

14

Represent and Interpret Data

- Bamboo is one of the fastest-growing plants in the world. What are some uses of bamboo?
- Why is it important to know how fast a plant grows? What are some ways you can represent the height of a plant?

Chapter Learning Target:

Understand data.

Chapter Success Criteria:

- I can identify a tool to collect data.
- I can create a tally chart to make a graph.
- I can represent data in different ways.
- I can interpret data in different ways.

14

Vocabulary

Name _____

Review Word

multiples

Organize It

Complete the graphic organizer.

Multiples Of	Examples	Non-Examples
2	4, 8, _____	3, 11, _____
3	6, 12, _____	4, 10, _____
5	10, 25, _____	9, 14, _____
10	20, 70, _____	8, 17, _____

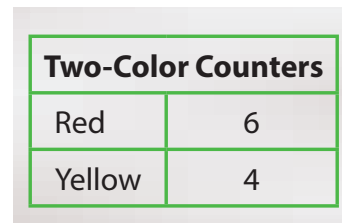
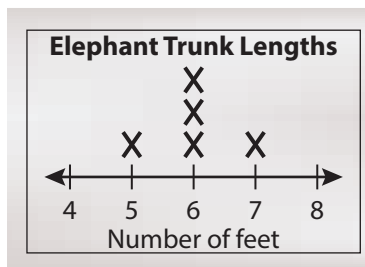
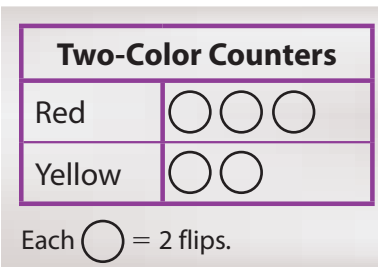
Define It

Use your vocabulary cards to match.

1. frequency table

2. line plot

3. picture graph



Chapter 14 Vocabulary Cards

bar graph

frequency
table

key

line plot

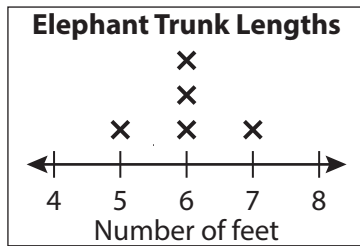
picture graph

scale

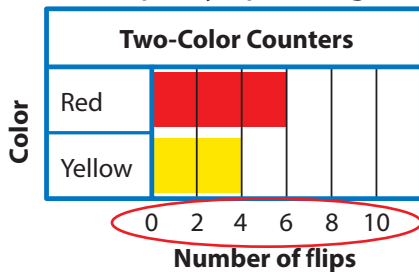
A table that gives the number of times something occurs

Two-Color Counters	
Red	6
Yellow	4

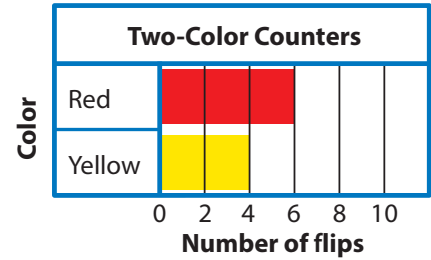
A graph that uses marks above a number line to show data values



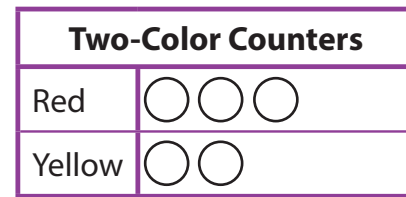
A group of labels that shows the values at equally spaced grid lines



A graph that shows data using bars

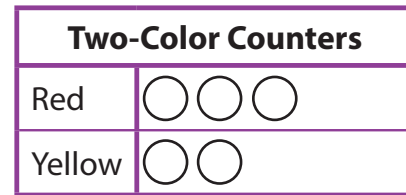


The part of a graph that gives the value of one picture or symbol



Each ○ = 2 flips.

A graph that shows data using pictures or symbols



Each ○ = 2 flips.

Learning Target: Understand the data shown by a picture graph.








Success Criteria:


- I can explain how to use a key to read a picture graph.
- I can use a picture graph to answer questions.




Explore and Grow

You survey 14 students about their favorite type of party. The results are shown on the left picture graph. Use the key to represent the same data on the right picture graph.

Favorite Type of Party	
Bounce house	  
Costume	
Pool	 
Skating	

Each  = 2 students.

Favorite Type of Party	
Bounce house	
Costume	
Pool	
Skating	

Each  = 1 student.



Structure You ask one more student to name his favorite type of party. He chooses pool party. How can you represent this on each graph? Explain.



Think and Grow: Read and Interpret Picture Graphs

A **picture graph** shows data using pictures or symbols. The **key** of a picture graph gives the value of one picture, or symbol. The value of one picture, or symbol, can be greater than 1.

Example Use the graph to answer the questions.

National Forests	
Idaho	
Colorado	
Oregon	
Arizona	

Half of a picture, or symbol, represents half the value of the whole picture. So, each = 1 forest.

Each = 2 forests. key

How many national forests are in Arizona? $3 \text{ trees} = 3 \times \underline{\quad} = \underline{\quad}$

There are national forests in Arizona.

How many national forests are in Colorado? $2 \text{ trees} = 2 \times \underline{\quad} = \underline{\quad}$

$1 \text{ half tree} = \underline{\quad}$

 + =

There are national forests in Colorado.

Show and Grow

1. Use the graph to answer the questions.

How many students chose dog?

How many students chose fish?

Favorite Pet	
Dog	
Cat	
Fish	





Each = 10 students.


 **Apply and Grow: Practice**

2. Use the graph to answer the questions.

What does the symbol  represent?

How many more students chose skiing than ice-skating?

Favorite Winter Activity	
Skiing	
Snowboarding	
Sledding	
Ice-skating	

Each  = 2 students.


How many students did *not* choose sledding?

3. Use the graph to answer the questions.


How many mangoes were eaten in June?

How many total mangoes were eaten in the months shown?

Mangoes Eaten in Summer	
June	
July	
August	

Each  = 6 mangoes.

Were more mangoes eaten in July or in June and August combined?

4.  **Logic** If $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc = 25$ on a picture graph, then what value does \bigcirc represent? Explain.



Think and Grow: Modeling Real Life

During which two weeks were a total of 52 cans recycled?

Cans Recycled	
Week 1	
Week 2	
Week 3	
Week 4	

Each = 8 cans.

During _____ and _____ 52 cans were recycled.

Show and Grow

5. Which two origami animals did a total of 32 students choose?

Favorite Origami Animal	
Swan	
Butterfly	
Frog	
Penguin	

Each = 4 students.

How many more students chose frog or penguin than swan or butterfly?

Learning Target: Understand the data shown by a picture graph.

Example Use the graph to answer the questions.

Daily Sleep Totals	
Cat	★ ★ ★ ★
Sloth	★ ★ ★ ★
Giraffe	★
Brown bat	★ ★ ★ ★ ★
Elephant	★

Each ★ = 4 hours.

How many hours do sloths sleep each day?

$$4 \text{ ★s} = 4 \times \underline{4} = \underline{16}$$

Sloths sleep 16 hours each day.

How many hours do cats sleep each day?

$$3 \text{ ★s} = 3 \times \underline{4} = \underline{12}$$

$$1 \text{ ★} = \underline{2}$$

$$\underline{12} + \underline{2} = \underline{14}$$

Cats sleep 14 hours each day.



1. Use the graph to answer the questions.

What value does the symbol ☺ represent?

How many students chose pterodactyl?

How many students chose stegosaurus or velociraptor?

How many students did *not* choose tyrannosaur?





Favorite Dinosaur	
Velociraptor	☺ ☺ ☺ ☺
Tyrannosaur	☺ ☺ ☺ ☺ ☺
Pterodactyl	☺ ☺ ☺ ☺ ☺
Stegosaurus	☺ ☺ ☺
Triceratops	☺ ☺ ☺


Each ☺ = 10 students.

2. Use the graph to answer the questions.

How many dogs participated in the survey?

Which dog treat has more votes than biscuits, but fewer votes than peanut butter? How many dogs chose this treat?





Favorite Dog Treat	
Dog bone	
Peanut butter	
Cheese	
Biscuits	

Each  = 2 dogs.

DIG DEEPER! Why would it be difficult to use a key where the value of one symbol represents an odd number of dogs?

