

## Lesson 8-1 Recognize Statistical Questions

Statistical Questions:

Have \_\_\_\_\_ one possible answer

A \_\_\_\_\_ always has variability in the response, there are several possible responses to the question.

Is the question statistical or not statistical???

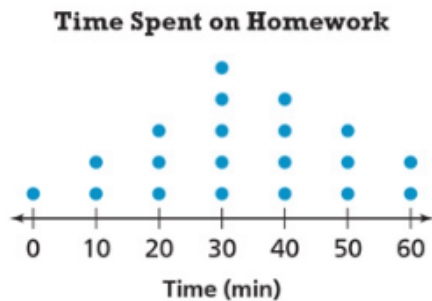
How many nickels are in a dollar?

Which former U.S. president appears on a nickel?

How many nickels do students have in their backpacks? \_\_\_\_\_

A \_\_\_\_\_, (or dot plot), can be used to display answers to a statistical question

14. **Analyze and Persevere** What statistical question could have been asked to collect the data shown in the line plot?



Did a typical student from this group spend more or less than 20 minutes on homework?

19. Select all of the statistical questions. **6.DP.1.1**

- ☐ How long did you spend on your math homework last night?
- ☐ When did Carmen start wearing braces?
- ☐ How many books did you read last week?
- ☐ Which U.S. state has the largest land area?
- ☐ How many points did each basketball player score during the last game?

## Lesson 8-2 Mean, Median, Mode and Range

**Measure of Center:** a value that represents the middle of a data set. Summarizes the data set with a single value. There can be more than one measure of center for a data set.

**Mean** (\_\_\_\_\_): the sum of all the value in a data set (\_\_\_\_\_) divided by the total number of data values in the set; mean can be a measure of center

**Median:** a measure of center; it is the \_\_\_\_\_ data value in a data set

**To find the median:**

1. Order the values from \_\_\_\_\_ to \_\_\_\_\_
2. Find the \_\_\_\_\_ value

\*\*For an EVEN number of data values, the median is the \_\_\_\_\_ of the TWO middle values\*

**Mode:** the value that occurs \_\_\_\_\_ often in a data set; also a measure of center; a data set can have one mode, no mode or more than one mode

What is the mean or average bowling score?

	9	10	FINAL SCORE
Desmond	86   7   2	95   6   3	95
Ramon	80   4   2	87   7   0	87
Kaitlin	77   5   1	84   4   3	84
Maria	74   2   4	81   5   2	81
Carla	75   3   3	83   6   2	83

Trey's Music Library	
Music Type	Minutes
Blues	62
Classical	72
Country	61
Gospel	67
Jazz	67
Latin Pop	63
Reggae	59

Find the median:

Sarah's Music Library	
Music Type	Minutes
Rock	37
Rap	42
Hip Hop	38
Bluegrass	46
New Age	51
Opera	35

Find the median:

Find the mode:

**States Traveled To or Lived In**

1, 3, 5, 2, 5, 2, 10, 7, 1, 2, 4, 1, 2, 7, 12

**MEASURE OF VARIABILITY:** uses a \_\_\_\_\_ number to describe how spread out a data set is

Find the range for Trey's music library:

**Trey's Music Library**

Music Type	Minutes
Blues	62
Classical	72
Country	61
Gospel	67
Jazz	67
Latin Pop	63
Reggae	59

**Carnival Ride Wait Times**

Person	Wait time (min.)
A	12
B	12
C	15
D	10
E	14
F	15
G	13

?



Mean:

Median:

Mode(s):

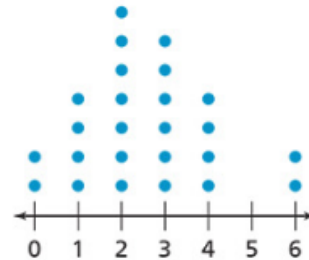
Range:

## Lesson 8-3 Line Plots

**Symmetric Data Set:** evenly spread out around the \_\_\_\_\_

Example of a symmetric data set:

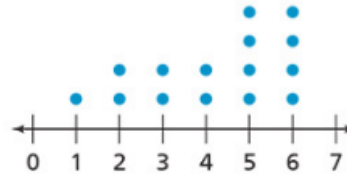
Responses to "How Many Books Are in Your Backpack?"



