

Winter Kids

ELEMENTARY
Edition

Learn OUTSIDE Guide



LEARN! EXPLORE!
MOVE!





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Table of Contents

6 Letter from the Executive Director

7 Going Beyond This Book

8 WinterKids Smarts

9 Clothing & Nutrition Basics

10 Clothing & Nutrition In-Depth

14 How to Stretch

17 Quick Tips & Tricks

18 Refocus

19 Transition Times

20 Ice Breakers and Pairing Up Students

21 Handshake Alternatives

22 Get Started! Lessons

23 Introduction

24 What Can We See Outdoors?, Language Arts K-2

25 What Can We Do Outdoors?, Language Arts K-2

26 Discovering Descriptive Details, Language Arts 3-5

27 Word Circle, Language Arts 3-5

28 Circle of Words, Language Arts 6-8

29 Animal Vegetable or Mineral, Language Arts 6-8

30 Students Count!, Math K-2

31 Shaping Students, Math K-2

32 Divide and Conquer Division!, Math 3-5

33 Shaping Students, Math 3-5

34 Ratios Rule!, Math 6-7

35 Exercising with Exponents, Math Grade 8

36 Shape Up, Math 6-8

38 Health

39 Outdoor Food Plates, K-2

42 My Plate Graphic

43 Healthy Foods, Healthy Bodies, K-2

46 Healthy Foods, Healthy Bodies, 3-5

49 5-2-1-0 Relay Race, 3-5

51 5-2-1-0 Pictures/Messages

53 Creating a Better Plate, 3-5

56 Choose My Plate Worksheet

57 Cardiovascular Health, 6-8

60 Healthy Heart Worksheet

61 Breakfast Counts! 6-8

64 Physical Activity Log for Families



65 Physical Education

66 Introduction

66 Suggestions and Guidelines for Implementation

67 Quick Tips & Tricks

67 Refocus

67 Transition Times

68 Ice Breakers and Pairing Up Students

68 Handshake Alternatives

69 Help Frustrated Kids

69 Including Special Needs Students

71 Aerobic Conditioning

71 Snow (or No Snow) Games

74 Figure 8 Fitness

75 Fun Run

76 Four Corners

77 Fun Partner Relays

78 Snowflake Fitness

79 Do you Want to Build a Snowman?

80 Snow TABATA

81 Dynamic Warm Up for Winter Fitness

84 Evaluation Tools

85 Student Fitness Questionnaire

86 Fitness Unit Evaluation

87 Cross Country Ski Unit

89 Lessons 1-4

97 Cross Country Skiing Vocabulary

98 Cross Country Skills Assessment

99 Cross Country Skills Assessment Checklist

100 Ski & Snowboard Unit

102 Lessons 1-6

114 Alpine Skier & Snowboarder Vocabulary

115 Your Responsibility Code

116 Ice Skating Unit

119 Lessons 1-4

126 Ice Skating Skills Assessment Checklist

127 Snowshoe Unit

129 Lessons 1-5

139 Snowshoe Olympics

141 Snowshoeing Vocabulary

143 Assessments

144 Flexibility Assessment

145 Stretch Your Thinking!

146 Create Valuable Ending Discussions With Essential Questions

147 Sample Rubric for PE Lesson

148 Sample Generic Rubric

149 Unit Evaluation

150 Purchasing Equipment for Your Program



151 Art

- 152** Funflakes, K-2
- 154** Experiencing the Outdoors Through Art, K-2
- 156** Four Seasons, 3-5
- 158** Still Life Snow People, 3-5
- 160** Bird's Eye View, 6-8
- 162** Experiencing the Outdoors Through Art, 6-8

164 Language Arts

- 165** Details Matter, K-2
- 167** Jump Up, Scrunch Down, K-2
- 169** I Think, 3-5
- 171** Let's Discuss It, 3-5
- 173** Descriptive Writing, 6-8
- 175** Express Yourself, 6-8

178 Mathematics

- 179** Cool Patterns, K-2
- 181** Measure Me!, K-2
- 184** Equipment Measure Up, 3-5
- 187** Bases and Baskets, 3-5
- 191** Moving Mathematics, 6-8
- 194** Plotting New Heights, 6-8

197 Science

- 198** Life is Wild, K-2
- 201** Move It!, K-2
- 204** "Al" the Snowman, 3-5
- 206** Making a Weather Report, 3-5
- 209** Stick to North, 3-5
- 211** Winter Ecology-Animal Adaptations, 3-5
- 216** The "Great" Heat Escape, 6-8
- 218** The Science of Sledding Lesson 1, 6-8
- 220** The Science of Sledding Lesson 2, 6-8

222 Social Studies

- 223** Exploring Geography, K-2
- 225** Natural Resources, K-2
- 227** Places and Regions, 3-5
- 229** Technology and Skiing, 3-5
- 233** History of Skiing Essay
- 236** Historic Forts, 6-8
- 239** Revolution Relay, 6-8

241 Imagine: A True Story

Letter from the Executive Director

Thank you for being a champion educator by helping kids to get outside and be active more often during the school day! You are truly at the heart of our work in elementary schools.

We are so excited to introduce the new and improved WinterKids Learn Outside Guide (formerly the Guide to Outdoor Active Learning)! This new Guide includes: 16 new lessons that are timely, fun and engaging; a completely enhanced Physical Education section with suggestions and guidelines for implementation; and, Tips & Tricks for pairing up and refocusing your students. The Learn Outside Guide offers easier usability and national learning standards. It is our hope that you will find this updated version to be a welcome, active addition to your education plan.

Please take some time to look through the table of contents and familiarize yourself with the new format. Teachers who are new to outdoor learning should pay special attention to our new Get Started! section. This section offers helpful tips for getting your students ready to learn outdoors, including: what to pack for a positive outdoor experience; and, 12 new outdoor lessons that support math and language arts curricula with little to no special equipment required to be successful.

This Guide is an excellent resource for all teachers to include outdoor learning across all subjects and all elementary grade levels. Have fun moving, learning and exploring with your students!

WinterKids has been building a legacy of outdoor winter fun in Maine for over two decades. Our education programs are evidence-based, award winning and most importantly, kid-centered and teacher approved. Please visit WinterKids.org to learn more about the impact our programs are having on Maine children and families statewide.

Outdoor kids are active kids. Active kids are healthy kids. Healthy kids are happy kids. Happy kids are winter kids! Together, we create the snowball effect.

We are here to support you and welcome your questions and ideas – and we look forward to hearing your success stories! Thank you.

Yours in health,



Julie D. Mulkern Executive Director

Going Beyond This Book

Other possible topics for lesson plans or units within the classroom setting are listed below by content area. We encourage you to take a subject you like to teach and take it outside! This is a working list and is open for suggestions and examples from all who would like to add what they have done. Please email us at info@winterkids.org with your ideas and suggestions.

Language Arts <ul style="list-style-type: none">• Writing Activities• Descriptive Writing• Persuasive Writing• Research Papers• Vocabulary and Activities	Science <ul style="list-style-type: none">• Laws of Motion• Laws of Gravity• Principles of Velocity• Snow and Snowmaking• Winter Recreation and the Environment• Exploring Weather
Math <ul style="list-style-type: none">• Winter Recreation Budgeting• Problem Solving: Basic Level• Problem Solving: Challenge Level• Maps, Ratio, and Proportion• Measuring Speed and Distance	Social Studies <ul style="list-style-type: none">• Maine and Ski History• Career Exploration• Maine and the Recreation Industry
Physical Education <ul style="list-style-type: none">• Principles of Physical Fitness• Skill Themes: jumping and landing, chase, flee, dodge, transfer of weight• Movement Concepts: pathways, body awareness, directionality	Health <ul style="list-style-type: none">• Communities• Environment• Consumers• Nutrition• Safety



WinterKids Smarts

WinterKids Smarts Clothing and Nutrition Basics

WinterKids Tips

- * Always wear a hat. Most of your body heat escapes from your head.
- * Wear a helmet when it's required. It will keep you safe and toasty.
- * Protect yourself from the sun with sunscreen, sunglasses, and goggles.
- * Choose gloves and mittens that are appropriate for your winter sport.
- * Wear socks designed for winter activity to keep your feet drier and more comfortable.

Layering

Wear multiple layers of clothing to stay warm and dry when engaging in winter sports. The first layer wicks moisture away from the skin, the second layer insulates and keeps you warm, and the third protects you from the weather.

Wicking layer:

The key to staying warm in the winter is to stay dry—that's why the wicking layer is essential. Examples of wicking layers include thermal underwear made of silk or polyester. Avoid cotton, which stays wet next to your skin.

Insulating layer:

The function of the insulating layer is to keep your body heat in and the cold weather out. Examples of insulating layers include fleece, wool sweaters, vests, and sweatshirts.

Protection layer:

The protection layer keeps out weather elements such as snow, rain, sleet, and wind. A protection layer should be waterproof and windproof and allow your body's moisture to evaporate through the fabric.

Nutrition for Winter Activities

Make healthy eating choices by incorporating the following tips into your diet:

- * Keep hydrated by drinking plenty of water or sports drinks.
- * Sustain your energy by eating a good supply of pasta, whole grains, fruits, and vegetables.
- * Increase your stamina by eating "good fats" such as nuts, seeds, olive oil, and peanut butter.

Always remember...

- * Don't overdo it. If you get tired, stop. To avoid frostbite, go inside if you get cold.
- * Always go with someone. It's safer and more fun with a friend.
- * Stay off the ice unless it has been designated safe by local officials.
- * Make sure an adult knows where you are.

WinterKids Smarts In-Depth

Dressing for Cold Weather

Wearing the right clothing is the first step in getting ready to play outside in the snow. You want to stay warm and dry. The best way to dress for winter fun is to wear layers of clothing. This allows you to add or remove layers, depending on the weather and what you're doing.

First layer:

This is the wicking layer worn next to your skin, usually long underwear. Even though it's cold outside, you will be sweating. And if you're wet with sweat, you will get colder faster. Wear long underwear made of synthetic fiber—usually polyester—that has “wicking” power. This means the fibers will wick (move) sweat away from your skin. This keeps you warm and dry.

Middle layer:

The middle layer is your insulation layer. This can include turtlenecks, sweatshirts, sweaters, and vests. Popular insulation materials include:

- * Fleece, a synthetic material that insulates even when wet.
- * Wool, which naturally wicks wetness away and maintains warmth while damp.

Outer layer:

The outer layer is usually pants and a jacket. This is your protection against the elements of winter and should block the wind and repel snow, sleet, and rain. Most genuine winter jackets and pants “breathe” and are waterproof. This keeps moisture on the outside and allows moisture from the inside – your sweat – to escape, keeping you dry and comfortable. Depending on the weather and what you're doing, you can wear uninsulated pants and jackets, called shells, or clothing with more insulation. Many snowboard pants are reinforced in the butt and knees for extra protection when kneeling or sitting on the snow.

Look for features that will help you stay warm and dry and have more fun such as:

- * Easy-to-use zippers,
- * Lots of pockets for your stuff,
- * A hood (you lose 50% to 70% of your body heat through your head),
- * Gaiters to keep snow out of your sleeves and pant legs,

Other important items to consider are:

- * Helmets—The best skiers and snowboarders in the world wear helmets, so why shouldn't you? Check out www.lidsonkids.com.
- * Goggles—They help protect your eyes from snow, wind, and the harmful rays of the sun.
- * Sunscreen—In the winter, the sun reflects off the snow and can quickly cause sunburns. This is especially true in the mountains. Wear sunscreen with a protection factor (SPF) of at least 30 and reapply frequently.

Nutrition for Winter Activity

You know that MVP stands for Most Valuable Player. What about MVB? It is not the Most Valuable Bobsledder or the Most Valuable Boarder. It stands for the best nutrition advice: Moderation, Variety, and Balance. Good health comes from the right balance of food and exercise, not to mention adequate rest and taking responsibility for your own health. The best foods for outdoor winter activity are ones that provide optimal energy. In general, those are foods rich in carbohydrates (and ideally fiber and other nutrients as well). Carbohydrates not only give you energy (which can also be stored for later use), but they also give foods texture, sweetness, and lots of minerals and vitamins.

Carbohydrate (energy) foods for outdoor winter activity:

- * Bananas
- * Beans
- * Bread (whole grain)
- * Ready-to-eat cereal (whole grain)
- * Corn
- * Couscous
- * French toast (whole grain)
- * Garbanzo beans
- * Grapes
- * Green beans
- * Low-fat yogurt
- * Nectarines
- * Oatmeal
- * Oranges/orange juice
- * Pancakes (whole grain)
- * Pasta
- * Peaches
- * Pears
- * Plums
- * Polenta
- * Potatoes
- * Pretzels
- * Squash
- * Rice, especially brown rice
- * Skim or low-fat milk
- * Sweet potatoes
- * Waffles (whole grain)

Use the USDA MyPlate as a basis for your choices.

When to Eat and Drink?

The nutrition needs of athletes during the winter are not too much different than those of athletes during the rest of the year, with a couple of exceptions. In the winter you'll burn more calories, so it is important to eat and drink before, during, and after winter activity.

Eat warm foods, not cold; that's common sense. You don't want your body to waste energy trying to warm up your insides. Besides, trying to chew on a frozen granola bar is no fun! Carry a thermos filled with warm soup or a non-caffeinated beverage to help you warm your body. To keep foods warm, tuck them inside your clothes rather than inside a backpack. Your body heat will keep the food from freezing.

You must drink fluids more often in the winter than you do in the summer. In cold weather, you are less likely to notice when you need fluids, and your body's thirst indicator isn't enough to tell you when you need to hydrate. By the time you are thirsty, your body is already



dehydrated, leaving you more susceptible to the cold. Dehydration can mean less circulation in your hands and feet (places likely to get frostbite), so drink warm fluids to help promote circulation. Drinking water helps you maintain the right body temperature, helps you digest your food and eliminate waste, and carries nutrients throughout your body.

Eat and drink before!

Eat a high-carbohydrate meal one to four hours before activity. Aim for drinking one pint of liquid, such as water (soda doesn't count here), before you head outside.

Eat and drink during!

Eat 30 to 60 grams of carbohydrates per hour to maintain your energy level. Try for five fluid ounces every 20 minutes during cold weather exercise. That comes out to about a pint of fluid each hour you're exercising.

Eat and drink after!

Eat small amounts of carbohydrates frequently. This will help you be more prepared for the next round of activity. Also, be sure to keep drinking fluids—the goal here is to replace fluid loss during exercise.

Healthy Food Ideas

Don't limit yourself to the following list of suggested foods. The important thing is that you eat enough to give your body the energy it needs to keep you warm and safe. If you feel like eating French toast for dinner, go for it!

Breakfast:

A fun day outdoors starts with a good breakfast (to “break” the overnight “fast”):

- * Oatmeal or other whole grain cereals
- * Yogurt
- * Fruit
- * Low-fat granola
- * French toast, pancakes or waffles (whole grain)
- * Ready-to-eat cereals (e.g. corn or bran flakes)
- * Baked or mashed potatoes
- * Beans and rice

Snacks:

Instead of grabbing a bag of chips, try one of these healthy alternatives that will give you the energy and nutrition you need for outdoor winter activity.

- * Bananas
- * Grapes
- * Low-fat yogurt
- * Nectarines

Lunch:

- * Soup
- * Sandwich (whole grain bread)
- * Fruit

Dinner:

- | | |
|-------------------------------|-------------------------------|
| * Lean meat (chicken or pork) | * Pretzels |
| * Beans | * Skim or low-fat milk |
| * Corn | * Low-fat yogurt |
| * Couscous | * Dried Fruit |
| * Garbanzo beans | * Polenta |
| * Green beans | * Potatoes |
| * Pasta | * Squash |
| * Peaches | * Rice, especially brown rice |
| * Pears | * Sweet potatoes |
| * Plums | |

The goal for eating while on the slopes or out on the trail is to find foods and liquids that won't freeze. Pick and choose what you like – it should be fun to get fit with the right foods. Listen to your body. Your individual needs will be different from your friends' needs.

Remember MVB:

- * Moderation—No eating to extremes.
- * Variety—Try a new food each week!
- * Balance—Balance the food you eat with regular activity, especially sports you enjoy!

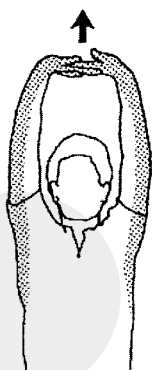
Sources: American College of Sports Medicine; Nancy Clark, Sports Nutritionist; and Elizabeth Patten, Consultant



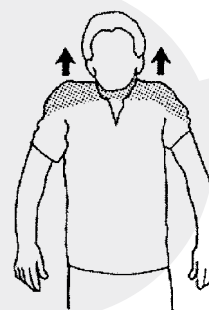
How To Stretch

These stretches should be done slowly with no bouncing. You should feel the stretch, but it should not hurt. Each stretch will be held for 10-20 seconds total. Hold the stretch feeling for 5-10 seconds. This is called the easy stretch. After holding the easy stretch, move a little more into the stretch until you feel the stretch again. This is called the developmental stretch. Hold for 5-10 seconds. If the stretch becomes painful, you are stretching too much. The developmental stretch will safely increase flexibility. Hold only stretch tensions that feel good to you. Be relaxed while you stretch. Your breathing should be slow and deep. Don't worry about how far you can stretch.

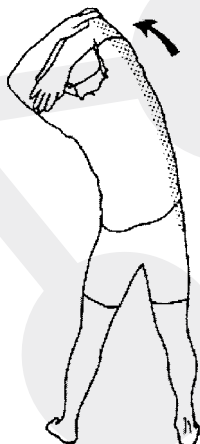
Interlace your fingers above your head, palms facing up. Stretch your arms back and up a little. Do not hold your breath. Hold stretch for 10 seconds.



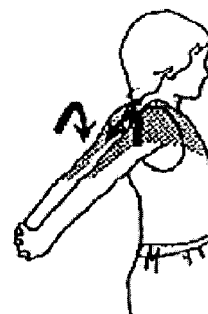
Raise the top of your shoulder up toward your ears. Hold a feeling of tension in your neck and shoulders for 3-5 seconds. Relax your shoulders downward to their normal position. Do this 2-3 times.



Hold the elbow of one arm with the hand of your other arm. Slowly pull your elbow down behind your head as you bend over sideways. Keep your knees bent during this stretch. Hold any easy stretch for 10-20 seconds.



Interlace your fingers like a basket behind your back. Slowly turn your elbows inward while straightening your arms. Hold for 5-10 seconds. Do twice.



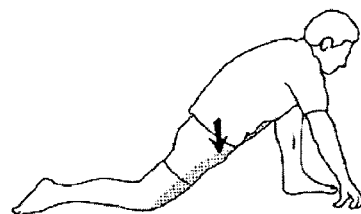
Interlace your fingers behind your head, resting your arms on the floor. Use the power in your arms and hands to slowly and gently pull your head, neck, and shoulders forward until a mild stretch is felt in the back of your neck. Hold for 5 seconds then relax in the starting position. Do 3 times.



Straighten out your arms and legs. Point fingers and toes and stretch as far as possible. Hold for 10-20 seconds. Relax. If you get cramps in legs or feet, bring your toes toward your knees.



Move one leg forward until the knee of the forward leg is directly over the ankle. Your other knee should be resting on the floor. Now without changing the position of the knee on the floor or the forward foot, lower the front of your hip downward to create an easy stretch. This stretch should be felt in the front of your hip and possibly your hamstring and groin. This will help relieve tension in your lower back. Hold the stretch for 20-30 seconds. Repeat for other leg.



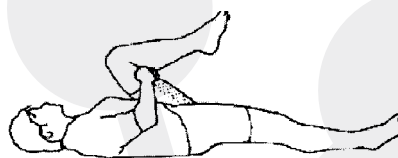
Gently pull your right foot (from the inside of the foot) toward buttocks with your left hand until you feel a mild stretch. If necessary place your other hand on a support for balance. Hold for 15-20 seconds. Stretch the other leg. Breathe. This stretch can also be done using the same hand to the same foot with hand holding on top of the foot.



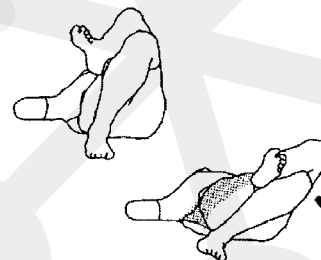
Lean on the wall with your forearms, your head resting on your hands or forearms. Bend one leg and place your foot on the ground in front of you keeping your back leg straight. Move your hips forward a little. Make sure your heels are on the ground and your toes are pointed straight ahead. Stretch each leg for 10-20 seconds. Do not bounce.



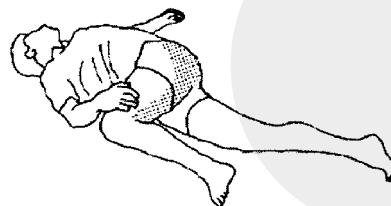
Lying on your back, straighten both legs and relax. Pull your left leg toward your chest. Keep the back of your head on the floor, if possible, but don't strain. Hold an easy stretch for 10-20 seconds. Repeat with other leg.



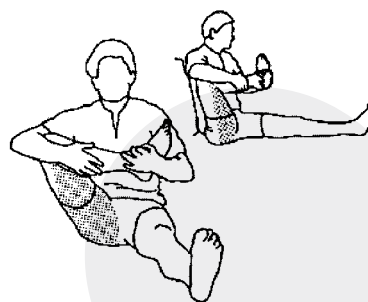
From a bent knee position, interlace your fingers behind your head and lift the left leg over the right leg. From here, use your left leg to pull your right leg toward the floor until you feel a stretch along the side of your hip and lower back. Stretch and relax. Keep your upper back, shoulders, and elbows flat on the floor. The idea is not to touch the floor with your knees, but to stretch within your limits. Hold for 15-30 seconds. Repeat on other side.



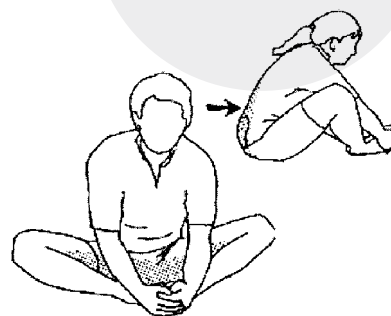
Keeping one leg outstretched, bend the other leg. With your opposite hand, pull the bent leg over the other leg as shown above. Turn your head to look away from the bent knee (your head should be resting on the floor). Now using your hand on your thigh (resting just above the knee) pull your bent leg down toward the floor until you get the correct stretch feeling in your lower back and side of hip. Keep feet and ankles relaxed. Hold a comfortable stretch for 15-30 seconds. Repeat on other side.



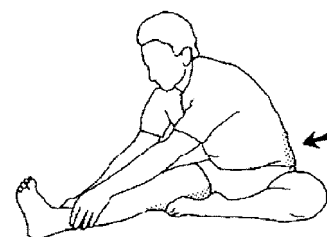
Rotate your ankle clockwise and counter-clockwise creating a complete range of motion with slight resistance provided by your hand. Rotary motion of the ankle helps to gently stretch out tight ligaments. Repeat 10-20 times in each direction. Do both ankles. A variation of this stretch can be done while lying on back and bringing knee and ankle towards chest.



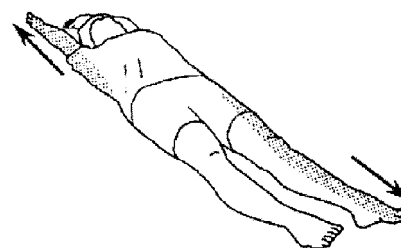
Sit with the soles of your feet together. Put your hands around your feet. Move your upper body forward with your back straight, bending at the hips. Keep your elbows in front of your legs. Hold for 15-20 seconds.



Sit with your right leg straight. Put the bottom of your left foot next to the inside of your straight leg/knee. Lean forward from your hips until you feel a stretch in your back and/ or back of your upper leg (hamstring). Hold for 10-20 seconds. Stretch both legs.



Stretch diagonally. Point the toes of your left foot as you extend your right arm. Stretch as far as is comfortable. Hold 5 seconds, and then relax. Repeat, stretching the right leg and the left arm.





Quick Tips & Tricks

Quick Tips to Refocus One Student, or Your Whole Class!

If you are in a situation where a student is feeling frustrated or you are observing the entire class may need to refocus or be redirected, try asking some of these mindful questions:

- * Take three deep breaths. Listen for one minute. What did you hear? What can you smell? How do you feel?
- * Think about a time when you did something you were afraid to try. How did you feel afterwards?
- * Think about three things that make you happy. How can you spend more time on these things each day?
- * When you're feeling confident, what emotions do you experience?
- * What is your favorite thing to do? How do you feel when you work on this activity?

LEARN!
EXPLORE!
MOVE!



Keeping Your Students Focused During Outdoor Transition or Wait Time

There will be many times your students will transition from one activity to another, and other times they will have to wait. The following ways can help assist gaining class attention or keeping students engaged:

Blast-Off

Have students spread out into their own personal space and begin counting down from 10. As they count down, they will all squat down lower and lower.

After “1,” students will say, “blast-off!” and make rocket ship or airplane arms and “fly” to line up. This will give students an opportunity to pop into line quickly or get out any other wiggles they must before lining up to transition.

Snowflakes

Loudly say “Snowflakes!” and then clap your arms above your head. Snap your fingers down or float your fingertips down like they are “snowing.” All students will repeat “snowflakes!” and then clap and fingertip/snap slowly, falling to the ground.

Skiers Exercise

Have students get into the skier’s position (knees and elbows bent with arms tucked), and then have them laterally jump-side to side.

Snowboard 180 Squat Jumps

Have students squat low and then jump up, turning to face the opposite direction.

Snowshoe Walk (High Knees)

With each step they take, have your students bring their knees up to chest height.

Snowflake Jumps

This is similar to the “star jump.” Have your students start low to the ground, tucked into a ball, and then jump up with their arms and legs in the formation of a “X” saying, “I’m a snowflake!”

Snowball Fight

Have your students squat, pick up an imaginary snowball, and then “throw” it. Have them alternate sides when picking up and throwing.

Icebreakers and Pairing Students

Several lessons will provide an opportunity to pair students. You may want to include an icebreaker to help students feel more comfortable in a new learning environment. You can use the following exercises:

Find Your “Sole” Mate

Have your students look at the bottom of their shoes or boots and then match them with the similar soles of their classmates’ shoes.

People-to-People

This activity will help students/staff get to know each other and step outside of their comfort zones by finding a new partner each round.

Directions:

- * The leader will say “people-to-people” to gain the group’s attention and then state a connection two people may have. Examples include:
 - Find a classmate(s) who has the same number of pets as you.
 - Find a classmate(s) who plays the same winter sports as you.
 - Find a classmate(s) who has done a similar outdoor activity as you: sledding, snowboarding, snowshoeing, skiing, shoveling, etc.
 - Find a classmate(s) who has built a snow fort, snowman, or any other creature/structure you have built out of snow.
 - Make a snowball and find a classmate(s) who made the same size snowball.
 - Find a natural object within one step of your body and then find a classmate(s) who has a similar object. Discuss what it is and why it caught your eye.
- * Students will chat quietly about what it is they have in common.
- * Encourage students to find a new partner each round.



Handshake Alternatives

It's important for your students to greet each other! These alternatives to the traditional handshake will help your students warm up with each other before an activity while minimizing physical contact.

Snowman Fist Bump

Student A holds out a fist to Student B, as if they were starting a fist bump. Student B puts one fist above and the other below Student A's fist to create a snowman. Student B says, "Snowman!"

Skier

The students stand across from their partners in a skiing position (knees and elbows bent, arms tucked into their sides). Student A will laterally jump to one side, and Student B will jump to the opposite side. They will repeat this three times and then elbow bump.

Snowshoe Foot-Five

Partners touch the sole of their shoes together or tap toes.

Fly By

Partners bring their arms up for a high-five, but instead, they miss on purpose and call it a fly by. Partners can always windmill their arms around and touch hands at the bottom.

Snowball Toss

Student A holds out a fist to Student B, as if they were starting a fist bump. Student B takes Student A's fist, pretends to throw it, and says, "Snowball toss!"



Get Started! Lessons

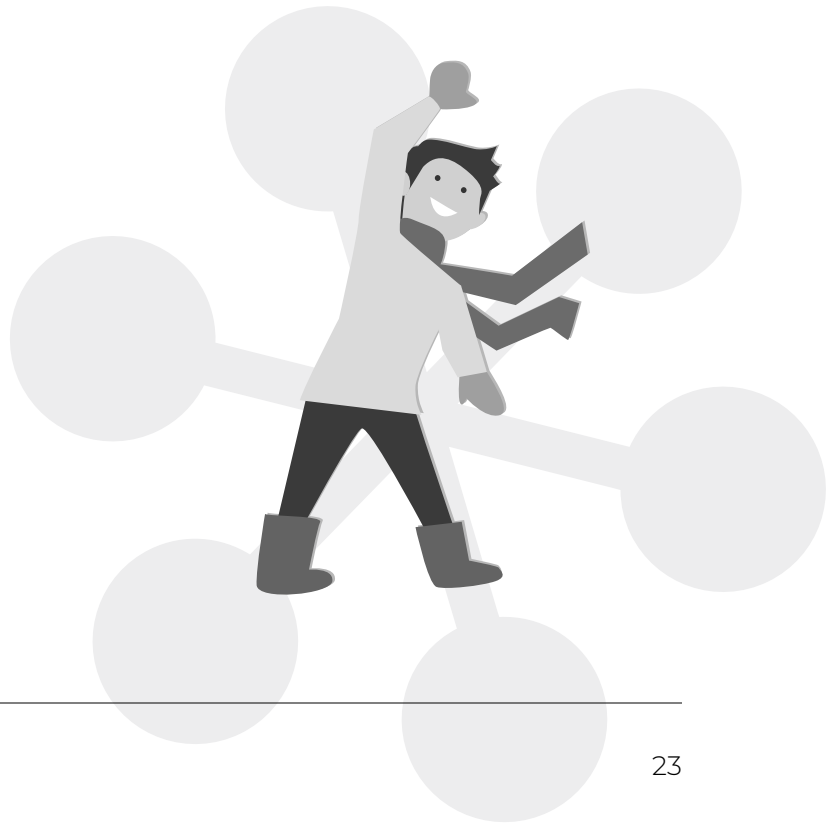
Introduction to Get Started! Lessons

Preparing yourself and your class for a trip outdoors offers great rewards. The benefits of active outdoor learning include exercise, fresh air, and a stimulating change of scenery – and that's just the start!

The Learn Outside Guide features high-interest lessons paired with interactive movement, creating a learning experience that encourages student engagement and supports academic success.

The Get Started! lessons support math or language arts curricula, meet common core standards, are engaging and easy to prepare for, and require little or no special equipment. Experience shows that being prepared is a powerful tool in creating a positive experience. When taking a class outside in winter, it is essential that you and your class be properly dressed to ensure safety and comfort. It is also essential to carry a custom-packed backpack or tote, like one you would take on a field trip. Suggested items include usual first aid supplies, sunscreen, and tissues, as well as a clipboard, paper, and pencils (markers and pens can freeze) for recordkeeping, and extra socks and mittens. You may want to use a set of clipboards, tagged in “team” colors, to help keep recordkeeping simple.

As you begin your journey with active outdoor learning, remember that the path and the pace are up to you. Choose a Get Started! lesson, prep your backpack, and head outside! Once you've completed your Get Started! lesson, wander through the guide and start experimenting with the lessons that speak to you. Enjoy your adventures under the open sky!





What Can We See Outdoors?

Grade K–2

Lesson Summary & Objective

This lesson offers students an opportunity to practice and demonstrate their skills with adjectives.

Materials

- * Notebook or clipboard to record student answers

Procedure

Outside:

1. Gather students. Together, the class will search for and record things that can be described by a specific adjective. Ask students to identify things that are hard, soft, small, large (this could lead to a discussion about synonyms/antonyms), things that are a specific color, etc.
2. Reward your class with ten jumping jacks or ten seconds of running in place after each correct answer.

Inside:

1. Write your recorded list of adjectives on the board.
2. Have students illustrate, caption, or write about one or more of the objects that they saw outside. They may share their object with the class using an online photo or video of the object, a picture of the object in a book, or simply a verbal description of the object.

Common Core Standards

English Language Arts

CCSS.ELA-LITERACY.L.K.5.B

Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms).

CCSS.ELA-LITERACY.L.1.1.F

Use frequently occurring adjectives.

CCSS.ELA-LITERACY.L.2.1.E

Use adjectives and adverbs, and choose between them depending on what is to be modified.



What Can We Do Outdoors?

Grade K–2

Lesson Summary & Objective

This lesson is designed to enhance and demonstrate student skills with verbs.

Materials

- * Notebook or clipboard to record student answers

Procedure

Outside:

1. Gather students. Ask them: What are we doing while we are outside today? Record student responses (ex. moving, exploring, enjoying).
2. Remind students that anything we do is a verb. Then ask: What else have you done outside in winter? What new outside winter activity would you like to try? What are some Winter Olympic Sports (skiing, bobsled, curling, figure skating, hockey, luge, ski jumping, snowboarding)? Record student answers.

Inside:

1. Write a list of the verbs recorded outside on the board.
2. Have students describe some of the things that they did outside by writing/drawing in their journals, telling their story aloud, or narrating to an assistant. If students are writing their stories, have them underline the verbs in their entries.

Common Core Standards

English Language Arts

CCSS.ELA-LITERACY.L.K.1.B

Use frequently occurring nouns and verbs.

CCSS.ELA-LITERACY.L.1.1.E

Use verbs to convey a sense of past, present, and future (e.g., Yesterday I walked home; Today I walk home; Tomorrow I will walk home).

CCSS.ELA-LITERACY.L.2.1.D

Form and use the past tense of frequently occurring irregular verbs (e.g., *sat*, *hid*, *told*).



Discovering Descriptive Details

Grade 3–5

Lesson Summary & Objective

This lesson encourages students to explore and demonstrate their skills with descriptive details.

Materials

- * Notebook or clipboard to record student answers

Procedure

Outside:

1. While walking, have students search for and share examples of opposites found in nature, such as alive/inanimate, colorful/camouflaged, or smooth/textured. Record student responses.
2. Play “Animal, Vegetable, or Mineral.” Name an object in clear sight, and ask students to answer which category the object belongs to and why. Record correct descriptions and examples offered by students for each category.

Inside:

1. Write the list of the students’ examples on the board.
2. Have students use six words from the list to create a narrative about their experience outdoors, create a digital narrative on a device and then share it with the class, or narrate their story to an assistant.

Common Core Standards

English Language Arts

CCSS.ELA-LITERACY.W.3.3

Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

CCSS.ELA-LITERACY.W.4.3

Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

CCSS.ELA-LITERACY.W.5.3.B

Use narrative techniques, such as dialogue, description, and pacing, to develop experiences and events or show the responses of characters to situations.



Word Circle

Grade 3–5

Lesson Summary & Objective

This lesson encourages students to explore and demonstrate their skills with descriptive details.

Materials

- ✱ Notebook or clipboard to record student answers

Procedure

Outside:

1. Have your students form a circle, facing one another, with an arm's length of space between them.
2. Explain that the first student must name an item that they can see (noun). The second student must then name a word that describes the first student's noun (adjective). If the answer is correct, the class runs in place for ten seconds.
3. Next, the second student names a noun, the third student names an appropriate adjective, and so on, until the first student names an adjective for the last student's noun. For an extra challenge, the class could do noun/adjective/adverb (i.e. tree, tall, extremely).

Inside:

1. Write the list of nouns/adjectives/adverbs on the board for reference.
2. Have students write, illustrate, digitally create, or narrate to an assistant the tale of a fictional character using six words from the list.

Common Core Standards

English Language Arts

CCSS.ELA-LITERACY.L.3.1.A

Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in particular sentences.

CCSS.ELA-LITERACY.W.4.3

Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

CCSS.ELA-LITERACY.W.5.3.B

Use narrative techniques, such as dialogue, description, and pacing, to develop experiences and events or show the responses of characters to situations.



Circle of Words

Grade 6–8

Lesson Summary & Objective

This lesson encourages students to explore and demonstrate their skills with descriptive details.

Materials

- ✱ Notebook or clipboard to record student answers

Procedure

Outside:

1. Have your students form a circle, facing one another, with an arm's length of space between them.
2. Explain that the first student must name something that they can see, hear, taste, or smell (noun). The second student must then name a word that describes the first student's noun (adjective). The third student then names an adverb that is appropriate to the second student's adjective (ex. tree, tall, extremely).
3. If the three answers are correct, the class runs in place for ten seconds.
4. The cycle then starts again with the fourth student naming the next noun, the fifth student the next adjective, the sixth student the next adverb, and so on around the circle.

Inside:

1. Write the list of the students' nouns, adjectives, and adverbs on the board.
2. Have students use ten examples of sensory language to describe their outdoor experience in five paragraphs, with a PowerPoint, or in a narration to an assistant.

Common Core Standards

English Language Arts

CCSS.ELA-LITERACY.W.6.2.A

Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect

CCSS.ELA-LITERACY.W.7.3.D

Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.

CCSS.ELA-LITERACY.W.8.3.D

Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.



Animal, Vegetable, or Mineral?

Grade 6–8

Lesson Summary & Objective

This lesson encourages students to explore and demonstrate their skills with descriptive details.

Materials

- ✱ Notebook or clipboard to record student answers

Procedure

Outside:

1. While walking, search for examples of opposites found in nature, such as alive/inanimate, colorful/camouflaged, or smooth/textured.
2. Next, have students take turns naming an object in plain sight, and play “Animal, Vegetable, or Mineral,” while you record correct descriptions and examples offered by students for each category.

Inside:

1. Write your students’ Animal, Vegetable, or Mineral list on the board.
2. Have students (individually, in teams, or as a class) compare and contrast two or three items (one from each category), in paragraph form or in a Venn Diagram.

Common Core Standards

English Language Arts

CCSS.ELA-LITERACY.W.6.2.A

Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect

CCSS.ELA-LITERACY.L.7.1

Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

CCSS.ELA-LITERACY.L.8.1

Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.



123 Students Count!

Grades K–2

Lesson Summary & Objective

This lesson gives student an opportunity to practice and demonstrate their addition and subtraction skills through interactive movement.

Materials

* None

Procedure

Outside:

1. Gather students into a group. Choose and separate one smaller group of five students and one smaller group of three students from the whole group.
2. Ask your class how many students there would be in total if the group of five were combined with the group of three. Have a student or two volunteer an answer. Then physically combine the groups.
3. Have the students in the combined group line up, so that the remaining students can count the total to confirm that their answers were correct. Each correct answer earns the class ten jumping jacks.
4. Continue with other groupings, including larger groups of students, and increasing the challenge of the tasks (for example, combining three groups of students to reach a total), and use your choice of physical activity rewards to keep warm and add fun.

Note: *This activity works equally well for subtraction practice.*

Inside:

1. Have students discuss the strategies that they use to solve addition and subtraction problems.
2. Check student progress with a quick game of addition and subtraction flash cards.

Common Core Standards

Mathematics

CCSS.MATH.CONTENT.K.OA.A.1

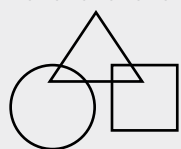
Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

CCSS.MATH.CONTENT.1.OA.A.1

Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.¹

CCSS.MATH.CONTENT.2.OA.B.2

Fluently add and subtract within 20 using mental strategies.² By end of Grade 2, know from memory all sums of two one-digit numbers.



Shaping Students

Grades K–2

Lesson Summary & Objective

This lesson is designed to give students an opportunity to discuss and demonstrate their ability to define the attributes of shapes.

Materials

* None

Procedure

Outside:

1. Gather students. Have them form a circle, facing one another. Discuss the attributes of a circle (no angles, no corners, no straight lines).
2. Next, have students form a triangle. Discuss the attributes of a triangle (a triangle is made of straight lines and has three angles). Discuss squares and compare them to circles and triangles.
3. Choose a group of students whose number is divisible by four and have those students form a square, arms extended to their sides, with each student representing one unit.
4. Each time the students complete a task successfully, reward them with ten jumping jacks – this adds fun and helps keep warm.
5. Challenge groups of students to form a trapezoid, rectangle, hexagon, etc.