YOU BE THE TEACHER Newton says that one more dog likes peanut butter than dog bones. Is he correct? Explain.

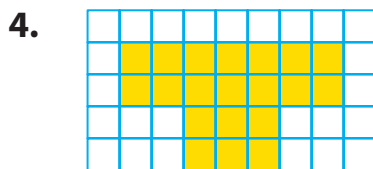
3. **Modeling Real Life** Which creature has 3 more eyes than the squid?

Number of Eyes	
Spider	
Praying mantis	
Squid	
Starfish	

Each  = 2 eyes.

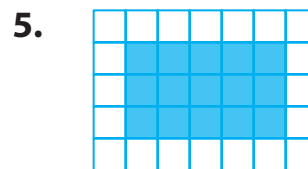
Review & Refresh

Find the area of the shape.



 = 1 square centimeter

Area = _____



 = 1 square meter

Area = _____

Learning Target: Use data to make picture graphs.

Success Criteria:

- I can read a frequency table.
- I can create a key for a picture graph.
- I can use a frequency table to make a picture graph.



Explore and Grow

Flip a two-color counter 10 times. Record the results. Then complete the picture graph.

Tally Chart


Color Flipped	
Red	
Yellow	

Frequency Table

Color	Total
Red	
Yellow	

Picture Graph

Two-Color Counters	
Red	
Yellow	

Each  = 2 flips.



Reasoning Why might you change the key if you flip the counter 100 times?



Think and Grow: Make Picture Graphs

A **frequency table** is a table that gives the number of times something occurs.

Example You survey students about their favorite planet. The frequency table shows the results. Use the table to complete the picture graph.

Favorite Planet	
Earth	25
Mars	15
Saturn	30
Jupiter	20



Step 1: Write the title at the top of the picture graph. Label a row for each category.

Step 2: Look at the numbers in the table. Choose a value for the key.

Step 3: Use the key to decide how many symbols you need for each planet. Then draw the symbols.

Favorite Planet	
Earth	
Mars	
Saturn	
Jupiter	

Each 😊 = _____ students.

Show and Grow

1. Use the frequency table to complete the picture graph.

Books You Read	
June	6
July	3
August	9

Books You Read	
June	
July	
August	

Each ○ = _____ books.

Name _____



Apply and Grow: Practice

2. Use the frequency table to complete the picture graph.

Inches of Snowfall	
January	30
February	25
March	10

January	
February	
March	

Each ○ = _____ inches.

How many symbols did you draw to represent 10 inches of snowfall in March?

How many inches do you think April would receive?

3. Use the frequency table to complete the picture graph.

Favorite Superpower	
Flying	32
Time travel	40
Super strength	12
Invisibility	24
Super speed	28

Flying	
Time travel	
Super strength	
Invisibility	
Super speed	

Each 😊 = _____ students.

Structure Choose a different value for the key. How would the picture graph change?



Think and Grow: Modeling Real Life

You survey 90 students about their favorite type of field trip. 35 students choose science center, 10 choose theater, and 20 choose zoo. The rest of the students choose museum. Complete the picture graph.

Each 😊 = _____ students.

Show and Grow

4. You survey 48 students about their favorite type of movie. 8 students choose cartoon, 12 choose action, and 24 choose comedy. The rest of the students choose musical. Complete the picture graph.



Each 😊 = _____ students.

All of the students who chose musical go to see a movie. Each ticket costs \$9. The students use two \$20 bills to pay for all of the tickets. What is the change?

Learning Target: Use data to make picture graphs.

Example Use the frequency table to complete the picture graph.



Future Job	
Astronaut	70
Firefighter	55
Actor	35
Doctor	50
Scientist	65

Future Job	
Astronaut	
Firefighter	
Actor	
Doctor	
Scientist	

Each = 10 students.

1. Use the frequency table to complete the picture graph.

Favorite Type of Art	
Drawing	10
Ceramics	25
Painting	15
Crafts	30

Drawing	
Ceramics	
Painting	
Crafts	

Each = _____ students.

Which type of art has more votes than painting, but fewer votes than crafts? How many students chose that type of art?

2. Use the frequency table to complete the picture graph.

Insects You See	
Ant	24
Butterfly	6
Bee	3
Ladybug	12

Butterfly	
Ladybug	

Each ○ = _____ insects.

DIG DEEPER! You see 1 more bee and 4 more ladybugs. How might you change the key?

3. **Modeling Real Life** You survey 72 students about their favorite carnival ride. 12 choose Ferris wheel, 24 choose swings, and 6 choose bumper cars. The rest of the students choose roller coaster. Complete the picture graph.

Each 😊 = _____ students.

Modeling Real Life All of the students who chose roller coaster want to ride together. Each ride ticket costs \$2. The students have three \$10 bills and four \$5 bills. Will they have enough to ride the roller coaster together?

Review & Refresh

Find the sum.

4. $532 + 54 = \underline{\hspace{2cm}}$

5. $718 + 226 = \underline{\hspace{2cm}}$

6. $81 + 647 = \underline{\hspace{2cm}}$

Learning Target: Understand the data shown by a bar graph.

Success Criteria:

- I can explain how to use a scale to read a bar graph.
- I can use a bar graph to answer questions.

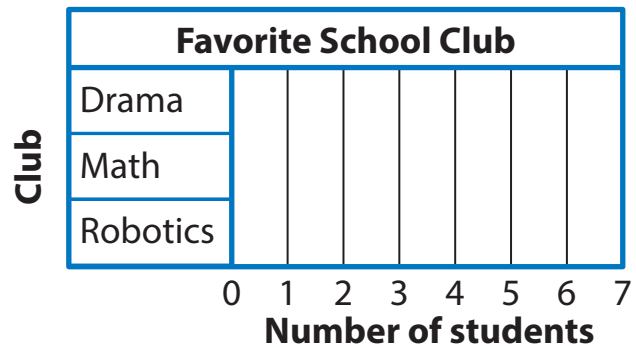


Explore and Grow

You survey 12 students about their favorite school club. The results are shown on the picture graph. Represent the same data on the bar graph.

Favorite School Club	
Drama	😊😊
Math	😊
Robotics	😊😊😊

Each 😊 = 2 students.



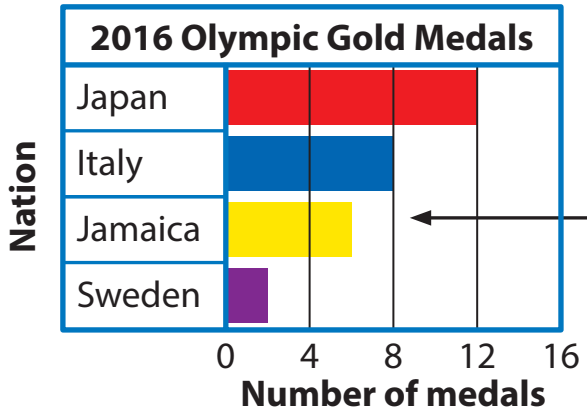
Structure How would you change the scale of the bar graph to match the picture graph?



Think and Grow: Read and Interpret Bar Graphs

A **bar graph** shows data using bars. The **scale** of a bar graph is the group of labels that shows the values at equally spaced grid lines.

Example Use the graph to answer the questions.



When a bar ends halfway between two grid lines, the data value for the bar is halfway between the two numbers on the scale.

How many gold medals did Japan win?

Japan won _____ gold medals.

How many gold medals did Jamaica win?

Jamaica won _____ gold medals.

Which country won the fewest gold medals?

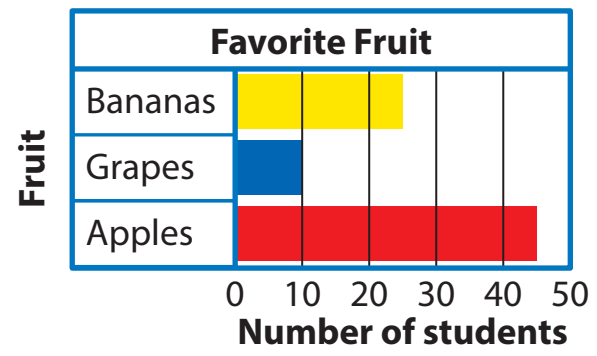
_____ won the fewest gold medals.

Show and Grow

1. Use the graph to answer the questions.

How many students chose grapes?