**Skewed Data Set:** most of the data is to one side or the other of the \_\_\_\_\_

Example of a skewed data set:

B. mean = 4.2



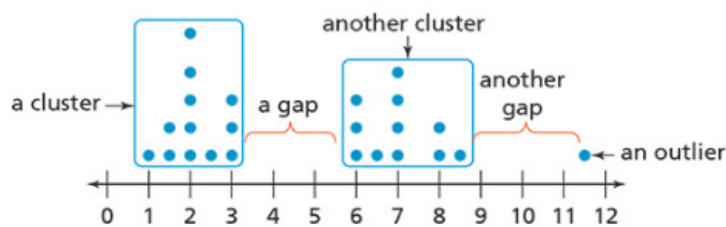
**Cluster of data:** data values that are \_\_\_\_\_ together

**Gap:** part of a data set with \_\_\_\_\_ values

**Outliers:** a data value that \_\_\_\_\_ from most of the other data values in a set

Think way \_\_\_\_\_ or way \_\_\_\_\_.

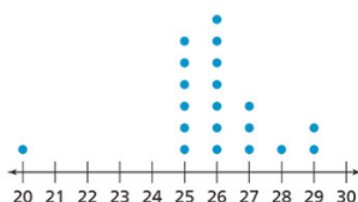
Ages of Cats at a Local Shelter (years)



15. Use the line plot. Select all the true statements. 6.DP.1.4

**Practice:**

Number of Rental Cars Available at 20 Sites

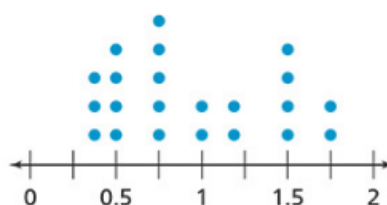


- ☐ The data set includes an outlier.
- ☐ The data set is skewed.
- ☐ The data includes a gap between 20 and 25.
- ☐ The range of the data set 10.

For 7–10, use the line plot at the right.

7. How many of River's pebbles weigh less than 1 ounce?
8. What is the combined weight of River's six heaviest pebbles?

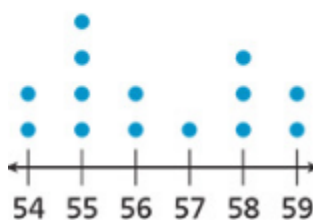
**Weights of Pebbles River Found on the Beach (ounces)**



9. **Check for Reasonableness** Which does River have more of, pebbles weighing less than 0.5 ounce or pebbles weighing more than 1.5 ounces? Explain.

Use the line plot. How many more bids did the most popular item get than the least popular item? **6.DP.1.4**

**Bids on Six Items at an Auction**

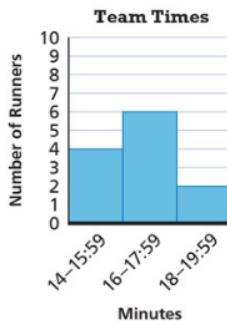


## Lesson 8-4 Frequency Tables and Histograms

**Frequency Table:** a table that shows the number of times a \_\_\_\_\_ occurs in each category or interval

Running Times	Tally	Frequency
14:00–15:59		4
16:00–17:59		6
18:00–19:59		2

**Histogram:** a graph that uses bars to show the \_\_\_\_\_ of numerical data



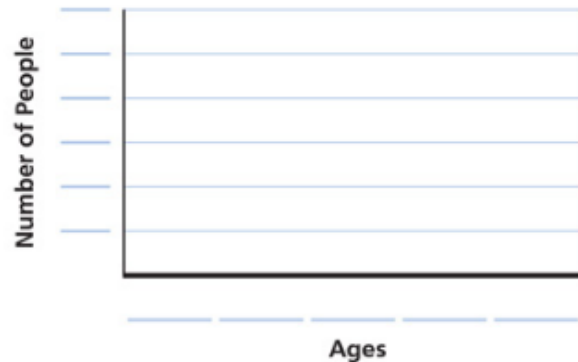
### Practice:

The data set shows ages from 6 to 27.

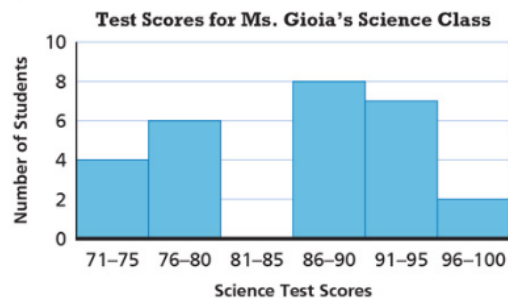
6, 11, 9, 13, 18, 15, 21, 15, 17, 24, 27, 12

Complete the frequency table and histogram.