Inside:

1. Discuss the shapes your students created outside.
2. Have volunteers draw the shapes on the board and label them. Vote on which was the class favorite.

Common Core Standards

Mathematics

CCSS.MATH.CONTENT.K.G.B.5

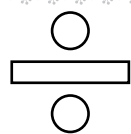
Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

CCSS.MATH.CONTENT.1.G.A.1

Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

CCSS.MATH.CONTENT.2.G.A.1

Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.1 Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.



Divide and Conquer Division!

Grades 3–5

Lesson Summary & Objective

This activity is designed to enhance and demonstrate the multiplication and division skills of students through interactive movement.

Materials

- * Notebook or clipboard to record student responses
- * Stopwatch

Procedure

Outside:

1. Gather students. Ask them how they could divide themselves into equal groups. Discuss using multiplication and division as appropriate tools for this task.
2. Have students attempt the task of division into equal groups without direction to see how they do, then offer guidance if necessary. If you find yourself with a prime number of students, or a “remainder” student, choose one or more students to be “counters.” Counters have the important job of ensuring that the groups are equal at the end of the task.
3. When your class has successfully completed the task, reward them with ten seconds of running in place – this adds fun and helps keep warm.
4. Once your class has had some practice, see if they can find other ways to form equal groups by dividing a variety of other numbers. If you like, you could make it competitive by timing how long it takes teams of students to form the groups you name. For example, if you have 24 students, divide them into two teams of 12, and have the teams take turns seeing how many different ways they can divide themselves into equal groups. This leads naturally to a discussion about factor pairs.

Inside:

1. Revisit your discussion about factor pairs and review a few examples on the board.

Common Core Standards

Mathematics

CCSS.MATH.CONTENT.3.OA.A.4

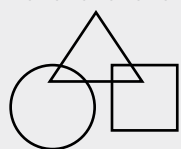
Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48$, $5 = _ \div 3$, $6 \times 6 = ?$*

CCSS.MATH.CONTENT.4.OA.A.2

Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.¹

CCSS.MATH.CONTENT.5.OA.A.2

Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3(18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.*



Shaping Students

Grades 3–5

Lesson Summary & Objective

This activity is designed to enhance and demonstrate student knowledge of the attributes of shapes through interactive movement.

Materials

- * Notebook or clipboard to record student responses
- * Stopwatch

Procedure

Outside:

1. Have your students stand in a circle, facing one another. Discuss what attributes make a circle different than other geometric shapes (i.e. no angles or straight lines).
2. Have students take a step back and do ten jumping jacks as a reward for their discussion input, and to keep warm.
3. Choose eight students and, with their arms extended, challenge them to make a square. Explain to those students that they are a linear unit of measure, not a point or angle. If the group is successful, reward the students with running in place to your count of ten.
4. Remind students that they are units, not points, and challenge them to form a variety of triangles, including right triangles, discussing angles as an attribute.
5. Try octagons and parallelograms if you dare!
6. You could get competitive. Divide the class into two or more teams and see which team can successfully complete a shape in the least time. You may also want to choose a few students to be “checkers.” Checkers help a teacher referee the team competitions.

Inside:

1. Draw several large geometric shapes on the board and have students volunteer to write one of the shape’s attributes inside it.

Common Core Standards

Mathematics

CCSS.MATH.CONTENT.3.G.A.1

Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

CCSS.MATH.CONTENT.4.G.A.2

Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

CCSS.MATH.CONTENT.5.G.B.3

Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.



Ratios Rule!

Grades 6–7

Lesson Summary & Objective

In this activity, students demonstrate their knowledge of ratio and proportionality through interactive movement.

Materials

✳ None

Procedure

Outside:

1. Gather students and explain that they will be solving and demonstrating their knowledge of equivalent ratios.
2. Choose 12 students to form a smaller group. Have four of those 12 students stand in a line (one behind the other) to your left, and have the remaining eight students stand in a parallel line to your right. Explain that the lines represent the ratio 4:8.
3. Challenge the same 12 students to form a pair of lines that represent a ratio equivalent to 4:8 (1:2, 2:4). If a group is successful, reward them with ten jumping jacks.
4. Choose new groups with 12 or 16 students, and a new ratio for each group to match to an equivalent, and then demonstrate.

Inside:

1. Have fun practicing a few ratio equivalents with much larger numbers now that you are not limited to the number of students.

Common Core Standards

Mathematics

CCSS.MATH.CONTENT.6.RP.A.1

Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

CCSS.MATH.CONTENT.7.RP.A.2.B

Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

LEARN! EXPLORE!
MOVE!





Exercising with Exponents

Grade 8

Lesson Summary & Objective

In this activity, students demonstrate their knowledge of exponents through interactive movement.

Materials

* None

Procedure

Outside:

1. Gather your students. Explain that they will be demonstrating their knowledge of exponents.
2. Choose 12 students for a demonstration group. Have three students stand in one line (one behind the other) and the other nine students stand in three parallel lines of three (so that they make a "square"), and slightly to the right of the first group's line.
3. Explain that the two lines represent 3, and 3 squared (9).
4. Challenge different groups of students to do the same demonstration with a variety of numbers and their squares.
5. Reward your students with a ten count of running in place after each correct demonstration to help keep everybody warm.

Inside:

1. Continue exponent practice with larger numbers now that you are not limited to the number of students..

Common Core Standards

Mathematics

CCSS.MATH.CONTENT.8.EE.A.1

Know and apply the properties of integer exponents to generate equivalent numerical expressions.

LEARN! EXPLORE!
MOVE!





Shape Up

Grades 6–8

Lesson Summary & Objective

This lesson is designed to give students an opportunity to use movement to enhance and demonstrate their knowledge of the properties of triangles.

Materials

- * Stopwatch
- * Calculators for Grade 8

Procedure

Grades 6 and 7

Outside:

1. Gather students and explain that they will be forming right triangles and solving for the area of those triangles.
2. Choose a small group of students to demonstrate a right triangle. Have the selected students stand with arms extended, and direct them into the shape of a triangle, explaining that they are a unit on a line segment, not a point. Discuss the properties of a right triangle and the formula for the area of a right triangle. As a class, find the area of your student demonstration triangle.
3. Choose teams of students to construct a variety of right triangles and then find their areas. Teams with the same number of members on each team could compete to see which team can most quickly construct a successful right triangle and then solve for its area. Reward students with ten jumping jacks for each correct answer.

Inside:

1. Draw several right triangles on the board.
2. Have students go to the board and solve for the areas of the triangles.

Common Core Standards

Mathematics

CCSS.MATH.CONTENT.6.G.A.1

Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

CCSS.MATH.CONTENT.7.G.B.6

Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

CCSS.MATH.CONTENT.8.G.B.7

Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

**Grade 8*****Outside:***

1. Gather students. Choose a small group of students and guide them in demonstration of how to construct two sides of a right triangle.
2. Review how to use the Pythagorean Theorem. As a class, solve for the length of the missing side of the student triangle using calculators.
3. Choose groups of students to construct two of the legs of various right triangles, and then challenge the others to solve for the third side using the Pythagorean Theorem.
4. Reward students with ten jumping jacks each time they find the correct answer.

Inside:

1. Have students go to the board and solve some more examples using the Pythagorean Theorem.





Health



Outdoor Food Plates

Grades Pre-K–2

Lesson Summary

In this activity, students will identify the food categories to which various foods belong based on the MyPlate guide from www.MyPlate.gov.

Objectives

Students will:

- * Give an example of a food from each section of the MyPlate graphic.
- * Explain why one section of MyPlate may be larger than another.
- * Explain why people should eat healthy foods,
- * Explain why physical activity is important to MyPlate.
- * Choose a personal health goal.

Materials

- * USDA's MyPlate graphic (see www.MyPlate.gov)
- * Basket
- * Magazine cutouts of food photos, at least one per student
(Note: You may choose to use cards with the names of foods on them instead)
- * Paperboard (for necklaces)
- * Glue (for necklaces)
- * String
- * Duct tape
- * Poster board (for signs)
- * Five stakes or cones (for signs)
- * Long string/rope
- * Enough plain paper plates for each student
- * Optional: sidewalk chalk, food coloring and water mixture in spray bottles, etc.
(for marking the outdoor plate boundary)

Preparation

1. Create paper food cards by cutting out photos of a variety of foods and gluing them to paperboard cutouts. Make sure you have several foods from each category of the food plate and enough for each student to have at least one card. You may choose to laminate the cards for durability. To simplify this step, use cards with names of foods on them or purchase ready-made cards.

Procedure

Inside:

1. Over the course of several days, introduce USDA's food plate called MyPlate (see www.MyPlate.gov). Spend a few minutes each day discussing MyPlate, stressing that the food we eat is just as important as exercise. Using a bulletin board, flip chart, transparency, etc., make a diagram and talk about one section of MyPlate a day. Be sure to emphasize common examples within each food group. Explain that the food plate is used to guide us in eating healthy foods—when we eat foods that are good for us, we are healthier and feel better! Although MyPlate does not include exercise and physical activity, diet and exercise are equally important parts of a healthy lifestyle.
2. Have students make food necklaces. Put either the food cards you made, cards with food names, or ready-made food cards into a basket and have students each pick one. Students will create necklaces by attaching string to the back of their food card(s) using heavy duty tape. Be sure students cut their string long enough to fit over outdoor winter clothing!
3. To prepare for the outdoor part of the lesson, divide the class into five groups. Have each group create large, legible signs for each food category (grains, vegetables, fruits, dairy, and protein). The signs should be made of sturdy paper or cardboard to withstand wind, snow, rain, etc. Use duct tape to attach the five signs to stakes or cones.
4. Have your students suit up for the outdoors, put on their necklaces, and head outside!

Outside:

1. Students will create a giant model of MyPlate outside. To start, have your students make a large circle, which will become their "plate". To make an outline of the circle, two students will hold an end of a long piece of rope. One will stand still while the other will pull the rope tight and walk in a circle around the other student. Then, students will either stomp out the border of the circle in the snow or use string, sidewalk chalk, or a food coloring/ water mixture in a spray bottle to mark the outline of the circle. This is your class' plate. The bigger the plate, the better!
2. Explain the connection between MyPlate in the classroom and the large plate outside, then place the five food group signs in the corresponding sections of the plate. Explain that this food plate is just like the one inside, but it is empty.
3. Have students determine the food group to which the food around their neck belongs and have them run to that section of the plate. Keep your students active by having them do jumping jacks until everyone has finished the sorting activity.
4. Have each student share which food they have with the class. Ask the rest of the class if they agree that the student chose the right food group.
5. Do this exercise several times. Have students walk or run to the opposite end of the field to switch necklaces so they can sort a different food. Throughout this activity, constantly reinforce the types of foods in each group.

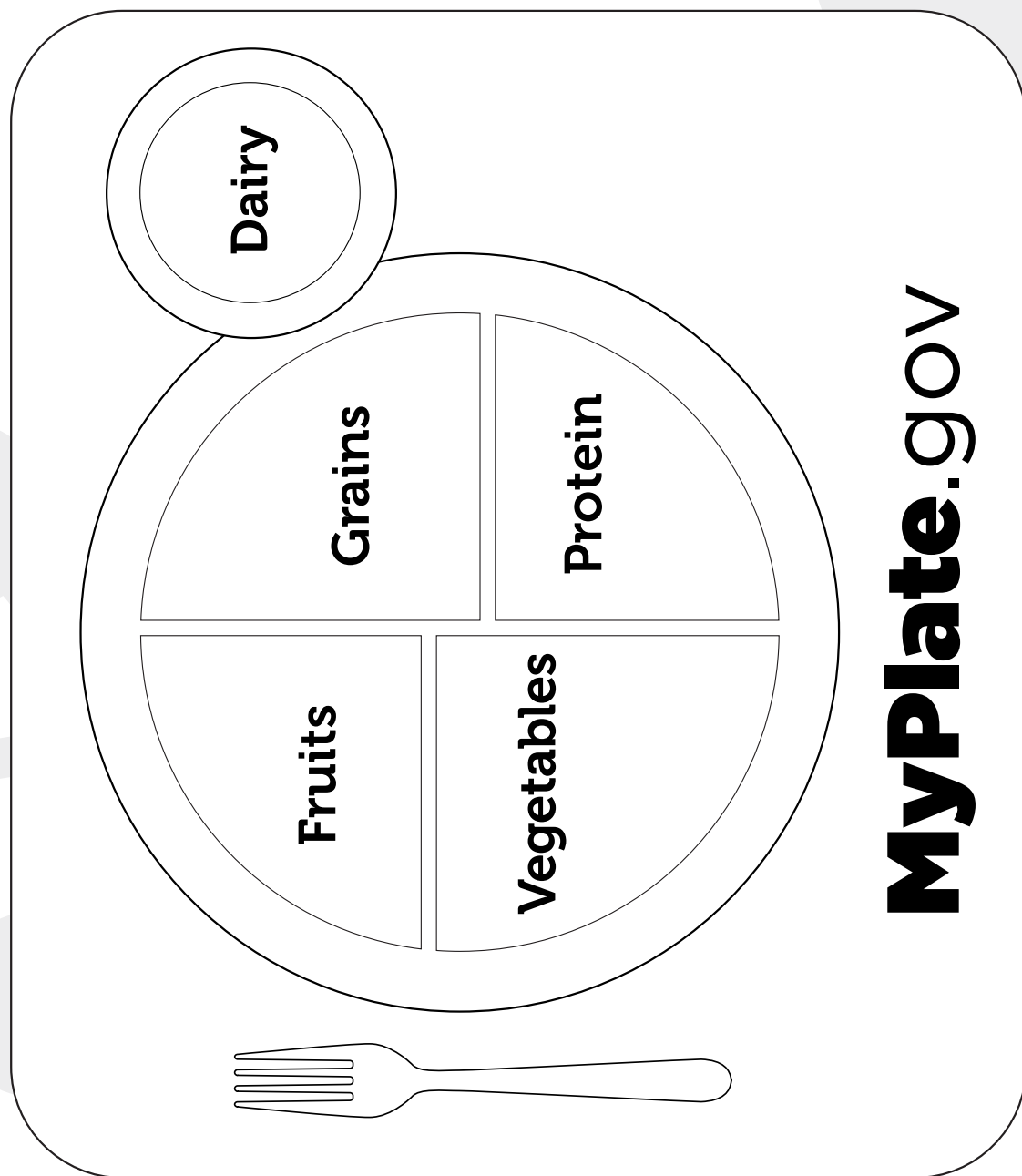
Inside:

1. Once you and your students are back inside, have your students fill in food on paper plate versions of their own food plates to hang on their refrigerator at home. Students may either draw examples of foods from each group or cut out photos from a magazine.
2. Set classroom eating goals. As a class, discuss the importance of a balanced diet and getting plenty of exercise. Encourage students to hang their food plates on the refrigerator at home to remind their families about healthy eating. Set a goal to eat a variety of foods from each group. In the days that follow, discuss what students are eating for breakfast, lunch, and dinner. How does that fit into MyPlate? At snack time, have students categorize and discuss the foods they are eating. How many have vegetables? How many have fruits? How many are drinking milk? What does this tell you about your food choices? How does using MyPlate affect your food choices? Make a chart on the wall to keep track of classroom eating habits to show progress in working toward their goal.

Special Needs Students

Students with dietary concerns may discuss the differences in their own food plates. Those allergic to dairy products, for example, could discuss with the class ways in which they fulfill their dietary requirements and design their own food plates.





MyPlate.gov



Healthy Foods, Healthy Bodies

Grades K–2

Lesson Summary

Students will learn to identify healthy foods through an interactive game where they will group foods that constitute healthy eating habits.

Objectives

Students will:

- * Match various foods with their food groups.
- * Choose three healthy foods.

Materials

- * Cut out pictures of a variety of foods-2 or 3 per child (Note: Collect empty cereal boxes, cans, milk jugs, etc., for use in the classroom as actual food models. Check out www.MyPlate.gov for more ideas.)
- * Scissors
- * Construction paper
- * Glue
- * Basket
- * USDA's MyPlate graphic (see www.MyPlate.gov)
- * 5 reusable grocery bags or other containers

Preparation

1. Download food images from WinterKids.org <https://winterkids.org/teachers-schools/resources-for-educators/> or cut out pictures of foods from magazines. Individual items work best with this age group, e.g., a picture of a tomato instead of a picture of a salad.
2. Sort the foods by food group, and glue the pictures to colored construction paper to match the MyPlate food group colors (red for fruits, green for vegetables, blue for dairy, etc.). For durability, laminate the photos.
3. Create signs for each of the five food groups and attach them to grocery bags or other containers.



Procedure

Inside:

1. Introduce the USDA MyPlate to your students. Point out the similarities among foods within each group. Use the following question to prompt class discussion:

Why don't we see candy bars and chips on the MyPlate of healthy foods?

Answer: Candy bars and chips have added salt and sugar. Eating a lot of salt or sugar can keep our bodies from functioning well and can cause things like tooth decay and obesity. When you eat a lot of salty and sugary foods, you can feel more tired and can be more likely to get sick. You can think of candy bars and chips as “sometimes” or “once-in-a-while” foods, not every day foods.

2. Brainstorm foods that fit into the different food categories.
 - Grains: cereal, bread, spaghetti, crackers, rice, etc.
 - Vegetables: carrots, celery, lettuce, spinach, etc.
 - Fruits: apples, bananas, oranges, blueberries, watermelon, grapes, etc.
 - Dairy: yogurt, milk, cheese, smoothies, ice cream, etc.
 - Protein: hamburger, steak, fish, nuts, chicken, peanut butter, etc.
3. Explain that, in addition to eating healthy foods, physical activity is also very important in building strong, healthy bodies. Have your students brainstorm different types of physical activities and say which ones they enjoy. Be sure to discuss outdoor winter activities, too.
4. Have students get dressed for outdoors.

Outside:

1. Place the labeled food group bags across the playground or a field. Leave plenty of space between the bags to allow for an active game.
2. Have your students work in pairs. Each pair will select a food card, determine what the food is, and decide to which food group it belongs. Each pair will then run or snowshoe to the bag with the corresponding food group name and drop the card in. Each pair will return to the teacher to get another card and repeat the process. Have students do this until all the food cards have been used.
3. Consider having your students move in different ways to distribute the food cards, e.g. hopping, crawling, jumping, running, walking backwards, “flying,” “swimming,” taking giant steps, taking baby steps, etc.
4. Gather your entire class around each bag and check the cards for accuracy. Have each pair choose a healthy food from the bag to determine if it was placed in the correct bag. If a card was placed in the wrong bag, discuss with the group where it belongs and why.

Optional Follow Up

Discuss the importance of physical activity. Copy the Family Activity Log on page 64 and distribute to each student. Have them record the activity and the amount of time they spend doing that activity, as indicated on the log. You may choose to create incentives or rewards for these healthy behaviors!

Special Needs Students

For the outdoor procedure, students with physical disabilities can use their wheelchairs or walkers and participate with their classmates or be the leader and hand out the food cards. Students who need help identifying foods and/or groups can be paired with another student (their “nutrition buddy”) for help.





Healthy Foods, Healthy Bodies

Grades 3–5

Lesson Summary

Students will learn to identify healthy foods through an interactive game where they group foods that constitute healthy eating habits.

Objectives

Students will:

- * Choose healthy foods and sort them into their appropriate MyPlate category.
- * Explain why certain foods are healthy and why others should be eaten less often.

Materials

- * Cutout pictures of a variety of foods-2 or 3 per student (Note: Collect empty cereal boxes, cans, milk jugs, etc. for use in the classroom as actual food models.)
- * Construction paper
- * Glue
- * USDA's MyPlate poster (from www.MyPlate.gov)
- * Grocery bags or other containers

Preparation

1. Cut out pictures of foods from magazines. Be sure to include some meals that have more than one food group (e.g. salad, pizza, macaroni and cheese, etc.). Glue the pictures to colored construction paper. Note: For younger children, use colors that correlate with MyPlate, i.e. blue=dairy; red=fruit, etc. For durability, laminate the photos. Create some cards with food words instead of pictures to increase literacy.
2. Create signs for each of the six food groups and attach them to grocery bags or containers.

Procedure

Inside:

1. Introduce the USDA MyPlate. Display the poster in the classroom where everyone can see it. Explain to your students that the sizes of the sections on the plate represent how much of that food group should be a part of their daily diet. For instance, grains are a larger section than proteins. We need more servings of grains because they are rich in carbohydrates which give us energy. Point out the similarities among foods contained within each group.

2. Brainstorm foods that fit into the different food categories. Look at the school lunch menu for the week and determine which food groups are represented.

- Grains: cereal, bread, spaghetti, crackers, rice, etc.
- Vegetables: carrots, celery, lettuce, spinach, etc.
- Fruits: apples, bananas, oranges, blueberries, watermelon, grapes, etc.
- Dairy: yogurt, milk, cheese, smoothies, ice cream, etc.
- Proteins: hamburger, steak, fish, nuts, chicken, peanut butter, etc.

Some concepts to discuss:

Which are healthier, whole grains or refined (processed) grains?

Answer: Whole grains! Whole grains haven't had their bran and germ removed by milling, making them good sources of fiber — the part of plant-based foods that your body doesn't digest. In addition to their many health benefits, high-fiber foods also tend to make you feel full longer. Refined grains, such as white rice or white flour, have both the bran and germ removed from the grain. Although vitamins and minerals are added back into refined grains after the milling process, they still don't have as many nutrients as whole grains do, and they don't provide as much fiber naturally.

Is there such a thing as good fats?

Answer: Yes! We all need some fat in our diets. Fats help our bodies absorb nutrients. However, too much fat contributes to weight gain, heart disease, and Type II Diabetes. Good fats are the unsaturated fats—monounsaturated fats lower total cholesterol and increase HDL cholesterol (the good kind!). Monounsaturated fats are found in nuts, avocado, and canola and olive oils. Polyunsaturated fats are also good fats. These are found in seafood like salmon, sardines, and fish oil. Corn, soy, safflower and sunflower oils are all high in polyunsaturated fats.

Saturated fats and trans fats are the “bad fats.”

Saturated fats can be found in animal products like meat, milk, and cheese. It is wise to choose lean meats (pork and chicken without skin) and low-fat milk and cheeses to limit saturated fat in your diet. Coconut oil and palm kernel oils are high in saturated fats and can often be found in packaged foods including milk chocolate, cookies, crackers, and snack chips. Trans fats, or partially hydrogenated fats, should be avoided if possible. Trans fats are responsible for clogging arteries, one reason for heart attacks. Food companies are beginning to remove partially hydrogenated fats from our foods, but it's still found in some stick margarine, shortening, fast food, cookies, crackers, granola bars, and microwave popcorn. Read the ingredient labels to limit these fats.

3. Explain that MyPlate shows us what to eat and, although it does not show us ways to be active, physical activity is very important in building strong bodies. Children should have at least 60 minutes of moderate activity each day. Ask your students to suggest different types of physical activities, and ask them which ones they enjoy. What can students do outside in winter to stay active?
4. Have students get dressed for the outdoors.

**Outside:**

1. Place the labeled food group bags across a playground or field. Leave plenty of space between the bags to allow for an active game.
2. Have each student select a healthy food card, decide the category to which the food belongs, and then run or snowshoe to the corresponding bag. They will drop the card in the food bag and return for another. Repeat until all the cards have been placed in the proper bag.
3. Consider having your students move in different ways to distribute the food cards, e.g. hopping, crawling, jumping, running, walking backwards, “flying,” “swimming,” taking giant steps, taking baby steps, etc.
4. When all the cards have been placed in the paper bags, gather the class around each bag and examine the contents. Have students explain why they categorized the foods the way they did. If any food cards have been misplaced, discuss the reasons why and then place them in the appropriate bag.

Optional Follow Up

Discuss the importance of physical activity. Copy the Family Activity Log on page 64 and distribute to each student. Have them record the activity and amount of time doing that activity as indicated on the log. Perhaps create incentives or rewards for these healthy behaviors!

Special Needs Students:

For the outdoor procedure, students with physical disabilities can use their wheelchairs or walkers and participate with their classmates or be the leader and hand out the food cards. Students who need help identifying foods and/or groups can be paired with another student (their “nutrition buddy”) for help.

LEARN! EXPLORE!
MOVE!





5-2-1-0 Relay Race

Grades 3–5

Lesson Summary

Students will learn the 5-2-1-0 message which emphasizes healthy behaviors including eating five or more vegetables a day, limiting recreational screen time to two hours or less a day, participating in one hour or more of physical activity every day, and limiting soda and sugar-sweetened drinks—and instead drinking more water and low-fat milk. This outdoor activity will reinforce learning 5-2-1-0 healthy habits. For additional information about this message and program, visit <https://www.mainehealth.org/Lets-Go/Childrens-Program/Schools/K-5-School-Tools>

Objectives

Students will:

- * Sort the 5-2-1-0 components in the appropriate categories.
- * Explain how the 5-2-1-0 message promotes good health.

Materials

- * 5-2-1-0 Poster (<https://www.mainehealth.org/-/media/Lets-Go/Files/Childrens-Program/Pediatric-Family-Practices/5210-Poster.pdf>)
- * 4 Hula Hoops-In lieu of hoops, stomp out circles or squares in the snow to contain the message cards at the start
- * 5 containers for each team
- * 4 sets of pictures representing the different components of the 5-2-1-0 message
- * Small prizes to award the winning team (optional)

Preparation

1. Print four sets of pictures from the attached list of 5-2-1-0 concepts.
2. Make four containers for each team, into which students will place appropriate message cards. Paper bags, small boxes or coffee cans will work well as containers. Next, mark each container with a 5, 2, 1, and 0. The fifth container will hold all the cards at the start.
3. Before students arrive, create a start line, by putting the containers with all the cards in four hula hoops side by side, leaving some space between them. Place the four numbered containers opposite each start hoop, across the playing space. When placing the containers, make sure they are far enough away to make for an active game.

Procedure

Inside:

1. Briefly discuss the 5-2-1-0 message using the 5-2-1-0 poster. When discussing the poster, avoid giving too many examples, as this is part of the lesson later.
2. Explain that the next activity will help them understand sorting/organizing by breaking down the components of the 5-2-1-0 message.

Outside:

1. Divide the classroom into four teams.
2. Next, have the students come up with a name for their team.
3. Designate each team to a “course.”
4. Explain to the students that they will work together to decide which pictures should be put into each container.
5. The students line up in front of the start hula hoops. The first student in line will select one picture card, run to the opposite end of the field, and deposit it in the appropriate container, and run back to the start.
6. Once the first student returns to the start line and tags the next teammate in line, that teammate can then select a card, and run to deposit it in the proper container. Continue until teams have sorted all the cards. As teams finish, they can cheer on the remaining teams until all cards are sorted.
7. After the race, take a few minutes to review each group’s sorting and decisions, making corrections as appropriate.

Back Inside:

Have students work in small groups to develop a group explanation of why the 5-2-1-0 message promotes good health.

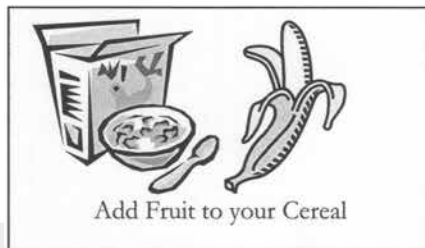
Special Needs Students

Students unable to run from start to finish may be stationed at the finish/answer hula hoop to help their teammates sort the pictures.

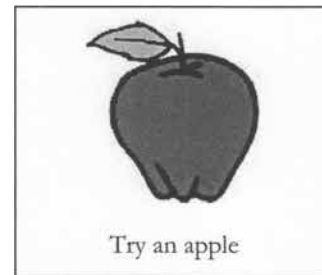




5 or more
FRUITS & VEGETABLES



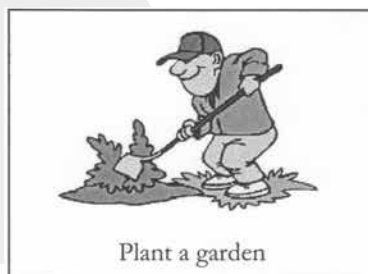
Add Fruit to your Cereal



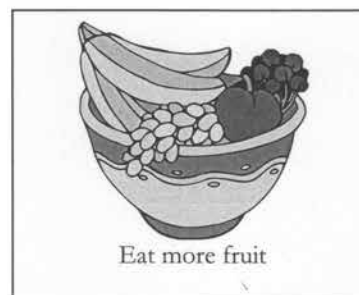
Try an apple



Have a salad with dinner

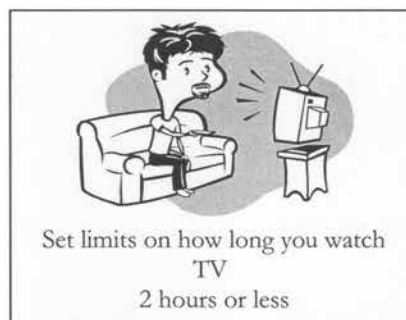


Plant a garden

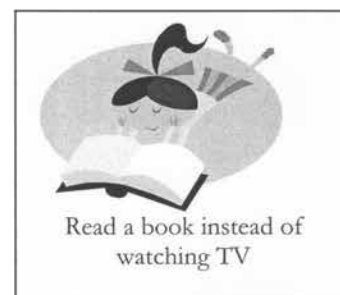


Eat more fruit

2 hours or less of
RECREATIONAL SCREEN TIME



Set limits on how long you watch
TV
2 hours or less



Read a book instead of
watching TV



Turn off the TV and play a
game

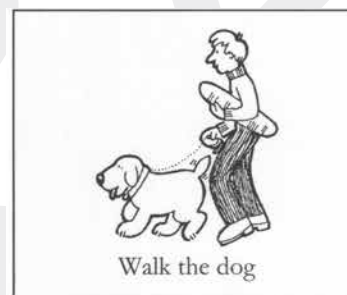


Unplug the TV & Participate
in TV Turn Off Week

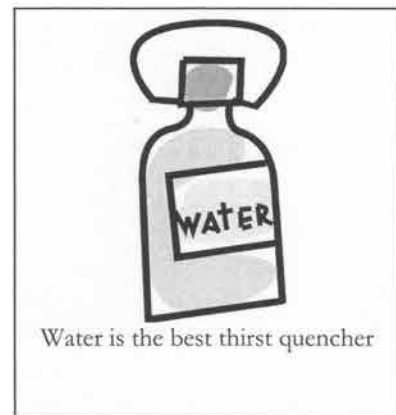
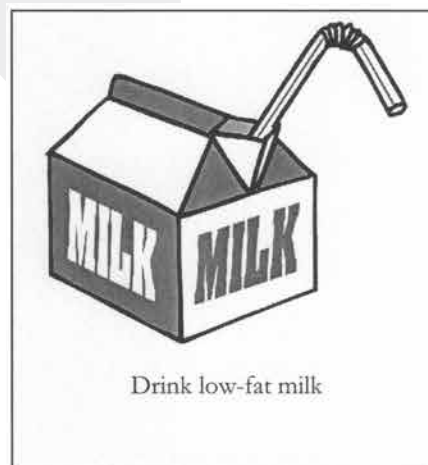
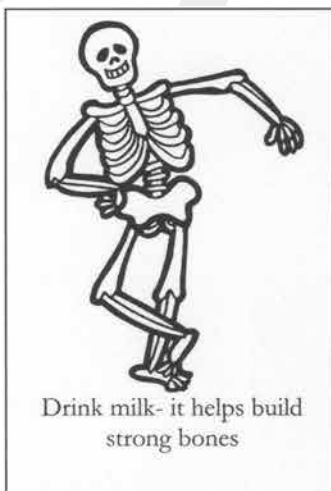
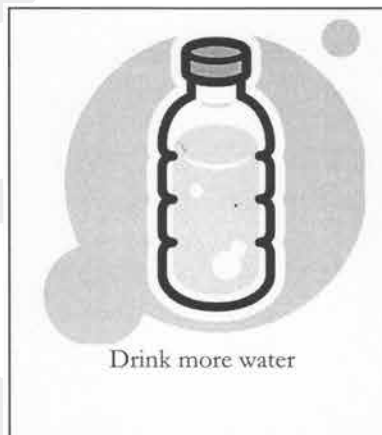
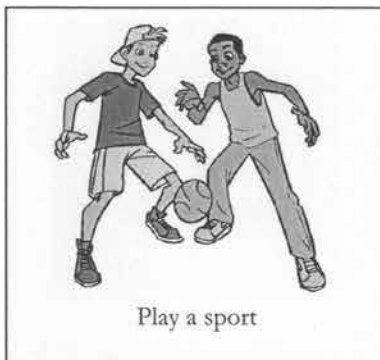
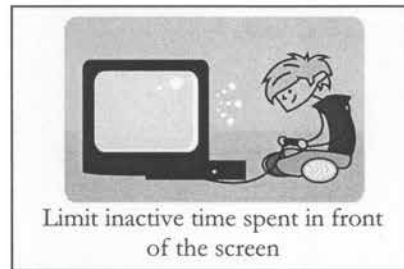
1 hour or more of
PHYSICAL ACTIVITY



Ride your bike to school



Walk the dog





Creating A Better Plate

Grades 3–5

Lesson Summary

Students will evaluate foods according to their nutritional value and determine how much and how often they should eat certain foods by labeling them as Anytime (GO), Sometimes (SLOW) or Seldom (WOAH). An outdoor game will reinforce learning.

Objectives

Students will:

- * Identify foods that can be consumed anytime, sometimes, or seldom.
- * Choose healthy foods for a snack.
- * Set a goal to eat healthy foods.
- * Include physical activity in their daily routine.

Materials

- * Cut out photographs of a variety of foods. Note: it's best to laminate if using them outdoors. You may use cards with names of foods on them OR laminated paper food models with nutrition information instead. These same cards can be used for the previous lesson, Outdoor Food Plate.
- * 3 boxes OR string, yarn, chalk, or food coloring and water mixture
- * 3 containers large enough to hold paper food models
- * USDA's MyPlate graphic
- * USDA's MyPlate Worksheet
- * Healthy snacks

Preparation

1. Create large paper food model cards by cutting out photographs of a variety of foods. Make up a range of cards—from those considered nutritious to those considered nutrient-poor. Make sure you have several from each category of MyPlate and enough for each student to have at least one card. A simpler version would be to use cards with names of foods on them. A good place to get food pictures is from grocery store flyers. You may also use some of the food group handouts created in the Healthy Foods, Healthy Bodies activity. For older students, you may want to use foods that involve more than one food group, like pizza. For younger students, you may want to use individual foods.
2. If using boxes for the outdoor activity, label one "GO," one "SLOW," and one "WOAH." If using string, chalk, or food coloring mixture, consider using green to mean "GO," yellow to mean "SLOW," and red to mean "WOAH." Make the food coloring mixture ahead of time.

Procedure

Inside:

1. Introduce the USDA's MyPlate. Refer to the MyPlate graphic and point out differences among foods contained within each group.

Grain group examples:

- refined white bread vs. whole grain bread
- saltines vs. whole wheat crackers
- white rice vs. brown rice
- refined sweetened cereals vs. whole grain cereal

Dairy group examples:

- skim vs. whole milk
- fat-free or reduced fat cheeses or yogurt vs. full fat cheeses and yogurt

Protein group examples:

- lean hamburger vs. regular hamburger
 - chicken with skin removed vs. chicken with skin on
2. Use the following question to prompt class discussion:

Should you eat the same amount of a super sweet cereal as you would a less sweet cereal or oatmeal? Why or why not?

Answer: No! To maximize outdoor (and indoor) energy, fitness, and brainpower, eat healthy foods like whole grain cereals and breads, beans, vegetables, and fruits.

Encourage low-fat animal products, such as skim or low-fat milk, yogurt, fish, and skinless chicken or turkey, and fewer servings of higher fat choices. Healthy, nutrient-rich foods should take up much more space on our plates than foods with few or no nutrients.

3. Discuss the "GO," "SLOW," and "WHOA" food categories. Explain that one way to classify food is according to how often you should eat it, or how much of a particular food is recommended. Think of the options as "anytime" or "GO" foods, "sometimes" or "SLOW" foods, and "occasional" or "WHOA" foods.
 - **ANYTIME** foods are generally low in fat, saturated fat, sugar, and do not have many preservatives or additives listed in their ingredients. We call these "GO" foods.
 - **SOMETIMES** foods should be eaten in small portions or just a couple of times per day/week. They are moderate in fat or saturated fat, may be high in sodium, cholesterol, or added sugars, or are made from white flour. We call these "SLOW" foods.
 - **OCCASIONAL** or **SELDOM** foods should be limited to a few times a week/month; eat smaller portions of these. They are foods high in saturated or trans-fats, or added sweeteners. They may contain many additives or preservatives and are generally more processed. We call these "**WHOA**" foods.

4. Brainstorm which foods would fit in these different categories. To assist with this exercise, see Center for Science in the Public Interest (www.cspinet.org) or invite a dietitian or nutritionist to speak with the class.
5. Place one third of the total number of food cards in each of three containers.
6. Have your students get dressed for the outdoors.

Outside:

1. Place your three containers in three corners of a large field or play space.
2. Have students form a circle in the remaining corner of the field. This circle must be large enough that three boxes OR your string, chalk, or food coloring markings can fit inside.
3. Explain that one box or string, chalk, or food color marking represents foods that you could eat anytime ("GO"), the second symbolizes foods that you could eat sometimes ("SLOW"), and the third stands for foods that you could eat occasionally ("WHOA"). Label them accordingly.
4. Each student starts from the circle and jogs, skis, or snowshoes to one of the three containers, retrieves one of the cards, and brings it back to the boxes. Students will place each card in the appropriate box and say the food group to which it belongs and why (e.g. donuts would go in the "WHOA" box and are in the grain group; a lean hamburger would belong in the "SLOW" box in the protein group; plain non-fat yogurt would go in the "GO" box in the dairy group, etc.).
5. Once all the cards are placed in a box, students should move in place to stay active and keep warm. Lead a discussion about how the food was sorted. Ask your students if they would make any changes, and why or why not.

Inside:

1. Have your students fill out the Choose MyPlate Worksheet.
2. Have each student select a "GO" food for a snack and explain why it is a healthy choice.
3. Create and enjoy a classroom snack using some of the foods from the "anytime" or "GO" category.

Special Needs Students

Students with physical disabilities should be assigned jobs that fit their abilities. For example, students might be the timekeeper, or they might judge whether a card is in the correct container. Allow students with dietary concerns to place foods in their own personal "never" category, and have a discussion about foods that are healthy for some, but not for all.

Choose MyPlate Worksheet*

Check how you did yesterday and set a goal to aim for tomorrow.

Name _____

Write in your choices from yesterday.	Food and Activity	Tip	Goal (Based on a 1800 calorie pattern)	List each food choice in its food group*	Estimate your total
Breakfast:	Grains	Make at least half your grains whole grains.	6 ounce equivalents (1 ounce equivalent is about 1 slice bread, 1 cup dry cereal, or 1/2 cup cooked rice, pasta or cereal.)		_____ ounce equivalents
Lunch:	Vegetables	Color your plate with all kinds of great tasting veggies.	2 1/2 cups (Choose from dark green, orange, starchy, dry beans and peas, or other veggies)		_____ cups
Snack:	Fruits	Make most choices fruit, not juice.	1 1/2 cups		_____ cups
Dinner:	Milk	Choose fat-free or low fat most often.	3 cups (1 cup yogurt or 1 1/2 ounces cheese = 1 cup milk)		_____ cups
	Meat and Beans	Choose lean meat & chicken or turkey. Vary choices-more fish, beans, peas, nuts & seeds.	5 ounce equivalents (1 ounce equivalent is 1 ounce meat, chicken or turkey, fish, 1 egg, 1 T peanut butter, 1/2 oz. nuts or 1/4 cup dry beans)		_____ ounce equivalent
Physical Activity:	Physical Activity	Build more physical activity into your daily routine at home and school.	At least 60 minutes of moderate to vigorous activity a day or most days.		_____ mins

How did you do yesterday? ☐ Great ☐ So-So ☐ Not So Great

My food goal tomorrow is _____

My activity goal tomorrow is _____

Adapted from MyPyramid Worksheet
TEAMNUTRITION.USA.GOV



Cardiovascular Health

Grades 6–8

Lesson Summary

This lesson complements lessons about the circulatory system. Students will learn to take their pulse and determine their resting heart rate. Students will then participate in outdoor activities and take their pulse again. Students will complete the Healthy Heart Worksheet. (Note: Students should have previous knowledge of the structure and function of the circulatory system and how it works in conjunction with the respiratory system).