Which fruit is the most favorite?



Name _____



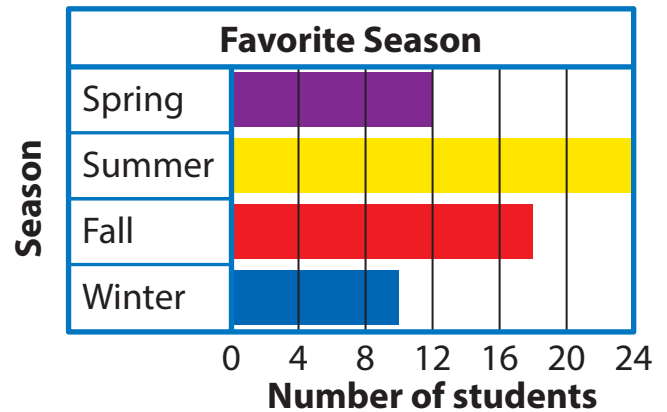
Apply and Grow: Practice

2. Use the graph to answer the questions.

How many students does each grid line represent?

How many students chose fall?

Which season is the least favorite?

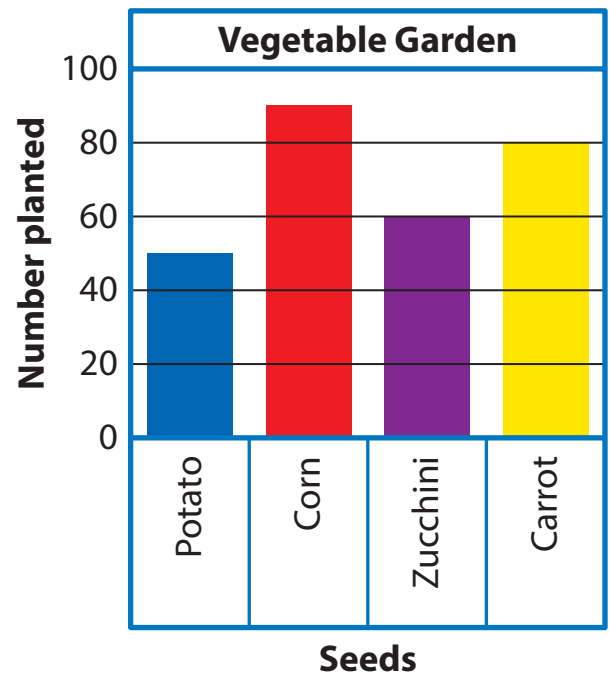


3. Use the graph to answer the questions.

How many vegetable seeds did the farmer plant in all?

The farmer wants to plant green bean seeds. She plants more green bean seeds than zucchini seeds, but fewer than carrot seeds. How many green bean seeds could the farmer have planted?

The farmer plants 30 more potato seeds. Will the farmer have more potatoes or more corn?



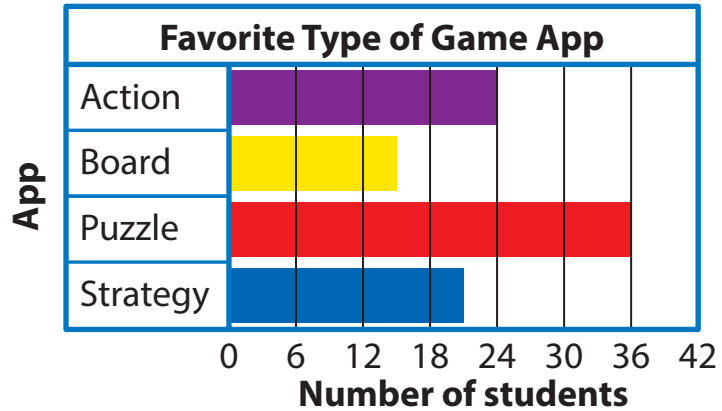
4. **Writing** Do you think a bar graph or a picture graph is easier to read? Explain.



Think and Grow: Modeling Real Life

How many more students need to choose the strategy app so that strategy is the most favorite?

Understand the problem:



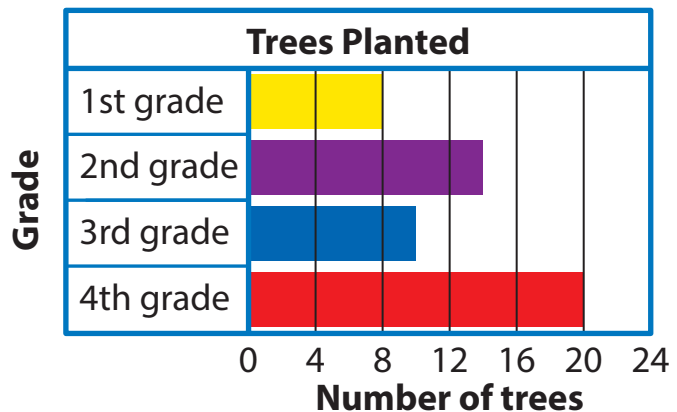
Make a plan:

Solve:

_____ more students need to choose the strategy app so it is the most favorite.

Show and Grow

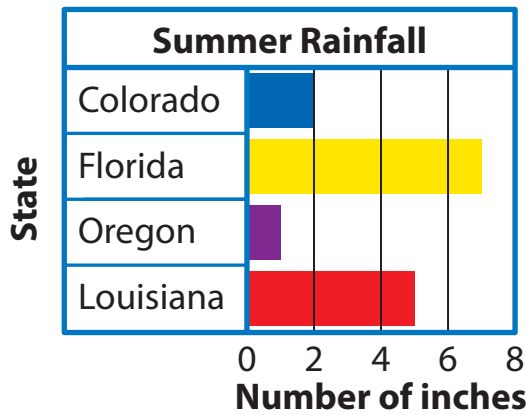
5. Each grade needs to plant 20 trees. How many more trees does second grade need to plant to complete the goal?



How many more trees did fourth grade plant than first grade and third grade combined?

Learning Target: Understand the data shown by a bar graph.

Example Use the graph to answer the questions.



How many inches of rain did Colorado have during the summer?

Colorado had 2 inches of rain.

How many inches of rain did Louisiana have during the summer?

Louisiana had 5 inches of rain.

Which state had the most rainfall during the summer?

Florida had the most rainfall.

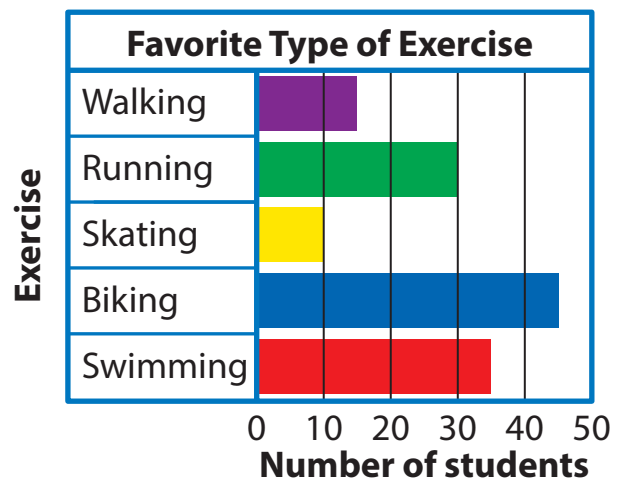
1. Use the graph to answer the questions.

How many students does each grid line represent?

Which type of exercise is the least favorite?

How many fewer students chose running than swimming?

How many students chose walking or biking?

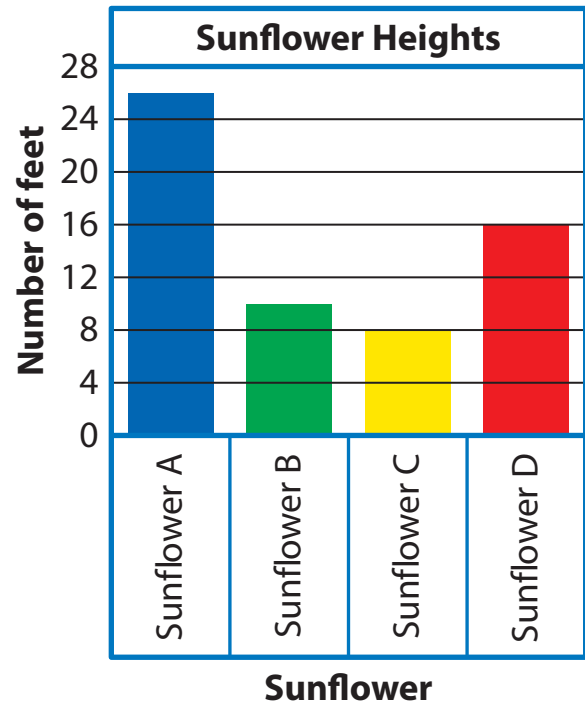


2. Use the graph to answer the questions.

Which sunflowers are taller than 11 feet?

