



Winter Kids

Moving Mathematics: Summer Edition

Worksheet

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 |
|------------------------|------|--------|------|-------|
| | | | | |
| | | | | |
| | | | | |

2. Using the mean, calculate and record the speed of each form of transportation in the table below: (Reminder: Speed = distance / time)

| Type of Transportation | Speed (miles / minute) |
|------------------------|------------------------|
| | |
| | |
| | |

3. Now you will use this information to determine how long it would take you to travel to a location of your choice:

 How far do you live from _____? _____ miles
(ex: Park / Grandparent's house/ School)

4. Complete the table below to determine how long it would take you to get to your selected destination using each form of transportation.

| Type of Transportation | Mean Speed | Distance (miles) | Time |
|------------------------|------------|------------------|------|
| | | | |
| | | | |
| | | | |



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TIMING SHEET



Transportation #1: _____

Lap times:

Transportation #2: _____

Lap times:

Transportation #3: _____

Lap times:



Moving Mathematics, Summer Edition

for Grades 6-8

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.

Lesson Summary:

This lesson explores the speed of various forms of human powered transportation used in the warmer/ drier months. Students will participate in time trials with three different types of human powered transportation (for example: biking, scootering, walking, skateboarding, roller skating) and calculate the speed of all three forms. Data collected will be put into a table and analyzed to find the mean, median, mode and range. Using the mean speed, students will calculate the time needed to travel from home to another destination using the different forms of transportation.

Materials:

- Timing Sheet
- Moving Mathematics Worksheet
- Clipboard (optional)
- Bike
- Scooter
- Skateboard
- Roller skates
- Safety gear (helmets, etc.)
- Measuring tape
- Stop watch
- Calculator (Optional. It may be helpful for decimal division.)
- Local topographic map or internet mapping program

Objectives:

Students will:

- Record timed results
- Tabulate data
- Calculate mean, median, mode, and range.



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Procedure:

1. Review:

- a. The calculation of speed (speed = distance / time).
- b. Review the concepts of mean, median, mode, and range.

Khan Academy Mean, Median and Mode Review - article with steps:

<https://www.khanacademy.org/math/statistics-probability/summarizing-quantitative-data/mean-median-basics/a/mean-median-and-mode-review>

Khan Academy - Mean, Median, Mode Review - video tutorial:

<https://www.khanacademy.org/math/ap-statistics/summarizing-quantitative-data-ap/measuring-center-quantitative/v/mean-median-and-mode>

2. Overview: You are going to conduct an experiment to see how long it would take to travel somewhere using different forms of transportation such as biking, scootering, walking, skateboarding, roller skating.

1. First you will complete a small course using 3 different forms of transportation and record your times with our timing sheets.
2. Next you will use this information to complete the Moving Mathematics worksheet and practice calculating mean, median, mode and range.
3. Then, use the mean times to calculate speeds and use those speeds to determine the time it takes to get to a location of your choice via bike, scooter, roller skate, etc.

3. Plan: Select the three forms of transportation you will use. Designate a small course to complete your time trials. (We recommend a half mile course!) Prepare your gear and safety gear. Print timing sheets to keep track of your data.

continued...



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4. Time Trials: READY, SET, GO! Complete the course at least three times with each form of transportation - this way you have enough data for your calculations. Use the timing sheets to record your time for each lap.

5. Assess: Tabulate data and complete our Moving Mathematics worksheet. On this worksheet activity, you will:

- a. Calculate the mean, median, mode and range of your trial times. Use the mean time to calculate the speed of each form of transportation.
- b. After calculating your speeds, you will plan a trip to a nearby location of your choice.
- c. Use a local topographic map or an internet mapping program to find how far you live from the location you've chosen.
- d. Calculate the travel time for your trip for all three forms of transportation.

6. Think: How much longer would it take to travel to your chosen destination by biking, scootering, skating or walking rather than driving? How would this impact your life?