Objectives

Students will:

- * Demonstrate their ability to take a pulse at the wrist.
- * Explain what happens to the heart rate when the body exercises.
- * Explain why it is important to take personal responsibility for physical fitness.

Materials

- * Timing device (for the teacher only)
- * WinterKids Healthy Heart Worksheet
- * Pencils
- * Clipboards for each student

Procedure

Inside:

1. Review the circulatory system and its functions. Discuss ways to keep your heart healthy and reduce the risks of heart disease.
2. Show students how to find their pulse. Use the wrist for this exercise. Instruct them to use two fingers on the inner part of their wrist. Remind them not to use the thumb, as it has a pulse of its own. Do not take a pulse at the neck; pressing on the carotid artery can reduce blood flow to the brain. Don't move onto the next step until all students can easily find their pulse.
3. Ask students how they strengthen the various muscles in their body. (Answer: different types of exercises or workouts). Explain that the heart is a muscle and needs to be exercised just like other muscles. Ask students how they can exercise their heart. (Answer: cardiovascular workouts). Explain that by monitoring their pulse they can tell how hard they are working their hearts.

4. Demonstrate how to take a resting heart rate. Explain that a resting heart rate is a person's heart rate at rest. Have students find their pulse by counting the beats over a 30 second period. Have your students double the number to determine their resting heart rate and then write this number down on their Healthy Heart Worksheet.
5. Discuss target heart rate. This is a range of heart rates that a person chooses to aim for when exercising, based on their personal fitness goals. It changes with age. Share the common formula for determining someone's target heart rate: Maximum heart rate of 220 minus your age in years, multiplied by 60 to 80%. (Note: There are many useful resources online for more information on target heart rate zones.)

Example of target heart rate range for Sally, age 13:

$$220 - 13 = 207$$

$$207 \times .60 = 124$$

$$207 \times .70 = 145$$

$$207 \times .80 = 166$$

When Sally exercises, she should stay between 124 and 145 beats per minute most of the time, though she may occasionally reach 145-166.

6. Have students suit up for outdoor weather.

Outside:

1. Once your class is outside, lead them in stretches to prepare for a short activity.
2. Engage your class in an instant game. Pick a quick one that gets their heart rate up! For some great ideas, check out the Aerobic Conditioning Section in Physical Education.
3. After a few minutes of movement, stop the activity and have your students take their active heart rate immediately. Students need to take their heart rate just after they complete the instant activity. Tell them to find their pulse and count the number of beats while you time them for 60 seconds. Have your students record their active heart rate on their worksheet.
4. Lead a discussion about what is happening with the students' cardiovascular system when they are active.

Inside:

1. Have your students discuss what they think happens when your heart is in better shape. Ask them if a person's pulse would be faster or slower, and why. (Answer: As you get in better shape, your heart works more efficiently. Runners traditionally have lower pulse rates than people who don't exercise, for example).
2. Have the students do a self-evaluation. Ask them to rate their own physical fitness level.
3. What can they do to improve that? What sorts of activities can they do in the winter to stay in shape rather than watching TV and playing video games? Why is it important for them to take charge of their fitness?

Special Needs Students

In lieu of participating in the instant activity, students may do any activity they can that will raise their heart rate. Special needs students may also need help finding their pulse and counting it. Students who are unable to feel a pulse could use the nurse's stethoscope to listen to their heartbeat instead.





Healthy Heart Worksheet

Resting Heart Rate: _____ Beats Per Minute

In your own words, explain how to find your resting heart rate.

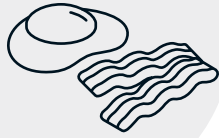
Heart Rate After Exercise: _____ Beats Per Minute

In your own words, explain what happens to your heart when you exercise.

Take charge!

Answer the following questions on the back side of this paper:

1. How would you rate your own level of fitness? Good, Fair, Poor? Why?
2. Make a list of five activities you enjoy, or think you might enjoy doing in the winter to exercise your heart and stay healthy.
3. List three reasons why it is important to take charge of your fitness now.



Breakfast Counts

Grades 6–8

Lesson Summary

In this lesson, students will investigate the nutrients in both healthful and inadequate breakfast foods. Using this information as well as other information they have learned in class, students will create a 30-60 second video production, news story, or advertisement which will include a comparison of healthful vs. inadequate breakfasts.

Objectives

Students will:

- * Compare nutrients in a variety of breakfast foods.
- * Explain the connection between a healthy breakfast and a body that has the necessary fuel to function well.
- * Produce a video production, news story, or advertisement promoting a healthy breakfast in which healthful and inadequate breakfasts are compared.
- * Present product to the class.

Materials

- * USDA's MyPlate graphic (see www.MyPlate.gov)
- * Empty food packages for nutrient information and breakfast props (e.g. cereal, doughnuts, juices, etc.)
- * Video camera, digital camera, and/or computer to create and edit stories
- * Outdoor play/sports equipment

Procedure

Inside:

1. Explain to your students that eating a breakfast of doughnuts, Pop-Tarts, and a soda might have the same number of calories as a breakfast of oatmeal, yogurt, juice, and a piece of fruit, but the difference in the nutrition one gets from the two different breakfasts is considerable. As the old saying goes, "You are what you eat." Empty calories don't fill the tank when you need to "break the fast" in the morning.
2. Have one student describe a nutritious breakfast – even better if it's what they actually ate that day! Explain that a good breakfast typically consists of foods from at least three of the healthy food groups: grains, vegetables, fruits, dairy, and/or protein. Refer to USDA's MyPlate. Have another student describe a more "typical" U.S. teen breakfast, and then discuss that some students do not eat breakfast at all. Write the examples of a nutritious breakfast and a more typical breakfast on the board. Try to include some foods generally



considered to have “empty calories.” Have students compare selected nutrient amounts (i.e. total calories, protein, fat, saturated or trans-fat, fiber, sodium, calcium, or Vitamin C, etc.) in these two breakfasts by referring to the USDA Nutrient Database (www.nal.usda.gov/fnic) or food nutrition labels. Note that fortified foods may skew results by showing that fortified white bread has as many B vitamins as whole grain bread. Explain how this does not mean they are equally healthy.

3. Have students name some benefits of eating a good breakfast. Discuss documented facts about regular breakfast eaters. They:
 - are better students,
 - have better concentration,
 - have faster reaction times,
 - have higher energy levels,
 - miss fewer days of school, and,
 - score better on tests.
4. Review facts about what happens when you don’t eat breakfast. Explain that during a fast (any long period without food), the amount of sugar (glucose) in the blood decreases. This leads to lethargy, poor concentration, hunger, and drowsiness because the body isn’t getting all the glucose or other nutrients it needs to work efficiently. Explain that a nutritious breakfast helps keep blood sugar levels even throughout the morning and supplies the body with nutrients it needs, such as protein, vitamins and minerals, and fiber from complex carbohydrates.

Processing questions: Why do you think so many teens either skip breakfast or eat an unhealthy breakfast? What can a teen or young person do to try to eat a healthy breakfast?

5. Divide the class into small groups. Explain that the students’ mission is to create a promotional piece, news story, or advertisement with their group encouraging others to eat a good breakfast. This could take many forms, such as a video explaining the benefits of eating healthfully, or still photos with written text that could be used as a print promotion. Encourage students to get creative! Explain that the finished product needs to contrast students eating a healthful breakfast and having energy to participate in an outdoor winter activity with students who eat nothing for breakfast or who make poor breakfast choices and aren’t able to participate as well in the outdoor winter activity. If video is going to be used, have students start by creating a series of “story boards” and scripts that they wish to enact for the camera. Students will need to practice their skit a few times before heading outside to record.

Outside:

1. Using a video or digital camera, have students capture the promotional skits or still shots they designed in the classroom. Take action shots of students engaged in a number of outdoor physical activities, like running, skiing, skating, snowshoeing, playing, etc. Encourage students to take turns being behind the camera and being the subject.

**Inside:**

1. Have students edit and complete their productions.
2. Each group will share their work with the rest of the class. You may choose to show these productions to the students' peers or to other classes, especially students in younger grades. Your students might enjoy eating healthy breakfast foods while watching the productions.
3. Lastly, you may wish to create a rubric for scoring the effectiveness of the film piece and students' presentation of the assignment.

Special Needs Students

Groups that include special needs students should choose a production in which all group members can participate.





Physical Activity Log for Families

Student Name _____ For the month of _____

Don't forget: Children need at least 60 minutes of activity every day and adults can benefit too! You can do it!

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Activities							
Minutes							
Activities							
Minutes							
Activities							
Minutes							
Activities							
Minutes							



Physical Education

Introduction

Winter outdoor fitness lessons are designed to be instructed by a trained physical education teacher. The purpose of these lessons is to reinforce the values of a healthy, active lifestyle and its relationship to safe participation in lifetime winter sports. Many of the principles in these lessons are applicable to skiing, snowboarding, and other winter sports.

The following multi-week units and lessons are appropriate for elementary, middle, and high school students. The units may be used in their entirety or modified to fit various time allotments and curriculum needs.

Suggestions and Guidelines for Implementation

- * Instruction periods should last approximately thirty to forty-five minutes, depending on the grade level, and will include the following phases:

Warm-up—approximately five minutes of dynamic stretching and low-intensity activity; i.e. light aerobic games and exercises, flexibility training, or balance skill enhancement.

Activity phase—approximately fifteen to twenty minutes of vigorous activity consisting of a blend of aerobic and anaerobic conditioning as well as games and exercises designed to improve strength, agility, coordination, and rhythm.

Cool down phase—approximately five minutes of static stretching and lower intensity activity; may include some exploratory time.

Ending discussion—approximately five to ten minutes of essential questions lead by students or teacher to refocus objectives.

- * Several of the sessions will include learning Your Responsibility Code. Use a handout or visual aid to introduce the concept.
- * Lessons will cover the following aspects of health-related fitness as they relate to skiing, snowboarding, snowshoeing, and ice skating:

Cardiovascular fitness—an important aspect of skiing, whether cross country or downhill. Students will be introduced to the concept of aerobic and anaerobic energy systems and learn about the importance of frequency, intensity, and time or duration in effectively improving cardiovascular fitness. Students will also learn how to determine their heart rate training zone, and how to properly monitor their heart rates.

Flexibility—an important aspect of performance, everyday living, and injury prevention. Students will define and discuss the concept of flexibility and the most effective and safest ways to increase range of motion.

Muscular strength and endurance—important for all activities. Students will discuss and define the concepts of strength and endurance. They will also discuss the various methods that can be used to improve this component.

Body composition—an important aspect as we look at the body as whole. Students will understand that an increase in lean body mass contributes to strength and power development. Strength and power relate to muscle size and growth; an increase in lean body mass enables the student to generate more force.

- * Sessions will cover the following aspects of skill-related fitness:

Balance—the ability to remain in equilibrium while changing body positions. Students will discuss the concepts of base, support, center of mass, and gravity.

Coordination—the ability to perform skilled movement patterns.

Agility—the ability to move rapidly and/or to quickly change the direction of the body. Students will discuss its relationship to sports, particularly skiing and snowboarding.

Speed/reaction time—the ability to begin movement quickly and move swiftly to completion.

Power—the ability to transfer energy into rapid force, also known as explosive body movement. A combination of strength and speed.

Quick Tips to Refocus One Student, or Your Whole Class!

If are in a situation where a student is feeling frustrated or you are observing the entire class may need to refocus or be redirected, try asking some of these mindful questions:

- * Take three deep breaths. Listen for one minute. What did you hear? What can you smell? How do you feel?
- * Think about a time when you did something you were afraid to try. How did you feel afterwards?
- * Think about three things that make you happy. How can you spend more time on these things each day?
- * When you're feeling confident, what emotions do you experience?
- * What is your favorite thing to do? How do you feel when you work on this activity?

Tips & Tricks to Gain Student Attention and Keep Them Focused!

There will be many times you will transition and possibly have wait time. The following activities can help gain class attention or keep students engaged:

* **Blast-off**

- Have students spread out into personal space and begin counting down from 10. With each number, everyone will squat lower and lower.
- Once students reach 1, they'll "blast-off" – students will make rocket ship or airplane arms and "fly" to line up. This will give students an opportunity to form a line quickly or get out any other wiggles before lining up to transition.

* **Snowflakes**

- Loudly say "snowflakes" then clap your hands above your head and float your fingertips down like snow or by snapping. All students will repeat "snowflakes," clap, and float their fingertips down like snow or by snapping slowly as they fall to the ground.

* **Skiers' exercise**

- With their knees bent and elbows bent with arms tucked into their sides, have students laterally jump-side to side.

*** Snowboard 180 squat jumps**

- Have students squat low and jump up, turning to face the opposite direction.

*** Snowshoe walk (high knees)**

- Have students pull their knees to chest height with each walking step.

*** Snowflake jumps**

- Similar to the “star jump,” have students start low to the ground, tucked into a ball. They will jump up to a standing position with their arms and legs in the shape of an “X” and say, “I’m a snowflake!”

*** Snowball fight**

- Have students squat, pick up an imaginary snowball, and then throw it. Have students alternate sides when they’re picking up and throwing.

Pair Up Your Class!

Several sessions will provide opportunities to pair students, but you may need an icebreaker to help students to feel more comfortable in a new learning environment. The following exercises can be used:

*** Find your “sole” mate**

- Have students look at the bottom of their shoes or boots and then match the similar soles of shoes of classmates.

*** People-to-people**

- You say “people-to-people” and state a connection two people may have. Students will find someone with whom they share that connection and then will chat quietly about what they have in common. You can do as many rounds of this as you’d like.

Some suggested connections:

- Find a classmate(s) who has the same number of pets as you.
- Find a classmate(s) who plays the same winter sports as you.
- Find a classmate(s) who has done a similar outdoor activity as you: sledding, snowboarding, snowshoeing, skiing, shoveling, etc.
- Find a classmate(s) who has built a snow fort, snowman, or any other creature/structure you may have built out of snow.
- Make a snowball and find someone who made the same size snowball.
- Find a natural object within one step of your body and find someone who has a similar object. Ask each other what it is and why it caught their eye.

Handshakes

* **Snowman fist bump:**

Student A will make a fist like they're going to fist bump Student B. Student B will place their fists above and below Student A's fist (making a snowman) and say, "snowman!"

* **Skier:**

Students will stand across from their partner in a skiing position (knees bent together, arms bent at elbows tucked into their sides), laterally jump to the opposite side as their partner three times, and then elbow bump.

* **Snowshoe foot five:**

Partners will touch the sole of their shoes together or tap toes.

* **Flyby:**

Partners will bring their arms up for a high five but miss on purpose and call it a flyby. Partners can always windmill their arms around and touch hands at the bottom.

* **Snowball toss:**

Student A will make a fist bump. Student B will pretend to take Student A's fist and say, "snowball toss!" and pretend to throw it.



Some Thoughts on Including Children with Special Needs

When participating in a sport fitness program, children with special needs will have limitations. Make any necessary modifications to accommodate their needs, but also be sure to encourage the student to participate. They will enjoy the socialization of working out with their peers. If you aren't sure how to modify a task, ask the student for their ideas – often their suggestions will be very creative.

For more information on how to incorporate children with special needs into a ski program, contact National Sports Center for the Disabled at nscd.org.

Suggestions for including students with disabilities in regular physical education classes:

1. Adapt the curriculum to meet the unique physical, educational, and social needs of the students.
2. Utilize peer tutors, cooperative small group work and games, a one-to-one aide, and special equipment as supports for the students.
3. Keep the number of students with special needs to two or three in each regular physical education class.
4. Keep activities, skills, expectations, and interactions functionally appropriate, i.e. things that are relevant to real life settings in school and in the community. Functional lifetime skills are important for an individual to be as independent as possible in activities that are important to them today as well as in the future.
5. Match as many of the student's Individual Education Plan (IEP) goals and objectives as possible to the regular physical education curriculum.
6. Talk with the students' non-disabled peers about disabilities in general and discuss ways students can help their classmates with disabilities.
7. Utilize a top-down or ecological approach to programming to provide a more real and functional environment for current and future recreational needs.

Additional Resources:

Block, M.E. (2002). *A Teacher's Guide to Including Students With Disabilities In Regular Physical Education*. Baltimore: Paul H. Brookes Publishing Co.

Sherrill, C. (1998). *Adapted Physical Activity, Recreation, and Sport: Cross-disciplinary and Lifespan* (6th ed.), Madison, WI: W.C. Brown & Benchmark.

Special Olympics Public Website: www.specialolympics.org. The "Coach" section of the website contains helpful Coaching Guides for alpine skiing, cross country skiing, snowboarding, snowshoeing, and ice skating.

Aerobic Conditioning

Snow (or No Snow) Games

Winter Pathways

Grade Level: K–2

Materials/Equipment:

Cones to designate the playing area

Set-up

Use cones to designate mountains, valleys, and areas for hot chocolate.

Directions

Kids will move in straight, curved, and zigzag patterns, pretending to ski around the mountains, through the valleys or to get hot chocolate. Explain to each student that they are on a mountain. Point out valleys and other mountains and where to get hot chocolate (any corner). Instruct students to ski around the mountains, to the valleys, other mountains or to get hot chocolate using straight, then curved, and then zigzag patterns. Have them use different combinations; for example, ski straight to one mountain then zigzag through the valley.

Because the students will pretend to be on skis, tell them to make sure they change their path to avoid crashing into other skiers. Ask students to design a pattern made up of the different action patterns (straight, curved, zigzag) and practice “freestyle skiing” that pattern until they can do it exactly the same each time. If desired and time allows, have students draw these patterns on paper and/or demonstrate their pattern to other students.

Variations:

Complete in snowshoes

Heart Power

Grade Level: K–2

Materials/Equipment:

Pinnies or half noodles for the taggers

Directions

This is a game of tag that reinforces classroom lessons on eating healthy, being active and tobacco-free. There are three rounds. Students with pinnies are taggers who represent unhealthy foods, couch potatoes, and tobacco products. Students without pinnies run away from the taggers.



In the first round, taggers represent junk food. If tagged, the student jogs in place with his/her hand over heart. Two untagged students join hands over the tagged person (like London Bridge). They say, "eat healthy food," in order to free the tagged student. In the second round, the taggers represent "couch potatoes." If tagged, the student jogs in place until two students join hands over him/her and say, "get active!" In the third round, the taggers represent cigarettes. If tagged, the student jogs in place until two students join hands over him/her and say, "live tobacco free."

Snowshoe Hare, Arctic Fox and Polar Bears

Grade Level: K-2

Directions

Introduce students to the concept of levels. (Low level: the space below the knees, close to the floor; medium level: the area between the knees and shoulders; high level: the space above the shoulders, toward the ceiling).

Scatter small groups of students around the established playing area boundaries.

The first student crouches down and pretends to be a snowshoe hare (low). The next student pretends to be an arctic fox and steps or carefully leaps over the snowshoe hare. The third student steps/leaps over the snowshoe hare, crawls under the arctic fox (medium) and pretends to be a polar bear (high). The fourth student steps/leaps over the snowshoe hare, crawls under the arctic fox, runs around the polar bear, and takes the first position as the snowshoe hare. The cycle keeps going as the first student gets up from the snowshoe hare position, goes through all the obstacles and pretends to be the next animal in the sequence - the arctic fox.

Variations:

Post drawings of the animal order for students to refer to during this activity. Children can also choose their own winter animals as long as they fit the low, medium and high criteria. Rather than crawl under legs students can create a bridge/down dog or carry a hula hoop with them.

Adaptations for Students with Disabilities:

Students with wheelchairs can weave in and out of the obstacles.

Jack Frost Tag

Grade Level: 3-5

Materials/Equipment:

1-2 scarves and 2-4 hand warmers depending on the size of the class. Pinnies /half noodles/ bean bags/spare mittens or gloves can be used as hand warmers.

Directions

In this tag activity, one or more students are chosen to be Jack and/or Jill Frost. These students are “it” and they each wear a scarf. Choose two to four students to be snow angels who carry the hand warmers.

When the activity begins, Jack and/or Jill Frost walks around and attempts to tag fellow students. (All of the students perform the same locomotor movement). When a student is tagged, he/she becomes a frozen snowman. To get unfrozen, a snow angel must give the student a hand warmer. Once a snowman is unfrozen, he or she becomes a snow angel and the person who gave them the warmer can now get tagged. (Snow angels can’t be tagged by Jack and/or Jill Frost.) Choose a different movement like skipping or sliding and choose new Jacks and/or Jills for subsequent rounds.

NOTE: In very cold weather, “frozen snowmen” should jog in place to stay warm.

Snowball Collection

Grade Level: 3–5

Materials/Equipment:

4 hula-hoops; enough snowballs for each member to have one plus 5 for the center

Set-up

Place 1 hula-hoop in each corner of designated space. Place snowballs in the center of the space.

Directions

Divide the class into 4 teams, one team behind each hoop. Explain that the object of the game is to get more snowballs than any other group in the allotted time. Discuss safety when moving within a group, teamwork, and sportsmanship. On the signal, the students run and gather one snowball and return it to their hoop. They can only take one at a time, but they can take it from the center or from other teams’ hoops. When time is up, count the snowballs in each hoop and declare a winning team. The other teams clap for the winners, the snowballs are returned to the center, and the activity begins again.

Variations:

Use different locomotor skills each time - running, walking, skipping, hopping, jumping, leaping, galloping, etc. You can also use the crab walk, duck walk, frog leap. To add more difficulty, send a set of guards to protect the middle snowballs. If a student is tagged by a guard they must put their snowball back and go back to their “home” location.

NOTE: In snowless conditions, substitute beanbags, tennis balls, etc. for snowballs.

Aerobic Conditioning

Quick Games also appropriate for snowshoes



Figure Eight Fitness

Description

This game is a good warm up activity. Students should monitor their pulses every three to five minutes.

Equipment

- * Eight cones
- * Music

Formation

Cones placed in a large figure eight.

Rules

Children move in single file around the cones while performing the locomotor movements that the teacher calls out, such as skip, hop, gallop, crab walk, bear walk, race walk, run, slide, and jump. Encourage students to keep moving throughout the entire activity to maintain their target heart rates. Start the music at the beginning of the activity. Students should immediately stop (but remain standing) and find their pulses when the music stops and take a ten second count.

Note: jumping and leaping activities will also improve strength.





Fun Run

Description

This activity improves muscular strength and endurance, depending on what types of activities are included.

Equipment

* Task sheet (index cards work great)

Formation

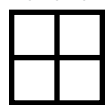
Students gathered near instructor.

Rules

Each student is given a task sheet with a description of a fun run on it. For example:

1. Jog across the soccer field.
2. Jog to the furthest goal.
3. Jump and touch the goal post three times.
4. Jog to the basketball hoop.
5. Jog to the baseball field and run the bases.
6. Jog to the playground.
7. Jog back to the teacher.
8. Start again and run the course as many times as possible until told to stop.

Snowshoe variation: make running speed appropriate to comfort level. Include varied terrain.



Four Corners

Description

This game works as a warm-up or for aerobic activity.

Equipment

- * Four movement task signs to be placed in each corner of the gym or field
- * Music optional for motivation

Formation

Students in four groups, one at each corner.

Rules

Students perform the first movement on their signs while traveling to the next corner, where they begin the first movement on that sign, and so on, as they progress from corner to corner. When they return to their starting corner, they begin the second movement listed and continue working their way through the lists around the gym, until they have completed all the tasks.

Task signs should have four to five movements on each card, for example: Bear Crawl, High Knee Skip, Pivot Squat, Frog Leaps, Low Shuffle. Other movements could include dynamic stretches; Walking Lunge, Bounds, Back Pedal, Slide, Carioca, etc.

LEARN! EXPLORE!
MOVE!





Fun Partner Relays

Description

This is another good warm-up activity and opportunity for student leadership.

Equipment

* None

Formation

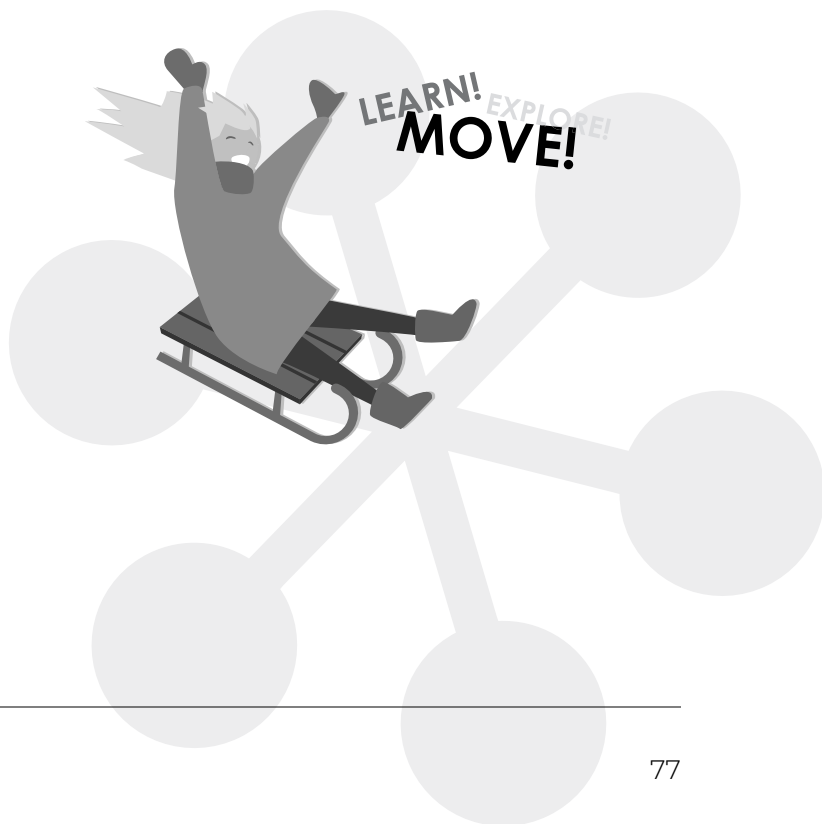
Students paired, one behind the other, in double line along one side of the gym.

Rules

Those in the front line choose exercise movements and perform them across the gym and back. Those in the second line copy their partners' movements. For example, a student might gallop to the center line, do five mountain climbers (push-up position with one leg extended and one pulled up to chest, quickly alternate legs), and then gallop to the other side; or skip to the center line, roll once, and skip to the other side; or run to the center line, leap once, and run to the other side. Have partners take turns making up and copying each other's movement patterns. Challenge older students to invent more difficult moves.

Variation

Keep movements appropriate to comfort level. Examples: hopping, silly walks. Use varied terrain or enlist kids' help in building a variety of snow mounds for walking over.





Snowflake Fitness

Description

This activity can be used if you are indoors. Students will use fine motor skills to cut a snowflake out of paper. Students will have an understanding of symmetry. Students will have an understanding of physical exercises and will perform exercise/activity.

Equipment

- * A piece of paper
- * Writing utensil for each student
- * Pair of scissors for each student

Formation

Students spread out working individually.

Rules

1. Fold paper in half and then in half again.
2. Discuss symmetry: The quality of being made exactly similar facing each other or around an axis. When you fold a piece of paper in half and cut through the middle line it will create the same shape on both sides.
3. Carefully begin to cut shapes into your paper to create a paper snowflake.
4. Open paper and write or draw your favorite exercise on the snowflake (you may have students draw or write the first letter of the exercise).
5. Each student will share their snowflake and everyone will perform the exercise for 30 seconds.

Variation

Put all snowflakes into a basket and pull out a snowflake whenever a movement break is needed or in random order for a great workout.



Do You Want to Build a Snowman?

Description

This activity can be used if you are indoors. Students will use integrity and will use the mature patterns of the underhand throw.

Equipment

- * Three pieces of newspaper/tissue for each student
- * A piece of paper for each student
- * A writing utensil for each student
- * A target (polyspot, another piece of paper, bucket, basket, desk, chair, etc.) for each student

Formation

Students will be spread out working individually with target about 10 feet in front of them.

Rules

1. Remind students about safety and the underhands throwing cues (step, swing back, throw, follow through).
2. Draw a simple snowman in sight for all students as a visual cue (base, middle, head, hat-if you want a longer game add: nose, eyes, mouth, three buttons, scarf and arms).
3. Each student will crumple up three pieces of newspaper/tissue. They will keep their writing utensil and paper with them.
4. Each round students will be able to throw all three "snowballs" at their target. If they successfully hit their target they will draw a piece of their snowman. If they miss, they will wait until the next round.
5. Play four rounds.

Variation

Use actual snowballs and targets (students will have to make snowballs each round) and when they are successful they must make a snowman-it does not have to be life-size. You may also encourage students to work in pairs if outdoors, which could assist in creating roles and leadership for each student.



Snowy TABATA

Description

A TABATA is a high intensity interval workout in which each round is four minutes long while alternating between 20 seconds of exercise and 10 seconds of rest. Students will perform exercises and be physically active and will demonstrate an understanding of what muscles are engaged during certain physical exercises. Students will demonstrate an understanding of why it is important to live a healthy lifestyle.

Equipment

* Timer: <https://fitlb.com/tabata-timer>

Formation

Students will be spread out in personal space.

Rules

1. Warm-up with dynamic stretches found on the following pages.
 - Discuss the muscles used in snowshoeing (quadriceps-tops of your thighs, hamstrings-backs of your legs, glutes-buttocks, calves-behind your shins).
2. Demonstrate the two exercises students will alternate between for the first TABATA.
 - Knee to chest pulls (alternate between legs, pulling one knee up to chest, setting down and pulling opposite knee to chest).
 - Squat to calf raise (squat low-keep knees over ankles, stand up to your toes).
3. Start TABATA timer and begin alternating 20 seconds of exercise with 10 seconds of rest. Students will complete eight, 20 second intervals of exercise.
4. Take a two minute rest for hydration.
5. Demonstrate TABATA two exercises:
 - Scoops (alternate between legs, one leg out, heel on the ground, dive arms down in a "scooping" formation (imagine rolling a heavy snowball), then scoop arms back up, switch sides).
 - Walking Lunges (step forward and bend front knee-remember to keep knee over ankle, back knee should also be bent, however, hovering off of the floor, alternate sides).
6. Start TABATA timer and begin alternating 20 seconds of exercise with 10 seconds of rest.
7. Cool-down with static stretches found in the Quick Tips & Tricks section.

Dynamic Warm-up For Winter Fitness

These drills develop balance, coordination, quickness, and are suitable for the peak phase of training. Many of them are high-intensity exercises and will also help aerobic and anaerobic endurance. Several also develop strength.

Karate Kid - balance

This is simply a variation on the stork stand or one-legged balance stand except that the child assumes the position of the Karate Kid. Balance for ten seconds, and gradually increase the time. Perform exercise on both legs. To add difficulty and increase strength, try performing balance squats. Start with seven to ten seconds on each leg.

Heel Toe Rollers - balance

This exercise increases sensitivity and strength in the lower leg muscles (calf muscles are extremely important for maintaining balance). Slowly roll from heels over arch and up onto toes and then back over arch and onto heels again. Be sure to keep body aligned and do not stick out buttocks! Continue the drill for 30 to 60 seconds. Do two sets.

Backward Run - agility and strength

Run backwards from start to finish. Concentrate on staying low and pumping shoulders and arms. If possible, try to find a hill for this one. Backpedal up and walk back to start. Repeat four to six times.

Cariocas (or grapevine) - agility, quickness and coordination

Run sideways, crossing left leg in front of right, right in front of left, and so on. Continue the drill for thirty to sixty seconds. Do one to two sets.

Skier's Jumps - leg strength and power; balance and agility

Jump laterally from right to left and left to right. Make the motion as smooth as possible and keep upper body movement to a minimum. Lay hoops or lines on the floor or use a pillow to jump over. Continue drill for twenty to thirty seconds and do one to two sets. For variation, jump in a high position, a low position or on one leg only.

Lateral Leaps - leg strength and power; balance, agility, weight transfer

Place two hoops on the floor, or two tape markers, and hop back and forth from one hoop to the other by springing from one foot to the other. Stay balanced over arch of foot and keep torso or upper body quiet.



Tuck Jumps - leg strength and power; balance

Flex legs and explode upward and try to touch knees to chest. You can do this drill in one place or you can lay four or five hoops on the floor and tuck from hoop to hoop. Try to minimize landing time. Do six or seven consecutive jumps. Rest completely and then do another set.

Downhill Skier

Jump side to side with both feet together. Lift alternate arms to the side.

Jumping Jacks

Stand erect with arms at sides. Jump up, landing with feet apart and arms extended overhead. Return to starting position.

Knee Touch

Alternate lifting the knees, touching both hands to the knee at the same time.

Lunge

Stand with the feet together. Step to the right landing with the right foot extended forward and bend right knee at a 90 degree angle. The left foot is back with knee bent slightly off of the ground. Return to the starting position, then step immediately to the left, landing with the left foot extended forward and the right foot back. Extend arms overhead with each lunge.

Stride Jump

Stand with one foot in front of the other. Jump up and switch feet, landing with the other foot in front.

Leg Kicks

Alternating between legs, hop on one foot while kicking the other out in front.

Ball Push-ups

Support the body on hands and toes or knees with a foam ball positioned under the chest. Slowly lower the body onto the ball, pressing it down. Push up with arms and return to starting position.

Elevated Push-ups

Support the body on hands and toes or knees with hands positioned on a chair/step/wall. Slowly lower the body towards the chair/step/wall and then push up with arms and return to starting position.

Bear Walk

Supporting the body on hands and feet, walk forward.

Crab Push-ups

With stomach facing the ceiling, support the body on hands and feet, with knees bent and arms straight. Fingertips should face rear end. Bend the elbows and lower the buttocks to the floor. Straighten the arms and return to starting position.

Line Walk

With fingertips next to the line, support the body on hands and feet with legs extended back-plank position. Place the right hand over the line, and then the left hand. Return the right hand, then the left.

Seal Walk

Support the body on both hands with the legs on the floor and the arms straight. Walk forward on the hands, dragging the legs.



Evaluation Tools

1. At the beginning of the unit, students will answer a fitness questionnaire, located on the next page, designed to assess current understanding of the subject matter. They will answer the same one at the end of the unit. The questionnaire may be used at the teacher's discretion.
2. Instructors will observe and note initial skill levels in activity areas such as warm-up, cool-down, and ability to check and measure their pulse. These will be compared with students' abilities at the end of the unit.
3. Students will complete an evaluation form designed to assess their attitudes and responses to the program.
4. A variety of assessment tools can be used with this curriculum guide. We have provided the Fitness Questionnaire, Essential Questions for Ending Discussions and Cross Country Skills Assessment Check List in this section. Also see the Assessment Section.
5. When evaluating special needs students:
 - Be aware of an Individual Education Plan (IEP).
 - Testing may have to be oral or eliminated entirely.
 - You may need to simplify the questionnaire.
 - One-to-one aide may need to assist the student.



Student Fitness Questionnaire

Name _____ Grade _____ Teacher _____

Please answer the following:

1. What physical activities and/or sports do you like to do?
2. How often do you participate in physical activities and/or sports?
3. What physical activities and/or sports would you like to learn to do?
4. Do you cross country ski, downhill ski, snowboard, or snowshoe?
5. Have you ever taken a skiing and/or snowboarding lesson?
6. Why is physical fitness important in school and in your everyday life?
7. What might you learn in a Physical Education class that could help you in everyday life?



Fitness Unit Evaluation

Name _____ Grade _____ Teacher _____

Please fill out the following evaluation. Check the response that applies.

1. I liked the skills and activities introduced in the fitness unit.

- ☐ Very much
☐ Most of the time
☐ Some of the time
☐ None of the time

2. This unit improved my ability to perform physical fitness activities and/or sports.

- ☐ Excellent improvement
☐ Above average improvement
☐ Good improvement
☐ Did not improve

3. This fitness unit has made me want to learn more about winter outdoor sports.

- ☐ Yes
☐ No

4. Something I liked about this fitness unit was _____

5. Something that could be improved was _____



Cross Country Ski Unit



Cross Country Ski Unit

Four-lesson introductory unit for elementary, middle, and high school students

Objectives

Students will:

- * Demonstrate an understanding of the components of cross country ski equipment.
- * Demonstrate an understanding of the physical conditioning needed for cross country skiing.
- * Demonstrate knowledge of how to improve personal fitness and to pursue cross country skiing.

Variations

Introduce skating techniques to more advanced students. Skating requires different skiing equipment and groomed trails. Consider taking the class to a local cross country ski center.

Reference

"Hal Higdon's Beginning Skier's Guide."





Cross Country Ski Lesson 1

All Grades

Lesson Summary

Students will be introduced to cross country ski equipment and learn about the importance of proper physical conditioning and dressing appropriately for winter recreation.

Objectives

These are general objectives which may need to be modified for the appropriate grade span.

Students will:

- * Observe a ski equipment demonstration.
- * Recognize and explain the relationship between cross country skiing and personal health.
- * Predict how cross country skiing could impact health.

Materials

- * Cross country skis
- * Dressing for Cold Weather handout
- * Cross Country Skills Assessment Checklist (optional)

Prior Knowledge

Students should have fitness goals established (6-8) and a fitness plan in place (9-Diploma).

National SHAPE Standards

Standard 3: Fitness Knowledge

(Pre-K-2): Recognizes that when you move fast, your heart beats faster and you breathe faster. Identifies the heart as a muscle that grows stronger with exercise, play and physical activity. Recognizes the use of the body as resistance and identifies physical activities that contribute to fitness.

(3-5): Demonstrates, with teacher direction, the health-related fitness components and address ways to use physical activity to enhance fitness.

(6-8): Participates in moderate to vigorous aerobic physical activity that includes intermittent or continuous aerobic physical activity of both moderate and vigorous intensity for at least 60 minutes per day.

(9-Diploma): Participates several times a week in a self-selected lifetime activity.

Standard 5: Health

(Pre-K-2): Recognizes and values that physical activity is an important component of good health.

(6-8): Identifies and describes how being physically active leads to a healthy body and has a positive effect on health. Identifies the five components of health-related fitness and explains the connections between fitness and overall physical mental health.

(9-Diploma): Analyzes the health benefits of a self-selected physical activity.



Procedure

Inside:

1. Introduce cross country ski equipment. Mention key equipment parts, including ski tips, ski tails, bindings, poles, baskets, pole straps, ski boots, and bindings.
2. Demonstrate how to put on skis. Use analogies to help students visualize the technique, such as squishing a bug, standing like a ballerina, etc.
3. Demonstrate the correct way to hold poles. Students should put their hands up through the pole loops and then slide their hands over strap and grip the pole.
4. Fit students to correctly-sized ski equipment.
5. Using the Dressing for Cold Weather handout located in the WinterKids Smarts section, review how to dress properly for cold weather.

Variations

- * You may want to incorporate the Cross Country Skills Assessment Checklist located at the end of the unit.
- * Older students will benefit from keeping a fitness log or portfolio which may contain the following:
 - a. Personal fitness goals
 - b. Records of daily physical activity including time spent, distance covered, and perceived level of exertion
 - c. Eating habits
 - d. Other behaviors that affect physical fitness

Special Needs Students

Students with special needs may need a peer helper or one-on-one aide for assistance. Be aware of sensory issues and fine motor issues involved with putting on boots, skis, and outdoor clothing.