Sunflower E has a height of 15 feet.
How much taller is Sunflower A than Sunflower E?

Writing Which sunflower is the shortest?
Explain.

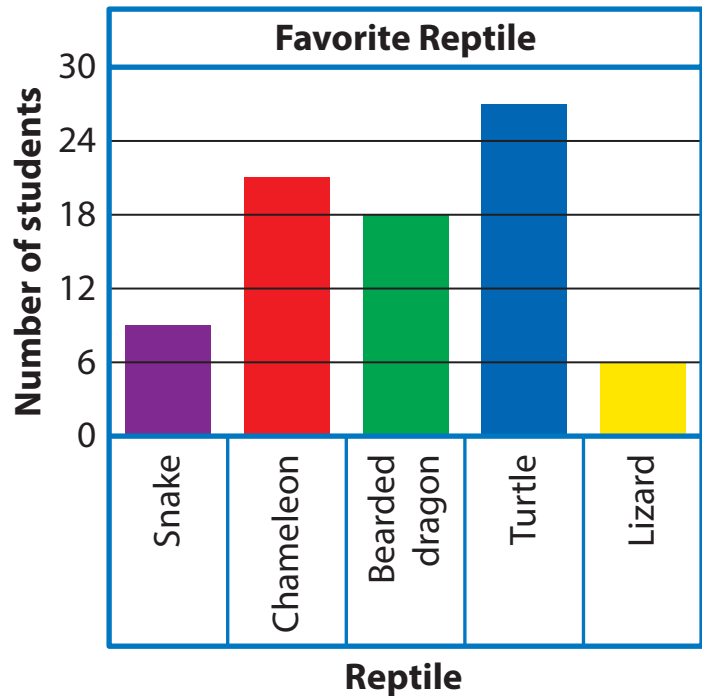


3. **Modeling Real Life** Use the graph to answer the questions.

How many more students need to choose chameleon so that chameleon is the most favorite?

You survey 10 more students and they all choose snake. What is the new total number of students who chose snake?

How many more students chose turtle than bearded dragon and lizard combined?



Review & Refresh

Estimate the difference.

4. $96 - 47$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$ | 5. $678 - 142$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$

Learning Target: Use data to make bar graphs.

Success Criteria:

- I can read a frequency table.
- I can choose a scale for a bar graph.
- I can use a frequency table to make a bar graph.



Explore and Grow

Spin the Color Spinner 10 times. Record the results. Then complete the bar graph.

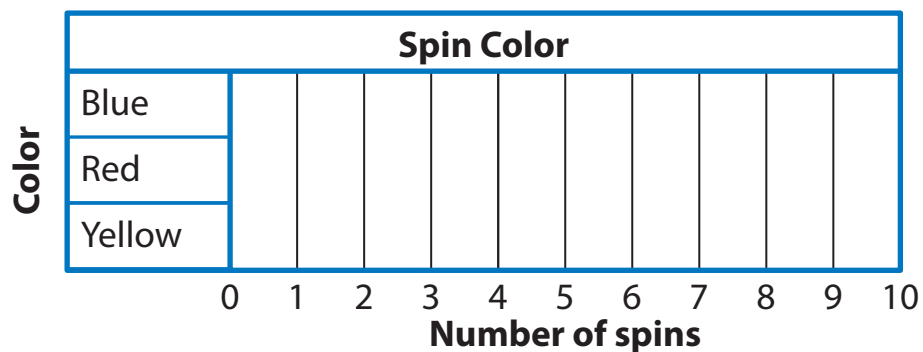
Tally Chart

Spin Color	
Blue	
Red	
Yellow	

Frequency Table

Spin Color	
Blue	
Red	
Yellow	

Bar Graph



Reasoning Explain how you would change the scale if you spin the spinner 100 times.



Think and Grow: Make Bar Graphs

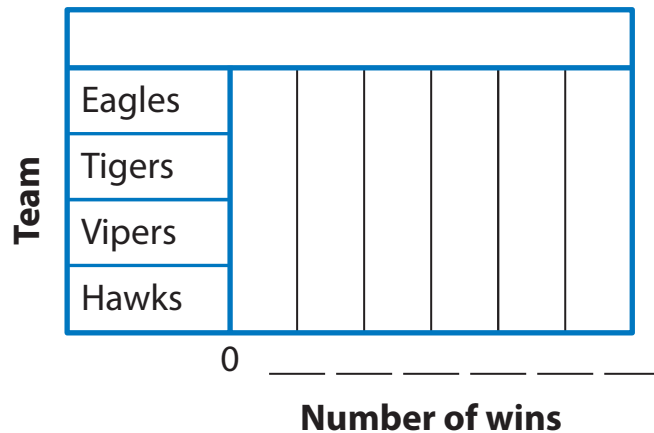


Example You record the number of times each baseball team wins. The frequency table shows the results. Use the table to complete the bar graph.

Team Wins	
Eagles	6
Tigers	3
Vipers	12
Hawks	9

Step 1: Write the title at the top of the bar graph. Label a row for each category. Label the categories.

Step 2: Look at the numbers in the table. Use a scale so that most of the bars end on a grid line. Label the scale.

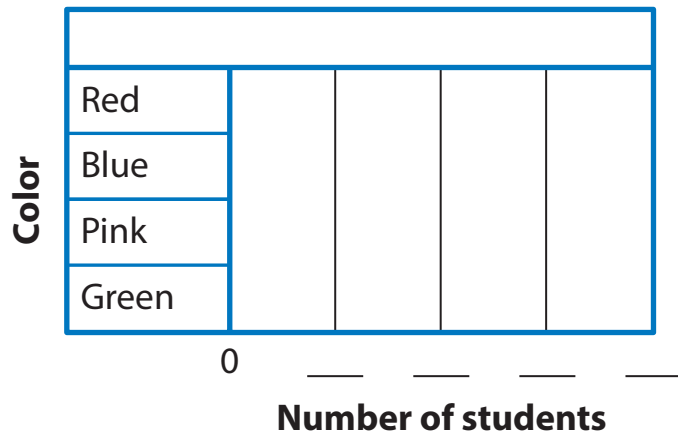


Step 3: Draw and shade a bar for each team.

Show and Grow

1. Use the frequency table to complete the bar graph.

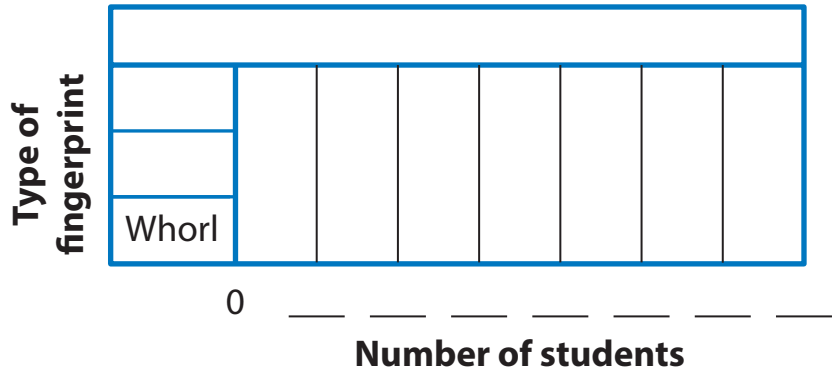
Favorite Color	
Red	2
Blue	8
Pink	4
Green	5



