

Vocabulary

dot plot A number line with dots that show the frequency of the values in a data set.

frequency table A table that shows the number of times each value or group of values in a data set occur.

histogram A type of bar graph that shows the frequencies of data in equal intervals.

Dear Family,

Throughout the next few weeks, our math class will be learning how to collect, organize, and analyze data. We will also be learning how to find measures of center.

You can expect to see homework that requires students to create and interpret a variety of graphs.

Here is a sample of how your child was taught to make a histogram.



MODEL Make a Histogram

Make a histogram for the ages of people at a restaurant.

32, 44, 22, 16, 35, 28, 37, 41, 37, 20, 31, 18, 20, 49, 56, 8

STEP 1

Make a frequency table using intervals of 10.

STEP 2

Set up the intervals on the horizontal axis and choose a scale for the vertical axis.

STEP 3

Graph the number of people in each interval.

STEP 4

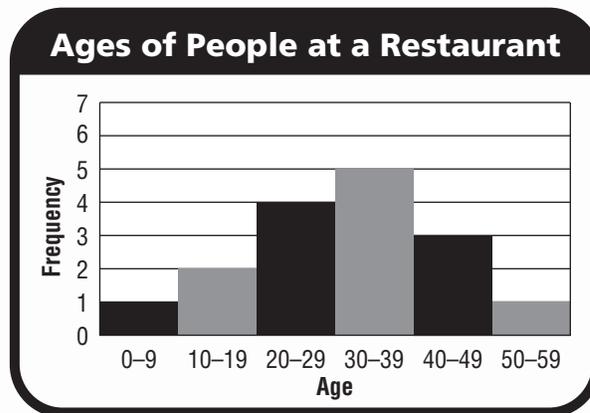
Give the graph a title and label the axes.

Tips

Making a Histogram

The intervals in a histogram must be the same size.

Interval	0-9	10-19	20-29	30-39	40-49	50-59
Frequency	1	2	4	5	3	1



Activity

Keep track of a piece of household data for one week, such as the number of cans or bottles recycled each day. Work together to choose an appropriate graph to display the data.

Carta para la casa

Querida familia,

Durante las próximas semanas, en la clase de matemáticas aprenderemos a recolectar, organizar y analizar datos. También aprenderemos a hallar los valores centrales.

Llevaré a la casa tareas para practicar la creación e interpretación de distintos tipos de gráficas.

Este es un ejemplo de la manera como aprenderemos a hacer un histograma.

Vocabulario

diagrama de puntos Una recta numérica con puntos que muestran la frecuencia de los valores en un conjunto de datos.

tabla de frecuencia Una tabla que muestra el número de veces que ocurre cada valor o grupo de valores en un conjunto de datos.

histograma Un tipo de gráfica de barras que muestra las frecuencias de los datos a intervalos iguales.

MODELO Hacer un histograma

Haz un histograma para las edades de los clientes de un restaurante.

32, 44, 22, 16, 35, 28, 37, 41, 37, 20, 31, 18, 20, 49, 56, 8

PASO 1

Haz una tabla de frecuencias usando intervalos de 10.

PASO 2

Forma los intervalos en el eje horizontal y elige una escala para el eje vertical.

PASO 3

Representa el número de personas en cada intervalo en la gráfica.

PASO 4

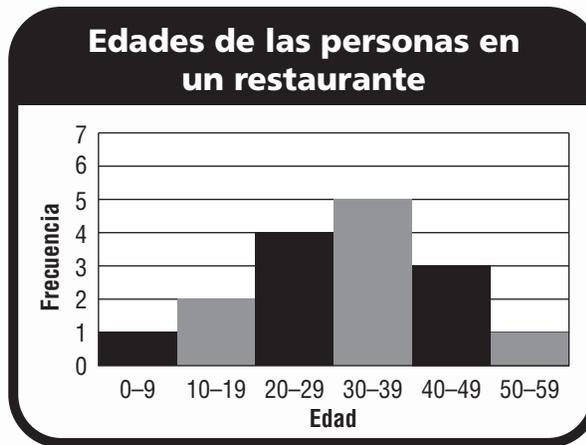
Ponle un título a la gráfica y rotula los ejes.