Cross Country Ski Lesson 2

All Grades

Lesson Summary

Students will learn and demonstrate basic cross country ski techniques, including falling and getting up, skiing in a relaxed position, correct weight transfer, and gliding.

Objectives

Students will:

- * Properly put on equipment.
- * Demonstrate basic cross country ski techniques.
- * State why practice is important.
- * Explain why appropriate feedback improves skill development.
- * Discuss safety rules for cross country skiing.

Materials

- * Cross country skis (no poles for this lesson)
- * Cross country ski tracks
- * Cross Country Skills Assessment Checklist (optional)

Prior Knowledge

Students should have fitness goals established (6-8) and a fitness plan in place (9-Diploma).

Preparation

Set cross country ski tracks in the snow before this lesson. This will make skiing easier for beginners.

National SHAPE Standards

Standard 3: Physical Activity Knowledge and Fitness Knowledge

(Pre-K-2): Identifies active-play opportunities, discusses the benefits of being active and exercising and/or playing. Describes large-motor and/or manipulative physical activities and recognizes that when you move fast, your heart beats faster and you breathe faster.

(3-5): Identifies physical activity as a way to become healthier, analyses opportunities for participating in physical activity. Describes the concept of fitness and provides examples of physical activity to enhance fitness.

(6-8): Describes how being physically active leads to a healthy body. Identifies the five components of health-related fitness and skill-related fitness and explains the connections between fitness and overall physical and mental health.

(9-Diploma): Discusses the benefits of a physically active lifestyle as it relates to college or career productivity. Investigates the relationships among physical activity, nutrition and body composition.

Standard 3: Engagement in Physical Activity

(Pre-K-5): Engages actively in all of the activities of physical education.

(6-8): Participates in a variety of lifetime recreational team sports, outdoor pursuits or dance activities.

(9-Diploma): Participates several times a week in a self-selected lifetime activity, dance or fitness activity.

Standard 4: Personal Responsibility

(Pre-K-2): Follows direction in group settings.

(3-5): Engages in physical activity with responsible interpersonal behavior.

(6-8): Exhibits responsible social behaviors by cooperating with classmates, demonstrating inclusive behaviors and supporting classmates.

(9-Diploma): Employs effective self-management skills to analyze barriers and modify physical activity patterns appropriately, as needed.

Standard 4: Safety

(Pre-K-2): Follows teacher directions for safe participation and proper use of equipment.

(3-5): Works safely with peers and equipment in physical activity settings.



Note: Do not use poles on the first day. This will help students learn how to balance their weight and assume the correct skier position (knees bent, weight slightly forward, balanced over one ski at a time). Save the poles for the next lesson; focus on getting the students up and moving around first. If possible, recruit a few helpers to make this lesson run smoothly. Students who are experienced cross country skiers can act as helpers.

Procedure

Outside:

1. Help students put on skis.
2. Demonstrate how to fall and get back up. The best way to get up after you have fallen on cross country skis is to roll over until you are on your hands and knees with both skis flat on the snow (the bindings on the skis will allow you to lift your heels). Push off the snow with your hands and stand up. Students may release the binding, although doing so will take longer. Encourage them to learn how to stand up without releasing the binding. Have students fall down and stand up several times before moving to the next step.
3. Demonstrate the correct skiing stance and stride, describing exactly what you're doing: bending your knees, shifting your weight slightly forward, and balancing over one ski at a time as you move. Exaggerate the glide portion of the cross country ski stride. Have students practice moving around on skis.
4. Lead your students through two skill drills:
 - a. **Windshield Wiper Drill:** Students stand in one place and move one ski back and forth like a windshield wiper. Alternate skis. This will help improve balance.
 - b. **360 Degree Sidesteps:** Students take small sidesteps to move in a full circle to the right and then to the left.
5. Allow students time to ski around in a designated area to practice falling and getting up, transferring their weight, and skiing in the correct position. Older students may work in pairs or small groups to critique and refine skills.

Inside:

1. Ask students to discuss why practice and positive feedback are important.
2. Ask students to discuss/describe safety rules for cross country skiing.
3. Grades 6-Diploma may develop a personal fitness goal/plan that includes cross country skiing.

Special Needs Students

Students with special needs may need poles for this lesson. A peer helper or one-to-one aide may assist with falling and getting up, weight transfer, and gliding. The skill drills may need to be modified with use of poles, shorter skis, and peer helpers.



Cross Country Ski Lesson 3

All Grades

Lesson Summary

Students will refine their cross country skiing skills by focusing on pole use and gliding.

Objectives

Students will:

- * Demonstrate the glide technique.
- * Demonstrate proper use of poles.
- * Describe the importance of practice and appropriate feedback.
- * Discuss the fitness benefits of cross country skiing.

Materials

- * Cross country ski tracks
- * Cross country skis
- * Cross country ski poles
- * Cross country Skills Assessment Checklist (optional)
- * YouTube video that demonstrates gliding

Prior Knowledge

Students should have fitness goals established (6-8) and a fitness plan in place (9-Diploma).

Procedure

Inside:

1. Share a YouTube video demonstration of gliding.
2. Get dressed to go outdoors.

National SHAPE Standards

Standard 3: Fitness Knowledge and Physical Activity Knowledge

(Pre-K-2): Recognizes that when you move fast, your heart beats faster and you breathe faster. Identifies the heart as a muscle that grows stronger with exercise, play and physical activity. Recognizes the use of the body as resistance and identifies physical activities that contribute to fitness. Identifies active play opportunities and discusses the benefits of being active and exercising and/or playing.

(3-5): Demonstrates, with teacher direction, the health-related fitness components and addresses ways to use physical activity to enhance fitness. Identifies physical activity as a way to become healthier.

(6-8): Participates in moderate to vigorous aerobic physical activity that includes intermittent or continuous aerobic physical activity of both moderate and vigorous intensity for at least 60 minutes per day. Identifies the five components of health-related fitness and explains the connections between fitness and overall physical and mental health.

(9-Diploma): Participates several times a week in a self-selected lifetime activity. Investigates the relationships among physical activity, nutrition and body composition.

Standard 4: Personal Responsibility

(Pre-K-2): Follows direction in group settings.

(3-5): Engages in physical activity with responsible interpersonal behavior.

(6-8): Exhibits responsible social behaviors by cooperating with classmates, demonstrating inclusive behaviors, and supporting classmates.

(9-Diploma): Employs effective self-management skills to analyze barriers and modify physical activity patterns appropriately, as needed.

**Outside:**

1. Review skills learned in previous lesson, i.e. falling and standing up and being in the correct skiing position.
2. Gliding. Gliding is an important part of cross country skiing. It lets you go farther without expending additional energy, and it's fun! Beginner skiers will often try to keep moving, as if running or walking on skis. Instead, students will learn to "push-glide, push-glide."
 - a. Still with no poles, have students focus on lengthening their glide. Shifting weight properly from one ski to the other is key. Students will practice transferring weight to one ski to push off, immediately transferring weight to the opposite ski, and gliding forward.
 - b. Have students continue to practice until they have a nice long glide. Have students say "push-glide, push-glide..." as they are skiing, exaggerating the word "glide" to make it longer.
3. Poles. Beginner skiers often hold poles in their hands or drag them as they ski. Using their poles correctly will allow them to ski faster and use less energy.
 - a. Review how to hold poles: have students put their hands up through the loops, slide their hands over straps, and hold onto the pole.
 - b. Demonstrate pole use with the classic stride. Explain that arms will swing similarly to those of a runner or walker. As the right ski moves to the forward position, plant the left pole opposite the right boot and push; as the left ski moves to the forward position, plant the right pole opposite the left boot and push. Poles should be used for pushing, not balancing (this is why we started with no poles!). Provide students time to practice. Remind students to combine their pole work with their long glides.
4. For older or more advanced students, lead them in the following skill drills:
 - a. Double Pole: Have students line up next to each other. When you say go, have students "double pole" (push with both poles at the same time to move without pushing off with their skis) to other end of a field. (Optional: Have a "double pole" race).
 - b. Kick and Double Pole: Building on the double pole skill, have students put weight on one ski and push off (kick) followed quickly by a double pole. This is repeated over and over, "kick-double pole, kick-double pole" with a small glide in between. Have students practice kicking with one foot and then with alternating feet. This is a technique used in Nordic racing since it is faster than the classic stride.

Inside:

1. Review the importance of practice and feedback.
2. Discuss the fitness benefits of cross country skiing, including the five health-related fitness components (see Introduction).

Special Needs Students

A peer helper or Ed Tech may assist with balance and push-and-glide techniques. The skill drills may need to be modified with the use of poles and shorter skis.



Cross Country Ski Lesson 4

All Grades

Lesson Summary

Students will learn, demonstrate, and practice techniques used to climb and descend hills including proper weight placement, herringbone, and sidestep.

Objectives

Students will:

- * Demonstrate techniques for skiing uphill.
- * Demonstrate techniques for skiing downhill.
- * Review safety rules for cross country skiing (Pre-K-2).
- * Review the importance of practice and feedback.
- * Discuss the fitness benefits of cross country skiing.

Materials

- * Cross country tracks in snow
- * Cross country skis
- * Cross country ski poles
- * Hilly terrain
- * Cross country Skills Assessment Checklist (optional)
- * YouTube video that demonstrates hill climbing techniques

Prior Knowledge

Students should have fitness goals established (6-8) and a fitness plan in place (9-Diploma).

National SHAPE Standards

Standard 3: Fitness Knowledge and Physical Activity Knowledge

(Pre-K-2): Identifies active-play opportunities, discusses the benefits of being active and exercising and/or playing. Describes large-motor and/or manipulative physical activities and recognizes that when you move fast, your heart beats faster and you breathe faster.

(3-5): Identifies physical activity as a way to become healthier, analyzes opportunities for participating in physical activity. Describes the concept of fitness and provides examples of physical activity to enhance fitness.

(6-8): Describes how being physically active leads to a healthy body. Identifies the five components of health-related fitness and skill-related fitness and explains the connections between fitness and overall physical and mental health.

(9-Diploma): Discusses the benefits of a physically active lifestyle as it relates to college or career productivity. Investigates the relationships among physical activity, nutrition, and body composition.

Standard 3: Engagement in Physical Activity

(Pre-K-5): Engages actively in all of the activities of physical education.

(6-8): Participates in a variety of lifetime recreational team sports, outdoor pursuits or dance activities.

(9-Diploma): Employs effective self-management skills to analyze barriers and modify physical activity patterns appropriately, as needed.

Standard 4: Safety

(Pre-K-2): Follows teacher directions for safe participation and proper use of equipment.

(3-5): Works safely with peers and equipment in physical activity settings.



Procedure

Inside:

1. Share a YouTube video demonstrating hill climbing techniques.
2. Get dressed to go outdoors.

Outside:

1. Review safety rules (for Pre-K-2).
2. Warm up with a game. See the Aerobic Conditioning, Snow (or no snow) Games section for ideas.
3. **Skiing uphill:** There are several different techniques that can be used to climb hills. Choosing the correct one depends on the steepness of the hill.
 - a. **Gradual hills:** Introduce an aggressive form of the classic stride. Demonstrate that more weight needs to be put on the ski when pushing off. Explain that students will need to keep their weight further back on their skis, otherwise they will slip backwards. Tell students to keep their chins up or to look at the top of the hill, not at their feet. This will help maintain correct body position.
 - b. **Moderate hills:** When simply digging in with poles isn't enough, introduce the herringbone step (creative analogies: duck/pigeon walk). With this technique, students will step out of the tracks, put weight on the inside edge of the skis, and spread their ski tips while keeping the tails of the ski close together, making a V-shape. Again, have students keep their eyes up and use their poles for an extra push.
 - c. **Steep hills:** If the hill is too steep for the herringbone, introduce the sidestep. Have students position their skis perpendicular to the slope of the hill. Students will first move the uphill ski up the slope and then move the downhill ski just below the uphill ski. Have students practice, continuing until they reach the top of the hill. Students can use their poles to help push them uphill as well.
4. **Skiing downhill:** Unlike going uphill where you keep your weight back, going downhill requires keeping your weight forward.
 - a. **Body Position:** Demonstrate and explain to your students the correct body position: ankles flexed, knees slightly bent, rear out, and hands reaching forward. If students try to extend their arms, their bodies naturally will start to assume this position.
 - b. **Slowing Down:** Explain that the more students crouch down, the faster they will go. Thus, if they want to slow down a bit, have them stand up... but remind them to keep their weight forward or they will end up on their rears.

Inside:

1. Review the importance of practice and feedback.
2. Discuss the fitness benefits of cross country skiing, including the five health-related fitness components (see Introduction).

Special Needs Students

Students with special needs may need to stay on flat surfaces and gradual slopes and hills. Strength, balance, and coordination can be common challenges.



Cross Country Skiing Vocabulary

Breaking trail

When the lead skier skis through the snow to make a solid path for others to follow.

Bindings

Hardware mounted on skis that secure a skier's boots to the skis.

Pole baskets

Discs at the bottom of ski poles that prevent the poles from sinking too far into the snow.

Edge

Side of the ski that bites into the snow at an angle to turn or hold the skier on the slope.

Inside edge

The internal edge of skis, toward the middle of your body.

Outside edge

The external edge of skis, on the outside of your body.

Glide zones

The tip and tail portions of the base of the ski. The glide zones are completely smooth.

Groove

The indentation on nearly the entire length of the base of the ski that affects tracking stability.

Kick zone

The central portion of the ski is called the kick zone. The kick zone may have what is called a crown pattern or a fish scale pattern milled into the base. The kick zone may also be as smooth as the glide zones, as with classical skis. Classical skis require kick wax – a sticky wax that grabs the snow much like the crown pattern does.

Metal-edged skis

Skis with metal edges that provide the greatest stopping and turning control.

Skating

Quick forward gliding motion of a skier, using one ski then the other like how a speed skater skates from ice skate to ice skate.

Sitzmark

An indentation left in the snow by a skier who has fallen.

Tail

The rear most part of the ski.

Tip

The front most part of the ski.

Herringbone

Ski technique used by the skier to climb short, steep hills. Turn the tips out and lift the tail of the ski over the top of the tail of the other ski. The poles are held behind each ski, and the skis are edged slightly on the inside edge. The weight is carried on the back of the skis.

Waxable skis

Classical skis that require kick wax are called waxable skis.

Waxless skis

Skis with a plastic bottom surface with a crown, fish-scaled, or crosshatch pattern in the kick zone. These do not require waxing.

Short/wide skis

Skis that are shorter and wider than traditional length skis and provide greater control for stopping and turning.

Traditional length

Skis that are longer, offer the most efficient glide, and track well at higher speeds.



Cross Country Skiing Skills Assessment

Recommended for Grades 4-6
Adaptable for other grade levels.

Level 1

1. Identify parts of ski equipment and proper use of equipment.
2. Demonstrate a fall and recovery without the use of poles.
3. Sidestep 360 degrees to the left and right without poles.
4. Classic stride on flat terrain with and without poles.
5. Skate on flat terrain with and without poles.
6. Snowplow to a stop position.

Level 2

1. Herringbone and sidestep a steep grade of terrain.
2. Double pole on a flat terrain for at least 20 yards.
3. Ski $\frac{1}{2}$ mile without stopping - falls are not counted and time is limited to class period provided.

Level 3

1. Classic stride with an evident glide phase with poles. Ski terrain that changes at least two to three times.
2. Turn while going downhill.
3. Ski over a one-foot-high bump without falling.
4. Double pole on a gradual uphill course.
5. Ski one mile without stopping - falls are not counted and time is limited to class period provided.

Use medals, ribbons, or pins to recognize the completion of a level and to keep students motivated.

Source: Mia Pangburn, Fort Street Elementary School, Mars Hill, Maine.

Cross Country Skiing Skills Assessment Checklist

	Level 1	Identify parts and proper use of ski equipment	Demonstrate a fall and recovery without the use of poles	Sidestep 360 degrees to the left and right without poles	Classic stride on flat terrain with and without poles	Skate on flat terrain with and without poles	Snowplow to a stop position	Level 2	Herringbone and sidestep a steep grade of terrain	Complete figure-8 around ski poles 20 yards apart	Double pole on a flat terrain for at least 20 yards	Ski over a one-foot high bump without falling	Ski 1/2 mile without stopping	Level 3	Classic stride with an evident glide phase with poles	Turn while going downhill	Ski over a one-foot high bump in a tuck position	Double pole on a gradual uphill course	Ski one mile without stopping
Name:																			
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An abstract graphic in the background consisting of several light gray circles of varying sizes connected by thin, light gray lines, resembling a network or a stylized snowflake.

Ski and Snowboard Unit



Ski and Snowboard Unit

Three-week unit for elementary students

Five-week unit for middle school students

Six-week unit for high school students

Objectives

Students will:

- * Demonstrate proficiency in understanding the components of ski and/or snowboard equipment.
- * Demonstrate proficiency in safety factors related to skiing or snowboarding.
- * Demonstrate an understanding of the types of physical conditioning needed for skiing or snowboarding.
- * Demonstrate knowledge of how to improve personal fitness and to pursue skiing or snowboarding further.

Ideally, this unit will be followed by a Learn to Ski or Snowboard Day at your local ski area.





Ski and Snowboard Lesson 1

All Grades

Lesson Summary

Using a “dry land” setting, students will practice skills that require eye-foot coordination, pivotal skills for skiing and snowboarding. After warming up with agility and balance exercises, students will work on lateral movements.

Objectives

Students will:

- * Demonstrate the ability to engage in an aerobic activity.
- * Demonstrate increased knowledge concerning the principles of warm-up and cool-down.
- * Demonstrate the ability to monitor pulse rates while exercising.
- * Demonstrate flexibility, balance, and agility exercises correctly.
- * Explain how feedback affects skill development (6-8).
- * Explain the relationship between the skill-related fitness components and the movements of skiing and snowboarding (9-Diploma).

Materials

- * Mats (for abdominal exercises)
- * 10-15 poles, cones, or markers
- * Stopwatches
- * Paper and pencil (to record results)
- * Dressing for Cold Weather handout located in the WinterKids Smarts section.

National SHAPE Standards

Standard 1: Locomotor Combinations

(3-5): Performs and applies a sequence of locomotor skills, transitioning from one skills to another smoothly and without hesitation.

Standard 1: Stability

(Pre-K-2): Maintains stillness on different bases of support with different body shapes.

(3-5): Balances on different bases of support, demonstrating muscular tension and extensions of free body parts.

Standard 1: Outdoor Pursuits and Lifetime Activities

(6-8): Demonstrates correct technique for basic skills in self-selected outdoor activities.

(9-Diploma): Demonstrates competency and/or refines activity specific movement skills in two or more lifetime activities.

Standard 3: Fitness Knowledge and Physical Activity Knowledge

(Pre-K-2): Recognizes that when you move fast, your heart beats faster and you breathe faster. Identifies the heart as a muscle that grows stronger with exercise, play, and physical activity. Recognizes the use of the body as resistance and identifies physical activities that contribute to fitness. Identifies active play opportunities and discusses the benefits of being active and exercising and/or playing.

(3-5): Demonstrates, with teacher direction, the health-related fitness components and addresses ways to use physical activity to enhance fitness. Identifies physical activity as a way to become healthier.

(6-8): Participates in moderate to vigorous aerobic physical activity that includes intermittent or continuous aerobic physical activity of both moderate and vigorous intensity for at least 60 minutes per day. Identifies the five components of health-related fitness and explains the connections between fitness and overall physical and mental health.

(9-Diploma): Participates several times a week in a self-selected lifetime activity. Investigates the relationships among physical activity, nutrition and body composition. Demonstrates competency in specialized skills in health-related fitness activities.

Procedure

Note: Emphasize throughout the lesson that these activities are designed to prepare students for fun outdoor recreation (i.e. skiing, snowboarding, snowshoeing, ice skating etc.).

Inside:

1. Warm up as a group. Have students begin with light bending and stretching. Have students jog in place, and then introduce some of the agility and balance exercises that will be used in the following lessons. Include squats, lateral leaps, skier's jumps, fast feet, and step-ups (Note: a lot of these are also football exercises!). Add your own abdominal routines and strength exercises for torso, arms, and legs.
2. Explain that skiing and snowboarding require a great deal of eye-foot coordination. Therefore, it is important that this skill be experienced and developed in a "dry land" setting prior to the outdoor activity.
3. Hop slalom. The purpose of this activity is to work on students' lateral movement.
 - a. Arrange ten to fifteen poles, cones, or other markers approximately one-and-a-half to two feet apart. Align markers so that each one is slightly offset from the next.
 - b. Students will hop back and forth through the course, experimenting with hopping with their feet together and with alternating one foot at a time, which develops independent leg action. Students should try one or two practice runs and two or three timed runs to see which style works best and if they can improve their speed.
4. Finish with a cool-down and stretches.
5. (Grades 6-8) Discuss how appropriate feedback affects skill development and how skiing and snowboarding might be included in students' personal fitness goals. (Grades 9-Diploma) Explain the relationship of the five skill-related fitness components to the specialized movements of skiing and snowboarding.
6. Discuss the Dressing for Cold Weather handout and review terminology.

Special Needs Students

A peer helper or one-to-one aide may be needed. Intensity of activity may need to be decreased or altered to allow for frequent rest periods. Adjustments to the agility, balance, and strength exercises may be needed, such as single leg skier jumps, assisted sit-ups, and isometric push-ups.



Ski and Snowboard Lesson 2

All Grades

Lesson Summary

Students will rotate through stations and perform exercises designed to improve balance, agility, coordination, muscular strength, and endurance.

Objectives

Students will:

- * Demonstrate exercises designed to improve balance, agility, coordination, muscular strength, and endurance.

Materials

- * Balance beams
- * Tape
- * Cones
- * Tumbling mats
- * Jump ropes or climbing rope
- * Stopwatches
- * Your Responsibility Code
(located at the end of the unit)

Preparation

1. Set up six to seven stations with activities designed to improve muscular strength and endurance, agility, and coordination—all necessary for a fun and safe time on the slopes! Station ideas include:
 - a. Lateral leaps over lines (strength and agility)
 - b. 180 and/or 360 degree jumps on two legs with eyes open and with eyes closed (balance and coordination)

National SHAPE Standards

Standard 3: Physical Activity Knowledge and Fitness Knowledge

(Pre-K-2): Identifies active-play opportunities, discusses the benefits of being active and exercising and/or playing. Describes large-motor and/or manipulative physical activities and recognizes that when you move fast, your heart beats faster and you breathe faster.

(3-5): Identifies physical activity as a way to become healthier, analyses opportunities for participating in physical activity. Describes the concept of fitness and provides examples of physical activity to enhance fitness.

(6-8): Describes how being physically active leads to a healthy body. Identifies the five components of health-related fitness and skill-related fitness and explains the connections between fitness and overall physical and mental health.

(9-Diploma): Discusses the benefits of a physically active lifestyle as it relates to college or career productivity. Investigates the relationships among physical activity, nutrition and body composition.

Standard 3: Engagement in Physical Activity

(Pre-K-5): Engages actively in all of the activities of physical education.

(6-8): Participates in a variety of lifetime recreational team sports, outdoor pursuits, or dance activities.

(9-Diploma): Participates several times a week in a self-selected lifetime activity, dance, or fitness activity.

- c. 180 degree jumps on one leg, with eyes open and with eyes closed (balance and coordination)
- d. Skier's jumps (strength and anaerobic fitness)
- e. Balance beam using a beam, a tape line/jump rope on the floor, or a stick line outdoors (balance)
- f. Jumping rope (muscular endurance)
- g. Partner sit-ups, passing a ball between them (muscular endurance)

Procedure

Inside or Outside:

1. Lead students in a short warm-up and ten-minute aerobic session.
2. Explain each exercise station to your students. Explain that each station will be approximately two to three minutes long and have two to four students at a time. Explain that each station will have three levels of exercise and that students will choose the level that best suits them.
3. Lead a warm-up to teach students each station's activities.
4. Divide students into groups of two to four and assign each group their first station. Students will begin with your signal (e.g. whistle).
5. Alert students to change stations with your signal (e.g., whistle). When students hear the signal, they will jog one lap around the course and then move to the next station. Repeat until every student has completed each station.
6. Lead students through stretches and a cool down.
7. Hand out a copy of the Your Responsibility Code and discuss as a class.

Special Needs Students

Allow for rest periods. Shorten the distances, and decrease the number of repetitions at each station. Allow for support on the balance beam. Allow for speed walking instead of jogging or running.



Ski and Snowboard Lesson 3

All Grades

Lesson Summary

Students will engage in exercises designed to increase skills that specifically relate to skiing and snowboarding. Students will then review Your Responsibility Code and create and present a skit based on the code.

Objectives

Students will:

- * Participate in exercises designed to increase skills that specifically relate to skiing and snowboarding.
- * Become familiar with ski and snowboard equipment.
- * Create and perform a skit based on Your Responsibility Code.

Materials

- * B15-20 slalom poles or cones
- * Rope
- * Bounce board
- * Mats
- * Ski equipment
- * Agility hurdles

Preparation

1. Set up stations, including ski equipment familiarization, rope slalom, gymnastics freestyle jumping, and ski movement patterns.

Procedure

Inside or Outside:

1. Lead a group warm-up. If necessary, review stations from Lesson 2.

National SHAPE Standards

Standard 3: Physical Activity Knowledge and Fitness Knowledge

(Pre-K-2): Identifies active-play opportunities, discusses the benefits of being active and exercising and/or playing. Describes large-motor and/or manipulative physical activities and recognizes that when you move fast, your heart beats faster and you breathe faster.

(3-5): Identifies physical activity as a way to become healthier, analyses opportunities for participating in physical activity. Describes the concept of fitness and provides examples of physical activity to enhance fitness.

(6-8): Describes how being physically active leads to a healthy body. Identifies the five components of health-related fitness and skill-related fitness and explains the connections between fitness and overall physical and mental health.

(9-Diploma): Discusses the benefits of a physically active lifestyle as it relates to college or career productivity. Investigates the relationships among physical activity, nutrition and body composition.

Standard 3: Engagement in Physical Activity

(Pre-K-5): Engages actively in all of the activities of physical education.

(6-8): Participates in a variety of lifetime recreational team sports, outdoor pursuits, or dance activities.

(9-Diploma): Participates several times a week in a self-selected lifetime activity, dance, or fitness activity.



2. Explain each station in today's lesson, emphasizing that they focus on skiing and snowboarding skills. Students will go through all stations once or twice, depending on the length of class time.
3. Explain and have students complete the following stations:
 - a. **Ski equipment familiarization:** This station is meant to demonstrate how to wear, use and participate with ski or snowboard equipment. Students will have the opportunity to explore equipment.
 - b. **Rope slalom:** This activity is similar to the hop slalom in Lesson 1. Set up 10-15 markers spaced one and a half to two feet apart, slightly offset from one another. Add a vertical dimension by stringing a rope through the course six inches to two feet off the floor. You may also use short agility hurdles. Students will hop through the course, jumping back and forth over the rope, moving down the course through the markers. The rope level can ascend, descend, or vary through the course. The rope will need two anchors, such as outdoor playground equipment. (Note: It is not desirable to have students hold the rope due to the temptation to raise or lower the rope). The preferred technique with this exercise is for students to hop with their legs together, but encourage experimentation. Timing is not necessary at this station – finishing the course is usually challenge enough! Varying the rope height can provide a challenge, if necessary.
 - c. **Gymnastics freestyle jumping:** Students will jump on a bounce board and mats.
 - d. **Ski movements:** Students will practice specific ski movement patterns for alpine and cross country skiing, including herringbone, sidestep, step turns, wedge, and straight run.
4. Divide students into four groups and assign each group their first station. Students will begin with your signal (e.g. whistle).
5. Alert students to change stations with your signal (e.g., whistle). When students hear the signal, they will move to the next station. Repeat until every student has completed each station.
6. Review Your Responsibility Code with your class.
7. Have students create and perform a skit based on Your Responsibility Code.
8. Go over a map of their local ski area.

Variations

For elementary students, a great way to end this unit is with a field trip to your local ski area for a Learn to Ski or Snowboard Day.

Special Needs Students

To help students be successful, try shortening the spaces between the markers and adjusting rope levels for safety. Be aware that freestyle jumping may be difficult for some special needs students, therefore try an agility ladder on the ground or use tape.



Ski and Snowboard Lesson 4

Grades 5-Diploma

Lesson Summary

Students will determine their resting heart rate, participate in physical activities that address muscular endurance and agility, and then determine their active heart rate. They will then participate in activities that promote eye-foot coordination and flexibility, two important skills for skiing and snowboarding.

Objectives

Students will:

- * Demonstrate how to take their resting and active heart rates.
- * Demonstrate agility and muscular endurance, two components of sports fitness.
- * Demonstrate improvement in their eye-foot coordination.

Materials

- * Stopwatch
- * Jump ropes: 8', 9', 10', and 16'
- * 8-10 hula hoops
- * Flexibility posters
- * Dressing for Cold Weather Handout located in the WinterKids Smarts section
- * Your Responsibility Code (located at the end of the unit)
- * Slow, calm music

Prior Knowledge

Students should have established fitness goals established (6-8) and a personal fitness plan in place (9-Diploma).

National SHAPE Standards

Standard 1: Manipulative/Individual-Performance and Lifetime Activities

(5): Performs jump-rope skills for both long and short ropes.

(6-8): Demonstrates correct technique for basic skills in individual-performance activities.

(9-Diploma): Demonstrates and/or refines activity-specific movement skills in lifetime activities.

Standard 3: Engagement in Physical Activity

(5): Engages actively in all of the activities of physical education.

(6-8): Participates in a variety of lifetime recreational team sports, outdoor pursuits, or dance activities.

(9-Diploma): Participates several times a week in a self-selected lifetime activity, dance, or fitness activity.

Standard 4: Personal Responsibility and Working with Others

(5): Engages in physical activity with responsible interpersonal behavior. Accepts, recognizes and actively involves others with both higher and lower skill abilities into physical activities and group projects.

(6-8): Accepts responsibility for improving one's own levels of physical activity and fitness. Uses effective self-monitoring skills to incorporate opportunities for physical activity in and outside of school.

(9-Diploma): Employs effective self-management skills to analyze barriers and modify physical activity patterns appropriately, as needed. Uses communication skills and strategies that promote team or group dynamics.

Preparation

1. Hang up several flexibility posters on the gym wall, set up so students can move through them in stations.
2. Set up a ring run by arranging eight to ten hula hoops (or other rings) in two rows, one row for each foot. (Note: This activity is similar to the traditional football training technique where players run through tightly spaced tires to improve eye-foot coordination and reflexes).

Procedure

Inside or Outside:

1. Explain heart rates and how to determine your heart rate. Have students sit down in a quiet place while you play slow, calming music. Have students take their resting heart rates.
2. Lead students through 30 and/or 45 seconds of teacher-timed individual jump rope.
3. Have students take their active heart rates.
4. Break class into teams of three to four students for team jump roping. Two students will swing a long jump rope, and a third student will jump in. Students will take turns so everyone on the team gets to be the jumper. Introduce front door* and back door** jump rope stunts.
 - *Front door: Rope is being turned so it is moving down toward the jumper.
 - **Back door: Rope is being turned so it is moving up toward the jumper.
6. Explain the ring run activity you've set up. Have students complete six runs. First, students will explore different methods of completing the ring run in a "do anything" creative exploration run. Second, students will run with one foot in each ring (i.e. right foot down in the right row, then left foot down in the left row). Third, a.k.a. the "swing feet" rotation, students will place their right foot in the ring on the left row, then place their left foot in the ring on the right row, and so on. Fourth and fifth, students will race down each side, hopping forward with their legs together and switching rows between the two races. Sixth, students will finish with another free-choice creative run-through. Students should check their active heart rate again.
7. Have students move through the stretching stations you've set up. Allow students to lead the static stretching cool-down. This is a great leadership opportunity for students! Emphasize the importance of stretching before you go skiing or snowboarding.
8. As a class, review and discuss Dressing for Cold Weather and the Your Responsibility Code.

Special Needs Students

The length of time jumping rope may need to be decreased. Allow for frequent rest periods. Allow students to walk if need be.



Ski and Snowboard Lesson 5

Grades 5-Diploma

Lesson Summary

Students will participate in several activities that promote strength and flexibility.

Objectives

Students will:

- * Demonstrate strength and flexibility challenges.

Materials

- * Flexibility posters
- * Large climbing rope
- * Mats
- * Scooters
- * Cones
- * Medicine ball or physio ball

Prior Knowledge

Student should have fitness goals in place (6-8) and a fitness plan (9-Diploma).

Preparation

1. Hang up three flexibility posters on the gym wall to create stretching stations.
2. Set up five strength stations, including rock wall (or an obstacle course completed while bear crawling), standing broad jump, medicine or physio ball slam, scooter obstacle course, and V-sit contest.

National SHAPE Standards

Standard 1: Manipulative/Individual-Performance and Lifetime Activities

(5): Performs jump-rope skills for both long and short ropes.

(6-8): Demonstrates correct technique for basic skills in individual-performance activities.

(9-Diploma): Demonstrates and/or refines activity-specific movement skills in lifetime activities.

Standard 3: Physical Activity Knowledge and Fitness Knowledge

(5): Identifies physical activity as a way to become healthier, analyses opportunities for participating in physical activity. Describes the concept of fitness and provides examples of physical activity to enhance fitness.

(6-8): Describes how being physically active leads to a healthy body. Identifies the five components of health-related fitness and skill-related fitness and explains the connections between fitness and overall physical and mental health. Employs a variety of appropriate static-stretching techniques for all major muscle groups.

(9-Diploma): Discusses the benefits of a physically active lifestyle as it relates to college or career productivity. Investigates the relationships among physical activity, nutrition and body composition. Identifies types of strength exercises and stretching exercises for personal fitness development.

Standard 3: Engagement in Physical Activity

(5): Engages actively in all of the activities of physical education.

(6-8): Participates in a variety of lifetime recreational team sports, outdoor pursuits, or dance activities.

(9-Diploma): Participates several times a week in a self-selected lifetime activity, dance, or fitness activity.

Procedure

Inside:

1. Have students play a game of bridge tag to warm up. Explain that three students are “it,” and the remaining students will scatter throughout the gym. The students who are “it” will run and tag as many people as they can. Tagged students will stay where they are and form a bridge with their bodies on the floor. Students can be untagged if someone who is not “it” crawls under their bridge.
2. Have students explain the importance of stretching before skiing and snowboarding (i.e. it helps prevent injuries). Demonstrate the three flexibility exercises modeled on the three posters you’ve set up, and then divide students into three groups. Each group will go to their designated station, stretch as instructed for 30 seconds, and rotate to the next station on your signal. Do this until every student has completed all three stretches. (Note: Each stretching station can have student leader who teaches the dynamic stretches. It’s a great leadership opportunity for students!).
3. Explain and demonstrate each strength station prior to students’ participation. Divide students into five groups and have them move through the following stations on your signal:
 - a. Rock wall or an obstacle course created with mats, cones, etc. to be completed while bear crawling.
 - b. Standing broad jump.
 - c. Medicine or physio ball slam. Students will lift a ball overhead and use their core to slam the ball to the floor/ground. Students must watch the ball as it bounces off the floor/ground.
 - d. Scooter obstacle course. Students will sit on scooters and use only their legs to move through the course. Set up two courses using cones. Students can race each other through the course using only their legs.
 - e. V-sit contest. Students will sit on a mat, lift their legs in the air, and keep their arms out to the side. Challenge them to see how long they can keep their bodies in this V-shape.
4. Review today’s objectives and emphasize the ways flexibility and strength relate to the sport of skiing and snowboarding.
5. Show maps of local ski areas.

Variations

For middle school students, a great way to end this unit is with a field trip to your local ski area for a Learn to Ski or Snowboard Day.

Special Needs Students

Include peer helpers or a one-to-one aide. Substitute isometric push-ups as necessary. For V-sit, students may have their knees bent and/or keep their hands on the floor for support if needed. Include special needs students as students who are “it” in bridge tag.



Ski and Snowboard Lesson 6

Grades 9-Diploma

Lesson Summary

Students will be introduced to the weight room, learn appropriate safety and weight-lifting techniques, and demonstrate flexibility exercises.

Objectives

Students will:

- * Demonstrate appropriate safety measures in the weight room.
- * Demonstrate appropriate weight-lifting techniques.
- * Demonstrate flexibility exercises.

Materials

- * Weight-lifting equipment
- * Pencil and paper (for students to keep track of the amount of weight they lift)
- * Fitness or weight-lifting plan (only if already in place)

Procedure

Weight Room:

1. Introduce the weight room as a place to improve ski and snowboard performance. After a safety demonstration, have students establish an appropriate amount of weight and repetition for an individualized workout.
2. Teach students the appropriate way to lift:
 - a. Technique
 - b. Breathing pattern
 - c. Safety
3. Teach students different ways to strengthen their upper body:
 - a. Bench press
 - b. Military press
 - c. Wide bench

National SHAPE Standards

Standard 3: Fitness Knowledge

(9-Diploma): Designs and implements a strength and conditioning program that develops balance in opposing muscle groups and supports a healthy, active lifestyle.

Standard 4: Rules and Etiquette

(9-Diploma): Examines moral and ethical conduct, as well as exhibits proper etiquette, respect for others, and teamwork while engaging in physical activity.

4. Teach students different ways to strengthen their trunk:
 - a. Abs curls
 - b. Lateral flies
 - c. Leg lifts
5. Teach students different ways to strengthen their lower body:
 - a. Squat
 - b. Leg extension
 - c. Leg curl
6. Lead a cool down with some flexibility stretching.
7. As a class, discuss the potentially hazardous aspects of skiing and snowboarding, and how to minimize risk of injury.

Note: This lesson can be repeated to continue building strength.

Variations

A great way to end this unit is with a field trip to your local ski area for a Learn to Ski or Snowboard Day.

Special Needs Students

Include peer helpers or one-to-one aides. Use lighter weights and/or more repetitions. You may need to demonstrate proper form several times or use special needs students in your demonstration.

LEARN!
EXPLORE!
MOVE!





Alpine Skier Vocabulary

Base lodge

Central building, usually at the bottom (base) of the ski area. Bathrooms, food service, information, and other facilities are located in this lodge.

Chairlift

A chair fastened to a moving, airborne cable used for transporting skiers and snowboarders up the hill. It is often built to carry two, three, four, or more per chair.

Lift line

Either the place at the bottom of the lift where people line up to ride the lift or the actual path that the lift follows up the hill.

Groomer

A vehicle, often known by its brand name “Snowcat,” which moves and packs snow on ski trails.

Ski Equipment

Bindings

The mechanisms that hold a skier or snowboarder to their skis or snowboard.

Pole baskets

A fixture at the bottom end of a ski pole that prevents the pole from going too far into the snow (or other people!).

Ski brake

A device built into modern ski bindings that stops the ski from sliding down the hill when bindings release a boot from a ski.

Carving snowboard

A snowboard designed to allow a rider to cut a clean turn on the snow by riding the edge of the board. These boards are usually used by advanced snowboarders and require hard boots for better edge control.

Freestyle snowboard

A snowboard designed to enable a rider to perform turns and tricks more easily by “skidding” or sliding the board on the snow. Most snowboarders learn on and continue to ride these boards as they improve and gain skills.

General Terms

Fall line

The straightest, most direct line down a hill or slope.

Slope

Generic term for a ski trail, short for “ski slope.” Ski slopes or trails are rated “easiest” (marked with a green circle), “more difficult” (blue square), “most difficult” (black diamond) and “experts only” (double black diamond).

Glades

A slope with well-spaced trees, used by advanced skiers and snowboarders.

Mogul

A bump on a slope caused by many people turning in the same spot. Advanced skiers and snowboarders often seek out moguls as a challenge.

Half-pipe

A snow channel for snowboarders to do creative maneuvers.



YOUR RESPONSIBILITY CODE

Always stay in control. You must be able to stop or avoid other people or objects.

