TASK 2

Measures of Central Tendency

Objectives

You will be able to

- Calculate mean and median.
- Identify mode.
- Describe, interpret, and draw conclusions from the central tendency of a data set.
- Describe what outliers are and how they affect measures of central tendency.
- Determine the ways in which measures change when new data is added to a set.
- Determine which statistics are best used to summarize different data sets.

How can we use mathematics to compare what is typical and what is unique about our class?

Evaluation and Feedback

To evaluate your work, you will

- Complete a check for understanding about ways in which measures change when new data is added to a set.
- Calculate the mean and median of a data set.

Learning Task 2: Measures of Central Tendency

As a group:

- Understand what average (mean) means.
- Calculate the measures of central tendency for the survey questions that students wrote.
- Calculate the measures of central tendency for data from the Sleep Log.
- Solve problems about Ms. Garcia's classes.

Vocabulary

- average
- mean
- measure of central tendency
- median
- mode
- outlier

Connect to the Culminating Project

You will

- Calculate measures of central tendency for one of the survey questions from the previous Learning Task.

LESSON 1

CENTRAL TENDENCY: PART I

WARM-UP

Find the Average

Your teacher will give you some Cheerios™.

1. Complete the table below to show how many Cheerios™ each person in your group has.

Person	Number of Cheerios™

2. How many Cheerios™ would you say the **typical** student in your group has? Another way of thinking about this question is to say: I think most group members have about _____ Cheerios™.

3. How did you determine your answer?

4. How could you make it “fair” so that everyone in your group has the same number of Cheerios™?

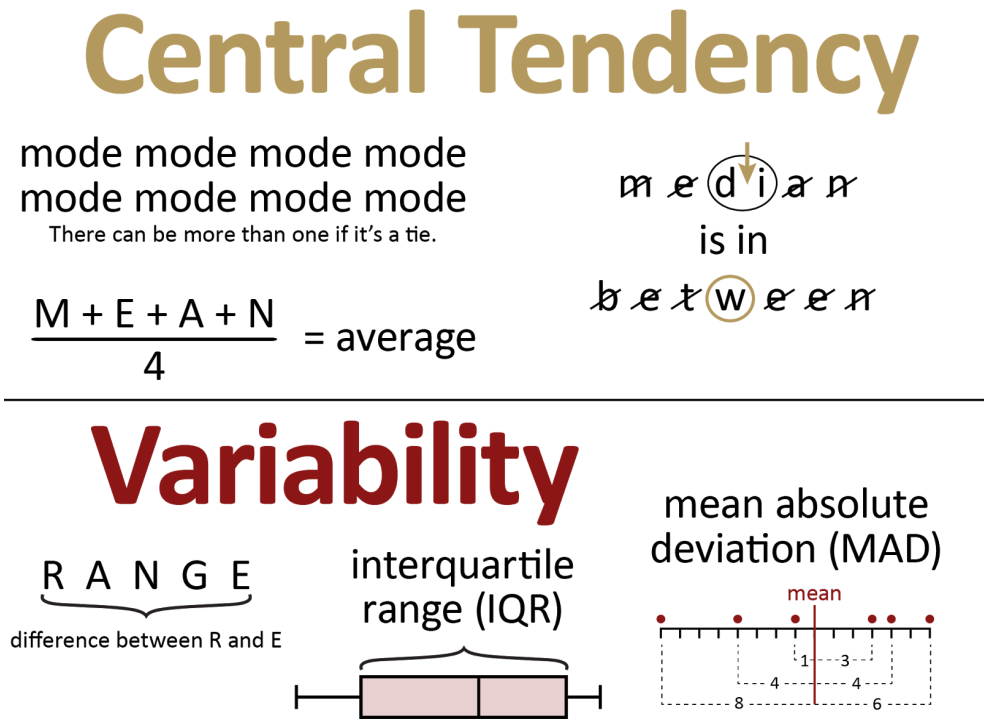
5. Were you able to divide the Cheerios™ evenly? If you cut the Cheerios™, how could you cut them so that everyone had the same number of Cheerios™?

6. What are some things your group did particularly well to collaborate on this activity?

PROJECT ACTIVITY

Central Tendency

1. Review the Central Tendency chart.



2. Compare and contrast three ways of summarizing central tendency (mean, median, and mode) using the graphic organizer below.

Mean	Median	Mode
All		

3. Refer back to the dot plot you created in Learning Task 1, Lesson 2 (for the question in the "Who Are We?" survey that you chose). Calculate the mean, median, and mode of the data set.

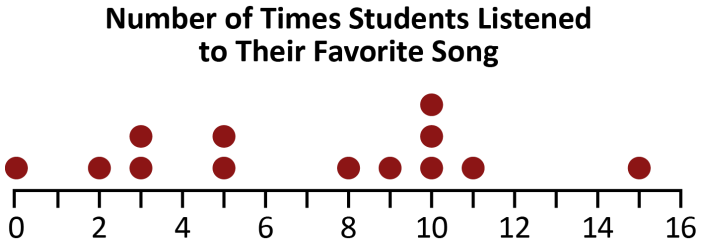
LESSON 2

CENTRAL TENDENCY: PART II

WARM-UP

Dot Plot

1. The dot plot below shows how many times the students in a sixth grade class listened to their favorite song on Monday. Use the dot plot to answer the questions below.



   a. What would be an appropriate label for the axis?

   b. If a dot plot had a *y*-axis, what would be an appropriate label for it in this dot plot?

   c. How many observations are reported in the data?

   d. What is the mode of the data?

   e. What is the mean of the data?

   f. What is the median of the data?

   g. Which measure of central tendency (mean, median, or mode) do you think is the best summary of the data? Why?