Pistas

Haz un histograma

Los intervalos de un histograma tienen que ser de igual tamaño.

Intervalo	0-9	10-19	20-29	30-39	40-49	50-59
Frecuencia	1	2	4	5	3	1



Actividad

Lleve la cuenta de datos de su hogar de una semana, como el número de botellas recicladas cada día, por una semana. Trabajen juntos para elegir la gráfica apropiada para mostrar esos datos.

Name _____

Recognize Statistical Questions



COMMON CORE STANDARD—6.SP.1
Develop understanding of statistical variability.

Identify the statistical question. Explain your reasoning.

1. **A.** How many touchdowns did the quarterback throw during the last game of the season?

B. How many touchdowns did the quarterback throw each game of the season?

B; the number of touchdowns in each game can vary.

2. **A.** What was the score in the first frame of a bowling game?

B. What are the scores in 10 frames of a bowling game?

3. **A.** How many hours of television did you watch each day this week?

B. How many hours of television did you watch on Saturday?

Write a statistical question you could ask in the situation.

4. A teacher recorded the test scores of her students.

5. A car salesman knows how many of each model of a car was sold in a month.

Problem Solving



6. The city tracked the amount of waste that was recycled from 2000 to 2007. Write a statistical question about the situation.

7. The daily low temperature is recorded for a week. Write a statistical question about the situation.

Lesson Check (6.SP.1)

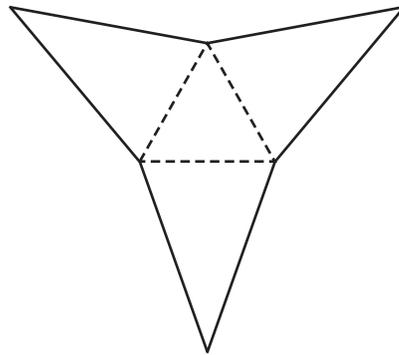
1. Elise says that the question “Do you have any siblings?” is a statistical question. Mark says that “How many siblings do you have?” is a statistical question. Who is correct?

2. Kate says that “What was the lowest amount of precipitation in one month last year?” is a statistical question. Mike says that “What is the speed limit?” is a statistical question. Who is correct?

Spiral Review (6.G.1, 6.G.2, 6.G.4)

3. A regular decagon has side lengths of 4 centimeters long. If the decagon is divided into 10 congruent triangles, each has an approximate height of 6.2 centimeters. What is the approximate area of the decagon?

4. Mikki uses the net shown to make a solid figure.



What solid figure does Mikki make?

5. A prism is filled with 30 cubes with $\frac{1}{2}$ -unit side lengths. What is the volume of the prism in cubic units?

6. A tank in the shape of a rectangular prism has a length of 22 inches, a width of 12 inches, and a height of 15 inches. If the tank is filled halfway with water, how much water is in the tank?

Name _____

Describe Data Collection

Describe the data set by listing the attribute measured, the unit of measure, the likely means of measurement, and the number of observations.



COMMON CORE STANDARDS—6.SP.5a, 6.SP.5b Summarize and describe distributions.