People ahead of you have the right of way. It is your responsibility to avoid them.

You must not stop where you obstruct a trail or are not visible from above.

Whenever starting downhill or merging into a trail, look uphill and yield to others.

Always use devices to help prevent runaway equipment.

Observe all posted signs and warnings. Keep off closed trails and out of closed areas.

Prior to using any lift, you must have the knowledge and ability to load, ride, and unload safely.

KNOW THE CODE



Ice Skating Unit



Ice Skating Unit

Four-lesson introductory unit for elementary, middle, and high school students.

Objectives

Students will:

- * Identify parts of the ice skate.
- * Demonstrate understanding of safety factors related to skating.
- * Demonstrate understanding of off- and on-ice balance and posture.
- * Demonstrate a proficiency with the glide and the standing swizzle.

Sources: Nici Carbone, Youth Market Director (Maine), American Heart Association; Lynda Hathaway, Director of Skating, Portland Ice Arena





Ice Skating Lesson 1

All Grades

Lesson Summary

Students will be introduced to the equipment used for ice skating and will learn the proper way to lace skates and dress for ice skating.

Objectives

Students will:

- * Name the parts of an ice skate.
- * Demonstrate the proper lacing of an ice skate.

Materials

- * Skates
- * Hats/helmets
- * Gloves/mittens

Prior Knowledge

Students should have fitness goals established (6-8) and a fitness plan in place (9-Diploma).

Procedure

Off-ice:

1. Introduce students to necessary clothing for ice skating. For beginner skaters, remember to mention the importance of light layers that provide warmth (but do not restrict movement), mittens or gloves, and a helmet or a warm and preferably thick hat. Socks should be lightweight and fitted rather than loose and bulky. Tights or knee-high type stockings are a good choice inside skates. Students should never step onto the ice with food, gum, or candy in their mouths.
2. Introduce the different parts of an ice skate. Mention boot, blade, laces, and tongue of skate. Point out each part to students.
3. Have students examine the blade of the skate. Explain that the long edge of the blade is for pushing during skating and that the toe pick is only for use in performing jumps, not for pushing or stopping. Explaining this may help prevent some early falls.

National SHAPE Standards

Standard 4: Personal Responsibility

(Pre-K-2): Follows directions in group settings and accepts personal responsibility by using equipment and space appropriately. Accepts responsibility for class protocols with behavior and performance actions.

(3-5): Participates with responsible personal behavior in a variety of physical activity contexts, environments and facilities.

(6-8): Accepts responsibility for improving one's own levels of physical activity and fitness.

4. Have students loosen the laces of one skate all the way down to the toes and open the foot bed by pulling the tongue forward. Explain that the tongue should always be in front of the boot when laced up and, if the skates are tied properly, it should not move to one side or the other while skating.
5. Have students place their foot in the boot and gently tap the back of the blade into the rubber floor to encourage their heel to slide all the way back into the skate.
6. Once their heel is in the boot, have students place their foot flat on the floor and begin to tighten the laces evenly up the length of the boot. When students reach the ankle area, they may tighten their laces slightly tighter than in the toe box and then slightly loosen them again at the upper shaft of the boot. Skaters should see no gaps in the lacing, and the boot should feel very snug but not extremely tight on the foot. Have students visualize a leather glove that fits snugly on a hand.
7. Students should stand in their skates and bend their knees. When they do this, they should be able to fit a finger down the back of their skate.
8. Have students repeat the lacing up process on the other foot.
9. For review, ask students to name the parts of a skate and describe the proper technique for lacing up skates.

Special Needs Students

A peer helper or one-to-one aide may be needed. Be aware of balance, coordination, and sensory issues for special needs students.





Ice Skating Lesson 2

All Grades

Lesson Summary

In an off-ice setting, students will be introduced to the appropriate methods for maintaining balance and posture while on skates and, in conjunction, will learn how to properly and safely fall down from a standing position and then get back up.

Objectives

Students will:

- * Demonstrate correct posture when on skates.
- * Demonstrate proper arm position for balance.
- * Demonstrate getting to a standing position after falling.
- * Demonstrate safe behavior and proper use of equipment.

Materials

- * Skates
- * Hats/helmets
- * Gloves/mittens
- * Space for students to stand and sit with their legs extended

Procedure

Off-ice, balance and posture:

1. Once students have all tied their skates and been checked by a teacher, have them stand up on their skates.
2. Demonstrate the basics of appropriate skating posture: stand up straight with the head up, bend the knees slightly

National SHAPE Standards

Standard 3: Physical Activity Knowledge and Fitness Knowledge

(Pre-K-2): Identifies active-play opportunities, discusses the benefits of being active and exercising and/or playing. Describes large-motor and/or manipulative physical activities and recognizes that when you move fast, your heart beats faster and you breathe faster.

(3-5): Identifies physical activity as a way to become healthier, analyses opportunities for participating in physical activity. Describes the concept of fitness and provides examples of physical activity to enhance fitness.

(6-8): Describes how being physically active leads to a healthy body. Identifies the five components of health-related fitness and skill-related fitness and explains the connections between fitness and overall physical and mental health.

(9-Diploma): Discusses the benefits of a physically active lifestyle as it relates to college or career productivity. Investigates the relationships among physical activity, nutrition and body composition.

Standard 3: Engagement in Physical Activity

(Pre-K-5): Engages actively in all of the activities of physical education.

(6-8): Participates in a variety of lifetime recreational team sports, outdoor pursuits, or dance activities.

(9-Diploma): Participates several times a week in a self-selected lifetime activity, dance, or fitness activity.

Standard 4: Safety

(Pre-K-2): Works independently and safely in physical education and works safely with physical education equipment.

(3-5): Applies safety principles with age-appropriate physical activities.

(6-8): Independently uses physical activity and fitness equipment appropriately, and identifies specific safety concerns associated with the activity.

(9-Diploma): Applies best practices for participating safely in physical activity, exercise and dance.

and place the arms out to the side at about waist height with palms down to maintain the best level of balance.

3. Demonstrate that the head and eyes are looking up and across the room/ice rather than at the feet/ice.
4. Demonstrate that the arms are extended and steady, neither wiggly nor stiff.
5. Ask students to stand with their feet side by side in good posture and bend and straighten their knees to feel the difference. Show students how to keep knees slightly bent while skating.
6. Have students practice moving from standing upright to bending their knees deeply (a “dip”) with their arms out in front of them to prepare for learning to fall. (Note: This will also help many students save themselves from falling if they feel unstable. Coach Lynda Hathaway always tells beginners, “When you feel tippy, do a dippy!”).

Off-ice, falling down and getting up:

1. Have students stand in the basic ice skating posture, with their knees bent and their hands stretched out directly in front of them.
2. Demonstrate a controlled fall by lowering your body down onto the side of your hip/leg area while using your hands to ease into the fall. When students practice this, they will end up on their bottoms with their legs out in front of them. Their upper bodies should remain upright during this falling process so students are able to see in front of them and not bump their heads.
3. Once students are down, demonstrate getting back up by having students kneel on both knees with their bottoms up off their legs. (Tell them to look like a puppy on his back legs begging for food!)
4. Demonstrate placing one skate blade firmly and flatly on the ice. (Visualize someone on bended knee to propose).
5. Demonstrate placing both hands on the knee or the ice to push oneself up so that the other foot can be placed flat on the ice, remembering to keep both knees bent during this process and the upper body upright to help retain balance.
6. Demonstrate fully straightening up from this position to a balanced two-footed stand with arms out.
7. Have students practice falling down and getting up several times.

Special Needs Students

A peer helper or one-to-one aide may be needed. To help with balance and coordination, the teacher may need to develop simple cues for off-ice balance, posture, falling down, and getting up activities.



Ice Skating Lesson 3

All Grades

Lesson Summary

After reviewing the concepts in Lesson 2, students will step onto the ice. They will practice balancing, falling down and getting up, and marching (precursor to gliding) across the ice.

Objectives

Students will:

- * Demonstrate ability to safely enter the ice surface.
- * Demonstrate balancing, falling safely, and getting up.
- * Demonstrate marching across the ice.

Materials

- * Skates
- * Hats/helmets
- * Gloves/mittens
- * Ice-skating rink

Prior Knowledge

Students should have fitness goals established (6-8) and a fitness plan in place (9-Diploma).

Procedure

Off-ice:

1. Have students put on and lace up ice skates.
2. Refresh students on Lesson 2 criterion for balance/posture and falling down and getting up.

National SHAPE Standards

Standard 3: Physical Activity Knowledge and Fitness Knowledge

(Pre-K-2): Identifies active-play opportunities, discusses the benefits of being active and exercising and/or playing. Describes large-motor and/or manipulative physical activities and recognizes that when you move fast, your heart beats faster and you breathe faster.

(3-5): Identifies physical activity as a way to become healthier, analyses opportunities for participating in physical activity. Describes the concept of fitness and provides examples of physical activity to enhance fitness.

(6-8): Describes how being physically active leads to a healthy body. Identifies the five components of health-related fitness and skill-related fitness and explains the connections between fitness and overall physical and mental health.

(9-Diploma): Discusses the benefits of a physically active lifestyle as it relates to college or career productivity. Investigates the relationships among physical activity, nutrition and body composition. .

Standard 3: Engagement in Physical Activity

(Pre-K-5): Engages actively in all of the activities of physical education.

(6-8): Participates in a variety of lifetime recreational team sports, outdoor pursuits, or dance activities.

(9-Diploma): Participates several times a week in a self-selected lifetime activity, dance, or fitness activity.

Standard 4: Safety

(Pre-K-2): Works independently and safely in physical education and works safely with physical education equipment.

(3-5): Applies safety principles with age-appropriate physical activities.

(6-8): Independently uses physical activity and fitness equipment appropriately, and identifies specific safety concerns associated with the activity.

(9-Diploma): Applies best practices for participating safely in physical activity, exercise and dance.



3. Have students stand in line with their arms out and march in place.
4. Explain that students will now, very slowly, enter the ice. Explain that they will place a hand on the boards or railing, step onto the ice, and use the wall to slowly march along the ice surface, using the boards for support and security.

On-ice: Part I

1. Once all students are on the ice surface, ask them to move forward a few steps away from the boards but not too close to their neighbors, facing the teacher/leader. (Using an arm's length between them is good. Cue: "zombie arms," "8th grade dance arms," or "helicopter arms.").
2. Have skaters find their balance again remembering to keep the knees bent and arms out with an upright position.
3. Demonstrate falling and getting up on the ice, and ask your students to slowly do the same with your guidance. (Remind them to be very careful of their skate blades as they do this and to keep them away from others!).
4. Demonstrate getting up from the ice – just as students practiced in the off-ice lesson – and ask students to do the same.
5. Repeat this part of the lesson several times until students feel confident with it.

On-ice: Part II

1. Demonstrate marching in place on the ice – just as students practiced off-ice – and ask students to do the same.
2. Instruct students to face the opposite side of the rink and begin to slowly march across the rink. Remind them to keep their heads up, arms out, and knees softly bent.
3. Repeat this multiple times until students are feeling secure with moving forward on the ice, falling down, and getting up as they control their balance and posture.

Special Needs Students

A peer helper or one-to-one aide may be needed to help with balance, coordination, and sensory issues.



Ice Skating Lesson 4

All Grades

Lesson Summary

Students will learn to glide on the ice on two feet and progress to a forward skating “swizzle” using both feet at the same time.

Objectives

Students will:

- * Demonstrate gliding on the ice.
- * Demonstrate a swizzle.

Materials

- * Skates
- * Hats/helmets
- * Gloves/mittens
- * Ice skating rink

Procedure

Forward two-foot glide:

1. With students standing near the wall, demonstrate marching or skating forward and then placing both feet side-by-side with your knees bent to glide across the ice.
2. Demonstrate this with the proper upright posture and equal balance over both feet.
3. Ask students to glide with two feet, allowing them to march and glide as they need to in order to cover the ice surface. Repeat this several times.

Forward two-foot glide with dip/sit:

1. Again, have students stand near the wall while you demonstrate forward gliding.

National SHAPE Standards

Standard 3: Physical Activity Knowledge and Fitness Knowledge

(Pre-K-2): Identifies active-play opportunities, discusses the benefits of being active and exercising and/or playing. Describes large-motor and/or manipulative physical activities and recognizes that when you move fast, your heart beats faster and you breathe faster.

(3-5): Identifies physical activity as a way to become healthier, analyses opportunities for participating in physical activity. Describes the concept of fitness and provides examples of physical activity to enhance fitness.

(6-8): Describes how being physically active leads to a healthy body. Identifies the five components of health-related fitness and skill-related fitness and explains the connections between fitness and overall physical and mental health.

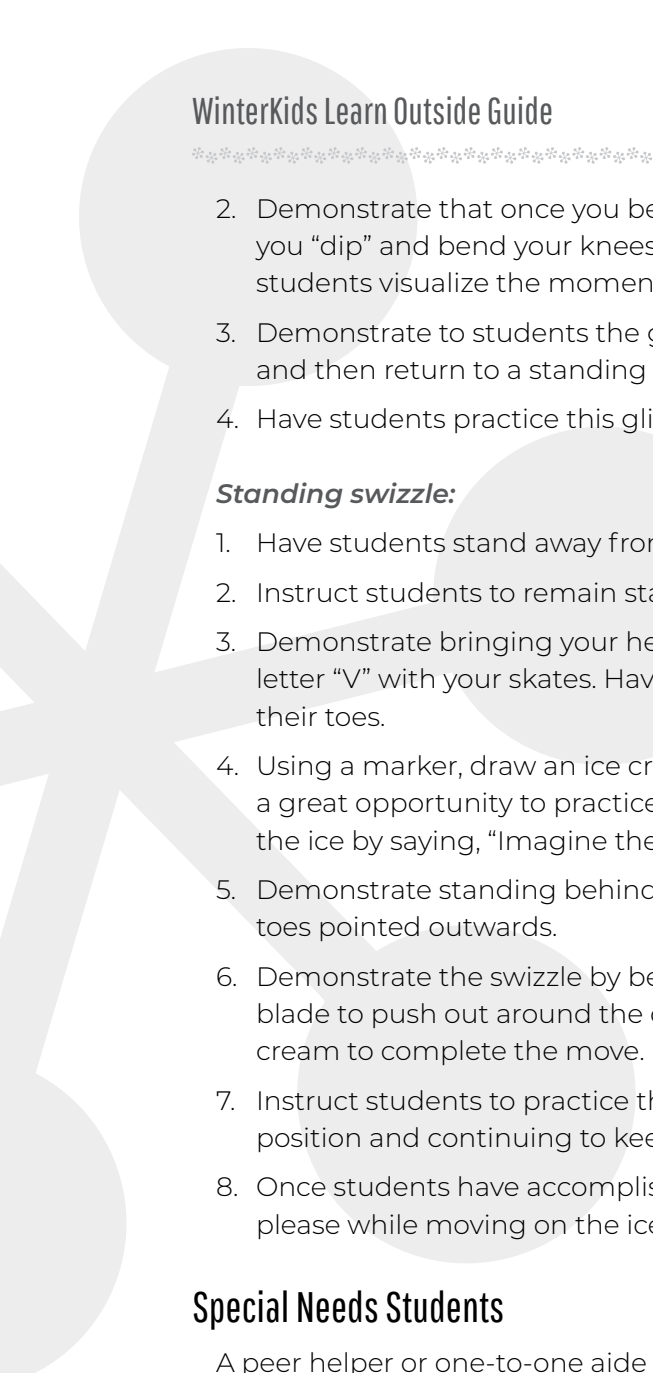
(9-Diploma): Discusses the benefits of a physically active lifestyle as it relates to college or career productivity. Investigates the relationships among physical activity, nutrition and body composition.

Standard 3: Engagement in Physical Activity

(Pre-K-5): Engages actively in all of the activities of physical education.

(6-8): Participates in a variety of lifetime recreational team sports, outdoor pursuits, or dance activities.

(9-Diploma): Participates several times a week in a self-selected lifetime activity, dance, or fitness activity.

- 
2. Demonstrate that once you begin to glide, you stretch your arms out in front of you as you “dip” and bend your knees until you are in a semi-seated position while gliding. (Have students visualize the moment before they fully sit into a chair).
3. Demonstrate to students the gliding dip with your head up and your arms in front of you, and then return to a standing two-foot glide to end.
4. Have students practice this glide and repeat several times.

Standing swizzle:

1. Have students stand away from the boards at an arm’s length apart from each other.
2. Instruct students to remain standing and to bend their knees with their arms out.
3. Demonstrate bringing your heels together so that your toes point outward, making the letter “V” with your skates. Have students practice touching their heels together and then their toes.
4. Using a marker, draw an ice cream cone on the ice in front of each student. (This is also a great opportunity to practice visualization orally. Create a scene for students on and off the ice by saying, “Imagine the ice cream cone is right in front of you...”).
5. Demonstrate standing behind the ice cream cone with your heels at the end of the cone, toes pointed outwards.
6. Demonstrate the swizzle by bending your knees and using the middle-back part of the blade to push out around the cone. Then, pull your toes in together over the top of the ice cream to complete the move.
7. Instruct students to practice this swizzle, keeping their upper bodies in an upright position and continuing to keep their knees bent.
8. Once students have accomplished this, have them march, glide, and swizzle as they please while moving on the ice.

Special Needs Students

A peer helper or one-to-one aide may be needed to help with balance, coordination, and sensory issues. Simplify the activities for special needs students. When assessing students, be aware of the accommodations for testing on their IEP.

Ice Skating Skills Assessment Checklist

	Identify parts and proper use of skating equipment	Describe the proper way to dress and lace skates	Demonstrate proper balance and posture techniques off ice	Demonstrate how to safely fall down and get up off ice	Demonstrate how to safely enter the ice surface	Demonstrate how to fall down and get up on ice	Perform the two foot glide	Perform the two foot glide with dip	Perform the standing swizzle
Name:									
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Snowshoe Unit



Snowshoe Unit

Four-week unit for elementary and middle school students

Six-week unit for high school students

Objectives

Students will:

- * Demonstrate knowledge of traditional snowshoes as well as sport snowshoes.
- * Demonstrate proficiency in understanding the components of a snowshoe.
- * Demonstrate proficiency in safety related to snowshoeing.
- * Demonstrate understanding of the types of physical conditioning needed for snowshoeing.
- * Demonstrate knowledge of improving personal fitness and ways to pursue snowshoeing further.

Variations

This unit provides great opportunity to introduce and practice taking heart rates. You may want to introduce target heart rate as a way for students to monitor their activity.

This unit also lends itself well to camping, mountaineering, geocaching, and letterboxing. Have older students plan and implement an overnight snowshoe trip!

Sources: Edwards, Sally and McKenzie, Melissa (1995). *Snowshoeing. Outdoor Pursuits Series: Champaign, IL. Human Kinetics.*





Snowshoe Lesson 1

All Grades

Lesson Summary

Students will engage in agility and flexibility activities, learn the similarities and differences between traditional and sport snowshoes, and practice putting on and taking off snowshoes.

Objectives

Students will:

- * Demonstrate agility and flexibility.
- * Demonstrate putting on snowshoes correctly.

Materials

- * Stopwatch
- * Snowshoes (Note: If possible, have several different styles of snowshoes available to highlight the differences between them. You may use pictures of different styles of snowshoes instead.)

Prior Knowledge

Students should have fitness goals established (6-8) and a fitness plan in place (9-Diploma).

Procedure

Inside:

1. Lead your students in a warm-up game activity (located in Aerobic Conditioning in the Physical Education section).
2. Lead your students in agility challenges for maintaining good balance (located in Aerobic Conditioning in the Physical Education section).

National SHAPE Standards

Standard 3: Physical Activity Knowledge and Fitness Knowledge

(Pre-K-2): Identifies active-play opportunities, discusses the benefits of being active and exercising and/or playing. Describes large-motor and/or manipulative physical activities and recognizes that when you move fast, your heart beats faster and you breathe faster.

(3-5): Identifies physical activity as a way to become healthier, analyses opportunities for participating in physical activity. Describes the concept of fitness and provides examples of physical activity to enhance fitness.

(6-8): Describes how being physically active leads to a healthy body. Identifies the five components of health-related fitness and skill-related fitness and explains the connections between fitness and overall physical and mental health.

(9-Diploma): Discusses the benefits of a physically active lifestyle as it relates to college or career productivity. Investigates the relationships among physical activity, nutrition and body composition. .

Standard 3: Engagement in Physical Activity

(Pre-K-5): Engages actively in all of the activities of physical education.

(6-8): Participates in a variety of lifetime recreational team sports, outdoor pursuits, or dance activities.

(9-Diploma): Participates several times a week in a self-selected lifetime activity, dance, or fitness activity.

Standard 4: Personal Responsibility and Safety

(Pre-K-5): Engages in physical activity with responsible interpersonal behavior. Applies safety principles with age-appropriate physical activities.

(6-8): Accepts responsibility for improving one's own levels of physical activity and fitness. Independently uses physical activity and fitness equipment appropriately, and identifies specific safety concerns associated with the activity.



3. Lead your class in stretches (located in the WinterKids Smarts Section).
4. Discuss types of traditional and sport snowshoes and the differences between them with your students. Discuss the key parts of a snowshoe (e.g., binding, crampon, decking, webbing, etc.).
5. Demonstrate how to put on snowshoes, then have students practice putting on and taking off snowshoes in class. Use protective mats or old carpeting to protect the gym floors.
6. Review and reinforce key words from class: pulse/heart rate, flexibility, and the different types of snowshoes.

Variations

Have students find their heart rate and, for older students, their target heart rate.

1. Define heart rate and target heart rate.
 - a. **Heart rate:** The number of beats your heart produces in one minute.
 - b. **Target heart rate:** A heart rate that is attained during aerobic exercise and represents the minimum level of exertion at which cardiovascular fitness can increase for an individual in a given age group. The target heart rate occurs when your heartbeat reaches 60-80% of its maximum ability, or 50% for overweight/obese children or those with little or no physical exertion before beginning an exercise program.
2. Have students place the tips of their second and third fingers on the palm-side of their wrist slightly below the base of the thumb. Time them for one minute while they count the number of times they feel their pulse.
3. Have students determine the target heart rate for their age group. A common formula for determining target heart rate is: Maximum heart rate (220 minus your age in years) multiplied by 60% to 80% of the maximum for the age.

Example for Sally age 13

$$220 - 13 = 207$$

$$207 \times .60 = 124$$

$$207 \times .80 = 166$$

When Sally exercises, she should stay between 124 and 166 beats per second most of the time, though may occasionally reach 145-166.

Special Needs Students

Use peer helpers or a one-to-one aide, use small cooperative groups to work together on activities, and use the student in the demonstration of putting on and taking off snowshoes.



Snowshoe Lesson 2

All Grades

Lesson Summary

While inside, students will engage in stretching and flexibility activities, review snowshoe components, and learn safety factors for outdoor activities. Once outdoors, students will put on snowshoes and walk around.

Objectives

Students will:

- * Demonstrate proficiency in understanding the purpose of the components of a snowshoe.
- * Explain the safety factors related to snowshoeing.

Materials

- * Large piece of paper to diagram a snowshoe or a large poster/picture of a snowshoe
- * Snowshoes
- * Examples of proper snowshoe clothing (e.g. layers, hat, gloves, sunglasses, etc.)

Prior Knowledge

Students should have fitness goals established (6-8) and a fitness plan in place (9-Diploma).

Procedure

Inside:

1. Lead students in a warm-up game activity (located in Aerobic Conditioning in the Physical Education section).

National SHAPE Standards

Standard 3: Physical Activity Knowledge and Fitness Knowledge

(Pre-K-2): Identifies active-play opportunities, discusses the benefits of being active and exercising and/or playing. Describes large-motor and/or manipulative physical activities and recognizes that when you move fast, your heart beats faster and you breathe faster.

(3-5): Identifies physical activity as a way to become healthier, analyses opportunities for participating in physical activity. Describes the concept of fitness and provides examples of physical activity to enhance fitness.

(6-8): Describes how being physically active leads to a healthy body. Identifies the five components of health-related fitness and skill-related fitness and explains the connections between fitness and overall physical and mental health.

(9-Diploma): Discusses the benefits of a physically active lifestyle as it relates to college or career productivity. Investigates the relationships among physical activity, nutrition and body composition.

Standard 3: Engagement in Physical Activity

(Pre-K-5): Engages actively in all of the activities of physical education.

(6-8): Participates in a variety of lifetime recreational team sports, outdoor pursuits, or dance activities.

(9-Diploma): Participates several times a week in a self-selected lifetime activity, dance, or fitness activity.

Standard 5: Health

(Pre-K-2): Recognizes the value of "good health balance."

(3-5): Compares the health benefits of participating in selected physical activities.

(6-8): Identifies the five components of health-related fitness and explains the connections between fitness and overall physical and mental health.

(9-Diploma): Analyzes the health benefits of a self-selected physical activity.



2. Lead students in stretches (located in the WinterKids Smarts Section).
3. Review basic components of a snowshoe. Use a diagram/poster and an actual snowshoe for reference.
4. Introduce safety factors (frostbite, dehydration, and sunburn and snow blindness), define each one, and discuss causes and prevention.
5. Discuss the importance of proper clothing (i.e. headgear, gloves, layering, and sunglasses).

Outside:

1. Have students take appropriate safety precautions, strap on snowshoes, and walk around outdoors. If your school has a nature trail, be sure to take advantage of it.

Inside:

1. (Grades Pre-K–5) Have students tell and show how they would protect themselves from frostbite, dehydration, and sunburn/snow blindness.

Special Needs Students

Use peer helpers or a one-to-one aide for this lesson. Have students sit at the front of class during discussions. Stress good posture during flexibility exercises. Students may need ski poles for balance while using snowshoes.

LEARN! EXPLORE!
MOVE!





Snowshoe Lesson 3

All Grades

Lesson Summary

After an indoor warm-up, students will practice a variety of horizontal movements while on snowshoes outdoors. For instance, moving forwards, backwards or side to side.

Objectives

Students will:

- * Demonstrate proficiency in horizontal movements on snowshoes.

Materials

- * Snowshoes
- * Ski poles
- * YouTube video of horizontal movements or pictures/posters of horizontal movements

Prior Knowledge

Students should have fitness goals established (6-8) and a personal fitness plan in place (9-Diploma).

Procedure

Inside:

1. Lead students in a warm-up game activity (located in the Aerobic Conditioning Section).
2. Lead students in stretches (located in the WinterKids Smarts Section).

National SHAPE Standards

Standard 1: Stability

(Pre-K-1): Maintains stillness on different bases of support with different body shapes.

(2-5): Combines locomotor skills and movement concepts.

Standard 1: Locomotor Skills and Outdoor Pursuits

(Pre-K-5): Demonstrates mature patterns of locomotor skills in dynamic small-sided practice tasks.

(6-8): Demonstrates correct technique for basic skills in self-selected outdoor activities.

(9-Diploma): Refines activity-specific movement skills in lifetime activities.

Standard 3: Physical Activity Knowledge and Fitness Knowledge

(Pre-K-2): Identifies active-play opportunities, discusses the benefits of being active and exercising and/or playing. Describes large-motor and/or manipulative physical activities and recognizes that when you move fast, your heart beats faster and you breathe faster.

(3-5): Identifies physical activity as a way to become healthier, analyses opportunities for participating in physical activity. Describes the concept of fitness and provides examples of physical activity to enhance fitness.

(6-8): Describes how being physically active leads to a healthy body. Identifies the five components of health-related fitness and skill-related fitness and explains the connections between fitness and overall physical and mental health.

(9-Diploma): Discusses the benefits of a physically active lifestyle as it relates to college or career productivity. Investigates the relationships among physical activity, nutrition, and body composition.

Standard 3: Engagement in Physical Activity

(Pre-K-5): Engages actively in all of the activities of physical education.

(6-8): Participates in a variety of lifetime recreational team sports, outdoor pursuits, or dance activities.

(9-Diploma): Participates several times a week in a self-selected lifetime activity, dance, or fitness activity.



3. Share YouTube videos of the horizontal movements below or demonstrate these movements for students. Have students practice indoors without snowshoes:
 - a. Striding
 - b. Stamping
 - c. Turning “kick or step”
 - d. Breaking Trail
 - e. Bushwhacking
 - f. Using poles
4. Get dressed to go outdoors.

Outside:

1. Demonstrate and have students practice the following horizontal movements above.

Special Needs Students

Use peer helpers or a one-to-one aide to assist the student. Have the student take part in the demonstration and use poles for balance while on snowshoes. Keep directions simple by using key words and phrases.





Snowshoe Lesson 4

All Grades

Lesson Summary

Students will warm up with exercises that promote flexibility, then they will observe and practice vertical movements while on snowshoes.

Objectives

Students will:

- * Demonstrate proficiency in vertical snowshoe movements.

Materials

- * Snowshoes
- * Ski poles (optional)
- * Vertical slope for practice
- * YouTube video of vertical movements

Prior Knowledge

Students should have fitness goals established (6-8) and a personal fitness plan in place (9-Diploma).

Procedure

Inside:

1. Share a YouTube video of vertical snowshoe movements with students. Promote active watching – have students practice the movements while watching the video.
2. Have students get dressed properly for the outdoors.

National SHAPE Standards

Standard 1: Stability

(Pre-K-1): Maintains stillness on different bases of support with different body shapes.

(2-5): Combines locomotor skills and movement concepts.

Standard 1: Locomotor Skills and Outdoor Pursuits

(Pre-K-5): Demonstrates mature patterns of locomotor skills in dynamic small-sided practice tasks.

(6-8): Demonstrates correct technique for basic skills in self-selected outdoor activities.

(9-Diploma): Refines activity-specific movement skills in lifetime activities.

Standard 3: Physical Activity Knowledge and Fitness Knowledge

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(6-8): Describes how being physically active leads to a healthy body. Identifies the five components of health-related fitness and skill-related fitness and explains the connections between fitness and overall physical and mental health.

(9-Diploma): Discusses the benefits of a physically active lifestyle as it relates to college or career productivity. Investigates the relationships among physical activity, nutrition, and body composition.

**Outside:**

1. Lead students in a warm-up game activity (located in the Aerobic Conditioning Section).
2. Lead students in stretches (located in the WinterKids Smarts Section).
3. Have students put on their snowshoes.
4. On a slope, demonstrate vertical movements (also called stepping up). Have your students practice these movements. This should be kept age/skill level appropriate:
 - a. Switchback
 - b. Sidestepping
 - c. Herringbone Stepping
 - d. Jumping
 - e. Glissade
5. Review each vertical movement as a class. Students can demonstrate as you review.

Students with Special Needs

Use peer helpers or a one-to-one aide. Have students take part in the demonstration. They may need to use poles for balance while on snowshoes. Keep directions simple by using key words and phrases.

LEARN! EXPLORE!
MOVE!





Snowshoe Lesson 5

Grades 9-Diploma

Lesson Summary

Students will engage in warm-up activities focusing on flexibility, and then they will observe and practice advanced snowshoeing techniques.

Objectives

Students will:

- * Demonstrate advanced snowshoeing techniques.

Materials

- * Snowshoes
- * Poles

Prior Knowledge

Students should have fitness goals established and a personal fitness plan in place.

Procedure

Outside:

1. Lead students in a warm-up game activity (located in the Aerobic Conditioning Section).
2. Lead students in stretches (located in the WinterKids Smarts Section).
3. Demonstrate and have students practice the following advanced snowshoeing techniques:
 - a. Running in snowshoes
 - b. Group or cooperative games in snowshoes
 - c. Snowshoe racing
 - d. Animal Tracking (Note: this could be a possible day trip for outdoor education class done on local trails or recreation area)

National SHAPE Standards

Standard 1: Lifetime Activities

Demonstrates competency and/or refines activity-specific movement skills in lifetime activities.

Standard 3: Engages in Physical Activity

Participates several times a week in self-selected lifetime activity.

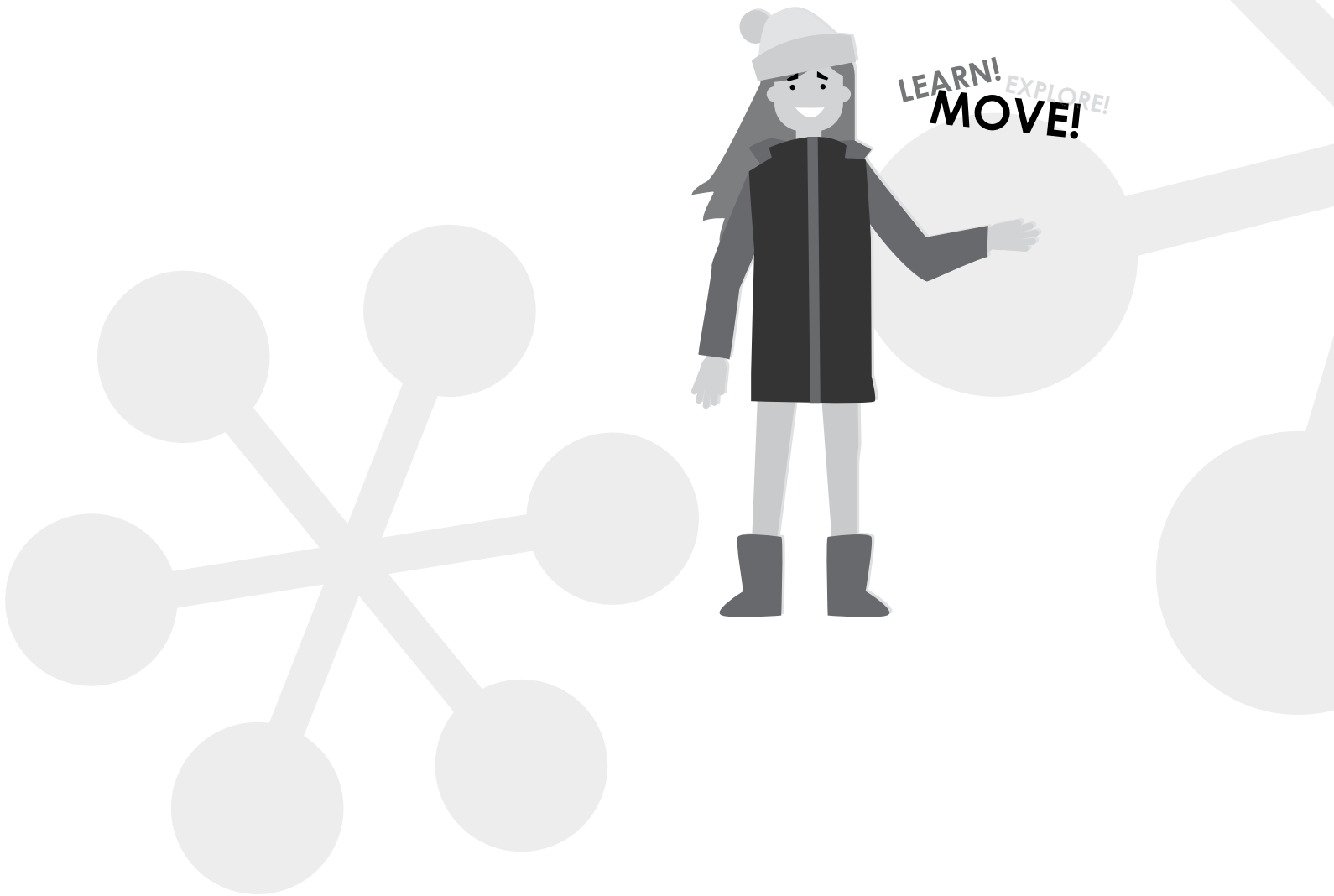


Variations

You could incorporate camping and mountaineering into an extension of your outdoor education class. Students could go on a winter overnight snowshoe trip!

Special Needs Students

Use small groups and peer helpers. Students may use poles for assisted balance. Provide students frequent rest periods as needed and have them race and run for shorter distances.





Snowshoe Olympics

Grades 3-Diploma

Lesson Summary

Students will run a circuit on snowshoes, stopping at three or more stations to perform different activities. Students will run the course twice (each being timed); the student with the best improvement in time wins the race.

Objectives

Students will:

- * Demonstrate a variety of snowshoeing movement skills.
- * Demonstrate a variety of manipulative skills, appropriate for their grade span, using correct technique.

Materials

- * Cones
- * Stopwatch
- * Throwing rings
- * Balls
- * Container for the balls
- * Hula hoops
- * Agility hurdles

Procedure

Outside:

1. Lead students in a warm-up exercise or activity (located in the Aerobic Conditioning section).
2. Explain to your students how the Snowshoe Olympics will be run. The course should have at least three stations: (a) ball toss into container, (b) snowshoeing sideways between two points and (c) a ring toss onto cones. Additional stations may be set up as needed. (For example, you may set up agility hurdles or use hula hoops as “tires” where students touch one foot in each hoop). The course should be long enough so that it is challenging. Emphasize the importance of safety over speed.

National SHAPE Standards

Standard 1: Locomotor, Outdoor Pursuits and Lifetime Activities

(3-5): Demonstrates mature patterns of locomotor skills in dynamic small-sided practice tasks. Combines locomotor and manipulative skills in a variety of small-sided practice tasks/games environments.

(6-8): Demonstrates correct technique for a variety of skills in a self-selected outdoor activity.

(9-Diploma): Demonstrates competency and/or refines activity-specific movement skills in two or more lifetime activities.



3. Time each student as they go through the course. Students should run the course twice. The student with the most improved time wins the race. (Note: The best way to get honest results is to keep it a secret that students will win based on how much their time improves. Reveal this only at the end of the event).
4. You may choose to add time onto a student's score for each time they miss the ball or ring toss.
5. Finish with cool-down and stretches.

Special Needs Students

A peer helper or one-to-one aide may be needed. You may consider shortening distances and allowing for more missed balls or rings.

LEARN!
EXPLORE!
MOVE!





Snowshoeing Vocabulary

Bearpaw	The original round and wide snowshoe frame geometry.
Beavertail	A wide, teardrop-shaped snowshoe frame, also known as “Maine,” “Michigan,” or “Algonquin.”
Binding	The part of a snowshoe that attaches to the footwear.
Breaking trail	The task of the lead snowshoer, who steps or stomps through the snow to make a solid path for the others to follow.
Bushwhacking	Snowshoeing through an uncut trail and bushes. May need to do this if following a compass bearing.
Bushwhack course	This is a type of snowshoe course designed to be off-trail and to cut through untracked snow and bushes.
Carrying surface	The surface area of a snowshoe; the larger the surface area, the more flotation and support for the snowshoer.
Crampon	Traction device that may be attached to a snowshoe's pivot rod to prevent slippage in steep terrain or icy conditions.
Decking	The solid piece of rubber-like material attached to the bottom of a snowshoe frame that provides flotation for the snowshoer.
Fall line	The shortest distance down a slope.
Flotation	The amount of loft provided by snowshoes.
Glissade	A controlled slide, in either a standing or sitting position, used in descending a steep incline.
Herringbone	A climbing method used for moderate slopes with toes pointing out and heels together.
Points	The sharp and sturdy spikes or teeth on a crampon or claw used for traction, especially when climbing. Also called spikes.
Poles	Poles can be used to aide balance.
Shoeing	The act of snowshoeing.
Shuffle-step	Snowshoe running style in which you take the weight off the snowshoe and shuffle it ahead. Used only on well-packed trails over moderately sloping terrain, this stride is best used for long-distance snowshoe runs or tramps.

**Sidestepping**

A climbing method used when slope is too steep for switch backing. The snowshoer sidesteps up the hill.

Snowshoe Sliding

A downhill technique similar to a glissade, with the snowshoes acting as modified skis. The feet may take either a parallel or diagonal stance.

Stamping

A technique used to pack down the snow with snowshoes. Packing the snow down makes it easier for those who follow, especially if heavy loads are being carried.

Striding

A walking technique that differs depending on the type of snowshoe. The snowshoer must adopt a gait to avoid hitting snowshoes together.