Apply and Grow: Practice

2. Use the frequency table to complete the bar graph.

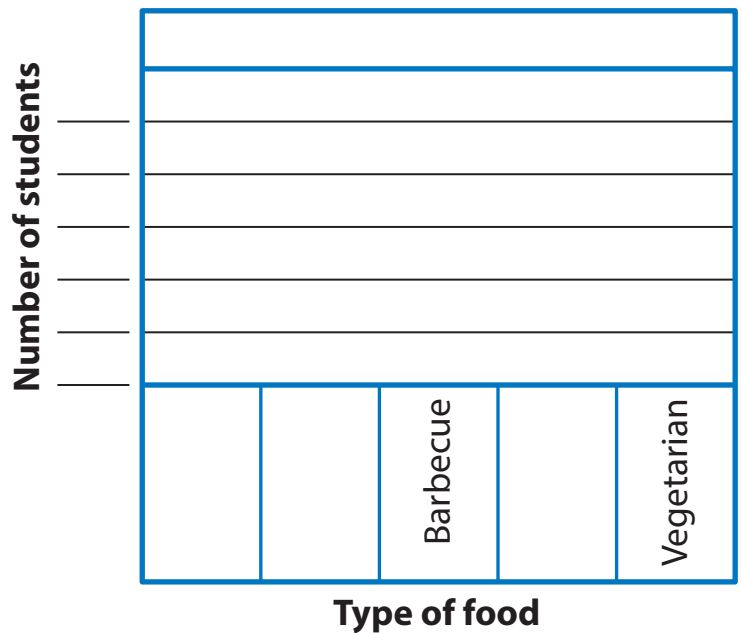
Type of Fingerprint	
Arch	100
Loop	110
Whorl	80



How would you use the graph to decide which type of fingerprint is the most common?

3. Use the frequency table to complete the bar graph.

Favorite Type of Food	
Italian	16
Mexican	18
Barbecue	12
Asian	6
Vegetarian	4

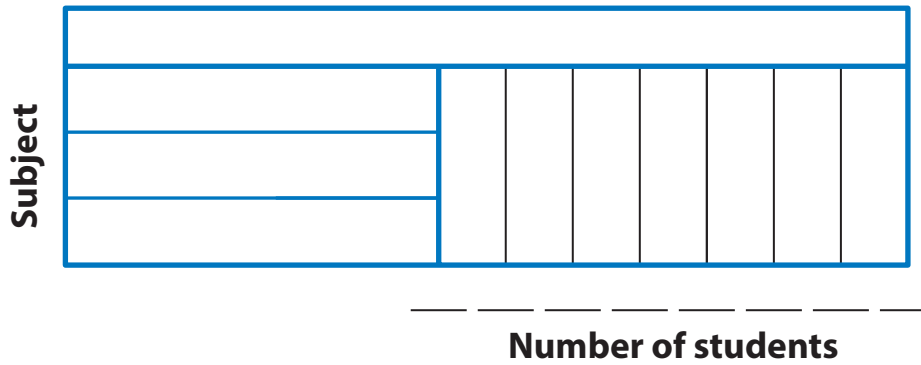


How many fewer students chose the least favorite type of food than the most favorite type of food?



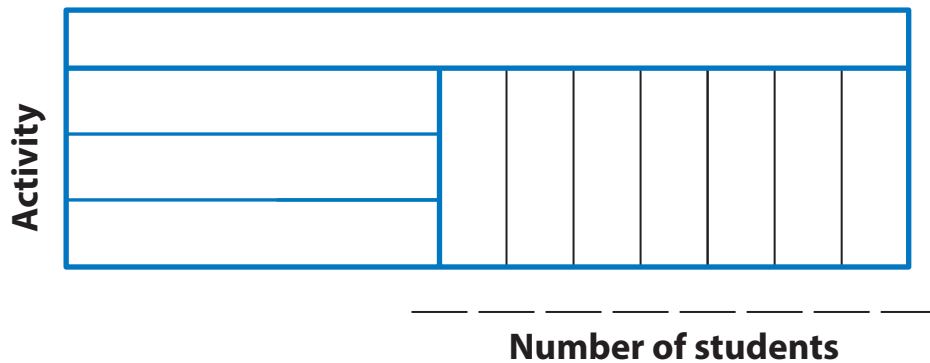
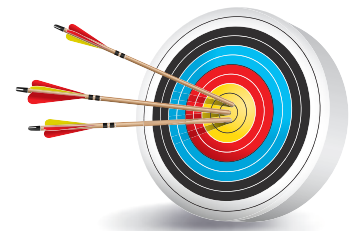
Think and Grow: Modeling Real Life

You survey 27 students about their favorite subject. Nine students choose science. Six fewer students choose English than science. The rest of the students choose math. Complete the bar graph.



Show and Grow

4. You survey 22 students about their favorite camp activity. Eight students choose archery. Four more students choose swimming than archery. The rest of the students choose hiking. Complete the bar graph.



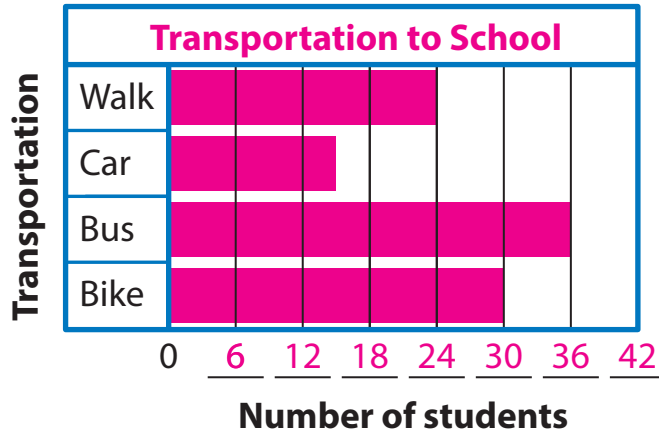
How many fewer students chose archery than swimming and hiking combined?

Learning Target: Use data to make bar graphs.

Example Use the frequency table to complete the bar graph.

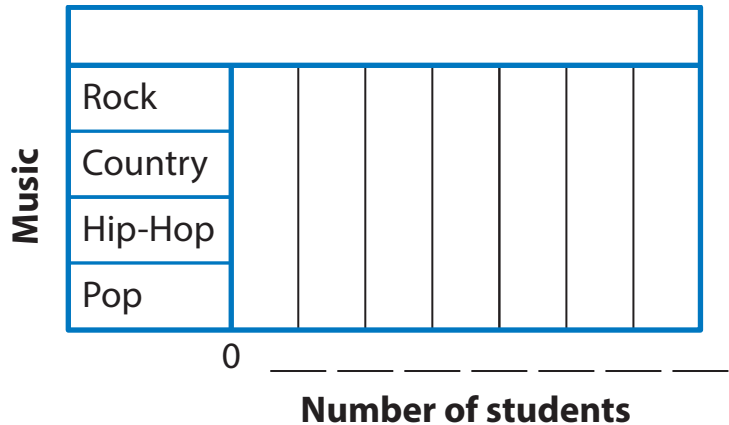


Transportation to School	
Walk	24
Car	15
Bus	36
Bike	30



1. Use the frequency table to complete the bar graph.

Favorite Type of Music	
Rock	5
Country	10
Hip-Hop	10
Pop	30

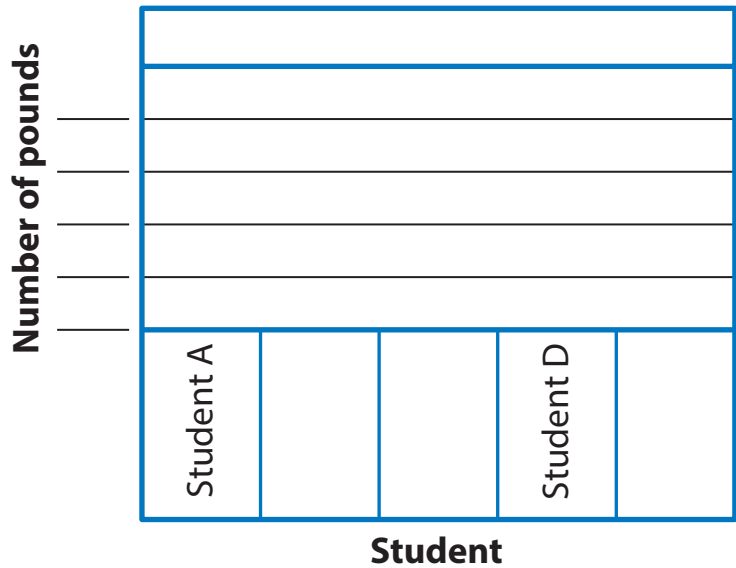


How many students does each grid line represent?

How would you use the graph to find the most favorite type of music?