1. Daily temperature

Daily High Temperature (°F)				
78	83	72	65	70
76	75	71	80	75
73	74	81	79	69
81	78	76	80	82
70	77	74	71	73

Attribute: daily temperature;

unit of measure: degrees

Fahrenheit; means of

measurement: thermometer;

number of observations: 25

2. Plant heights

Height of Plants (inches)				
10.3	9.7	6.4	8.1	11.2
5.7	11.7	7.5	9.6	6.9

3. Cereal in boxes

Amount of Cereal in Boxes (cups)							
8	7	8.5	5	5	5	6.5	6
8	8.5	7	7	9	8	8	9

4. Dog weights

Weight of Dogs (pounds)							
22	17	34	23	19	18	20	20

Problem Solving



5. The table below gives the amount of time Preston spends on homework. Name the likely means of measurement.

Amount of Time Spent on Homework (hours)							
5	3	1	2	4	1	3	2

6. The table below shows the speed of cars on a highway. Name the unit of measure.

Speeds of Cars (miles per hour)							
71	55	53	65	68	61	59	62
70	69	57	50	56	66	67	63

Lesson Check (6.SP.5a, 6.SP.5b)

1. What is the attribute of the data set shown in the table?

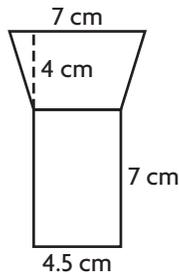
Mass of Produce (grams)				
2.4	1.7	3.2	1.1	2.6
3.3	1.3	2.6	2.7	3.1

2. What is the number of observations of the data set shown below?

Swim Times (min)		
1.02	1.12	1.09
1.01	1.08	1.03

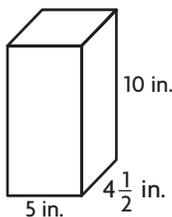
Spiral Review (6.G.1, 6.G.2, 6.G.4, 6.SP.1)

3. What is the area of the figure shown below?



4. Each base of a triangular prism has an area of 43 square centimeters. Each lateral face has an area of 25 square centimeters. What is the surface area of the prism?

5. How much sand can this container hold?



6. Jay says that “How much does Rover weigh today?” is a statistical question. Kim says that “How long are the puppies' tails in the pet store?” is a statistical question. Who is NOT correct?

Name _____

Dot Plots and Frequency Tables

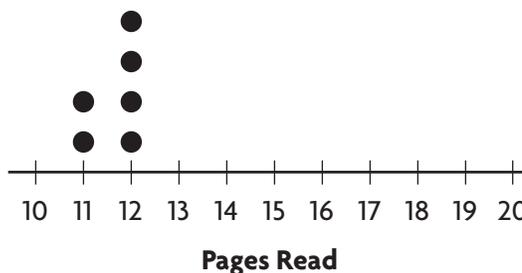


COMMON CORE STANDARD—6.SP.4
Summarize and describe distributions.

For 1–4, use the chart.

- The chart shows the number of pages of a novel that Julia reads each day. Complete the dot plot using the data in the table.

Pages Read				
12	14	12	18	20
15	15	19	12	15
14	11	13	18	15
15	17	12	11	15



- What number of pages does Julia read most often? Explain.

- Make a frequency table in the space below. Use the intervals 10–13, 14–17, and 18–21.
- Make a relative frequency table in the space below.

Problem Solving

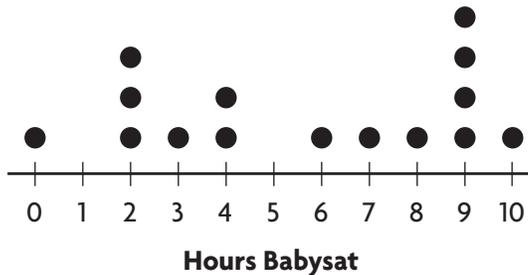


- The frequency table shows the ages of the actors in a youth theater group. What percent of the actors are 10 to 12 years old?

Actors in a Youth Theater Group	
Age	Frequency
7–9	8
10–12	22
13–15	10

Lesson Check (6.SP.4)

1. The dot plot shows the number of hours Mai babysat each week. How many hours is Mai most likely to babysit?



2. The frequency table shows the ratings that a movie received from online reviewers. What percent of the reviewers gave the movie a 4-star rating?