Switch backing

A technique used to climb steep terrain. Rather than climbing up the fall line, the snowshoer works up the slope in a zigzag pattern. This is a common technique used for snowshoes without crampons.

Toe hole

The opening in the front of the decking that allows the forefoot to pivot through a complete range of motion.

Turning

An exaggerated wide turn with the foot.

Webbing

The interwoven decking that serves as the carrying surface for traditional snowshoes, usually made of rawhide or neoprene.





Assessments



Flexibility Assessment

Name _____ Grade _____ Teacher _____

1. List two benefits of flexibility.

1.

2.

2. Explain why flexibility is important.

3. Describe something that flexibility helps you do better.

4. Name two different stretches that increase your flexibility.

Stretch Your Thinking!

Name _____ Grade _____ Teacher _____

1. When exercising, when should you stretch?

Why?

2. True or False

_____ Stretching cold muscles is a good idea.

Explain your answer:

3. Why is it important to warm up with dynamic stretches before activity?

What are three important things to remember when you stretch?

- 1.
- 2.
- 3.

Creating Valuable Ending Discussions with Essential Questions

Pre-K–2nd Grades

- * How do you keep yourself safe?
- * Why are there rules?
- * How does what you do impact your classmates' safety?
- * What kind of things do you do that are good for you?
- * When do you get along with other people?
- * How does what you say affect others?

3rd–5th Grades

- * What do/did you do to be successful?
- * Why is it important to listen?
- * How do/did you keep yourself safe?
- * How do people know what you are thinking and/or feeling?
- * What are some ways two people can deal with conflict?
- * How does what you do impact your classmates' safety?
- * What are things that you do that are good for you?

6th–8th Grades

- * What are some resources we can use to improve our individual performance?
- * How can you encourage others to participate in physical activity?
- * How can you be a responsible leader?
- * How do the Health-Related Fitness components affect your life?
- * What are some specific reasons that we need to participate in physical activity?
- * What are some ways I can participate safely in physical education activities during the school day?
- * What are some ways you can use equipment to participate in physical activity?

Sample Rubric for a Physical Education Lesson

Score	Assessment Descriptors
4 —	Wow!! You have demonstrated the correct mechanics and have applied more complicated skills.
3 —	You've been practicing... You have demonstrated the correct mechanics for this skill.
2 —	Almost there... just a few mistakes. See me for some pointers that will get you there.
1 —	Keep practicing. Think about the important cues we've gone over in class as you practice. See me for some additional instruction.

Source: Liz Giles Brown, South Bristol Elementary School

Rubric for Performance Assessment

Activity _____ Name _____

Class _____ Date _____

Distinguished 4	Demonstrates mastery over the strategy or skill specific to the task or situation. Can perform the strategy of skill without error and with little or no conscious effort. Comments: _____ _____ _____
Advanced 3	Carries out the strategy or skill specific to the task or situation without significant error. Comments: _____ _____ _____
Basic 2	Makes a number of errors when performing the strategy or skill specific to the task or situation, but can complete a rough approximation of it. Comments: _____ _____ _____
Novice 1	Makes many critical errors when performing the strategy or skill specific to the task or situation. Comments: _____ _____ _____

Note that this general rubric may be rewritten to include specific information, and may be used for numerous activities in this guide.

Unit Evaluation

Activity _____ Name _____

Directions—Complete the following sentences:

1. During this unit I improved in _____
2. I can tell that I improved because _____

3. My favorite part of the unit was when we _____

4. This was my favorite part because _____

5. I think that I need more practice on _____

6. I can tell that I need more practice because _____

7. It was helpful when _____

8. Where did you find you wanted more help? _____

9. On a scale of 1 to 10 I would rank this unit a _____ because _____

Comments _____



Purchasing Equipment for Your Program

Note: Purchase snowshoes with aluminum crampons.

❁ Tubbs Snowshoes, Vermont | 1-800-882-2748

www.tubbssnowshoes.com

❁ Cadillac Mountain Sports, Bar Harbor, Maine | 207-941-5670

www.cadillacsports.com

❁ L.L. Bean, Freeport, Maine | 1-800-458-3058

www.llbean.com

20% discount on school equipment.

1. School must be accredited
2. Must make purchase with school check or purchase order
3. No minimum purchase is required

❁ REI, Seattle, Washington | 1-800-258-4567

Group Sales www.rei.com

10% discount on school equipment. No minimum purchase required.





Art

**Funflakes**

Grade K–2

Lesson Summary

Students will create human snowflakes outdoors. Once they are back inside, they will use the experience as inspiration for a piece of art that explores symmetry and patterns.

Objectives

Students will:

- * Demonstrate teamwork and critical thinking skills.
- * Communicate an experience through art.
- * Demonstrate pattern and symmetry in their art.

Materials

- * Yardstick
- * Hexagon tracers
- * White construction paper
- * Rulers
- * Pencils
- * Blue colored pencils or blue fine-line markers
- * Camera or cell phone to photograph outdoor activity

Procedure

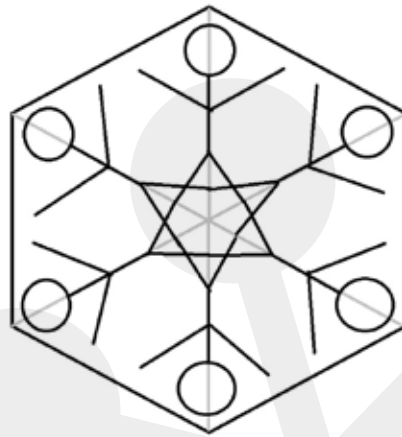
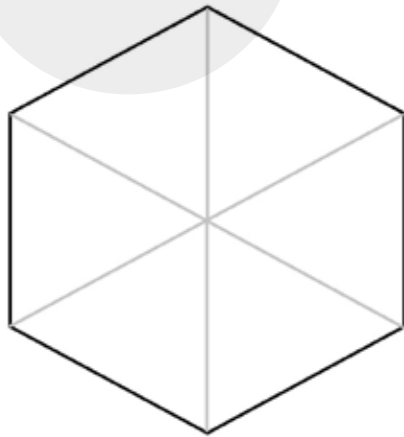
Outside:

1. Gather your students and explain that they are about to become Funflakes, or human snowflakes.
2. Discuss the hexagon shape of a snowflake. Explain that each of the six "spokes" of a snowflake are symmetrical (like a human face) and identical to one another (like sextuplets).
3. Demonstrate body symmetry by raising both arms at the same angle to your body and then perpendicular to your body. Explain that body symmetry and teamwork will be essential to their task. Explain that each child in a group will be one spoke of a Funflake.
4. Break your class into groups of six. (After whole groups of six have had their turn, remaining students can be joined by student volunteers to complete a group of six).

5. Have the first group of six face one another and briefly discuss and decide what symmetrical posture all members of the group will take. Next, have students sit in a circle with their legs outstretched in front of them so their feet are all together in the center. Then have them lay down without moving their legs. Make sure their heads are an equal distance apart. Have them assume their chosen body postures.
6. Take an aerial photo of the group's snowflake and ask for observers' opinions.
7. As each group has its turn, suggest variations from the postures of the first group.

Inside:

1. Explain that students will now create a representation of a Funflake on paper.
2. Provide students with paper, tracers, scissors, pencils, and rulers.
3. Have students trace hexagons onto their papers.
4. Meanwhile, draw a large hexagon on the board. Using a yardstick, draw three dotted lines, one between each vertex of the three sets of opposite angles of your hexagon, dividing your hexagon into six equal pieces. Explain that these will be the spokes of each Funflake.
5. Have students make three folds on their hexagon to represent the spokes of their paper Funflakes.
6. Demonstrate how to add a congruent and symmetrical stick figure to each spoke, creating a Funflake. Remind students that they should try to model their paper Funflakes after the one their group created outdoors. Mention that adding hands, faces, beards, or hats can add interesting details to a Funflake but that each added detail must be congruent and symmetrical.

**Special Needs Students**

Some students may require the help of an assistant.



Experiencing the Outdoors Through Art

Grade K–2

Lesson Summary

Students will spend half an hour outdoors in the winter. Back inside, they will create a work of art that reflects the ideas and feelings they experienced while outside.

Objectives

Students will:

- * Communicate ideas and feelings generated by the outdoor experience through art by creating a drawing or painting.

Materials

- * Warm outdoor clothing
- * Drawing/painting paper
- * Drawing materials
- * Painting materials
- * Lined paper

Procedure

Outside:

Make sure students are properly dressed for the outside work. Sending a letter home to parents a week prior to the outside class will help.

1. Have students dress for their winter outdoor experience. Make sure students are properly dressed in boots, mittens, and hats.
2. Once outside, take students for a winter hike around the school campus. If your school has nature trails, be sure to take advantage of them.
3. While hiking, lead a class discussion about what it is like to be outside during the winter. Ask students to share how they feel, what they like most about being outside in the winter, and what winter looks like. Ask questions, such as “What are your favorite outside winter activities?,” “How does your face feel right now?,” and “How are the woods different in the winter than they are in the summer?” to help generate dialogue between students. Encourage students to be quiet for a period of time and listen to winter sounds. Ask students, “How do winter sounds differ from summer sounds?”

Inside:

1. Have students draw or paint about their outdoor experience. Explain that art is a form of expression and communication. Their goal is to tell others about being outside in the winter through visuals rather than words. Encourage students to tell a story through their drawing or painting.

Special Needs Students:

Students with physical disabilities may be pulled in a sled, for example, to participate in the outdoor portion of this lesson. For the inside portion, supply large crayons and paint brushes for students with fine motor issues. The optional writing activity could be modified or omitted.

Lesson Extension for Language Arts (optional)**Objectives*****Students will:***

- ✱ Write about their outdoor experience including a beginning, middle, and ending.
- ✱ Orally share ideas and opinions of the different forms of communication (art vs. writing).

Procedure

1. Have students write a journal entry about their experience outside. The length of the entry will vary depending on grade level and ability.
2. Once completed, have a classroom discussion comparing and contrasting strengths of writing vs. drawing/painting as forms of communication.

Common Core Standards

English Language Arts

Writing – Text Types and Purposes

Kindergarten:

W.K.3. Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.

Grade Two:

W.2.3. Write narratives in which they recount a well elaborated event or short sequence of events, include details to describe actions, thoughts and feelings, use temporal words to signal event, order, and provide a sense of closure.



Four Seasons

Grade 3–5

Lesson Summary

The class will take an outdoor hike, stopping along the way to choose scenes that the students will recreate as an art project once back inside. Students will also use their imaginations to recreate their chosen scene in different seasons.

Objectives

Students will:

- * Create an original landscape based on a personal experience.
- * Use visualization to recreate their landscape set in other seasons.
- * Demonstrate awareness of foreground, middle ground, and horizon.
- * Demonstrate the use of the elements of art (color, form, line, shape, space, texture, and value) in their original artwork.
- * Demonstrate the use of the principals of design (balance, contrast, emphasis, movement, and pattern) in their original artwork.

Materials

- * Large paper (16" x 20")
- * Crayons, colored pencils, or paint
- * Clipboards for each student
- * Paper (8.5" x 11")
- * Pencils
- * Camera or cell phone to capture the chosen scenes

Procedure

Outside:

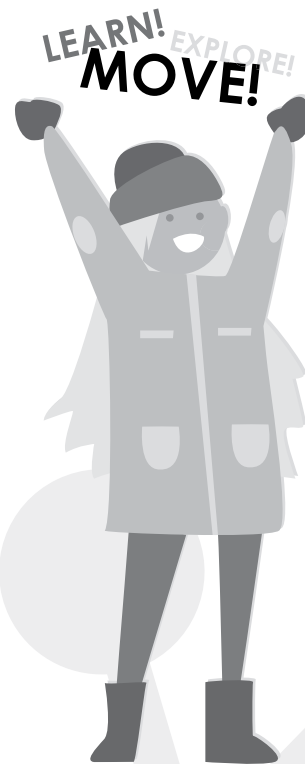
1. Engage your students in a walk outdoors and explain that they will be observing and capturing landscape scenes as they go. Remind students to observe foreground, middle ground, and horizon in each scene.
2. Stop along the way to observe and capture various landscape scenes that will act as their inspiration once they are back indoors. You may choose to equip each student with a clipboard and pencil so that they may each do rough sketches of the chosen scenes while outdoors, or you may choose to use a camera or phone to capture the scenes photographically and print or project them to share with students later.

**Inside:**

1. Explain to students that they will use their rough sketches or photos to create a more detailed landscape of their chosen scene. Remind them of the importance of illustrating foreground, middle ground, and horizon.
2. Equip each student with large paper and your choice of art medium (crayons, colored pencils, paint, etc.).
3. Have students fold their paper both vertically and horizontally, dividing the paper into four equal spaces.
4. In the upper left-hand space, have students use their rough sketches or the photos that you took to compose the winter scene of their choice as they observed it.
5. Finally, have students use their imaginations to compose the same scene in spring, summer, and fall using the remaining three spaces on the paper.

Special Needs Students

Some students may require the help of an assistant.





Still Life Snow People

Grade 3–5

Lesson Summary

Outside, student teams will sculpt a snow person. Inside, each student will create a two-dimensional work of art based on their sculpture.

Objectives

Students will:

- * Demonstrate teamwork and creative thinking.
- * Demonstrate the use of the elements of art (color, form, line, shape, space, texture, and value) to create original artwork.
- * Demonstrate the use of the principals of design (balance, contrast, emphasis, movement, and pattern) in their original artwork.
- * Demonstrate knowledge of how light source and shadow add depth to artwork.

Materials

- * Good packing snow
- * Sticks, pinecones, rocks, and/or other nearby natural items
- * Hats and scarves (optional)
- * Paper
- * Pencils
- * Colored pencils or paint (optional)

Procedure

Outside:

1. Explain to students that they will be sculpting snow people and decorating them with things they can find nearby (and with hats and scarves if you choose). Inform students how much time you will allot for completion of their sculptures.
2. Divide your class into four groups.
3. Have each group sculpt a snow person.
4. Have students observe and discuss how the light source creates shadows on the snow people.
5. Photograph each completed snowperson for later use.

**Inside:**

1. Display photos of snow people.
2. Explain to students that they will be creating sketches of their group's snow person. Remind students to be aware of the direction of the light source for their sketches and to include shadows to indicate that light source.
3. Provide students with white paper and pencils.
4. Have students complete their sketches.

Going Further

You may choose to have students add color or use their imaginations to embellish their sketches with additional details.

Special Needs Students

Some students may require the help of an assistant.

LEARN! EXPLORE!
MOVE!





Bird's Eye View

Grade 6–8

Lesson Summary

Student teams will sculpt a snow person and then sketch a bird's eye view of their sculpture.

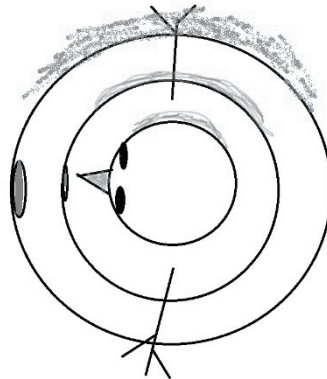
Objectives

Students will:

- * Demonstrate teamwork and creative thinking.
- * Demonstrate the use of the elements of art (color, form, line, shape, space, texture, and value) to create original artwork.
- * Demonstrate the use of the principals of design (balance, contrast, emphasis, movement, and pattern) in their original artwork.
- * Demonstrate knowledge of how light source and shadow add depth to artwork.
- * Demonstrate knowledge of perspective in art.

Materials

- * Good packing snow
- * Sticks, pinecones, rocks, and/or other nearby natural items
- * Hats and scarves (optional)
- * Paper
- * Pencils
- * Colored pencils or paint (optional)



Procedure

Outside:

1. Explain to students that they will be sculpting snow people and decorating them with things they can find nearby (and with hats and scarves if you choose).
2. Divide your class into four groups.
3. Have each group sculpt a snow person.
4. Photograph each completed snowperson for later use.

**Inside:**

1. Display photos of snow people.
2. Explain to students that they will be creating sketches of their group's snow person from the perspective of a bird flying directly above that snow person.
3. Provide students with white paper and pencils.
4. Remind students of the importance of light source and shadow to give their sketches dimension.
5. Have students complete their sketches.

Going Further

You may choose to have students add color or use their imaginations to embellish their sketches with additional details.

Special Needs Students

Some students may require the help of an assistant.

LEARN! EXPLORE!
MOVE!





Experiencing the Outdoors Through Art

Grade 6–8

Lesson Summary

Students will experience how art originates from human experience by spending half an hour outside in the winter, writing a journal entry once back in class, and then creating a painting, drawing, or sculpture that communicates the emotions and ideas captured in the journal entry.

Objectives

Students will:

- * Communicate ideas and feelings generated by the outdoor experience through journaling.
- * Express the ideas and feelings in their journal entries by creating art projects using the media of their choice.

Materials

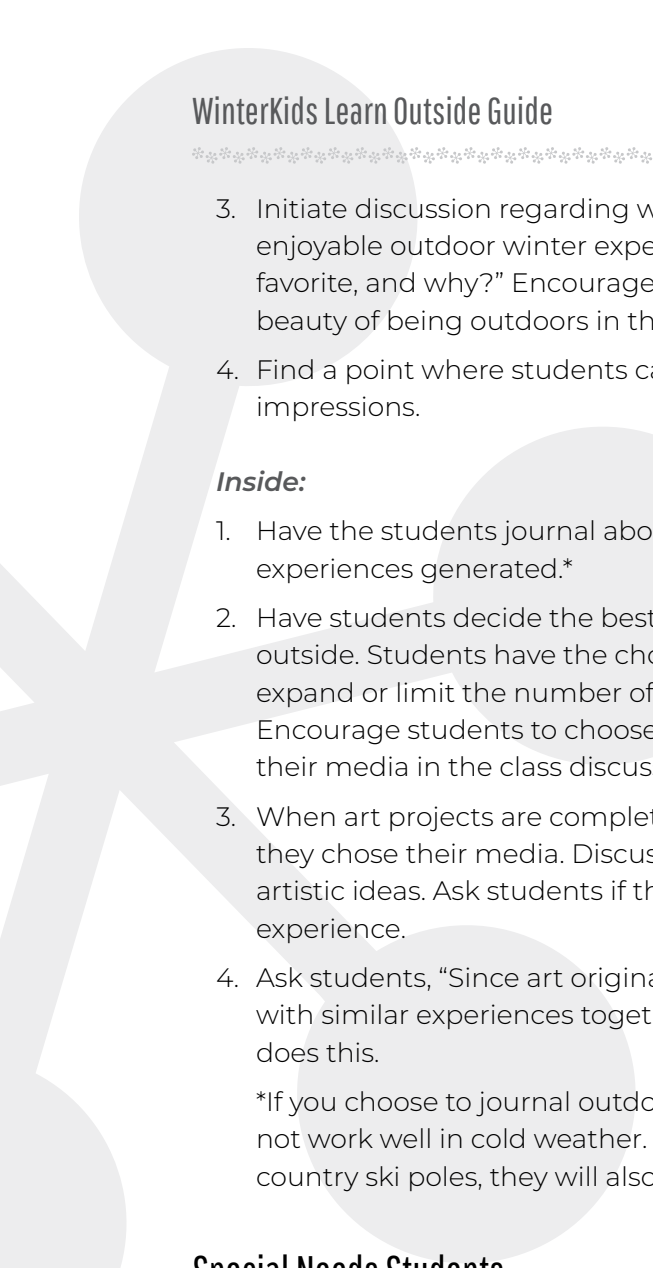
- * Warm outdoor clothing
- * Skis/snowshoes (optional)
- * Writing paper
- * Pencils
- * Painting/drawing paper
- * Painting materials
- * Drawing materials
- * Clay for sculpting

Procedure

Outside:

Make sure students are properly dressed for the outside work. Sending a letter home to parents a week ahead of time or reminding older students to bring in warm clothes will help.

1. Have students dress for their winter outdoor experience. Make sure students are properly dressed in boots, mittens, and hats. (Optional: Use snowshoes or cross country skis).
2. Once outside, take students for a winter hike, snowshoe, or cross country ski around the school campus. If your school has nature trails, be sure to take advantage of them.

- 
3. Initiate discussion regarding what winter feels, looks, and sounds like. Ask students “What enjoyable outdoor winter experiences have you had?” and “Which winter activity is your favorite, and why?” Encourage students to think about the natural surroundings and the beauty of being outdoors in the winter.
4. Find a point where students can stop for a few minutes to gather their thoughts and impressions.

Inside:

1. Have the students journal about their thoughts, ideas, and feelings that the outdoor experiences generated.*
2. Have students decide the best media to use to express the emotions evoked from being outside. Students have the choice of drawing, painting, or sculpting. You may want to expand or limit the number of choices depending on time and material constraints. Encourage students to choose their media carefully – they will be asked why they chose their media in the class discussion when artworks are completed.
3. When art projects are completed, have students share their artworks, including why they chose their media. Discuss as a class how the different media used communicate artistic ideas. Ask students if they can see how the piece of art has roots in the outdoor experience.
4. Ask students, “Since art originates from experience, is it possible that it could bring people with similar experiences together?” Have students come up with examples of how art does this.

*If you choose to journal outdoors, you will need clipboards and pencils only – pens may not work well in cold weather. If students need their hands free for snowshoe or cross country ski poles, they will also need to bring a backpack for carrying writing supplies.

Special Needs Students

Allow students to journal in any way that makes sense to them. A nonreader may journal in pictures or symbols. Their own understanding of the journal is what is important.



Language Arts



Details Matter

Grade K–2

Lesson Summary

The class will embark on a brisk walk and stop for observation and discussion at points of interest along the way. The teacher will record the students' observations and actions. Back inside, students will describe their observations.

Objectives

Students will:

- * Demonstrate the use of description with attention to details.
- * Accurately recount the sequence of an event.
- * Use sensory details to enhance a narrative.

Materials

- * Clipboard
- * Pencil (pens and markers can freeze outside)
- * Drawing paper
- * Coloring materials (colored pencils, markers, crayons, watercolors, etc.)
- * Writing paper
- * Writing utensils

Common Core Standards

English Language Arts

CCSS.ELA-LITERACY.SL.K.4

Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.

CCSS.ELA-LITERACY.SL.K.5

Add drawings or other visual displays to descriptions as desired to provide additional detail.

CCSS.ELA-LITERACY.W.1.3

Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.

CCSS.ELA-LITERACY.W.2.3

Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.



Procedure

Outside:

1. Have your students bundle up in warm outdoor clothes. Take them outside for some warm-up stretches (i.e. touch your toes, raise your hands high over your head, do some squats) followed by a brisk walk. Explain that you will be stopping now and then to ask questions about what the children are seeing and doing.
2. Walk until you reach a point of interest. Stop the group and ask what your students see, hear, smell, and feel. Record student responses for a later activity. Repeat as time allows.
3. Remind students to use all their senses (except taste) while they are walking.
4. You may wish to take photos on your phone to share and spark memories later.

Inside:

1. Write student responses on the board. Explain that the responses on the board are also subject choices for their next assignment.

Kindergarten:

1. Have students choose a subject from the list to illustrate. Encourage students to include interesting details in their illustrations.
2. When students are finished, gather the class in a circle and give each child a turn to describe their drawing aloud to the class. Remind students to include interesting details when sharing.

Grades 1-2:

1. Have students write, type, or dictate a narrative of sequenced events that they experienced on your walk. Encourage students to use vivid details in their descriptive writing.
2. If time allows, have students illustrate or share their narratives.

Special Needs Students

Some students may require an assistant.



Jump Up, Scrunch Down

Grade K–2

Lesson Summary

Students will use body movements to demonstrate their ability to identify nouns, verbs, verb tenses, adjectives, and adverbs as the teacher reads a paragraph aloud.

This lesson works equally well with a paragraph or passage from a favorite or familiar book and can be applied to any part of speech.

Objectives

Students will:

- * Identify nouns and verbs.
- * Identify adjectives and adverbs.
- * Identify regular and irregular verb tense.

Materials

- * Jump Up paragraphs (below)
- * Two marking cones (to keep students aligned)

Procedure

Outside:

1. Gather students in a straight line from left to right between the cones, facing you.
2. Explain that you will be reading a paragraph to them and that will respond to certain types of words that you read with a body movement. For example, if you are using the noun/verb paragraph, students will Jump Up when they hear a noun, and Scrunch Down when they hear a verb.
3. Read the paragraph slowly, giving students time to respond, or possibly offer an up or down hand signal if they need a few hints to get started. Praise students when most of the group responds quickly with a correct movement. Allow students to try the paragraph again, challenging them to be quicker and more accurate with their responses.

Common Core Standards

English Language Arts

CCSS.ELA-LITERACY.L.K.1.B

Use frequently occurring nouns and verbs.

CCSS.ELA-LITERACY.L.1.1.E

Use verbs to convey a sense of past, present, and future (e.g., Yesterday I walked home; Today I walk home; Tomorrow I will walk home).

CCSS.ELA-LITERACY.L.2.1.E

Use adjectives and adverbs, and choose between them depending on what is to be modified.

**Inside:**

1. Lead the class in creating a story about your recent outdoor lesson. Write the story on the board as you create it.
2. When the story is complete, have student volunteers to the board to demonstrate their ability to identify specific parts of speech, or have each child write a list of specific parts of speech from the story on paper.

Special Needs Students

Students may require the help of an assistant or may need to be assigned the important role of teacher helper to watch the other students' responses during the physical activity.

Jump Up paragraph for **Nouns** and *Verbs*

My **family** once traveled to **Niagara Falls, New York**. It *felt* like a long **trip**. My **dad** *drove*. My **mom** *served* **snacks** and *taught* us fun travel **games**. My younger **brother** mostly *slept*. When our **family** *arrived*, we all *rested* at our **hotel** and then *started* out on our **adventure**. **Sights** *filled* our **eyes**, and **sounds** *filled* our **ears**. The **waterfall** *roared* like **thunder booming**. When our **group** *rode* a **boat** beneath the **falls**, the crashing **water** *sprayed* us all over. **Niagara Falls** *showed* us that **adventures** *rock*!

Jump Up paragraph for **Past** and *Future Tense Verbs*

One day Pete the Pup **had run** away from his boy and **had become** lost. Pete **said** to himself, "I *will find* my way back home!" The puppy **wandered** around, sniffing the ground for the smell of his boy. "When *shall I find* my way home?", **wondered** Pete. Pete **listened** hard for the sound of his boy. "Maybe my boy *will whistle* for me like he does," **hoped** the pup. Just then, Pete the pup **heard** a voice calling his name over and over. Pete **ran** to his boy and **licked** his face as if to say, "I never *will run* away from you again!"

Jump Up paragraph for **Adjectives** and *Adverbs*

Horses are **amazing** animals. They are **beautiful** creatures and can run *swiftly* on their **long** legs. Horses are colored *differently* depending on their **specific** breed. Horses behave *gently* with their young, and with **kind** humans. The **powerful** horse has been *faithfully* helping humans for many years, carrying us on their **strong** backs to help us travel *quickly* and *safely*. The **sturdy** horse *easily* pulls our **heavy** wagons and *steadily* plows our **family** farms. Horses *naturally* help make **happier** humans!



I Think

Grade 3–5

Lesson Summary

Students will use technology to research a ski area and write an opinion about how that ski area affects the economy of the town in which it is located. Using at least one fact from their research, students will design a poster about the ski area they researched and will produce three fact cards to accompany the poster. Students will then present their posters, and the fact cards will be used in a review challenge.

Objectives

Students will:

- * Use technology and other resources to research a topic.
- * Use three sources of information, including two websites.
- * Write a one-page opinion essay.
- * Use appropriate writing conventions and cite their sources.
- * Create a poster and fact cards.

Materials

- * Poster board
- * Markers or colored pencils
- * Construction paper
- * Index cards
- * Large paper clips

Teacher Notes

1. Students will work in pairs or groups of three. You may wish to determine partners or groups ahead of time.
2. Prepare a list of ski areas. Either assign each pair/group a ski area to research or cut the list into strips for students to draw at random.
3. Find and post websites that may help students with their research.

Common Core Standards

English Language Arts

CCSS.ELA-LITERACY.L.3.2, 4.2, 5.2

Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

CCSS.ELA-LITERACY.W.3.1, 4.1, 5.1

Write opinion pieces on topics or texts, supporting a point of view with reasons.

CCSS.ELA-LITERACY.W.3.7, 4.7, 5.7

Conduct short research projects that build knowledge about a topic.



Procedure

Inside:

1. Either have each pair/group draw a ski area at random or inform each pair/group which ski area they will be researching.
2. As a class, brainstorm ideas for researching unfamiliar topics.
3. Provide time for students to do online research to find the following information:
 - a. History of the ski area
 - b. Number of skiers at the ski area for the past three years
 - c. Number of people employed by the ski area
 - d. The ski area's earnings per year for three years
 - e. Advantages and/or disadvantages of the ski area to the community
4. Be sure students use three sources, including two websites, for their research.
5. Review the process of writing an opinion piece.
6. Have each student write an essay about why the ski area they researched is or is not important to the community in which it is located.
7. Have each pair/group create a poster about their researched ski area that highlights one fact. For example, if the ski area has a new ski lift, students may include that in their poster.
8. Have students create and clearly print three fact cards about their ski area using index cards.
9. Have students present their poster and facts to the class orally.

Outside

1. Hang posters outside far enough away from the start location to make for an active game. Attach a large paper clip to each poster.
2. Collect all fact cards and place in a container.
3. Have each student draw a fact card. Once everyone has a card, have the students run or snowshoe to the posters and match the fact card to the correct ski area poster by fastening it with the paper clip.
4. When all cards have been attached to the posters, have students determine if the cards match the correct poster.
5. Discuss results.

Special Needs Students

Some students may need the help of an assistant.



Let's Discuss It

Grade 3–5

Lesson Summary

Students will enjoy a brisk walk outdoors, stopping at points of interest to find interesting topics and subjects that inspire discussion. Students will then practice and demonstrate their discussion skills.

Objectives

Students will:

- * Follow rules for discussion.
- * Pose and respond to questions to clarify information.
- * Make comments that contribute to the discussion.
- * Link comments to the remarks of others.

Materials

- * Clipboard
- * Pencil

Procedure

Outside:

1. Be sure your class is bundled up, and then take them outside to line up for some warm-up stretches (i.e. touch your toes, raise your hands high over your head, do some squats). Explain that the class is going on a fast-paced walk and will be stopping now and then to ask questions about what the students are seeing and doing and to have discussions about their responses.
2. Review the rules of discussion (i.e. good listening, one voice at a time, stay on topic).

Common Core Standards

English Language Arts

CCSS.ELA-LITERACY.SL.4.1.B

Follow agreed-upon rules for discussions and carry out assigned roles.

CCSS.ELA-LITERACY.SL.4.1.C

Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.

CCSS.ELA-LITERACY.SL.3.1.B

Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).

CCSS.ELA-LITERACY.SL.3.1.C

Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.

CCSS.ELA-LITERACY.SL.5.1.B

Follow agreed-upon rules for discussions and carry out assigned roles.

CCSS.ELA-LITERACY.SL.5.1.C

Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.



3. Walk for five minutes or until you find a point of interest, stop the group, and ask what your students see, hear, smell, and feel. Record several students' responses.
4. Choose a subject from the student responses that you think would encourage discussion. Ask students for comments that connect to the subject and to the responses of others.
5. Repeat as time allows.

Inside:

1. Wrap up any discussions that you felt were unfinished outside.
2. Have a discussion on the strengths and weaknesses of the students' discussion skills.

Special Needs Students

Some students may need the help of an assistant.





Descriptive Writing

Grade 6–8

Lesson Summary

This lesson is designed to follow the Science of Sledding and has students write a descriptive essay about their sledding experience.

Objectives

Students will:

- * Use the writing process to write a descriptive essay.
- * Incorporate details and elements of descriptive writing.

Procedure

1. As a class, discuss the elements of descriptive writing. Stress these four strategies:
 - a. Using details in the order they occurred or were observed;
 - b. Using details in the order of the most important to the least significant;
 - c. Using details in the order of the most noticeable to the least obvious; and,
 - d. Using details that describe an object's setting.
2. Discuss elements of descriptive writing and tools for improving descriptive writing:
 - a. Adjectives: “descriptive words” that describe nouns and pronouns by telling what kind, which one, or how many;
 - b. Adverbs: used to describe verbs, adjectives, or other adverbs by telling where, when, how, or how often; and
 - c. Prepositions: used to show the connection between nouns/pronouns and other parts of the sentence.

Common Core Standards

English Language Arts - Writing

W.6.4, W.7.4, W.8.4

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

W.6.5

With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

W.7.5, W.8.5

With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.

3. Instruct students to write a descriptive essay about their sleds and their experience testing out the sleds on the snow. Encourage them to be creative and use a strong writing voice. Explain that this will be their first draft. This portion of the assignment could be done in class or taken home as homework.
4. Have students work in pairs and proofread/edit each other's work. Stress that students should give feedback on correct grammar and spelling as well as effective use of descriptive words. Have them work together to come up with stronger descriptive words to improve their writing voices and enhance their essays.
5. Instruct students to write a final draft of their essays.

Special Needs Students:

The assignment may be shortened to focus on fewer elements of descriptive writing. Voice-to-text software could be used for students with minimal literacy skills.

LEARN! EXPLORE!
MOVE!





Express Yourself

Grade 6–8

Lesson Summary

In this activity, students will practice and demonstrate their skills identifying and naming synonyms and antonyms by participating in two activities. Once inside, students will discuss the merits and challenges of each activity.

Objectives

Students will:

- * Demonstrate knowledge of synonyms and antonyms.
- * Follow rules for discussion.
- * Pose and respond to questions to clarify information.
- * Make comments that contribute to the discussion.
- * Link comments to the remarks of others.

Materials

- * Cones (for marking boundaries)
- * Clipboard
- * Pencil
- * Class list (to record responses)
- * Stopwatch

Procedure

Activity 1

Outside:

1. Gather your students in a circle, standing one arm's length apart.
2. Explain to your students that they will be playing Synonym Scramble. You will read a word from the Synonym and Antonym list (below), and the first student must respond with a synonym.
3. Once a student responds successfully, they must then run clockwise around the circle and back to their spot before the next student gets a turn.

Common Core Standards

English Language Arts

[CCSS.ELA-LITERACY.SL.6.1](#)

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

[CCSS.ELA-LITERACY.SL.7.1](#)

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.

[CCSS.ELA-LITERACY.SL.8.1](#)

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.

4. Explain that the total activity will be timed. Ask for predictions on the number of minutes it will take to complete the activity.
5. Move around the circle until all students have had a turn, praising imaginative adjectives. Announce and record the elapsed time.

Activity 2

1. Explain that the next activity is called Antonym Action. Gather your students into a line, one behind the other. Move two cones 12-15 feet from the first student in line.
2. Explain that you will call out a word and ask one student at a time for an antonym for that word. When each is successful, they will run to the cones and wait for their classmates.
3. Remind students that you will be timing how long it takes the class to complete the activity.
4. Move through the line until all students have had a turn, praising amazing antonyms.
5. Announce and record the elapsed time.

Word	Synonym	Antonym
begin	start	end
best	greatest	worst
big	large	small
fast	quick	slow
friendly	kind	mean
happy	joyous	sad
correct	right	wrong
ill	sick	healthy
near	close	far
difficult	hard	easy
exit	leave	enter
alike	same	different
false	untrue	true
last	final	first
under	below	over
artificial	fake	natural
good	fine	bad
uninteresting	boring	exciting
infant	baby	adult
connect	join	disconnect
lift	raise	lower

Word	Synonym	Antonym
succeed	win	lose
soiled	dirty	clean
wet	damp	dry
cold	chilly	hot
illuminated	light	dark
humorous	funny	serious
hushed	quiet	noisy
ancient	old	new
delicious	tasty	foul
legible	readable	illegible
trustworthy	honest	dishonest

Inside:

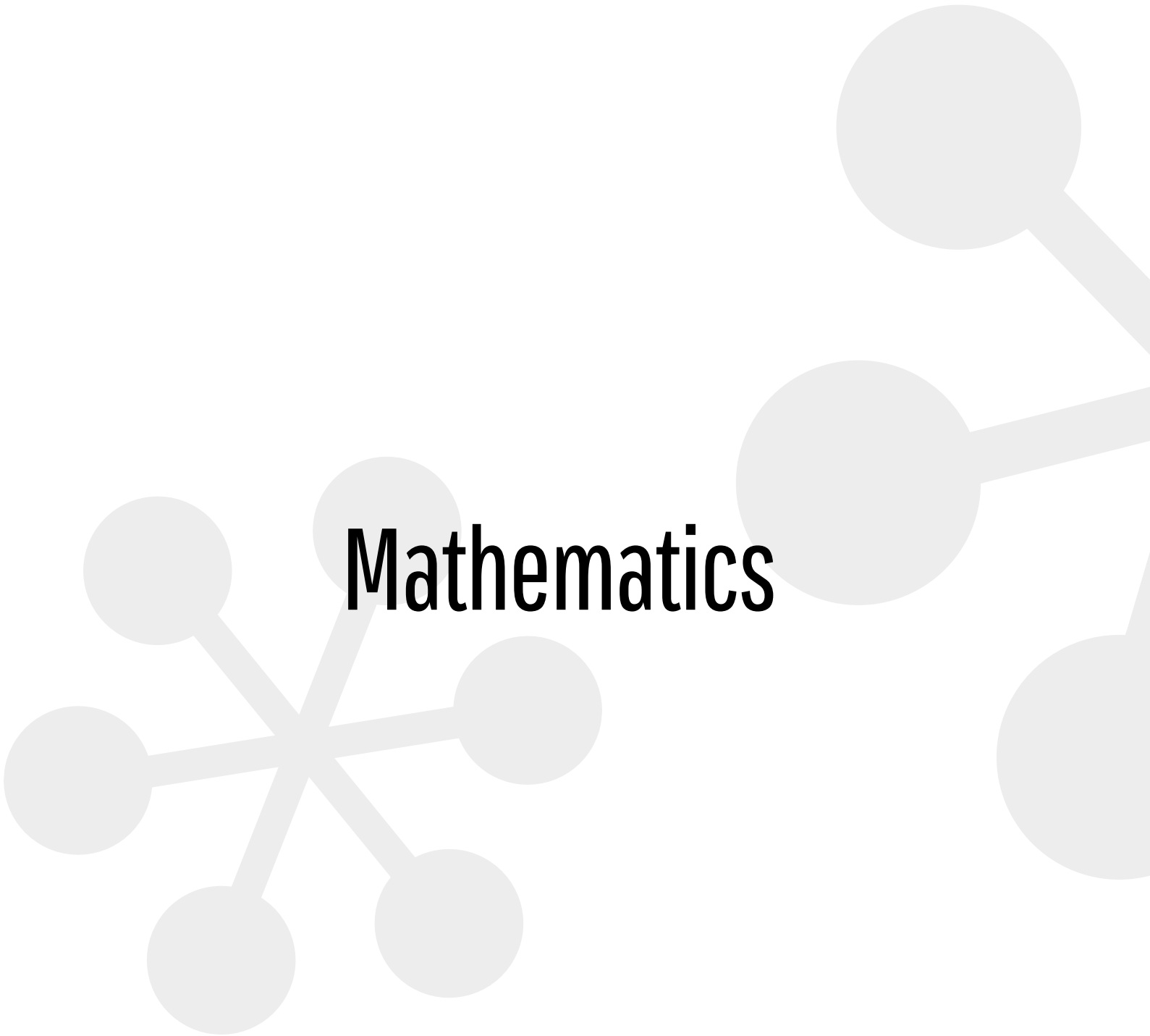
1. Lead a discussion about which activity was the most fun, the most challenging, and/or the most active. Discuss why one activity took longer than the other.
2. Remind students to follow the rules of discussion and to link their comments to the remarks of others.

Special Needs Students

The help of an assistant may be needed. Students could be assigned the role of helpers during the physical activity, announcing when students complete their circle or high-fiving students as they cross the finish line.