2. Use the frequency table to complete the bar graph.

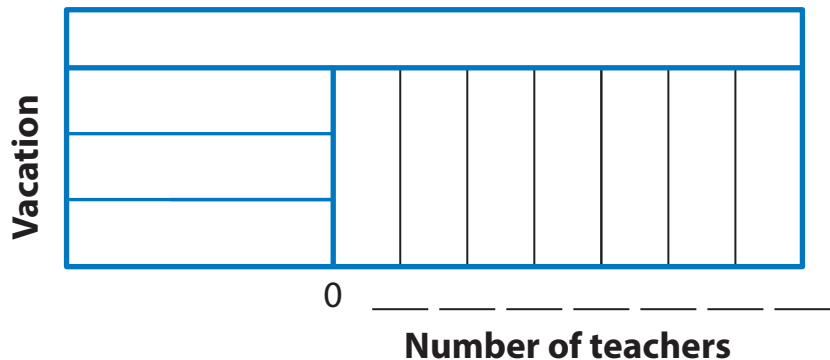
Weight of Backpack (pounds)	
Student A	12
Student B	10
Student C	16
Student D	4
Student E	6



MP Structure On the last day of school, each backpack weighs less than 5 pounds. How could the scale of the bar graph change?

3. **Modeling Real Life** You survey 26 teachers about their favorite vacation spot. Six teachers choose amusement park. Two more teachers choose camping than amusement park. The rest of the teachers choose beach. Complete the bar graph.

How many fewer teachers chose camping than amusement park and beach combined?



Review & Refresh

Find the difference.

4. $474 - 19 = \underline{\quad}$

5. $615 - 204 = \underline{\quad}$

6. $232 - 53 = \underline{\quad}$

Learning Target: Use data to make line plots.

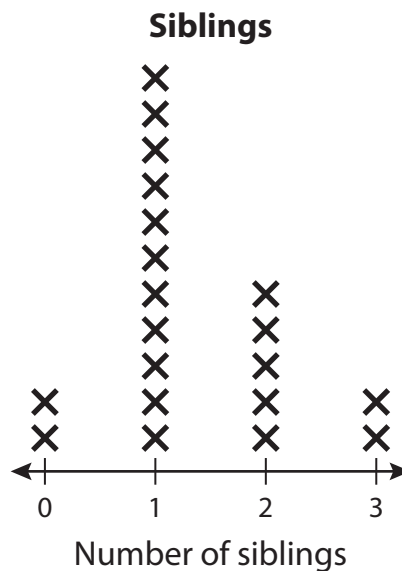
Success Criteria:

- I can read the data shown in a table.
- I can label the scale for a line plot.
- I can make a line plot.



Explore and Grow

A teacher asks students to line up according to the number of siblings they have. The results are shown. Create a Line Plot for the number of siblings the students in your class have.



Structure Compare the two line plots. How are the line plots the same? How are they different?



Think and Grow: Make Line Plots

A **line plot** uses marks above a number line to show data values.

Example The table shows the weights of 15 bald eagles. Use the table to complete the line plot.

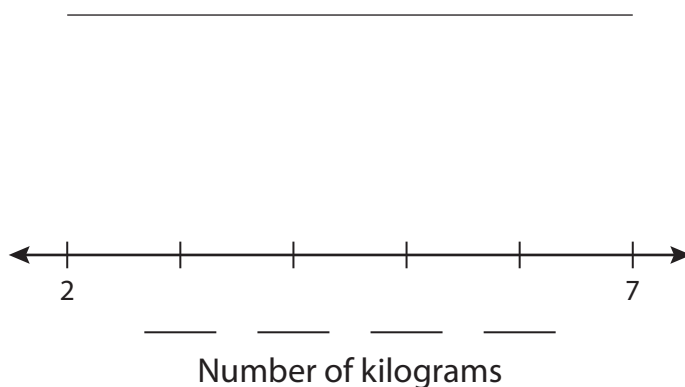
Bald Eagle Weights (kilograms)		
3	5	4
4	5	5
5	6	4
4	3	3
4	6	4



Step 1: Write the title at the top of the line plot.

Step 2: Look at the numbers in the table. Use a scale that shows all of the data values. Draw a number line using the scale. Label the scale.

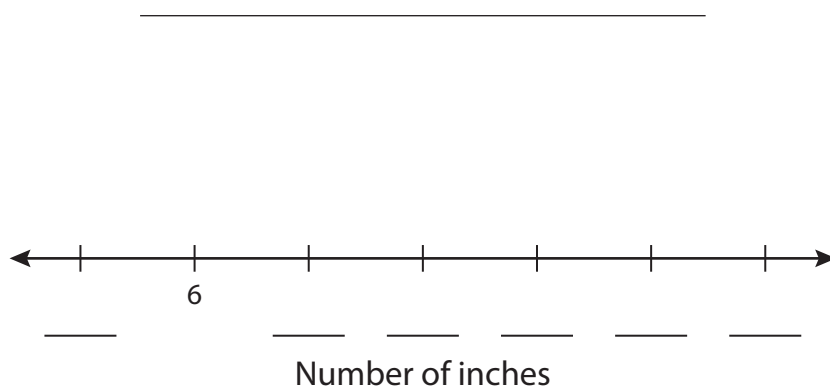
Step 3: Mark an X for each data value.



Show and Grow

1. Use the table to complete the line plot.

Flower Heights (inches)		
8	10	9
6	9	8
7	10	8
7	8	10
8	8	7



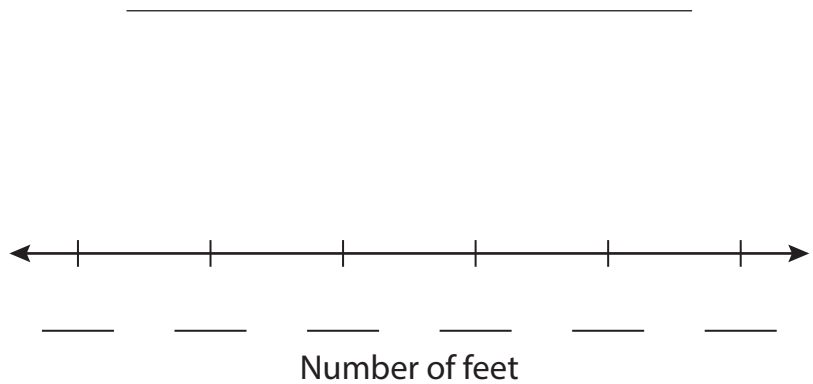
Name _____



Apply and Grow: Practice

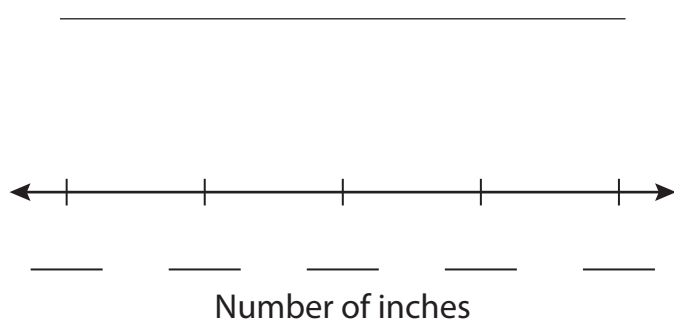
2. Use the table to complete the line plot.

Wave Heights (feet)	
29	30
25	29
28	27
30	25
29	30
27	29
28	25




How many waves were 26 feet tall or taller?

3. Use the table to complete the line plot.



Which giraffe tongue length is the most common?

Giraffe Tongue Lengths (inches)	
19	20
17	19
21	20
19	21
20	17
18	20
20	17

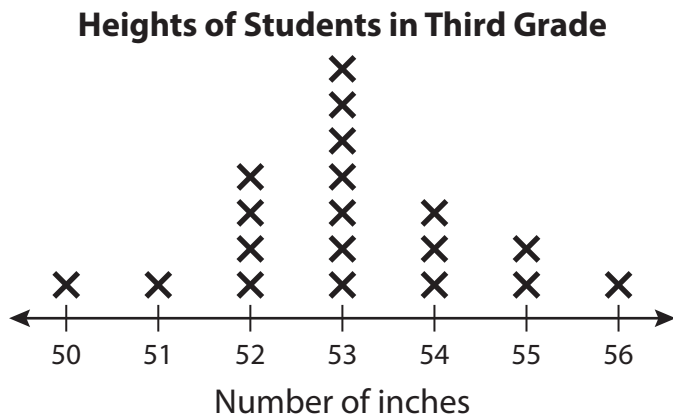
 **Precision** How many giraffe tongues are 19 inches long?