Ages	Tally	Frequency
6–10		
11–15		
16–20		
21–25		
26–30		



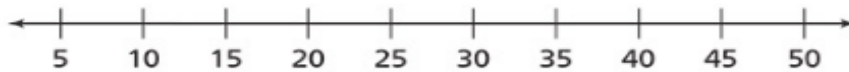
12. How many students in Ms. Gioia's class took the science test?
13. Is the distribution of test scores *symmetric* or *skewed*? Explain.
14. Can you tell from the histogram how many students scored 83 on the test? Explain.



## Lesson 8-5 Box Plots

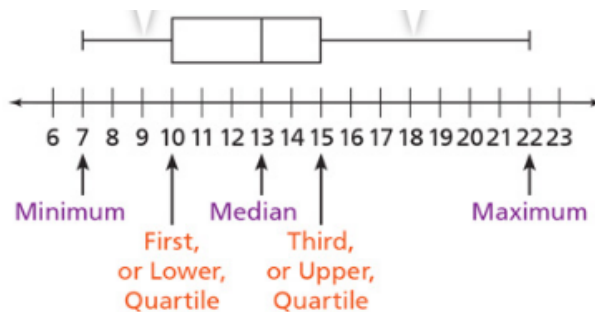
**Box Plot:** a diagram that shows the distribution of data values using the \_\_\_\_\_, quartiles, minimum value and maximum value on a number line

**Quartiles:** divides a data set into \_\_\_\_\_ equal parts



To make a box plot:

- Find \_\_\_\_\_ boundary points \*this shows how the items in a data are distributed\*
  - Minimum data point
  - Q1** First (Lower) Quartile (\_\_\_\_\_ of the first half of the data set)
  - Median (which is also the Second Quartile)
  - Q3** Third (Upper) Quartile (\_\_\_\_\_ of the second half of the data set)
  - Maximum data point
- Place a box between the first and third quartiles
- Draw a vertical line in the box to represent the median
- Draw a line segment that extends from the box to the minimum value
- Draw a line segment that extends from the box to the maximum value

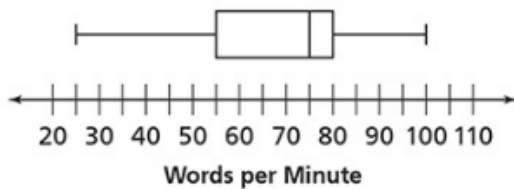


**Leveled Practice** In 9 and 10, use this data set, which shows the number of minutes Enzo practiced violin each day for 10 days. 40, 25, 45, 55, 30, 25, 30, 50, 30, 40

3. **Communicate and Justify** The box plot shows the prices in dollars of some used books. The box of the box plot starts at \$2 and ends at \$5. Alex says this means that about one-quarter of the books cost between \$2 and \$5. Is Alex correct? Explain.



**Group 1 Keyboarding Speeds**



15. Describe the typing speeds of the middle 50% of keyboarders in each group.

Sarah's scores on tests were 79, 75, 82, 90, 73, 82, 78, 85, and 78. In 4–8, use the data.

4. What are the minimum and maximum test scores?
5. Find the median.
6. Find the first and the third quartiles.

Interquartile Range (IQR):  $Q3 - Q1 = IQR$

Find the IQR of Sarah's scores.



## Lesson 8-6 Determine How Data Changes Impact Statistical Measures

How do you choose the most appropriate statistical measurement to describe the center and variability of a data set?

**Mean:** good choice to describe \_\_\_\_\_ of a data set when the data values are \_\_\_\_\_ together

- a. The \_\_\_\_\_ is a good voice to described variability when mean is used for center

**Median:** good choice to describe \_\_\_\_\_ of a data set when the data set includes an \_\_\_\_\_.

- a. The \_\_\_\_\_ is a good choice to describe variability when median is used for center

**Mode:** sometimes a good choice to describe \_\_\_\_\_ if the data set is not number or the values do not fall in intervals

In 6–8, use this data of the price of a quart of milk from five different stores:  
\$1.50, \$1.55, \$1.80, \$1.70, \$1.50

6. What are the mean, median, and mode of the data?
7. a. Which measure of center best describes the data? Which measure of variability?
- b. Calculate a measure of variability for the data. Describe the variability.

In 17 and 18, use the table.

Game Scores for Two Players on the Bravo Bowling Team									
Jessie	150	145	181	235	196	211	204	221	185
Sam	186	187	192	195	194	157	157	162	200



17. **Analyze and Persevere** Who is the better bowler? Explain. Use a measure of center in your explanation.

18. **Higher Order Thinking** During the next game, Jessie and Sam each bowl 185. Do those scores change your answer to Exercise 17? Explain. Use a measure of variability in your explanation.