Movie Ratings	
Rating	Frequency
1 star	2
2 stars	5
3 stars	7
4 stars	6

Spiral Review (6.G.1, 6.G.2, 6.G.4, 6.SP.5b)

3. The dimensions of a rectangular playground are 50 times the dimensions of a scale drawing of the playground. The area of the scale drawing is 6 square feet. What is the area of the actual playground?
-
4. A square pyramid has a base side length of 8 feet. The height of each lateral face is 12 feet. What is the surface area of the pyramid?
-
5. A gift box is in the shape of a rectangular prism. The box has a length of 24 centimeters, a width of 10 centimeters, and a height of 13 centimeters. What is the volume of the box?
-
6. For a science experiment, Juanita records the height of a plant every day in centimeters. What is the attribute measured in her experiment?
-

Name _____

Histograms



COMMON CORE STANDARD—6.SP.4
Summarize and describe distributions.

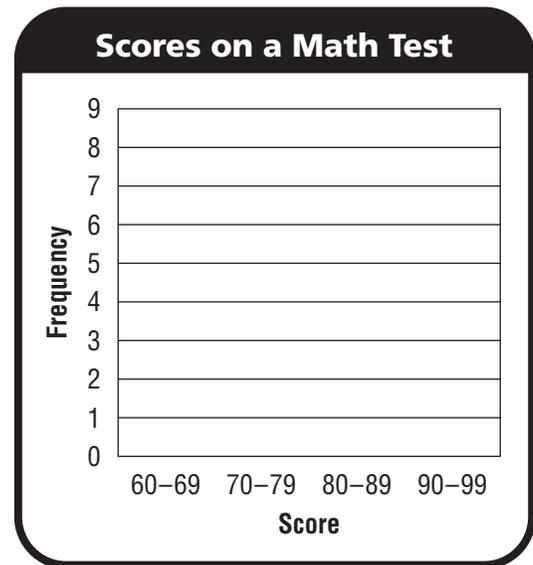
For 1–4 use the data at right.

- Complete the histogram for the data.
- What do the numbers on the y-axis represent?

- How many students scored from 60 to 69?

- Use your histogram to find the number of students who got a score of 80 or greater. Explain.

Scores on a Math Test									
85	87	69	90	82	75	74	76	84	87
99	65	75	76	83	87	91	83	92	69



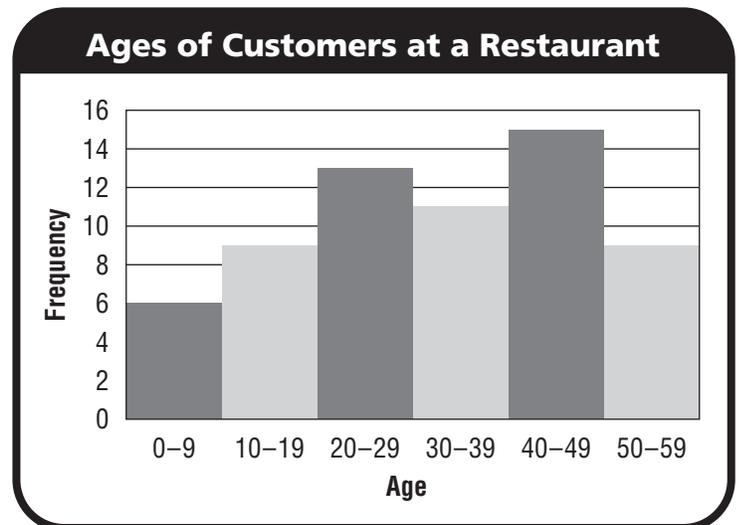
Problem Solving



For 5–6, use the histogram.

- For which two age groups are there the same number of customers?

- How many customers are in the restaurant? How do you know?