Think and Grow: Modeling Real Life

What is the difference in height of the tallest student and the shortest student?

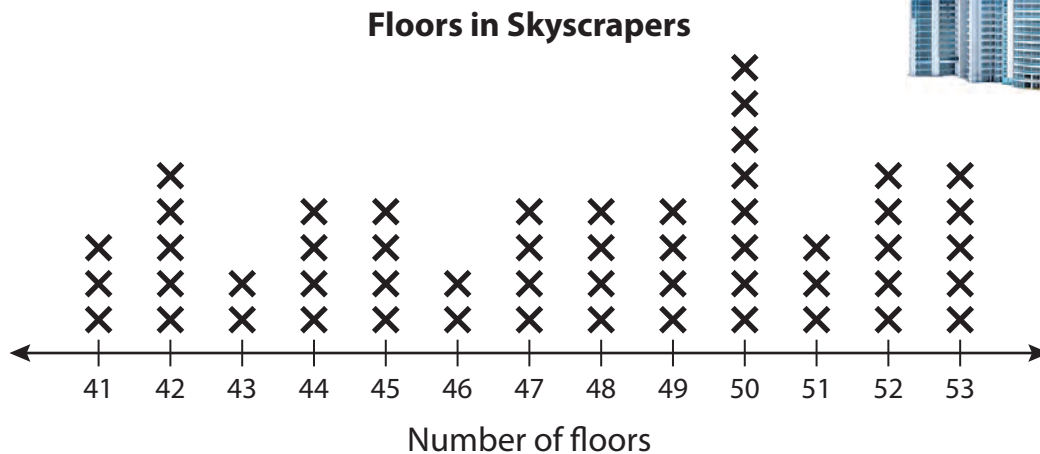
Subtraction equation:



The difference in height is _____ inches.

Show and Grow

- What is the difference between the greatest number of floors and the least number of floors?



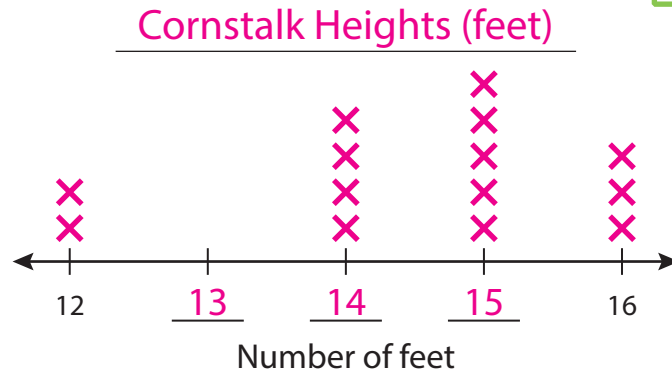
How many fewer skyscrapers are there with over 50 floors than skyscrapers with under 50 floors?

Learning Target: Use data to make line plots.

Example Use the table to complete the line plot.



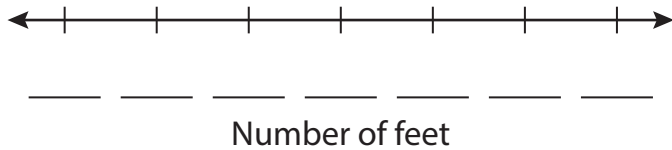
Cornstalk Heights (feet)	
16	15
14	14
12	15
15	15
14	12
16	16
15	14



How many cornstalks are 15 feet tall?

5 cornstalks are 15 feet tall.

1. Use the table to complete the line plot.



How many snakes are longer than 10 feet?

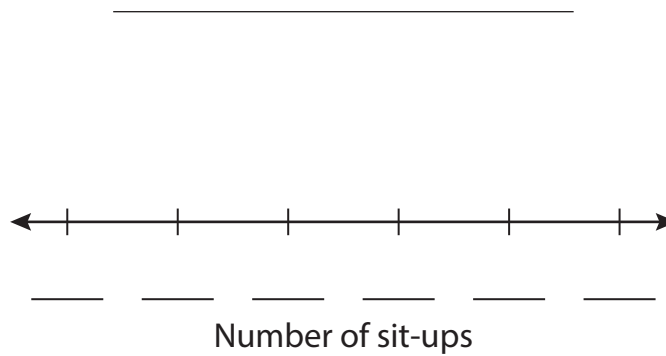
Which snake length is the most common?

Snake Lengths (feet)	
10	11
7	7
6	10
9	5
10	6
7	10
6	9



2. Use the table to complete the line plot.

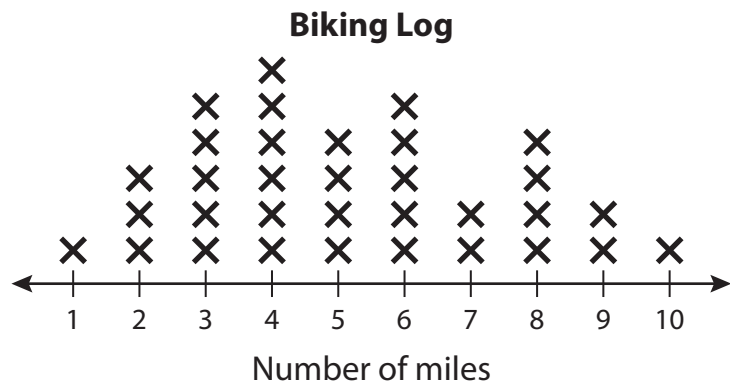
Sit-Ups	
30	27
27	32
32	29
28	27
27	29
29	27
27	32



MP Reasoning Are most of the students able to complete 30 sit-ups? Explain.

DIG DEEPER! Student H completed more sit-ups than Student F, but fewer sit-ups than Student B. How many sit-ups could Student H have completed?

3. **Modeling Real Life** What is the difference of the most number of miles biked and the least number of miles biked?



Review & Refresh

Find the sum or difference. Use the inverse operation to check.

4.
$$\begin{array}{r} 523 \\ + 237 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 403 \\ - 252 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 612 \\ + 387 \\ \hline \end{array}$$

Learning Target: Measure objects to the nearest half inch and make line plots.

Success Criteria:

- I can measure the lengths of objects to the nearest half inch.
- I can record lengths on a line plot.



Explore and Grow

How much longer is the green ribbon than the yellow ribbon?
How do you know?



How much longer is the purple ribbon than the orange ribbon?
How do you know?

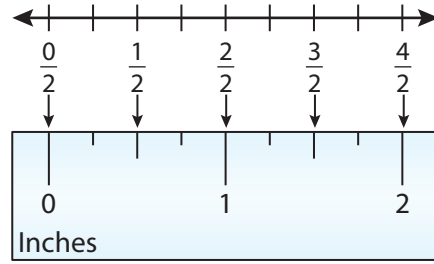


Structure How can you use a ruler to measure an object to the nearest half inch?



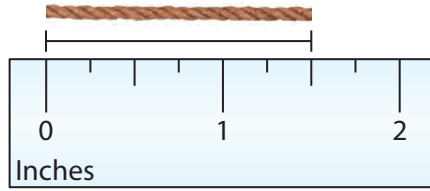
Think and Grow: Measure Lengths: Half Inch

Not all objects are whole numbers of inches long. You can use a ruler to measure length to the nearest half inch. Remember to line up the end of the object with 0.

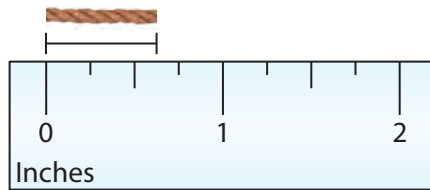


Example Measure the length of each string to the nearest half inch.

