		smallest number)

Ex. 1 – Find the mean, median, mode and range of the following data set:

17 47 26 41 22 39 22

First, write your data in order from smallest to largest:

17, 22, 22, 26, 39, 41, 47

MEAN (average): add up your numbers and divide by the number of numbers you have

$$\frac{17+22+22+26+39+41+47}{7} = 30.57$$

MEDIAN (middle): 26

MODE (most): 22

RANGE: 47 − 17 = 30

18 52 28 41 18 22 37 22 24 62

Order the data: 18, 18, 22, 22, 24, 28, 37, 41, 52, 62

Mean (average): 324 / 10 = 32.4

Median (middle): since you have an even number of numbers, you must find the **average of the two middle numbers**

the two middle numbers are: 24 and 28

$\frac{24+28}{2} = 26$

Mode (most): 18 and 22

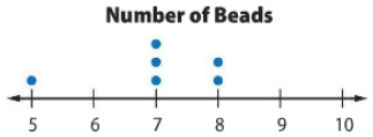
$\frac{52}{2}$

Range: $62 - 18 = 44$

Guided Practice

1. The dot plot shows the number of beads sold. Find the mean number of beads. (Examples 1–3)

7



2. The table shows the greatest depths of four of the five oceans in the world. If the average greatest depth is 8.094 kilometers, what is the greatest depth of the Southern Ocean? (Example 4) 7.24 km

Ocean	Greatest Depth (km)
Pacific	10.92
Atlantic	9.22
Indian	7.46
Arctic	5.63
Southern	■

3. **Building on the Essential Question** Why is it helpful to find the mean of a data set?

Sample answer: The mean gives the average of the data set, which is a summary of all the data using a single number.

Independent Practice

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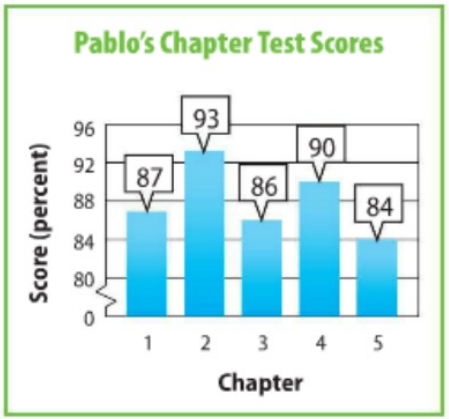
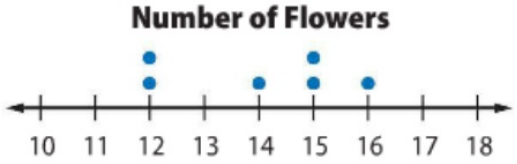
Find the mean for each data set. (Examples 1–3)

1. **88%**



2. **14**



3. **Financial Literacy** Jamila babysat nine times. She earned $15, $20, $10, $12, $20, $16, $80, and $18 for eight babysitting jobs. How much did she earn the ninth time if the mean of the data set is $24? (Example 4)

$25

4. **Model with Mathematics** Refer to the graphic novel frame below for Exercises a–b.

a. What is the mean number of wins for the Cranes? for the Panthers?

40; 40

b. Based on your answer for part **a**, is the mean a good measure for determining which team has the better record? Explain.

no; Both means are equal.

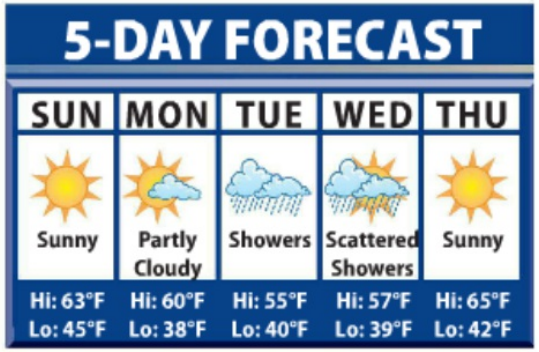
5. A *stem-and-leaf plot* is a display that organizes data from least to greatest. The digits of the least place value form the leaves, and the next place-value digits form the stems. The stem-and-leaf plot shows Marcia's scores on several tests. Find the mean test score.

Stem	Leaf
7	8
8	5 8 9
9	2 6

7|8 = 78

88

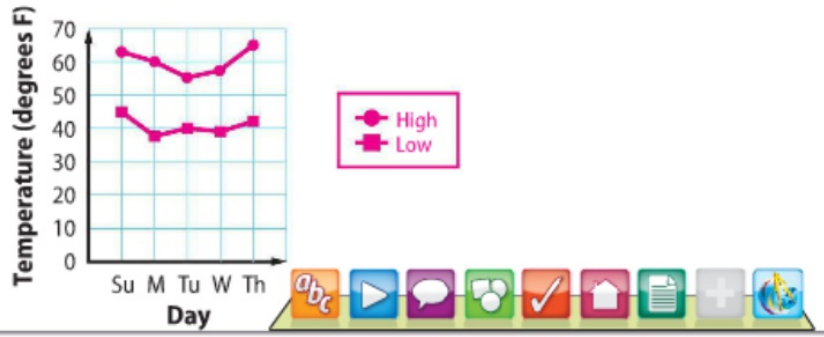
6. CCSS **Multiple Representations** The graphic shows the 5-day forecast.



a. Numbers What is the difference between the mean high and mean low temperature for this 5-day period? Justify your answer.