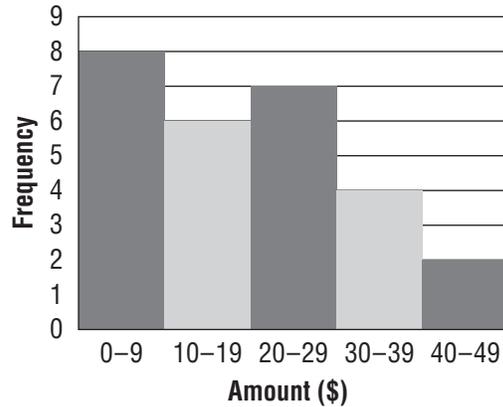


Lesson Check (6.SP.4)

1. The histogram shows the amount, to the nearest dollar, that customers spent at a museum gift shop. How many customers spent less than \$20?

2. Use the histogram in Problem 1. How many customers bought something at the gift shop?

Amount Spent at Museum Gift Shop



Spiral Review (6.G.2, 6.G.3, 6.SP.4)

3. Marguerite drew a rectangle with vertices $A(-2, -1)$, $B(-2, -4)$, and $C(1, -4)$. What are the coordinates of the fourth vertex?
4. A rectangular swimming pool can hold 1,408 cubic feet of water. The pool is 22 feet long and has a depth of 4 feet. What is the width of the pool?

5. DeShawn is using this frequency table to make a relative frequency table. What percent should he write in the Relative Frequency column for 5 to 9 push-ups?

DeShawn's Daily Push-Ups

Number of Push-Ups	Frequency
0-4	3
5-9	7
10-14	8
15-19	2

Name _____

Mean as Fair Share and Balance Point



COMMON CORE STANDARD—6.SP.5c
Summarize and describe distributions.

Use counters to find the mean of the data set.

1. Six students count the number of buttons on their shirts.

The students have 0, 4, 5, 2, 3, and 4 buttons.

Make **6** stacks of counters with heights 0, 4, 5, 2, 3, and 4.

Rearrange the counters so that all **6** stacks have the same height.

After rearranging, every stack has **3** counters.

So, the mean of the data set is **3**.

2. Four students completed 1, 2, 2, and 3 chin-ups. _____

Make a dot plot for the data set and use it to check whether the given value is a balance point for the data set.

3. Sandy's friends ate 0, 2, 3, 4, 6, 6, and 7 pretzels.
Sandy says the mean of the data is 4. Is Sandy correct?



The total distance from 4 for values less than 4 is _____.
The total distance from 4 for values greater than 4 is _____.
The mean of 4 _____ a balance point.
So, Sandy _____ correct.

Problem Solving



4. Three baskets contain 8, 8, and 11 soaps.
Can the soaps be rearranged so that there is an equal whole number of soaps in each basket?
Explain why or why not.

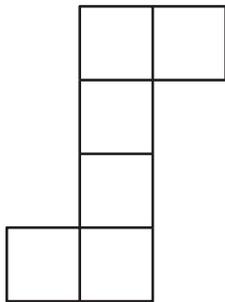
5. Five pages contain 6, 6, 9, 10, and 11 stickers.
Can the stickers be rearranged so that there is an equal whole number of stickers on each page?
Explain why or why not.

Lesson Check (6.SP.5c)

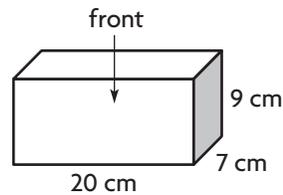
1. What is the mean of 9, 12, and 15 stamps?
2. Four friends spent \$9, \$11, \$11, and \$17 on dinner. If they split the bill equally, how much does each person owe?

Spiral Review (6.G.4, 6.SP.5b)

3. What figure does the net below represent?



4. Sarah paints the box below. She paints the whole box except for the front face. What area of the box does she paint?



5. Chloe collected data and then displayed her results in the table to the right. What is the unit of measure of the data?

Temperature at Noon	
Monday	80°F
Tuesday	84°F
Wednesday	78°F
Thursday	90°F
Friday	80°F

Name _____

Measures of Center



COMMON CORE STANDARD—6.SP.5c
Summarize and describe distributions.