Mathematics





Cool Patterns

Grades Pre-K–2

Lesson Summary

After students have had experience with patterns using manipulatives, students will go outside and take turns forming, identifying, and replicating patterns in the snow.

Objectives

Students will:

- * Recognize patterns
- * Create a variety of patterns
- * Replicate and extend patterns when a pattern is provided

Materials

- * Small objects that demonstrate patterns
- * Outdoor winter clothing
- * Objects to make imprints in snow—be creative!
- * Food coloring (optional)

Procedure

Inside:

1. Review the concept of patterns and give examples using blocks or other objects to demonstrate.
2. Assign partners or have students pick one other person to work with. Give directions for outside activity: the class is going outside to make patterns in the snow.
3. Get dressed for outdoors.

Outside:

1. Have students work together in pairs to make patterns in the snow. If the snow is fresh, have students stomp out different patterns or make imprints with objects (boots, mittens, balls, etc.) in the snow. If there's no snow, have students use items from the classroom to create a variety of patterns instead. After students have made a couple of patterns, regroup as a class and discuss the patterns they made.

Common Core Standards

Mathematics

Pre-K–2: No performance indicators are indicated for pattern recognition, formation, or extension.





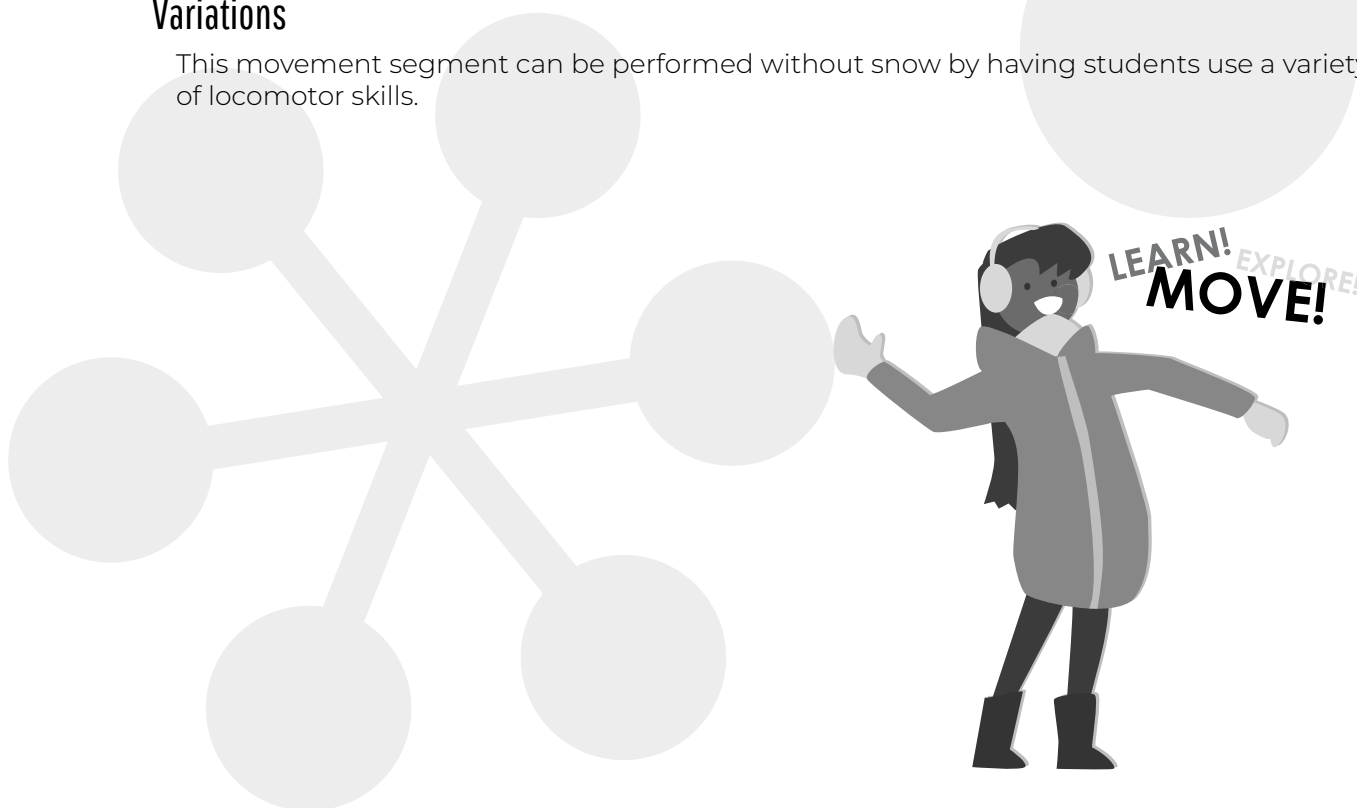
2. Group two pairs of two together to create groups of four. One pair will create a pattern, and the second pair will try and replicate the pattern. Run through this activity several times, giving both pairs a chance to make a pattern and guess the type of pattern.
3. Now add an element of movement. Explain to students that they are now going to be a part of the pattern, but this time it is a moving pattern. Start out having one student make a snow angel (students need to keep moving or the pattern will be broken!), have the next student march in place, have the next student be a snow angel, and so on. Continue until whole class is part of this moving pattern. Run through this exercise several times, allowing students to choose or create different movements for the pattern.

Special Needs Students

Students with physical disabilities may need to sit in the snow during this activity to make their patterns. While creating moving patterns, be sure that these students participate with a motion they can perform.

Variations

This movement segment can be performed without snow by having students use a variety of locomotor skills.





Measure Me!

Grades K–2

Lesson Summary

Students explore the attributes of measurement by reading and comparing measurements. In the first activity, students will guess their height in inches and then will go outside to determine their actual heights using snow angels. In the second activity, the students become units of measurement and learn to determine the difference between two measurements.

This is a great lesson for employing the help of parent volunteers with additional tape measures and yardsticks in hand. The more help taking measurements the students have, the faster the results can be gathered.

Objectives

Students will:

- * Correctly measure the length or height of objects.
- * Directly compare the length or height of two objects.
- * Predict their height and then compare to their actual height.
- * Use teamwork and critical thinking to successfully perform tasks.

Materials

- | | |
|-----------------|--------------|
| * Height chart | * Clipboards |
| * Rulers | * Paper |
| * Yardsticks | * Crayons |
| * Tape measures | * Pencils |

Common Core Standards

Mathematics

CCSS.MATH.CONTENT.K.MD.A.2

Directly compare two objects with a measurable attribute in common to see which object has “more of”/“less of” the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.

CCSS.MATH.CONTENT.1.MD.A.1

Order three objects by length; compare the lengths of two objects indirectly by using a third object.

CCSS.MATH.CONTENT.2.MD.A.4

Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard-length unit.



Procedure

Activity 1

Outside:

1. Gather the class. Discuss the concept of measurement in general. Discuss the concepts of height and length, and explain that they will be explored in the activity.
2. Remind students that when it comes to people, height is not a competition. It's just another attribute like eye color or singing ability.
3. To give students a basis for comparison, show them a yard stick and remind them that it is 36 inches long. If you like, you could also share your own height in inches as a second basis for comparison.
4. Have students predict their own height in inches. Record student predictions for use back inside the classroom.
5. **Option 1:** If you have an available snowy place, have each student make a snow angel. Have students stay with their angel, doing leg lifts while they wait their turn, until each angel can be measured. To measure, lay a yardstick at the feet of the snow angel and hold the tape measure perpendicular to the middle of the yardstick. Have the student measure by pulling the tape to the top of the snow angel's head and then coming back to the bottom of the snow angel to read the measurement on the tape. Record results in inches for easy comparison.
Option 2: If there is no available snow, hang a height chart in an accessible place, and have students line up a short distance away. One student at a time will then run to the chart and have their height measured and recorded by the teacher. While the teacher is measuring one student, the others could do five jumping jacks, clap their hands, or any other safe exercise. Record measurements in inches. After being measured, each student will then run to the end of the line.

Inside:

1. Reveal your students' predictions and heights.
2. Have students solve and discuss the differences between their predictions and their actual heights.

Going Further

For homework, assign your students the task of measuring the heights of their family members, or their families' snow angels, including pets.

Activity 2

Outside:

1. Break your entire class into three groups, one small (Group A), one medium (Group B), and one large (Group C). Record the number of students in each group. Be sure that the size differential in each group is distinct, for comparison purposes.

2. Explain that the students will be the actual units of measurement in the activity. Have the three groups form three parallel lines facing you. Students will form three lines by standing one behind the other with their hands on the shoulders of the person in front of them.
3. Ask students which lines are longer or shorter than the others. Ask how much longer or shorter one line is than another, and how they know. Discuss the number of students in each line and how we can use numbers to compare the length or height of objects.

Inside:

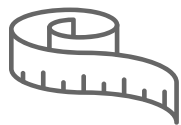
1. Create a bar graph using the data from the lines that your students formed outside.
2. Use the graph to discuss longer and shorter and how to compute the difference between two heights or lengths.

Special Needs Students

Modifications may include the help of an assistant, a student being assigned a role as Teacher Helper to call other students up for their turn, or a student being assigned a role as Data Collector.

LEARN! EXPLORE!
MOVE!





Equipment Measure Up

Grades 3-5

Lesson Summary

Students will take measurements of outdoor sports/play equipment in inches, feet, and yards to demonstrate their ability to measure in these units. Then, using the Equipment Measure Up Data Sheet, students will record measurements and find the area of each rectangular item using the most appropriate unit of measurement. Lastly, students will go outside and measure outdoor objects and spaces using non-standard units of measurement (i.e. boots, skis, mittens, etc.).

Objectives

Students will:

- * Measure items in inches, feet, and/or yards.
- * Record measurements.
- * Find area of rectangular items.

Materials

- * Outdoor recreation equipment (skis, snowboard, sled, boots, ice skates, mittens, etc.)
- * Measuring tapes (English system)
- * Equipment Measure Up Data Sheet (following page)
- * Masking tape (optional)

Common Core Standards

Mathematics

No performance indicators are stated for linear measurement at this grade span.

Grade 3:

Geometric Measurement

3.MD.C.7

Relate area to the operations of multiplication and addition.

3.MD.C.7b

Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.



Procedure

Inside:

1. Introduce inches, feet, and yards as units of measurement. Demonstrate taking measurements in all units. Ask the class, "What are different things we measure in inches? In feet? In yards?"
2. As a class, have students practice taking measurements of common objects in the classroom, i.e. height of a chair, length of a pencil, width of the chalkboard, etc.
3. Introduce each piece of outdoor recreation equipment that will be measured. Point out where students will measure for length and width. Note: It may be helpful to put masking tape along the line students should measure.
4. Set up the equipment in stations around the classroom. Have students circulate around the room in groups of two, measuring the equipment in inches, feet, or yards and recording the data on the Equipment Measure Up Data Sheet.
5. Challenge more advanced students to find the approximate area of rectangular objects measured in inches, feet, or yards.
6. Go over the findings as a class.

Outside

1. Suit up for some outdoor fun and bring the equipment outdoors.
2. Measure outdoor items (i.e. the sidewalk in front of the school, the bus circle, playground equipment, etc.) using the outdoor equipment as non-standard units of measurement (i.e. boots, sleds, skis, etc.). Record the answers on the data sheet.
3. Challenge more advanced students to find the approximate area of rectangular figures measured in these non-standard units.
4. Go over the findings as a class.

Special Needs Students

The lesson may be adapted by requiring fewer items to be measured, or requiring measurement in only one unit (i.e. inches only). Students with fine motor issues could use a ruler with a cork backing to minimize its slipping during measurement.





Equipment Measure Up Data Sheet

Name _____ Date _____

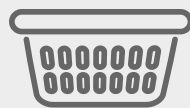
Directions

Playing outside in the winter is fun! Let's practice our measuring skills by finding the length and width of common outdoor equipment in inches, feet, or yards. Use the measurement that is most appropriate. An example has been done for you. Round to the nearest unit.

Then find the approximate area of each rectangular item using the most appropriate unit of measure. Take the equipment outdoors and do some outdoor measuring.

Type of Equipment	Length			Width			Area
	Inches	Feet	Yards	Inches	Feet	Yards	Inches, feet, or yards
boot	7			3			21 square inches

Outside Item to be Measured	Unit of Measurement	Length	Width	Area
Front Door	Boot	12	5	60 square boots



Bases and Baskets

Grades 3–5

Lesson Summary

Students will demonstrate their multiplication and division skills while involved in outdoor base running and ball throwing activities.

Objectives

Students will:

- * Demonstrate fluency in multiplication and division.
- * Demonstrate understanding of factors and multiples.
- * Use strategies to solve mathematical equations.

Materials

- * 2 laundry baskets (or other large, open containers)
- * Four traffic cones
- * 2 large pieces of posterboard/cardboard and crayons
- * Snowballs or a dozen small rubber balls
- * Snowshoes (optional)
- * Clipboards and pencils for calculations (optional)
- * Grade Level Questions (below)

Procedure

Outside:

1. Choose a rectangular “playing field” and have students line up side-by-side along one of the long sides of the field, facing the field.
2. Divide the class into two teams by splitting the line down the middle.
3. Give the teams two minutes to decide on a team name.
4. Add team names to your Teacher Scoreboard.

Common Core Standards

Mathematics

CCSS.MATH.CONTENT.3.OA.C.7

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

CCSS.MATH.CONTENT.4.OA.B.4

Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.

CCSS.MATH.CONTENT.5.NBT.B.5

Fluently multiply multi-digit whole numbers using the standard algorithm.

- *****
5. Choose one member of each team to make the team sign/scoreboard. Remind students to write their team's name at the top of the cardboard, leaving room for hashmarks on a scoreboard section at the bottom.
 6. Place 4 cones 10-12 feet apart, set up like a baseball diamond, with home plate closest to the line of students.
 7. Place the empty basket at home plate. If "snowball snow" is not available, place the second basket of rubber balls at third base.
 8. Explain to students that they will be playing "Bases and Baskets," and that they will earn points by correctly answering math questions, then by traveling around the cones to third base, and finally by throwing a ball into the empty basket at home plate.

If their math answer is correct, they earn **two points** for their team. If their first answer is *incorrect*, they may ask a teammate for help with a new answer, try that new answer, and if correct, earn **one team point**. If not correct, that team earns 0 points. Once the first student has provided a correct answer he will snowshoe (or hop or run) around the cones to third base and STOP. The student will then make a snowball (or grab a ball from the basket), and attempt to throw it from third base into the basket at home plate, for **two more team points**. The student will then run home and record his total points on the scoreboard using hashmarks.

9. Begin asking the students questions, one at a time, alternating teams. For grades 4 and 5, you may choose to allow clipboards and pencils for use in computation.

Note: Be sure to mark each student's score on the Teacher Scoreboard to keep things official.

10. When all students have had a turn, tally and then announce the team scores, and congratulate the teams.

Inside:

Discuss the math strategies that the students used successfully during this activity.

Special Needs Students

Some students may require the help of an assistant, or to participate as scoreboard supervisor or basket referee.



Grade 3 Questions

$12 \times \underline{\quad} = 60$ (5)	$5 \times \underline{\quad} = 15$ (3)	$3 \times \underline{\quad} = 24$ (8)	$\underline{\quad} \times 8 = 80$ (10)
$\underline{\quad} \times 7 = 77$ (11)	$9 \times \underline{\quad} = 54$ (6)	$\underline{\quad} \times 12 = 48$ (4)	$7 \times \underline{\quad} = 56$ (8)
$\underline{\quad} \times 10 = 50$ (5)	$\underline{\quad} \times 2 = 16$ (8)	$9 \times \underline{\quad} = 99$ (11)	$\underline{\quad} \times 5 = 25$ (5)
$4 \times \underline{\quad} = 36$ (9)	$9 \times \underline{\quad} = 27$ (3)	$\underline{\quad} \times 6 = 36$ (6)	$4 \times \underline{\quad} = 12$ (3)
$\underline{\quad} \times 7 = 14$ (2)	$7 \times \underline{\quad} = 28$ (4)	$5 \times \underline{\quad} = 35$ (7)	$7 \times \underline{\quad} = 49$ (7)
$3 \times \underline{\quad} = 36$ (12)	$\underline{\quad} \times 6 = 72$ (12)	$8 \times \underline{\quad} = 64$ (8)	$5 \times \underline{\quad} = 45$ (9)
$6 \times \underline{\quad} = 24$ (4)	$4 \times \underline{\quad} = 28$ (7)	$\underline{\quad} \times 12 = 84$ (7)	$\underline{\quad} \times 8 = 48$ (6)

Grade 4 Questions

Reuse questions with multiple answers until all answers are used.

A) Name a factor pair of:

- 12 Ans. (1,12), (2,6), (3,4)
- 27 (1,27), (3,9)
- 20 (1,20), (2,10), (4,5)
- 17 (1,17) prime
- 44 (1,44), (2,22), (4,11)
- 18 (1,18), (2,9), (3,6)
- 42 (1,42), (2,21), (3,14), (6,7)
- 36 (1,36), (2,18), (3,12), (4,9), (6,6)

B) Name a factor (except 1) common to the following pair of multiples:

- 22 and 33 - Common Factor is 11
- 9 and 12 - CF 3
- 20 and 30 - CFs 5,10
- 8 and 12 - CFs 2,4
- 15 and 20 - CF 5
- 12 and 18 - CFs 2,3,6
- 6 and 18 - CFs 3

Grade 5 Questions

$20 \times 240 = \underline{4800}$	$700 \times 50 = \underline{35,000}$	$130 \times 30 = \underline{3,900}$	$50 \times 800 = \underline{40,000}$
$12 \times 600 = \underline{7200}$	$250 \times 40 = \underline{10,000}$	$400 \times 60 = \underline{24,000}$	$30 \times 120 = \underline{3,600}$
$17 \times 200 = \underline{3,400}$	$30 \times 150 = \underline{4,500}$	$160 \times 20 = \underline{3,200}$	$19 \times 200 = \underline{3,800}$
$360 \times 20 = \underline{7,200}$	$600 \times 90 = \underline{54,000}$	$110 \times 90 = \underline{9,900}$	$15 \times 400 = \underline{6,000}$
$150 \times 30 = \underline{4,500}$	$80 \times 300 = \underline{24,000}$	$45 \times 200 = \underline{9,000}$	$300 \times 90 = \underline{27,000}$
$400 \times 70 = \underline{28,000}$	$350 \times 20 = \underline{7,000}$	$40 \times 800 = \underline{32,000}$	$90 \times 400 = \underline{36,000}$
$80 \times 700 = \underline{56,000}$	$23 \times 300 = \underline{6,900}$	$32 \times 200 = \underline{6,400}$	$120 \times 70 = \underline{8,400}$



Teacher Scoreboard

Team _____	Team _____
<div></div>	<div></div>
Total:	Total:



Moving Mathematics!

Grades 6–8

Lesson Summary

Many forms of winter recreation and exercise we enjoy today were previously used for transportation. This lesson explores the speed of various forms of winter transportation. Students will participate in several different kinds of winter transportation (including but not limited to snowshoeing, cross country skiing, and walking) and calculate the speed of each. Data collected will be put into table format and analyzed to find the mean, median, mode and range. Using the mean speed, each student will calculate the time needed to travel to school using the various forms of transportation.

Objectives

Students will:

- * Record timed results.
- * Tabulate data.
- * Calculate mean, median, mode, and range.

Materials

- * Moving Mathematics Worksheet
- * Snowshoes
- * Cross country skis
- * Snow boots
- * Measuring tape
- * Stopwatch
- * Local topographic map or internet mapping program

Common Core Standards

Mathematics

Statistics & Probability

6.SP.B.5c (*partially meets*)

Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data was gathered.



Procedure

Inside:

1. Introduce or review the calculation of speed ($\text{speed} = \text{distance} / \text{time}$) with your class. Discuss and estimate speeds of various forms of transportation.
2. Introduce or review the concepts of mean, median, mode, and range.
3. Explain the activity's procedure: The class is going to conduct an experiment to see how long it would take to get to school using alternative forms of transportation such as snowshoes, cross country skis, or walking in the snow. Students will use the mean to determine the time it takes to get to school via snowshoes, cross country skis, or simply by walking in snow boots.
4. Divide the class into three groups—one group will snowshoe, one group will cross country ski, and one group will walk in snow boots. Enlist a volunteer to record time data. Have students dress for the outdoors.

Outside:

1. Have students complete a quarter- or half-mile course using their assigned form of transportation to gather time data. Note: You may want to run three time trials to ensure each student has a chance to try snowshoeing, cross country skiing, and walking.

Inside:

1. Tabulate data and complete Moving Mathematics worksheet individually or in small groups. Use local topographic maps or an internet mapping program to determine how far each student lives from the school.
2. Discuss findings as a class. How much longer would it take to travel to school by snowshoes, cross country skiing, or walking rather than riding the bus? What time would you have to leave your house in the morning to make it to school on time using these alternative forms of transportation? How would this impact your life?

Special Needs Students

Students with mathematical disabilities may use data collection software when completing calculations and may also use whole numbers rather than decimals. Students with physical disabilities may participate in this activity over a shorter distance or may act as a timekeeper for their group.

LEARN! EXPLORE!
MOVE!

Moving Mathematics Data Sheet

Name _____ Date _____

1. Using the time data collected, calculate and record the mean, median, mode, and range in the table below.

Type of Transportation	Mean	Median	Mode	Range
Snowshoeing				
Cross Country Skiing				
Walking				

2. Speed = _____ / _____

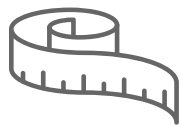
3. Using the mean, calculate and record the speed of each form of transportation in the table below:

Type of Transportation	Speed (miles/minute)
Snowshoeing	
Cross Country Skiing	
Walking	

4. How far do you live from school? Record your answer in miles.
5. Complete the table below to determine how long it would take you to get to school using alternative forms of transportation.

Type of Transportation	Mean	Median	Mode	Range
Snowshoeing				
Cross Country Skiing				
Walking				

6. How do the times above compare to how long it currently takes you to get to school?



Plotting New Heights

Grades 6-8

Lesson Summary

Students will predict their height in inches and take height measurements. Sixth and seventh grade students will determine the mean height of different data sets and compare to the mean of the whole class. Eighth grade students will plot the prediction and actual height measurement data on a graph for comparison.

This is a great lesson for employing the help of parent volunteers with additional tape measures and yardsticks in hand. The more help with taking measurements you have, the more quickly results can be gathered.

Objectives

Students will:

- * Collect and compare data.
- * Find the mean of data sets.
- * Accurately graph and label data.

Materials

- * Height charts (and a way to hang them)
- * Class list for recording data

Common Core Standards

Mathematics

CCSS.MATH.CONTENT.6.SP.B.5

Summarize numerical data sets in relation to their context, such as by: CCSS.MATH.CONTENT.6.SP.B.5.B Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.

CCSS.MATH.CONTENT.7.SP.A.1

Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

CCSS.MATH.CONTENT.8.SP.A.1

Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

Procedure:***Inside:***

1. Before heading outside, ask your students to predict their own height in inches (for easy comparison later), and record those predictions on your class list.

Outside:

1. Discuss linear measure and when and how it is used. Choose a few measurable objects for students to predict the measurement, and then take the actual measurement of them. Discuss in what applications precise measurement is extremely important. Explain that during the activity the class would now be gathering measurement data to compare to their height predictions.
2. Remind students that when it comes to people, height is not a competition, just another attribute like eye color or singing ability.
3. Hang your height chart(s) in a flat, easily accessible area.
4. Have students line up a distance from the charts. One at a time, have students run up to the chart while the rest of the class performs jumping jacks or another exercise of your choice, alternating with rest periods. Measure and record each student's actual height (in inches) beside his predicted height. After each student has been measured, they can go to the end of the line and join the exercises until all students have been measured.

Grade 6–7***Additional materials:***

- * Calculators
- * 0.5 cm graph paper

Inside:

1. List the students' predicted and actual heights on the board. Discuss why the predicted data differs from the actual data. Discuss when and why having accuracy when measuring a person's height is important.
2. As a class, find the average actual height of your whole class using the data set on the board.
3. Break the actual height data into three relatively equal sample populations by circling them on the board. Break your class into three equal groups and assign them one sample population. Have each group find the average height of their sample population. Compare the sample populations' average heights to the whole class' average height.
4. Discuss sample populations and their accuracy to whole populations.

Grade 8

Additional Materials:

- * .05 cm graph paper
- * Colored pencils
- * Rulers

Inside:

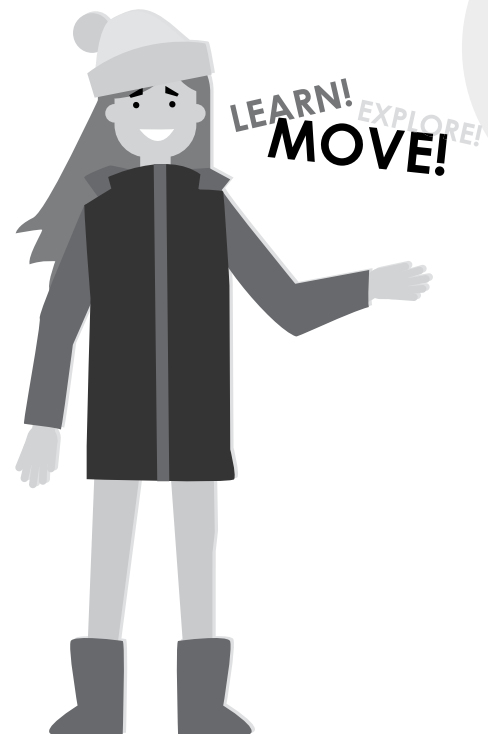
1. Write the students' predictions and actual heights on the board. Discuss how accurate their predictions were.
2. Provide students with graph paper, colored pencils, and rulers. Explain to students that they will create a scatterplot graph by plotting the class's predicted height data (graphed in red) and actual height data (graphed in blue) on the same graph.
3. Have students hold their graph paper vertically. Have students create and then label the vertical axis of the graph Height in Inches, and the horizontal axis of the graph Students (A, B, C, etc.). Explain that in order to plot their data points from smallest to largest, the students will first need to list both the predicted and actual heights in order from smallest to largest.

Challenge:

Find the mean, median, and mode of your scatter plots and discuss the results.

Special Needs Students

Modifications may include the help of an assistant, a student being assigned a role as Teacher Helper to call other students up for their turn, or a student being assigned a role as Data Collector.





Science



Life is Wild

Grades K–2

Lesson Summary

During an outdoor walk, students will engage in discussions about the diversity of animal habitats, what plants and animals need, animal adaptations to cold weather, and man's mimicry of those adaptations. Students will then play a running game to demonstrate what they have learned.

Objectives

Students will:

- * Recognize and identify the diversity of the local habitat.
- * Demonstrate knowledge of animal adaptations to cold climates.
- * Identify human products that mimic animal adaptations to cold climates.

Materials

- * Large "YES" sign
- * Large "NO" sign
- * 10 cones (to mark sidelines and center)
- * Game questions (below)

Resources

- * https://www.coolantarctica.com/Antarctica%20fact%20file/science/cold_all_animals.php
- * https://www.canr.msu.edu/news/animal_adaptations_for_winter
- * Winter Adaptations video (3 minutes):
https://www.youtube.com/watch?v=vfcxLk6QsS&ab_channel=naturalistoutreach

Preparation

Show your students a short video on animal adaptations to cold climates, or discuss the ways that animals survive the cold of winter (i.e. hibernate, migrate, or adapt).

- * **Hibernation:** Hibernation is like a very deep sleep. Animals hide away in a den or burrow. Their body temperature and heart rate slow down. This helps them to save their energy. Hibernating animals wake up in spring when the weather is nicer and there is more food around.
- * **Migration:** When the weather starts to get cold, migrating animals fly or swim to a warmer place where they can find food. Some travel great distances to their destinations.

- ❖ **Adaptation:** Animals that adapt to the cold weather often change their appearance. They grow warmer fur or feathers and sometimes change color. Some animals change color to camouflage themselves against the snow. These animals can find food in winter, even though there isn't much food around.

Game Questions

1. Do all animals need water to survive?
Yes, animals need fresh water for their bodies to function. Water is vital for bodily functions such as regulation of temperature, nutrient uptake, removing wastes, body weight, and health.
2. Do all plants need water to survive?
Yes, plants need water for photosynthesis. Water also helps move nutrients from the soil into the plant.
3. Do plants need food to survive?
No, plants are called producers because they make – or produce – their own food. Their roots take up water and minerals from the ground and their leaves absorb a gas called carbon dioxide (CO₂) from the air. They convert these ingredients into food by using energy from sunlight. The foods are called glucose and starch.
4. Do animals need sunlight to survive?
Yes, because they depend on plants. Also, some cold-blooded animals (reptiles) use the sun to warm their bodies.
5. Are large feet a good winter adaptation for animals?
Yes, it helps them move more easily on top of the snow.
6. Is losing weight a good winter adaptation for animals?
No, animals burn energy to maintain body heat. Therefore, they need to eat more food so they have something to burn to stay warm when it's cold.
7. Can this outdoor winter habitat contain more than 20 types of plants and animals?
Yes. This habitat contains many different plants and animals. Specific examples will vary by location.
8. Are you wearing something that mimics animal adaptation to winter?
Yes. Coats, hats, and gloves are like the fur that keeps an animal warm.

Procedure

Outside:

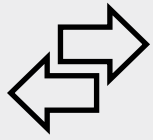
1. Take your students on a short hike, stopping now and then to search for and observe plant and animal life that has found a way to adapt to the winter weather. Discuss the diversity of the plants and animals, what plants and animals need to survive, and the ways that those plants and animals have adapted to life in the winter. Discuss ways the students' winter clothing mimics animal's adaptations.
2. On a level and open space, mark two sidelines, 30 feet apart, using 8 cones. Display a "YES" sign on one sideline and a "NO" sign on the other. Set up two cones halfway between the sidelines to designate where teams will line up for this game.
3. Gather students and explain that they will play a "yes or no" question game.
4. Divide the class into four teams. Explain that each team will get a different question.
5. Have one team at a time line up single-file behind the center cones, facing you, to hear their question.
6. Ask the first team a question, repeat the question, and then say "go!"
7. When you say "go," each member of the team must immediately choose (individually) which answer they think is correct and then run to either the YES sideline or to the NO sideline.
8. When all team members have made it to one of the sidelines, reveal the correct answer, have that team return to you, and discuss the question with the entire class.
9. Repeat with a new question for the next team until all four teams have had a turn or two.
10. Follow up with a short discussion about migration and hibernation as adaptations to cold climate.

Inside:

1. Have students choose an animal that adapts to winter weather.
2. Have students sketch their chosen animal wearing a human product that mimics the animal's adaptation. (For example, a snowshoe hare wearing snowshoes, or a bear in a fur coat).

Special Needs Students

Some students may need the assistance of a peer teammate or an adult.



Move It!

Grades K–2

Lesson Summary

The students will push and pull objects of various shapes, weights, and textures across a smooth and then a snowy surface to learn about friction, force, and resistance. A teacher or assistant will record student observations for later discussion.

This is a great lesson for employing the help of friends and family as volunteers. The more positive guidance that the students have, the more enjoyable and effective the activity will be.

Objectives

Students will:

- * Use hands-on field work to reach scientific conclusions.
- * Understand that an object can only be in motion if a force of push or pull is applied, and that resistance can impede these forces.
- * Explain the results of their field work thoughtfully and with supporting facts.

Materials

- * Plastic shower curtain liner, cut or folded in half
- * 4 rocks (to use as weights to hold down the shower curtain)
- * Twine
- * Duct tape
- * Objects to pull (brick, shoe, blackboard eraser, etc.)
- * Objects to push (wooden blocks including square, rectangle, triangle, and circle)
- * Clipboard, paper, and pencil (to record student observations)

Resources

- * Push and Pull for Kids video (6 minutes):
https://www.youtube.com/watch?v=ZLDUrPaLQWE&ab_channel=HomeschoolPop
- * Forces Can Push or Pull music video (2 ½ minutes):
https://www.youtube.com/watch?v=E-SnC_WKsCg_channel=JackHartmannKidsMusicChannel



Preparation

Securely attach a 3-foot length of twine to each of the “pull” objects that you have chosen with your class, with an oversized loop handle that will fit over hands wearing mittens.

Procedure

Activity 1

Outside:

1. Lay the shower curtain down lengthwise. Be sure to have a snow covered surface parallel to the shower curtain. These are your two sledding “courses.” Secure the corners of the shower curtain with rocks.
2. Explain to students that they will need to extend their arms when pulling, so as not to step on the shower curtain or the snow covered course.
3. Have one student at a time choose an object. Using the twine, they will pull it first across the shower curtain then turn around and pull their object across the snow covered surface to end up where they started.
4. Once each student has had their turn, if time allows, repeat the process, but ask the students to choose a different object than they did in the first round.
5. Ask what students observed during the activity. Remind them to offer observations only for now, not conclusions.
6. Record their observations for later discussion.

Activity 2

Outside:

1. Repeat the same process as Activity 1, but this time have students push wooden blocks of various shapes and sizes first across the plastic and then for an equal distance through the snow.

Inside:

1. Write the students’ observations on the board.
2. Facilitate a discussion where students share the conclusions they drew from the activity. Remind students to explain clearly, stay on point, and back up their conclusions with facts. See discussion questions (below).

Discussion Questions

1. Why were some objects harder to push/pull than others?
Weight, shape, and texture add resistance (gravity and friction).
2. Did it take more force (energy) to push/pull an object across a plastic sheet or through snow? Why?
Snow caused resistance against the object and therefore against the “pulling” force (the student).
3. How does the shape of an object affect the “pushing/pulling” force?
Rougher/smoother shape offers more/less resistance (getting caught on things).

Special Needs Students

Some students may need peer group or adult assistance during the activity.

LEARN! EXPLORE!
MOVE!





"Al" the Snowman

Grades 3–5

Lesson Summary

Students will build snow people and use them to explore the albedo effect, or how the Earth's reflective surfaces play a role in our planet's climate. This is a multi-day activity where students keep a log of the condition of their snow creations.

Objectives

Students will:

- * Hypothesize about the effect that different colored coverings for their snow people will have on their snow people.
- * Make daily observations.
- * Understand the albedo effect and how it plays a role in our planet's climate.

Materials

- * Black (or dark-colored) trash bags
- * White (or clear) trash bags
- * Notebook or data sheet on clipboard
- * Pens/pencils
- * Tape measure, ruler, and/or yardstick
- * Digital camera or phone camera
- * Accessories for decorating snow people (optional)

Background

Albedo is the amount of solar radiation reflected off a surface. The scale ranges from no reflection at all (black surfaces) to complete reflection (white surfaces). Albedo plays a role in the temperature balance of our atmosphere. Areas of the Earth where snow and ice cover the surface reflect the sun's energy, whereas areas of the Earth with darker surfaces absorb more of the sun's energy. As climate change causes more of the Earth's ice to melt, the darker ground beneath the ice that is exposed absorbs more of the sun's energy, which contributes to the heating of the atmosphere and the rising temperature of the Earth.

We've all walked across an asphalt driveway or street barefoot in the summer. That dark surface absorbs a lot of heat. Not only do ice and snow play a factor in surface albedo, but other factors can contribute to heat buildup as well, like more of the Earth's surface being covered in asphalt and dark roofing material rather than vegetation. The types of surfaces and the albedo of those surfaces covering our planet all contribute to the overall climate.

Procedure

Outside:

1. Break the class into groups of two to four students. In their groups, students will build two snow people.
2. Students will measure the height and circumference of their snow people and record those measurements. Students could take a digital photo of their snow people for comparison later.
3. Each group will cover one snowperson with a black trash bag and the other with a white trash bag. Secure trash bags for wind and other weather conditions by using snow, rocks, or other heavy items.
4. After a few hours, students will check in on their snow people by carefully removing the trash bags. They should record any changes observed of each snowperson from their original creation. Be sure to re-secure the trash bags after students make their observations.
5. Students will check in on their snow people once a day for several days, and record how they are changing over time, noting the differences in the changes between those under the dark cover versus the light cover.
6. Students will then hypothesize reasons for the differences in the changes of their snow people over time.

Going Further

1. Students can list Earth's surface types that are more reflective of heat, and surface types that absorb more heat.
2. Students can research what can be done to combat the loss of reflective surfaces such as ice and snow on the Earth's surface.

Special Needs Students

Some students may need the help of a teaching assistant or peer helper.





Making A Weather Report

Grades 3–5

Lesson Summary

Students gather individual weather conditions (including temperature, humidity, wind speed/ direction, and barometric pressure) at stations that have been set up at each corner of a playground or sports field. The students will read and record the information and then compute the wind chill temperature.

This lesson requires a facilitator at each of the four stations, and is a great opportunity to encourage friends and family to join the exploration as volunteers.

Objectives

Students will:

- * Describe the current weather using accurate weather terminology and measurements.
- * Identify and explain the tools and instruments used to gather weather data.
- * Use the data gathered to calculate the wind chill temperatures.
- * Make an individual data-based poster showing current weather conditions.

Materials

- * Index cards
- * Small pencils
- * Thermometer
- * Hygrometer
- * Anemometer
- * Barometer
- * Wind Chill Chart (<https://www.weather.gov/media/safety/windchillchart3.pdf>)
- * Poster board, crayons, markers, construction paper, scissors, and glue (for students to make posters indicating weather conditions)
- * Whistle

Background

Prior to this activity, introduce to the students the instruments used to take weather observations and explain how these instruments work. Be sure students understand the definitions of temperature, humidity, wind speed/direction, barometric pressure, and wind chill.

Preparation

1. Set up four weather instruments (thermometer, hygrometer, anemometer, barometer) outside, one at each corner of a playground or sports field.
2. Download and print a wind chill chart to help students calculate the wind chill. Laminate the chart or glue it to poster board for durability. Set this up as the final station.

Procedure

Outside:

1. The students will begin by taking a notecard and pencil and writing down the sky condition (e.g. sunny, mostly sunny, cloudy, etc.).
2. Divide the students into four groups and start each group at a different station – temperature, humidity, wind speed/direction, or barometric pressure. All groups will progress through each station clockwise to complete the course. Blow your whistle only when all groups are ready to move on to the next station. Facilitators at each station will keep students who are waiting active by leading them in exercises (e.g., stretching, jumping jacks, etc.).
3. Students will begin at one of the four stations and record that instrument's data on their notecards.
4. Once students have recorded the data from their first station, blow your whistle. Students will run to the next station and record that instrument's data on their notecards.
5. After students have recorded the data from their second station, blow your whistle. Students will skip to the next station and record that instrument's data on their notecards.
6. After students have recorded the data from their third station, blow your whistle. Students will run sideways to the next station and record that instrument's data on their notecards.
7. Once every group has recorded data from each station, all students will take giant steps to the wind chill chart at the final station. Students will use the chart to calculate the wind chill temperature.
8. Students will gather and describe the weather conditions they observed.
9. Finally, students will use the information on their cards to make their own weather page of the current conditions.

Inside:

1. Back in the classroom, students may use their weather page to make individual posters about the weather conditions at the school yard. If time and resources allow, posters can then be the backdrop for a video weather report created by the students.

Going Further

Go outside one hour later and re-do the exercise. Have students note what has changed in the past hour. With two sets of observations, they may now explain the trend of each measurement. This is the first step toward making a weather forecast.

Special Needs Students

Some students may need the assistance of a peer team or an adult, particularly when identifying and using equipment, calculating the wind chill, and making the poster. Keep directions simple and allow students with fine and gross motor issues to move between stations using their best locomotion skill pattern, e.g., walk, speed walk, or jog. If possible, use larger weather reporting equipment and larger recording charts.





Stick to North

Grades 3–5

Lesson Summary

Simply figuring out which direction is north is sometimes the most important thing you can do when you're lost. With a stick, some rocks, and enough sunlight to cast a shadow, students will determine which way is north, south, east, and west.

This activity must be done on a sunny day and works best well before or after noontime when shadows are longer.