19.2°F; The mean high temperature was 60°F and the mean low temperature was 40.8°F; therefore, the difference is 19.2°F.

b. Graph Make a double-line graph of the high and low temperatures for the 5-day period.



H.O.T. Problems Higher Order Thinking

7. **Reason Abstractly** Create a data set that has five values. The mean of the data set should be 34. **Sample answer: pages read: 27, 38, 26, 39, 40**

8. **Persevere with Problems** The mean of a set of data is 45 years. Find the missing numbers in the data set {40, 45, 48, ?, 54, ?, 45}. Explain the method or strategy you used.

Sample answer: 41 and 42; I used the *work backward* strategy.

9. **Reason Inductively** If 99 students had a mean quiz score of 82, how much is the mean score increased by the addition of a single score of 99? Explain.

0.17; Sample answer: The sum of the scores for the 99 students must be 82×99 or 8,118. Adding the score of 99, the sum of the 100 students is 8,217. The new mean is then 82.17. The mean increased by 82.17 – 82 or 0.17.

Guided Practice

1. Find and compare the median and mode for the following set of data. monthly spending: $46, $62, $62, $57, $50, $42, $56, $40 (Examples 1–4)

$53; $62; The median is $9 less than the mode.

2. Describe the daily high temperatures using the measures of center. (Example 5)

Daily High Temperature (°F)							
34	35	31	36	31	24	33	

The measures vary by one degree each. The median is the highest at 33°, the mode is the lowest at 31°, and the mean is 32°. The data follows the measures of center in that they are close to the measures of center.

3. **Building on the Essential Question** How are mean and median similar? **Sample answer: Both are one number used to summarize a data set.**

Rate Yourself!

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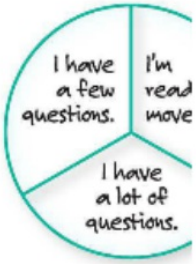

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Independent Practice

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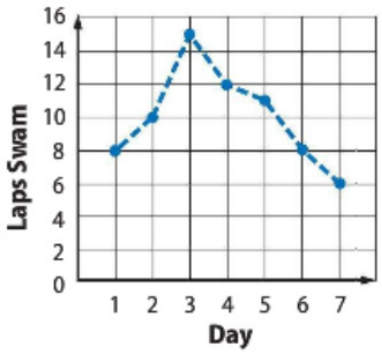
Find and compare median and mode for each set of data. (Examples 1–4)

1. math test scores: 97, 85, 92, 86 **89; none; There is no mode to compare.**

2. 

median: 10; mode: 8; The median is 2 laps more than the mode.

3. Describe the average speeds using the measures of center. (Example 5)

The values are close. The median and mode are equal, 44 mph, and the mean of about 45.6 mph, is slightly more. The data follows the measures of center in that they are close to the measures of center.

Average Speeds (mph)			
40	52	44	46
52	40	44	50
41	44	44	50

4. **Model with Mathematics** Refer to the graphic novel frame below for Exercises a–b.

a. Find the median and mode for each team's wins.

Cranes: median: 40, mode: 31; Panthers: median: 40, mode: 40

b. Which team had the better record? Justify your response.

Sample answer: The Panthers had the better record. Even though the mean and median are the same, the Panthers' mode is higher.

5 A Louisville newspaper claims that during seven days, the high temperature in Lexington was typically 6° warmer than the high temperature in Louisville. What measure was used to make this claim?

Daily High Temperatures (°F)	
Louisville	Lexington
75, 50, 80, 72, 70, 84, 70	80, 73, 75, 74, 71, 76, 76

Justify your answer. **Mode; The mode of the temperatures in Louisville is 70° and the mode for Lexington's temperatures is 76°. Since 76° − 70° = 6°, the mode was used to make this claim.**

6. CCSS **Use Math Tools** Use the Internet to find the high temperatures for each of the last seven days in a city near you. Then find the median high temperature.

See students' work.

H.O.T. Problems Higher Order Thinking

7. CCSS **Persevere with Problems** The ticket prices for a concert series were $12, $37, $45, $18, $8, $25, and $18. What was the ticket price of the eighth and final concert in this series if the set of 8 prices had a mean of $23, a mode of $18, a median of $19.50? **$21**

8. **Construct an Argument** One evening at a local pizzeria, the following number of toppings were ordered on each large pizza.

3, 0, 1, 1, 2, 5, 4, 3, 1, 0, 0, 1, 1, 2, 2, 3, 6, 4, 3, 2, 0, 2, 1, 3

Determine whether each statement is *true* or *false*. Explain your reasoning.

a. The greatest number of people ordered a pizza with 1 topping.

True; the mode of the data set is 1.

b. Half the customers ordered pizzas with 3 or more toppings, and half the customers ordered pizzas with less than 3 toppings.

False; the median of the data is 2.

9. **Justify Conclusions** In the data set {3, 7, 4, 2, 31, 5, 4}, which measure best describes the set of data: mean, median, or mode? Explain your reasoning. **Sample answer: The median or mode best represents the data. The mean, 8, is greater than all but one of the data values.**

10. **Model with Mathematics** Create a list of six values where the mean, median, and mode are 45, and only two of the values are the same.

Sample answer: 42, 43, 45, 45, 47, 48