Use the table for 1–4.

1. What is the mean of the data?

$$\frac{10 + 8 + 11 + 12 + 6}{5} = \frac{47}{5} = 9.4$$

9.4 points

2. What is the median of the data?

3. What is the mode(s) of the data?

Number of Points Blaine Scored in Five Basketball Games	
Game	Points Scored
1	10
2	8
3	11
4	12
5	6

4. Suppose Blaine played a sixth game and scored 10 points during the game. Find the new mean, median, and mode.

Problem Solving



5. An auto manufacturer wants their line of cars to have a median gas mileage of 25 miles per gallon or higher. The gas mileage for their five models are 23, 25, 26, 29, and 19. Do their cars meet their goal? Explain.

6. A sporting goods store is featuring several new bicycles, priced at \$300, \$250, \$325, \$780, and \$350. They advertise that the average price of their bicycles is under \$400. Is their ad correct? Explain.

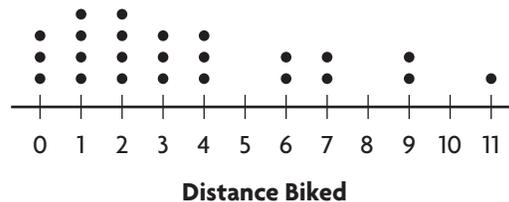
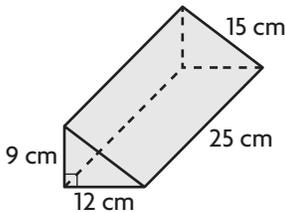
Lesson Check (6.SP.5c)

- The prices for a video game at 5 different stores are \$39.99, \$44.99, \$29.99, \$35.99, and \$31.99. What is the mode(s) of the data?
- Manuel is keeping track of how long he practices the saxophone each day. The table gives his practice times for the past five days. What is the mean of his practice times?

Manuel's Practice Time	
Day	Minutes Practiced
Monday	25
Tuesday	45
Wednesday	30
Thursday	65
Friday	30

Spiral Review (6.G.4, 6.SP.4, 6.SP.5c)

- What is the surface area of the triangular prism shown below?
- Kate records the number of miles that she bikes each day. She displayed the number of daily miles in the dot plot below. Each dot represents the number of miles she biked in one day. How many days did she bike 4–7 miles?



- Six people eat breakfast together at a restaurant. The costs of their orders are \$4, \$5, \$9, \$8, \$6, and \$10. If they want to split the check evenly, how much should each person pay?

Name _____

Effects of Outliers



COMMON CORE STANDARD—6.SP.5d
Summarize and describe distributions.

1. Identify the outlier in the data set of students in each class. Then describe the effect the outlier has on the mean and median.

Students in Each Class				
30	22	26	21	24
28	23	26	28	12

12; Possible answer: The outlier decreases the mean from about 25.3 to 24. The outlier decreases the median from 26 to 25.

2. Identify the outlier in the data set of pledge amounts. Then describe the effect the outlier has on the mean and median.

Pledge Amounts			
\$100	\$10	\$15	\$20
\$17	\$24	\$32	\$36

3. In a set of points that Milton scored in basketball games, there is an outlier. Before one game, Milton injured his knee. Do you think the outlier is greater or less than the rest of the numbers of points? Explain.

Problem Solving



4. Duke's science quiz scores are 99, 91, 60, 94, and 95. Describe the effect of the outlier on the mean and median.

5. The number of people who attended an art conference for five days was 42, 27, 35, 39, and 96. Describe the effect of the outlier on the mean and median.

Lesson Check (6.SP.5d)

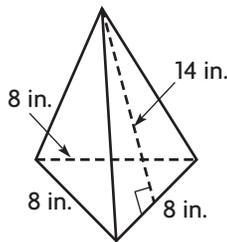
1. What is the outlier for the data set?