Objectives

Students will:

- * Work cooperatively in groups.
- * Learn how to determine north in almost any situation.

Materials

- * 1 stick, stake, or short pole for each group
- * 3-5 rocks or other items that can be placed on the ground as markers
- * North, south, east, and west markers for each group
- * Compass (optional)

Background

Although we all may be more familiar with using the Earth's magnetic field or GPS satellites to determine direction, there are many simple ways to figure out where north lies. All you need to figure out compass directions is the sun and monitoring a shadow.

Procedures

1. In groups of two or three, students will gather a stick, stake, or short pole and three to five rocks or other items that can be placed on the ground to mark the path of a shadow.
2. Groups will stand their sticks upright into the snow or dirt somewhere with enough sunlight to cast a shadow.
3. Have students place a rock at the tip of each stick's shadow. This rock will be the marker for West. *The sun moves East to West so the shadow that it creates moves West to East.*
4. Every five minutes, have students place a rock at the new location of the tip of their stick's shadow until there is a line of a minimum of three, but preferably five, rocks. The final rock will be the marker for East.
5. Have students draw a line in the snow or dirt connecting the rocks (this line indicates East and West), and a perpendicular line from the base of the stick that intersects with the first line (this line indicates North and South). These two lines create a compass rose.
6. Have students label the four points of their compass rose, with the upright stick marking south (in the northern hemisphere – it is opposite in the southern hemisphere). Students can now determine their direction.

Going Further

1. Students can bring a compass outside with them to see how close their rose came to actual north.
2. Students can research other methods of identifying north out in the woods without a compass (or cell phone of course).

Special Needs Students

Some students may need the help of a teacher assistant or peer helper.





Winter Ecology – Animal Adaptations

Grades 3–5

Lesson Summary

Students will learn about various ways animals cope with the approach of winter and demonstrate understanding by presenting research findings to the class and participating in the Winter Relay.

This lesson can be done in its entirety or broken up into smaller parts.

Objectives

Students will:

- * Research a local animal.
- * Complete the Winter Adaptations worksheet.
- * Make a short presentation to class after about their chosen animal.
- * Participate in a winter relay.

Materials

Inside:

- * Winter Adaptations worksheet for each student
- * Research materials

Relay:

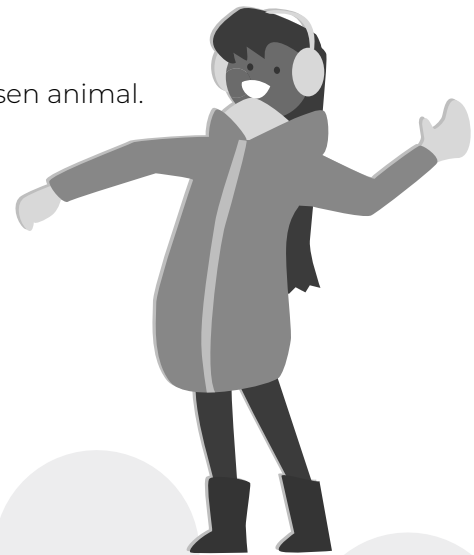
- * 4 pairs of snowshoes
- * 6 hula hoops
- * 4 large fleeces or other coats (must be big enough to fit over students' winter jackets)
- * Long tunnel (borrow from Physical Education teacher or improvise)
- * 10 small bean bags, acorns, snowballs, etc. to simulate animal food
- * Collection bin (trash can, laundry basket, etc.)

Background

Migration

What is migration?

Migration is the movement from one location or climate to another. Discuss your climate in the winter compared to places where local animals migrate.



***Why do animals migrate?***

Many animals are so specialized they are unable to adapt to winter conditions. If they wish to survive, there is no choice but to take the necessary risk of migration. Herons, for example, are adapted to fishing in shallow water. They are unable to penetrate ice, so they must move to warmer climates before waters freeze. Insect-eating birds must also fly south because insects are sedentary in the winter. Others migrate to find breeding grounds.

What are some of the risks that animals must face when migrating?

Migration is a relatively dangerous endeavor for animals. Ducks, for example, face human hunters along the way. Other dangers include natural predators, disease and parasites, and a changing and uncertain food supply.

What kinds of preparations need to take place for migration?

In order to have a successful migration, animals need to have enough energy reserves, which are stored as fat. How much fat does an animal need? Well, the energy costs of long-distance travel can be high. For example, birds flying 1,000 kilometers should carry 50% of their body weight in fat. Animals moving over land generally use even more energy than those who fly.

Hibernation***What is hibernation?***

Hibernation is a state of inactivity in an animal brought on by various environmental conditions, such as short day lengths, limitations of food, and cold temperatures. Examples of hibernating animals include chipmunks, woodchucks, turtles, frogs, bears, mice, skunks, snakes, and raccoons. Some animals hibernate the entire winter while others wake up periodically to raise their body temperature or to eat food stored in their hibernacula (the place where an animal hibernates).

Why do animals hibernate?

Hibernation is a survival strategy many animals use when food is scarce or hard to come by. A hibernating animal is able to conserve energy resources by reducing its metabolic rate, thus allowing the animal to survive on stored energy reserves.

What are some of the risks that face hibernating animals?

Hibernating animals run the risk of running out of stored energy. Each time a hibernating animal wakes up to increase body temperature, for example, it is costly in terms of energy and uses fat reserves. Hibernating animals should not be disturbed for this reason—each time they are roused, they use up large amounts of their energy, decreasing their chances for survival.

Resistance***What is resistance?***

Resistance is the process of staying and enduring the hardships of winter. Many animals have developed adaptations or acclimations to deal with winter elements.

What are some types of resistance?

Resistance comes in a variety of forms:

- Complex biochemical adaptations: insects produce a chemical (glycerol) which prevents ice formation. They can cool down to -50 degrees centigrade without freezing.
- Physiological adaptations: caribou, lynx, and snowshoe hares all have big feet that act like snowshoes. Some animals increase their fat and fur thickness with the onset of winter.
- Behavioral adaptations: birds fluff their feathers to stay warm. Many animals huddle together, build nests, or go subnivean (below ground) to stay warm.

Procedure

Inside:

1. Ask the class how the food web changes throughout the year. What kind of seasonal variations occur in the winter? How do animals react to these changes?
2. Discuss the three major survival strategies animals use to adapt to changing winter resources: migration, hibernation, and developing resistance. Explain that animals who do not adapt to winter conditions die.
3. Have students pick an animal from the local environment and research how the animal survives in the winter. Students will complete the Winter Adaptation worksheet to document their research and present their findings to the class.

Outside:

Winter Relay

This relay game simulates the various ways animals cope with the winter months. Break the class into groups of three to four students. One group at a time, students will move through five different stations, each representing a different way animals deal with winter.

1. **Start/Station 1:** Students will attach snowshoes to their feet to simulate adaptations some animals have for walking on the snow (such as the lynx or snowshoe hare). Students will run to the next station using snowshoes.
2. **Station 2:** Students will remove the snowshoes and stand in a “flock” together with their feet inside the starting hula hoop. Once all members of a team are ready, they will flap their arms like birds and run through a series of five additional hula hoops (each 10 feet apart). Since students must move as a flock, each member of the team must fold their wings and land inside each hula hoop before proceeding to the next hula hoop.
3. **Station 3:** Students will put on an extra fleece or winter jacket to simulate additional fat reserves needed to survive in winter. Then they will run to their “hibernacula” (a long tunnel or designated area) and huddle while they wait for the rest of their group to arrive. Once all members are in the hibernacula, they will run back to station 3, deposit their fat reserves, and proceed to station 4.



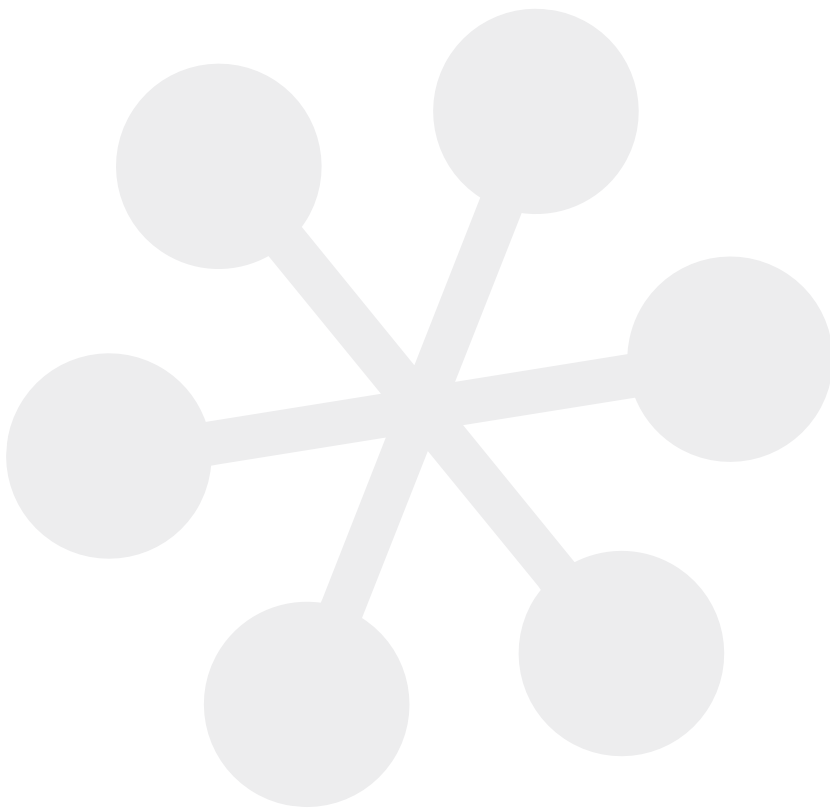
4. **Station 4:** Students will collect bean bags and put them in the collection bin to simulate gathering enough food for the winter. Once all the bean bags are collected, the group will run to station 5.
5. **Station 5:** Students will act out a dramatic death. The next group starts through the relay.

Variations

1. The relay may be timed.
2. Add a few students assigned the role of “predators” to tag “prey.”

Special Needs Students

Students with mobility issues may participate in the relay as well. For example, students could participate in station 3, with the group huddling around them rather than in the tunnel. These students also may participate carefully in stations 4 and 5.





Winter Adaptations

Name _____ Date _____

Directions

Animals experience winter in one of four ways: hibernation, migration, resistance, or death. Pick an animal from your local environment and research how it deals with the winter months (hibernation, migration, resistance, or death).

Draw or attach a picture of your animal below:

Animal _____ Strategy _____

Summarize your research findings below:



The “Great” Heat Escape

Grades 6–8

Lesson Summary

In a fun outdoor activity, students will model the greenhouse effect and explore the impact that a thickening layer of greenhouse gases has on the amount of heat trapped within the Earth’s atmosphere. This activity can be done on a sports field or open green space, with or without snow.

Objectives

Students will:

- * Recreate and model the greenhouse effect.
- * Describe how greenhouse gases behave.
- * Hypothesize what can be done to lessen the amount of greenhouse gases we emit.

Materials

- * Playing field or open space outside

Background

Carbon dioxide (CO₂), methane, and water vapor are greenhouse gases. These gases act as insulation for the planet. The sun heats up the Earth as each hemisphere faces it during that part of the Earth’s day. As each hemisphere rotates out of the sunlight and into its night, the heat of the day is released out into space. We need greenhouse gases working as a blanket to trap some of that heat, otherwise it would all escape every night and temperatures would drop too low for life to survive.

When we burn fossil fuels like oil, coal, and natural gas, we are releasing the carbon trapped within them and adding carbon dioxide to our atmosphere. The more CO₂ we add to the atmosphere, the more it insulates the planet and holds in the escaping heat (like how the thicker your blanket, the more of your body heat it traps and the warmer you get).

We do need the greenhouse effect, but as more CO₂ is released into the atmosphere, the Earth’s average temperature is rising, and we’re seeing it happen now. As the Earth’s temperature rises, the climate changes. This impacts precipitation amounts, ice coverage, ocean currents, and many of Earth’s other systems that affect the resources needed to sustain the planet’s populations of plants and animals (including humans).

Procedures

Inside:

1. Discuss the greenhouse effect, its causes, and its consequences.

Outside:

1. Designate an outdoor area as the “atmosphere” play area. One side will represent the surface of the Earth and the opposite side will represent outer space.
2. A third of the students will be “Carbon Dioxide (CO₂) Molecules”. The remaining students will be “Heat.”
3. The “CO₂ Molecules” will stand approximately halfway between the surface of the Earth and outer space. They should choose their location wisely because once they have a spot, they must stay put.
4. The “Heat” will line up on the “Earth’s Surface” end of the area.
5. The “Heat” students will try to walk, jog, or run (depending on the teacher’s preference) to outer space to escape the Earth’s atmosphere. If the “Heat” are tagged by the stationary “CO₂ Molecules,” they are trapped in the Earth’s atmosphere and will join the “CO₂ Molecules” in the next round.
6. The “Heat” students who made it to outer space will return to the surface of the Earth for the next round while the “Heat” students who were tagged are now playing as “CO₂ Molecules.”
7. Repeat the activity again with the remaining “Heat” students. Each round should get more difficult for the “Heat” to escape the atmosphere, just as more CO₂ in the atmosphere insulates the Earth and traps more of the escaping heat.
8. Continue playing as many rounds as necessary to get one student – or zero students – left as “Heat” trying to escape.

Going Further

1. Students can research what they can do to help cut back on the emission of greenhouse gases.
2. Students can calculate their own greenhouse gas emissions.

Special Needs Students

Some students may need the help of a teacher assistant or peer helper.



The Science of Sledding: Lesson 1

Grades 6–8

Lesson Summary

Students will design and conduct an experiment to discover what kind of material, when applied to the bottom of a sled, will increase the speed of the sled as it goes down a slide.

Objectives

Students will:

- * Design an experiment.
- * Make accurate measurements of time and distance.
- * Calculate speed.
- * Complete a lab report in which they will:
 - identify the findings of their experiment;
 - provide an explanation of their reasoning; and,
 - provide data to support their reasoning.

Materials

- * 3 pieces of 5- to 6-foot lengths of plastic rain gutter per team (to use as their sleds)
- * 1 weighted object per team (note: all the sleds must have the same weight)
- * Sled bottom materials (e.g., sandpaper, glossy magazine paper, burlap, felt, cotton, etc.)
- * Tape, glue, or rubber bands (to attach materials to the bottom of the sleds)
- * 1 stopwatch or clock with a second hand per team
- * Pencil and paper

Background

Students should have learned how speed affects the motion of objects. They should be familiar with the formula $\text{speed} = \text{distance} / \text{time}$, and they should understand the concept of friction.

Procedure

Inside:

1. Create groups of three to four students and explain that they are to design their own experiment to determine which material, when attached to the bottom of a sled, will cause the sled to go fastest down the slide.
2. Students will need to design data sheets to record the results of their experiment. Explain that each group will complete three runs for each unique sled, collecting data each time so that they can calculate an average speed for each sled.

Outside:

1. Have students conduct and record the results of their experiment.
2. Have students determine the average speed for each sled using the data they collected.

Inside:

1. Have students write up a lab report that includes the procedure, the materials used, how the variables were controlled, all relevant data (charts, tables, graphs, etc.), mathematical evidence that documents which material made the sled go the fastest down the slide, and why they think that material worked the best.

Special Needs Students

- * Allow students with learning disabilities in mathematics to use whole numbers rather than fractions in their calculations. A data collection computer program could also be helpful.
- * Special needs students may limit the number of materials tested. Try to assign a smaller number of materials for which the timed difference will be the greatest (for example, aluminum foil and sandpaper).

LEARN!
EXPLORE!
MOVE!





The Science of Sledding: Lesson 2

Grades 6–8

Lesson Summary

Students will work in teams to conduct an experiment to discover what kind of material, when applied to the bottom of a homemade sled, will increase the speed of the sled as it goes down a hill.

NOTE: The hill should be checked for iciness and other safety considerations prior to this activity.

Objectives

Students will:

- * Predict which sled will be the fastest.
- * Make accurate measurements of time and distance.
- * Calculate the speed of their sled.
- * Complete a lab report where they will:
 - identify the material that works the best;
 - provide an explanation of their reasoning; and,
 - provide data to support their reasoning.

Materials

- * Cardboard boxes
- * Duct tape
- * Markers or paint (for decorating sleds)
- * Helmet (for the sled driver)
- * 1 stopwatch per team
- * 1 measuring tape (to measure from start to finish line)
- * Pencil and paper
- * Sled bottom covering materials provided by the students (e.g. tin foil, wax, duct tape, plastic wrap, etc. Encourage students to be creative)!

Background

Students should have learned how speed affects the motion of objects. They should be familiar with the formula $\text{speed} = \text{distance} / \text{time}$, and they should understand the concept of friction. Prior knowledge of Newton's Laws would be helpful, as well.

Procedure

Inside:

1. Divide students into groups and explain that each group will be designing sleds using a cardboard box (the dimensions of the sled should be determined in advance), adhering different materials to the bottoms of the sleds, and designing an experiment to determine which material increases the sleds' speed the most.
2. Each team member will make and decorate a sled with a different material on the bottom. Students will predict which of their group's sleds will travel down the hill the fastest.
3. Have students take notes as to how they came up with the design and any discoveries or problems that occurred along the way.

Outside:

1. It's time for The Big Event! Students will take their sleds outside to conduct their experiments.
2. Set the start and finish lines. Have students work collaboratively to measure the distance between start and finish.
3. After reviewing the event's safety rules (such as only one person sledding at a time, sledders must wear a helmet, etc.), each student is allowed to make three runs down the hill.
4. Two timekeepers will record the time across the finish line at the bottom of the hill.
5. Sledders must wear helmets.

Inside:

1. Student teams will write a lab report that includes the procedure, how the variables were controlled, what materials they used, all relevant data (charts, tables, graphs, etc.), mathematical evidence to document which material created the fastest sled, and why they think that material worked the best.
2. Discuss the connections between Lesson 1 and Lesson 2 as a class.

Variations

The outdoor activity may be followed by an afternoon of sledding, skiing, snowboarding or other winter activities. The winning team might receive a prize.

Special Needs Students

Special needs students may design and construct their cardboard sleds with a partner. Data entry computer programs may be used to collect, analyze, and display data from this experiment.



Social Studies



Exploring Geography

Grades K–2

Lesson Summary

Students will explore and discuss geographic features and their impact on people.

This is a great lesson for employing the help of friends and family as volunteers. The more positive guidance that the students have, the more enjoyable and effective the activity will be.

Objectives

Students will:

- * Demonstrate an understanding that geography includes the study of Earth's physical features.
- * Identify the impacts of geographic features on individuals, families, and their immediate surroundings.

Materials

- * A short introductory video on geographic features such as:
Exploring Landforms and Bodies of Water for Kids – FreeSchool (9 minutes):
https://www.youtube.com/watch?v=BsqKTJtK_vw&ab_channel=FreeSchool

Preparation

1. Present students with a video(s) to introduce geographic features (i.e. mountains, hills, canyons, valleys, deserts, plains, beaches, rivers, lakes, marshes, ponds, etc.).
2. Explain that the study of geography includes the study of Earth's physical features.



Procedure

Outside:

1. Take your students outside for a hike.
2. Ask them to identify any geographic features that they can see along the way.

Inside:

1. Ask students to remember what physical features they saw on their hike.
2. Ask students about any geographic features they have seen and explored while visiting relatives or while on vacation.
3. Discuss how landforms and bodies of water can be fun places for outdoor activities.
4. Ask students which landforms they think are more fun in winter, spring, summer, or fall. Ask them why they feel that way.

Going Further

Have students either illustrate or write a journal entry about a special day enjoying a specific geographic feature.

Special Needs

Some students may need the help of an adult or peer assistant.

LEARN! EXPLORE!
MOVE!





Natural Resources

Grades K–2

Lesson Summary

Students will explore the outdoors, identify natural resources, and discuss the wants and needs that those natural resources provide for them.

This is a great lesson for employing the help of friends and family as volunteers. The more positive guidance that the students have, the more enjoyable and effective the activity will be.

Objectives

Students will:

- * Define the term “natural resources.”

Natural resources are materials from the Earth that are used to support life and meet people's needs. Any natural substance that humans use can be considered a natural resource. Oil, coal, metals, stone, and trees are natural resources. Other natural resources are air, sunlight, soil, and water.

- * Recognize the role of natural resources in daily life.
- * Define the difference between a want and a need.

Materials

- * A short video on natural resources, such as:
Natural Resources of the Earth (5 minutes):
https://www.youtube.com/watch?v=Qw6uXh9yM54&ab_channel=Turtlediaryl



Procedure

Inside:

1. Show your students a short video about natural resources.

Outside:

1. Take your student on an outdoor hike.
2. Ask students to identify natural resources that they see outside. Record student responses for later use.

Inside:

1. Write the list of natural resources identified by the students on the board.
2. Discuss what natural resources are necessary for human life (i.e. clean air, water, food, shelter, sleep, etc.). Explain that these necessities are needs.
3. Discuss how natural resources can make life more enjoyable. Explain that these niceties (i.e. ski trips, skating, building a snow fort, etc.) are wants.
4. Discuss what each natural resource from the list can provide to humans (i.e. wood for treehouses and books, water for swimming and squirt guns, snow for skiing and sledding, etc.).
5. Discuss why we need to conserve our natural resources and what students can do to help conserve these resources for the future.

Special Needs Students

Some students may require the help of an adult or peer assistant.

LEARN! EXPLORE!
MOVE!





Places and Regions

Grades 3–5

Lesson Summary

Students will research the physical features of one of your state's regions and then create brochures about that region's winter-friendly activities. Students will demonstrate their knowledge of the state's regions in an outdoor review game.

Objectives

Students will:

- * Choose and research a region of your state, focusing on winter activities.
- * Create a tri-fold brochure explaining and illustrating winter-friendly regional activities.

Materials

- * Pencils
- * Construction paper
- * Coloring implements
- * Internet access for research
- * Index cards
- * 8 bags or containers (or one more than the number of regions in your state)
 - 7 labeled (one for each region)
 - 1 unlabeled

Common Core Standards

English Language Arts - Literacy

CCSS.ELA-LITERACY.W.3.2

Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSS.ELA-LITERACY.W.3.2.A

Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.

CCSS.ELA-LITERACY.W.4.2

Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSS.ELA-LITERACY.W.4.2.A

Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.

CCSS.ELA-LITERACY.W.5.2

Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSS.ELA-LITERACY.W.5.2.A

Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.



Procedure

Inside:

1. Students will choose a state region.
2. Using online resources, students will research and gather information about the region's physical features that lend themselves to winter activity.
3. Next, students will create a brochure by folding a piece of white construction paper into thirds and adding information and illustrations using colored pencils or markers. (Alternatively, students could create brochures with a suitable computer program and printer). Brochures will include a map locating their region within the outline of the state, illustrations of the features that lend themselves to winter activities in that region, and text describing the features and activities.
4. Have students select one fact about their region from the brochure and write it clearly on an index card.
5. Gather all fact cards from students and put them in a bag.

Outside:

1. Label a bag or container for each region and place them outdoors far enough away from the students to make for an active game.
2. Have students take turns selecting a fact card from the bag and running the fact card to the correct regional container.
3. As a class, review cards in each container to check for accuracy.

Going Further

If time allows, individual students, partners, or groups will choose one winter-friendly regional feature from their brochure(s) to replicate as a snow sculpture. Students will then explain the importance of the feature represented by their snow sculpture and which winter activities it supports. Students could also act out one of these activities while sharing about their feature.

Special Needs Students

Students may require help from a peer or adult assistant. Modifications may include completing only part of the project.



Technology and Skiing

Grades 3–5

Lesson Summary

Students will research and test the ways winter clothing and ski equipment have changed between the 1800s and now due to technological advances.

Objectives

Students will:

- * Research a topic that has changed over time.
- * Share information orally.
- * Complete a compare/contrast chart.
- * Participate in an outdoor experiment.
- * Draw conclusions based on experiment results.

Materials

- * Copies of the Mitten/Glove
- * Questionnaire (one for each student)
- * Copies of the Winter Ski Clothing Venn Diagram (one for each student)
- * Mittens and/or gloves made of different materials

Preparation

1. Have additional gloves and mittens on hand. Lost & found is a good source for temporary use.
2. Print enough copies of the Mitten/Glove Questionnaire and of the Winter Ski Clothing Venn Diagram to provide one for each student.

Common Core Standards

English Language Arts -
Speaking & Listening

CCSS.ELA-LITERACY.W.3.2

Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSS.ELA-LITERACY.W.3.2.A

Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.

CCSS.ELA-LITERACY.W.4.2

Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSS.ELA-LITERACY.W.4.2.A

Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.

CCSS.ELA-LITERACY.W.5.2

Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSS.ELA-LITERACY.W.5.2.A

Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.



Procedure

Inside:

1. Divide your students into five groups.
2. Explain that each group will research one of the following topics:
 - a. Winter clothing in the late 1800s for both men and women (made from natural fibers);
 - b. Winter clothing today (made from man-made fibers including waterproof, insulating, and moisture-wicking materials);
 - c. Change in skis over the years (including their use and maintenance);
 - d. Changes in boots and bindings; or,
 - e. Changes in ski lodges and lifts.
3. Each group will orally share information about their research.
4. As a class, students will fill in the Winter Ski Clothing Venn Diagram.

Outside:

1. Take your class outside. Be sure everyone has a pair of gloves or mittens.
2. Divide the class into groups based on type of mitten:
 - a. Knitted
 - b. Insulated fabric
 - c. Fleece
 - d. Leather
 - e. Other
3. Have each group spend 5-10 minutes building a snow sculpture.
4. Take your class back to the classroom and have your students fill out the Mitten/Glove Questionnaire.
5. Tabulate results.
6. In a class discussion, draw conclusions regarding the warmth of natural vs. man-made fibers based on results.

Special Needs

For special needs students, modifications may include working on part or all of the project with a peer assistant, working in a small group, and/or working on an individual project that would serve the student's strengths and contribute the most to the project. Accommodations may be needed for transportation to the site. Students with physical limitations may need assistance building a snow sculpture.



Winter Ski Clothing

Name _____ Date _____

1800s

BOTH

NOW



Mitten/Glove Questionnaire

Name _____ Date _____

Circle one answer for each question.

1. My mittens are made of
Fleece Insulated fabric Knitted yarn Leather Other
2. Are your mittens
Damp Soaked through Pretty dry Very dry
3. Are your hands wet?
Yes No
4. How do your hands feel?
Warm Cool Cold
5. Would you want to spend another 20 minutes outside wearing your mittens as they are now?
Yes No

Mitten/Glove Questionnaire

Name _____ Date _____

Circle one answer for each question.

1. My mittens are made of
Fleece Insulated fabric Knitted yarn Leather Other
2. Are your mittens
Damp Soaked through Pretty dry Very dry
3. Are your hands wet?
Yes No
4. How do your hands feel?
Warm Cool Cold
5. Would you want to spend another 20 minutes outside wearing your mittens as they are now?
Yes No

History of Skiing

The origin of skiing is debated among scholars and between countries wanting to claim the invention as their own. The earliest archaeological examples of skis were found in Russia and date back to 6000 BC. Wall paintings depicting skis dating back to 5000 BC were discovered in caves in the Xinjiang region of what is now China. However, most scholars believe that skiing has its roots in the Scandinavian countries where they have had skis for over 6000 years. In the Viking Age, Norsemen regarded skiing as a form of recreation as well as an efficient way to travel for hunting and war. They even worshipped a god of skiing, Ullr. The Norwegians, Swedes, Lapps, and other inhabitants of northern lands had used skis for many centuries before skiing became a sport. People from these regions brought skis and skiing with them to the United States when they emigrated from their home countries.

The growth of skiing in the United States is due in part to the American Civil War in the 1860s, which indirectly led to the establishment of Scandinavian colonies in Maine and the Midwest. These groups were brought to the United States, specifically to areas that needed people after the war, and led to the national migration of people to the west. With these immigrants came their rural way of life. They used skis for hunting and transportation, as they had in their home countries. The skis they used were unlike the equipment of today and were made with very different materials, but they suited the needs of the people at that time. Ski clubs sprang up over one hundred years ago in places where there were Norwegian and Swedish settlers. In Maine, Wisconsin, and Minnesota, people were holding ski contests as early as 1886. On February 21, 1904, at Ishpenning, Michigan, a small group of skiers came together to organize the National Ski Association, and recreational skiing in the United States was born.

World War I put a hold on recreational skiing. Skis were used during battles in high alpine winters but were used for little else during the war. After the war, the social aspect of skiing started to become increasingly important. Small ski areas were developed by most of the northern boarding schools and academies to attract and entertain students, and some even had rope tows. With the Great Depression and the resulting development of the Civilian Conservation Corps and Works Progress Administration projects, recreational facilities including parks with ski trails started to appear. Most communities in the colder, snowier areas of the country had winter carnivals where skiing events such as downhill, cross country, and jumping events were a major part of the festivities. They even had skijoring using horses. (Skijoring is a winter sport in which a person on skis is pulled by a horse, a dog, or a motor vehicle. It is derived from the Norwegian word skikjøring, meaning “ski driving”. Although skijoring is said to have originated as a mode of winter travel, it is currently primarily a competitive sport). The carnivals were the social event of the season for the small rural communities and brought in thousands of spectators. These events, along with skiing’s rising popularity, came to a quick halt with the rationing that was necessary at the beginning of World War II.

As World War II raged in Europe, the United States created a division of soldiers called the 10th Mountain Division who trained for mountain warfare in the mountains outside of Leadville, Colorado. Many of the soldiers had never even seen snow before their duty assignment but quickly gained the skiing skills that they then used in European mountain battles. When they returned home after the war, some put their new skills to use and developed ski areas across the country. At first, these were just small community areas, but in the 1960s, as leisure time and the ability to travel increased, some of them began to turn into major ski areas. Along with the growth in skiing's popularity came technological advances that made skiing easier and ski equipment safer. By the 1970s, there was a separation of ski areas, where some areas were designed specifically for cross country skiing and others had lift services for alpine (or downhill) skiing.

Snow sports have continued to evolve into a variety of specialized forms, like snowboarding. In the early history of skiing, people used the same skis for everything from hunting and racing to touring and skiing extreme mountains. Today there is specialized ski equipment for all the different aspects of skiing. Even within the specialized areas of skiing, there is now also further separation into specific sports. As skis have changed over time, so too has ski clothing, but always in keeping with the same purpose: to keep the skier warm and comfortable while they enjoy the sparkling snow on sunny winter ski runs.

Eric Hendrickson, Author



Resources

Books

First Tracks by Glenn Parkinson (60 pages - ISBN-10:0964751704)

(Covers the history and development of skiing; while it focuses on the state of Maine, it also has a great deal of North American information)

The Winter Sport of Skeeing by Theodore Johnsen (54 pages - ASIN:B0006F682I) (a reproduction of a 1905 ski catalog where half the catalog is equipment while the other half is technique; it was the first American ski book – a great resource when compared to any current ski catalog)

Online

<https://www.mentalfloss.com/article/31869/12-fascinating-moments-winter-clothing-history>
(Development of winter clothes)

<https://www.bustle.com/p/the-history-of-winter-mittens-is-surprisingly-feminist-7659781>
(History of mittens)

<https://camotrek.com/blogs/news/difference-warm-gloves-mittens/>
(Difference between mittens and gloves)

<https://www.maineskiandsnowboardmuseum.org/> (Maine Ski and Snowboard Museum)

<http://newenglandskimuseum.org/> (New England Ski Museum)

<https://www.skiinghistory.org/> (International Ski History Association)

<https://www.skiinghistory.org/history/ski-equipment> (History of skiing equipment)

<https://snowbrains.com/10th-mountain-division-history-fire-mountain/> (10th Mountain Division)

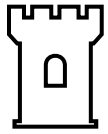
<https://www.rei.com/blog/snowsports/an-abbreviated-history-of-modern-ski-technology>
(History of Skis)

<https://thevintagetraveler.wordpress.com/2008/11/17/a-short-history-of-ski-clothing/> (Ski Clothing)

https://www.coolantarctica.com/Antarctica%20fact%20file/science/clothing_in_antarctica_2.php
(Dressing for the cold)

<https://www.artofmanliness.com/articles/cold-weather-dressing/> (Dressing for the cold)

<https://emergencyprepguy.com/how-to-keep-your-head-warm-in-winter/> (Loss of body heat)



Historic Forts

Grades 6–8

Lesson Summary

In groups, students will research historic forts to learn their different styles, purposes, and uses. Then students will choose a specific historic fort, develop and answer a research question about it, and collect and record data about its history. Groups will create blueprints of their forts and then build scale replicas of their forts out of snow. Examples of interesting forts follow this lesson.

Objectives

Students will:

- * Demonstrate the ability to research information using technology.
- * Gain an understanding of the historic importance of forts.
- * Apply their knowledge of the structure of forts by creating scale replicas from snow.

Materials

- * Research materials
- * Containers of various sizes (to make snow molds)
- * Cardboard
- * Waterproof pens

Procedure

Inside:

1. Give a brief introduction on the purpose, history, and technology of forts:
The structure of a fort will reflect its purpose. Early forts were made of sticks, leaves, and mud, while others were simply a hole carved in a cliff. As time passed, forts were made of stone, brick, and sometimes wood. Forts have been used as stores, prisons, temporary homes, lookout posts, and storage places, but were used most often for military purposes.
2. Divide students into four groups. Explain that each group will:
 - Conduct general online research of historic forts;
 - Choose a specific historic fort for their project;
 - Develop a research question about their fort;
 - Collect and record data about their specific forts; and,
 - Complete a to-scale sketch of their fort, to be used as a “blueprint”



when building their fort out of snow.

3. Have teams divide the work amongst themselves.
4. Students will prepare and present their findings, including:
 - A brief history of the fort;
 - Historic uses of the fort (storage, military, housing, prison, etc.);
 - The size and structure of the fort;
 - The event(s) that led to the fort being built; and,
 - A scale sketch and floor plan of the fort.
5. As a class, discuss:
 - Which fort each team will build;
 - How to build a fort to scale;
 - Which tools and containers to use to create different shapes and sizes from snow; and,
 - What role each student will play in their group (i.e. designer/foreman, builder, mason, etc.).

Outside:

1. Teams will build snow replicas of the forts that they researched.
2. Using cardboard and waterproof pens, students will label their forts to educate other students about the fort they have built.

Special Needs Students

For special needs students, modifications may include working on part or all of the project with a peer assistant, working in a small group, and/or working on an individual project that would serve the student's strengths and contribute the most to the project. Accommodations may be needed for transportation to the site. Students with physical limitations may need assistance with building the forts.

**LEARN!
MOVE!**



Fort Clinch, Florida



Fort Astoria, Oregon



Fort Snelling, Minnesota



The Alamo, Texas





Revolution Relay

Grades 6–8

Lesson Summary

Students will run a relay race to construct a timeline of the American Revolution.

This is a great lesson for employing the help of friends and family as volunteers. The more positive guidance that the students have, the more enjoyable and effective the activity will be.

Objectives

Students will:

- * Demonstrate problem solving skills.
- * Demonstrate teamwork.
- * Demonstrate understanding of cause and effect.
- * Demonstrate knowledge of chronological events.

Materials

- * Clothesline rope (30 feet)
- * Clothespins
- * Timeline events list (below)
- * Timeline date cards
- * Timeline event cards

Events of the American Revolution

- * The Stamp Act - March 22, 1765
- * The Boston Massacre - March 5, 1770
- * The Boston Tea Party - December 16, 1773
- * The First Continental Congress Meets - September 5, 1774
- * Paul Revere's Ride - April 18, 1775
- * Battle of Lexington and Concord - April 19, 1775
- * Capture of Fort Ticonderoga - May 10, 1775
- * Battle of Bunker Hill - June 16, 1775
- * The Declaration of Independence Adopted - July 4, 1776
- * George Washington crosses the Delaware - December 25, 1776
- * America chooses a Flag - June 14, 1777
- * Battle of Saratoga - September 19 to October 17, 1777
- * Valley Forge - December 1777 to June 1778
- * Alliance with France - February 16, 1778
- * Articles of Confederation - March 2, 1781
- * Battle of Yorktown - October 19, 1781
- * British Surrender - October 19, 1781 (after Battle of Yorktown)
- * Treaty of Paris - September 3, 1783



Preparation

1. Choose the events that you will use for your timeline. Create (or have students create) timeline cards by printing the chosen events of the American Revolution onto 8x10 inch cards. Laminate cards, if possible, for durability and for use over multiple school years. **DO NOT** include the dates of the events on the cards.
2. Mix up the event cards so that they are NOT in chronological order.
3. Create three date cards for the years of the first, middle, and last events of your timeline. These will be used to label each end and the center of the timeline rope. You may wish to laminate these as well.

Procedure

Outside:

1. Explain to students that they will be working in teams to construct a timeline of the American Revolution by hanging event cards on a rope in the correct chronological order.
2. String the clothesline rope between two trees or posts (or have two student volunteers hold the rope between them).
3. Have students stand in a straight line at least 20 feet away from the rope. Students should be facing the rope.
4. Keeping the straight line intact, break your class into groups, and give an equal number of shuffled event cards and clothespins to each group.
5. One group at a time, have students run to the rope, pin their event cards at the location they think is appropriate on the timeline, and then run back to the class to tag the next group for their turn.
6. After the last group has pinned their event cards and run back to the starting line, discuss and correct any event card errors that were made.
7. Remove the timeline event and date cards, keeping them in correct chronological order, and remove the rope.

Inside:

1. Choose events from the timeline and discuss how each event(s) caused the next event on the timeline.
2. Challenge students to name the date or year each timeline event occurred.

Special Needs

Some students may require an adult or peer assistant.

Imagine: A True Story

Imagine a small town in Maine. It's winter; it's cold and dark, and much of the population struggles to make ends meet. At school, the truancy rate is high, and the majority of the students have failed to meet the minimum standards on the State Educational Assessment tests.

Now imagine this same town a year later. It's a February morning; students and teachers are on a ski trail behind the school. Kids are laughing and shouting, gliding through the woods on cross country skis. The speedier ones are in front, but some of the better skiers bring up the rear, encouraging the slower students. Other kids climb up and ski down a little hill in the schoolyard, over and over again. They practice turning, schussing, racing, and jumping. They're having a ball, and you can feel the magic in the air.

And the magic isn't just outside – it's in school, too. Students are happier, eager to learn, and their test scores prove it. One particularly troubled boy has lost twenty-seven pounds; he cross country skis to school every day and has turned into a classroom leader. Absenteeism has dropped, and both students and teachers are enthusiastic.

How did this happen? The school board hired a new principal who realized his new community, like so many in Maine, spent the winter in front of TV sets and at fast food restaurants. This new principal, however, believed in the importance of outdoor winter activity and knew just what to do.

He drove to Goodwill to get boxes of warm clothing. He worked with a local winter sports center who gave him cross country skis and lessons for every student in his K-8 school. He built a ski trail behind the school and made sure his students used it - every day!

The new principal implemented outdoor academic lessons in a number of subject areas. One math teacher had students multiplying and dividing snowballs. Science students built sleds and had races to learn about friction. Art students went outside to feel winter and incorporated their experiences into art projects. The new principal made sure his students were outdoors and active, studying and having fun at the same time. Teachers said they had never seen their kids so enthusiastic about learning, and that made all the difference.

This is what WinterKids is all about. We truly care about kids and families, and we believe in the long-term benefits of a healthy, fun-filled, family-oriented outdoor lifestyle. Yes, our winter is long and cold, but it is filled with opportunity. The WinterKids Learn Outside Guide addresses this issue. Our goal is to help Maine children and families enjoy their legacy and the birthright of our beautiful winters. We invite you to join us; you may be surprised at how terrific you'll feel after a day sharing, playing, and learning in the winter sunshine.

Our Mission:

WinterKids helps children develop healthy lifelong habits through education and fun, outdoor winter activity.

This Learn Outside Guide was funded by



THE BINGHAM PROGRAM