PROJECT ACTIVITY

Sleep and Central Tendency

Your teacher will give you data from your Sleep Logs.

1. Create a dot plot for your class's sleep data. Make sure to include a title and to label the axis.

2. Find the mean number of hours your class slept. Show your work.

3. Find the median number of hours your class slept. Show your work.

4. Why might the mean and median be different in this data set?

5. Which of these central tendencies do you think is the best summary of this data? Why?

6. Look at your mean hours of sleep. What are some ways that you could raise the mean by 15 minutes? Do you need to increase your sleep every night? What if you decrease your sleep some nights?

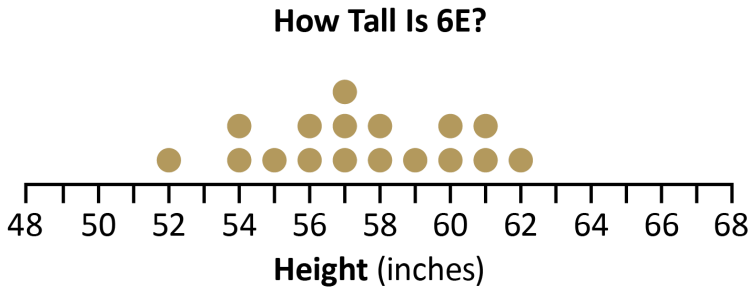
LESSON 3

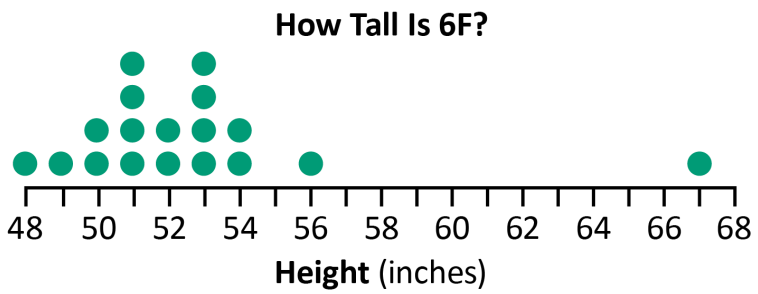
MS. GARCIA'S CLASSES: PART I

WARM-UP

Mean and Median

1. Look at the two data plots.





2. Decide whether it would be better to use the **mean** or **median** to summarize the data in each of these dot plots. Give reasons to support your claim.

PROJECT ACTIVITY

Sleep Data from Ms. Garcia's Classes

Answer the following questions. Make sure to show and explain all thinking. You will have time in the next lesson to finish your work.

1. Ms. Garcia's classes are also tracking their sleep. In her first-period class, 30 students have a mean of 8.25 hours of sleep on the night of September 20. How many total hours of sleep did her class get that night?

Show	**Explain**

2. One of the students in Ms. Garcia's class, Victor, spilled some juice on his Sleep Log.

Date	Hours of Sleep
1. 9/6	7.5 hours
2. 9/7	8 hours
3. 9/8	7 hours
4. 9/9	9 hours
5. 9/10	

He knows that the mean for the whole five-day week is 8 hours. How many hours of sleep did he get on the fifth night?

Show	**Explain**

LESSON 3 • MS. GARCIA'S CLASSES: PART I

3. There are 20 students in Ms. Garcia's second-period class. If you combine the data from this class with the data from her first-period class, the mean from question 1 changes. On September 20, the mean hours of sleep for **both her first- and second-period classes** is 8.75 hours.

   Find the mean hours of sleep on September 20 for **only the second-period class students**.

Show	**Explain**

4. Create a data set for Ms. Garcia's third-period class for September 20, where the mean is 9 hours and the median is 7 hours. What might the mean and median tell you about the students in the third-period class? Why are the mean and median so different?

Explain

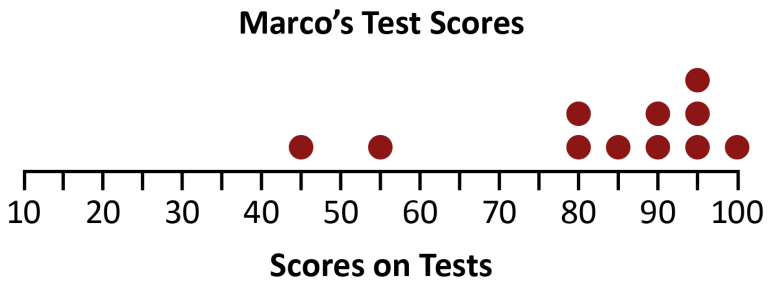
LESSON 4

MS. GARCIA'S CLASSES: PART II

WARM-UP

Remove and Add Values

1. Use the dot plot below to answer the questions. Each dot represents the score for a different test. Show or explain all of your thinking.



   a. What is the median test score?

   b. What would happen to the median test score if you removed the score of 55?

   c. What is the mean test score of the original data set?

   d. What would happen to the mean test score if you removed the score of 55?

   e. Add one value to the data set below so that it has a median of 13. Show and explain your work.

      { 12, 9, 16, 21, 4}

2. Update your Sleep Log.

PROJECT ACTIVITY

Sleep Data from Ms. Garcia's Classes

- Continue to work on the problems about Ms. Garcia's classes.

CHECK FOR UNDERSTANDING

Test your knowledge of how the center changes when you add or remove values using the Check for Understanding • How the Center Changes.