77, 18, 23, 29

2. The number of counties in several states is 64, 15, 42, 55, 41, 60, and 52. How does the outlier change the median?

Spiral Review (6.G.4, 6.SP.4, 6.SP.5b, 6.SP.5c)

3. Hector covers each face of the pyramid below with construction paper. The area of the base of the pyramid is 28 square feet. What area will he cover with paper?



4. Mr. Stevenson measured the heights of several students and recorded his findings in the chart below. How many observations did he complete?

Heights of Students (cm)						
160	138	148	155	159	154	155
140	135	144	142	162	170	171

5. Kendra is making a histogram for the data in the chart. She uses the intervals 0–4, 5–9, 10–14, and 15–19. What should be the height of the longest bar in her histogram?

Lengths of Lizards (cm)				
8	3	12	12	15
19	4	16	9	5
5	10	14	15	8

6. Sharon has 6 photo files on her computer. The numbers below are the sizes of the files in kilobytes. What is the median number of kilobytes for the files?

69.7, 38.5, 106.3, 109.8, 75.6, 89.4

Name _____

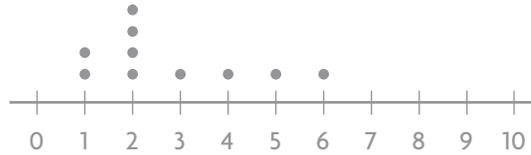
Problem Solving • Data Displays



COMMON CORE STANDARD—6.SP.4
Summarize and describe data distributions.

Read each problem and solve.

1. Josie collected data on the number of siblings her classmates have. Make a data display and determine the percent of Josie’s classmates that have more than 2 siblings.



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

40%

2. The following data show the number of field goals a kicker attempted each game. Make a data display and tell which number of field goals is the mode.

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

3. The math exam scores for a class are shown below. Make a data display. What percent of the scores are 90 and greater?

91, 68, 83, 75, 81, 99, 97, 80, 85, 70, 89, 92, 77, 95,
100, 64, 88, 96, 76, 88

4. The heights of students in a class are shown below in inches. Make a data display. What percent of the students are taller than 62 inches?

63, 57, 60, 64, 59, 62, 65, 58, 63, 65, 58, 61, 63, 64

5. The ages of employees are shown below. Which age is the mode?

21, 18, 17, 19, 18, 23, 18, 16, 22, 18, 21, 18

Lesson Check (6.SP.4)

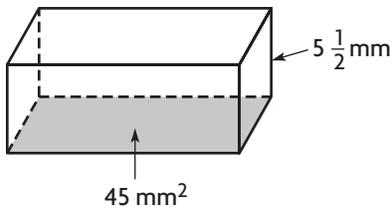
1. The number of student absences is shown below. What is the mode of the absences?

2, 1, 3, 2, 1, 1, 3, 2, 2, 10, 4, 5, 1, 5, 1

2. Kelly is making a histogram of the number of pets her classmates own. On the histogram, the intervals of the data are 0–1, 2–3, 4–5, 6–7. What is the range of the data?
-

Spiral Review (6.G.2, 6.SP.4, 6.SP.5c, 6.SP.5d)

3. The area of the base of the rectangular prism shown below is 45 square millimeters. The height is $5\frac{1}{2}$ millimeters. What is the volume of the prism?



4. The frequency table shows the number of runs scored by the Cougars in 20 of their baseball games. In what percent of the games did they score 5 or fewer runs?

Runs Scored by the Cougars	
Number of Runs	Frequency
0–2	14
3–5	3
6–8	2
9–11	1

5. There are 5 plates of bagels. The numbers of bagels on the plates are 8, 10, 9, 10, and 8. Shane rearranges the bagels so that each plate has the same amount. How many bagels are now on each plate?
-

6. By how much does the median of the data set 12, 9, 9, 11, 14, 28 change if the outlier is removed?
-