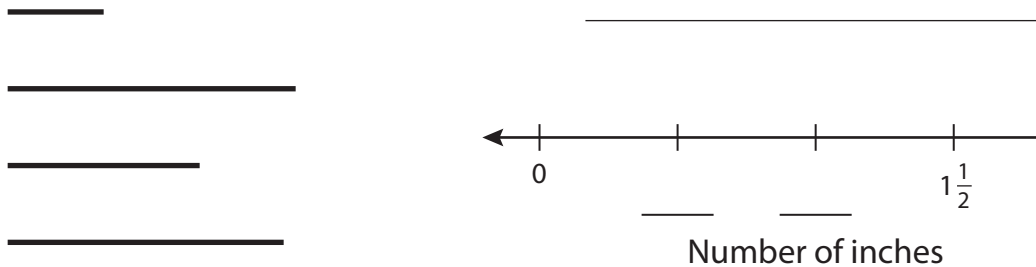
The string is $\frac{3}{2}$ inches long. You can also represent the length as 1 whole inch and one $\frac{1}{2}$ inch, or $1\frac{1}{2}$ inches.



The string is between $\frac{1}{2}$ inch and 1 inch long. The half-inch marking that is closest to the end of the string is $\frac{1}{2}$. So, the string is about $\frac{1}{2}$ inch long.



Example Measure the length of each line to the nearest half inch. Then record each length on the line plot.



Show and Grow

1. Measure the length of each line to the nearest half inch. Then record each length on the line plot above.

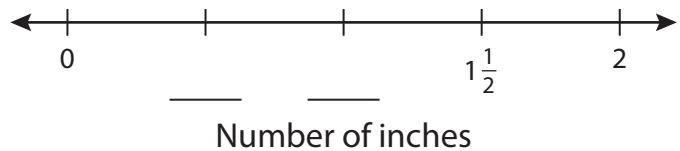


Name _____



Apply and Grow: Practice

2. Measure the length of each line to the nearest half inch. Record each length on the line plot.



How might the scale change if the length of the line below is recorded on the line plot?



3. Measure the length of each toy to the nearest half inch. Then record each length on the line plot.

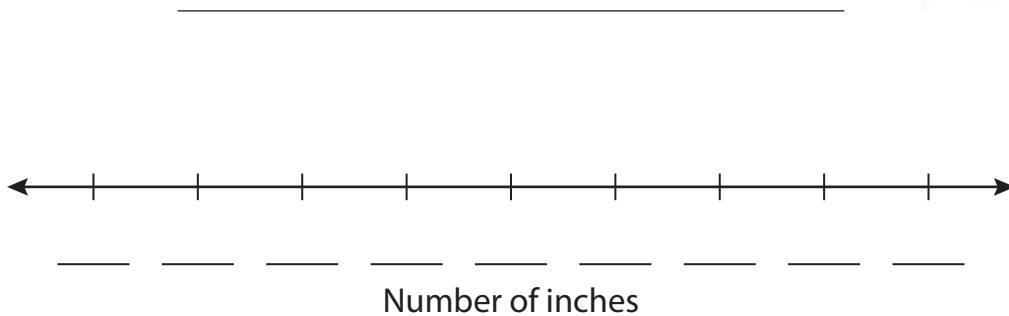


Number of inches



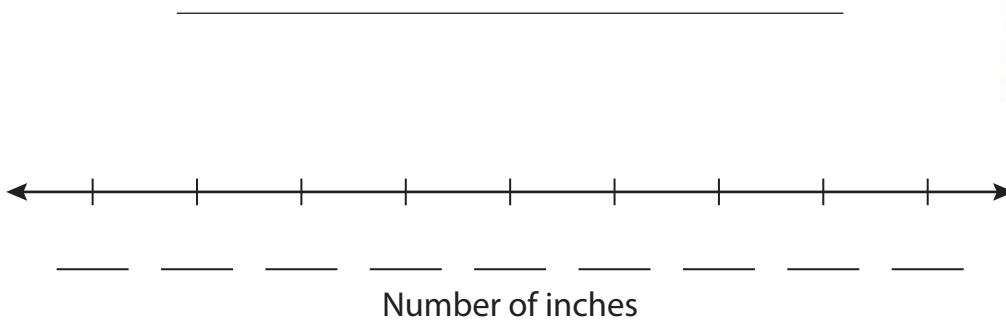
Think and Grow: Modeling Real Life

Measure the lengths of 10 crayons to the nearest half inch.
Record each length on the line plot.



Show and Grow

4. Measure the lengths of 10 shoes to the nearest half inch. Record each length on the line plot.

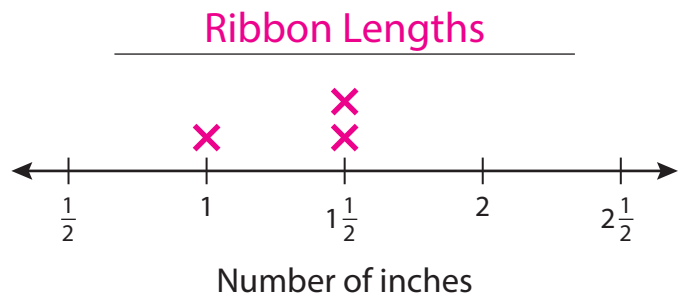
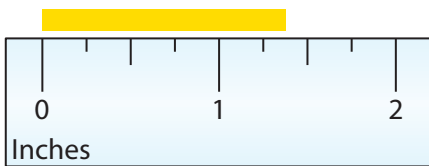
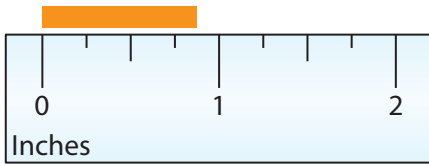
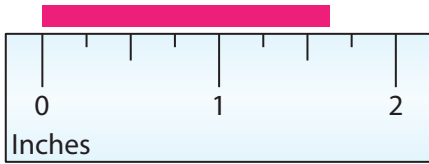


What is the length of the longest shoe? What is the length of the shortest shoe?

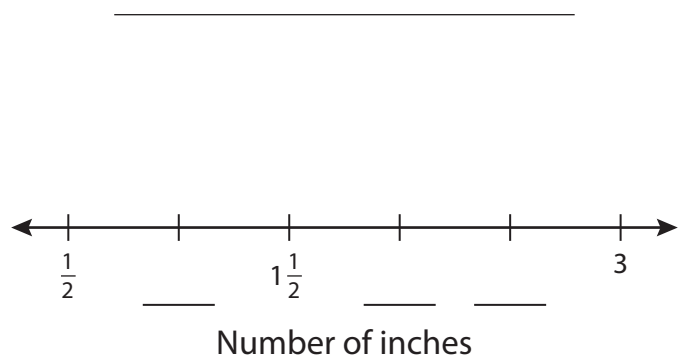
What length of shoe is the most common?

Learning Target: Measure objects to the nearest half inch and make line plots.

Example Measure the length of each ribbon to the nearest half inch. Then record each length on the line plot.

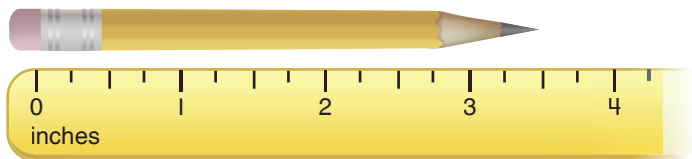


1. Measure the length of each pretzel stick to the nearest half inch. Record each length on the line plot.



How many pretzel sticks are 1 inch?

2. **YOU BE THE TEACHER** Descartes says the pencil is $3\frac{1}{2}$ inches long. Is he correct? Explain.



3. **MP Reasoning** Your friend's wrist measures $\frac{13}{2}$ inches around. His friendship bracelet is $6\frac{1}{2}$ inches. Will the bracelet fit around his wrist? Explain.

4. **Modeling Real Life** Measure the lengths of 10 plant leaves to the nearest half inch. Record each length on the line plot.



What is the length of the longest leaf?
What is the length of the shortest leaf?

What leaf length is the most common?

Review & Refresh

Find the product.

5. $5 \times 30 = \underline{\quad}$

6. $9 \times 50 = \underline{\quad}$

7. $6 \times 70 = \underline{\quad}$

Learning Target: Measure objects to the nearest quarter inch and make line plots.

Success Criteria:

- I can measure the lengths of objects to the nearest quarter inch.
- I can record lengths on a line plot.

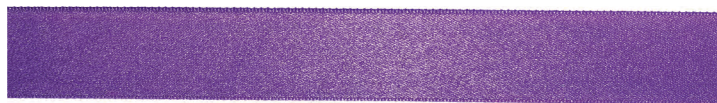


Explore and Grow

How much longer is the green ribbon than the yellow ribbon?
How do you know?



How much longer is the purple ribbon than the orange ribbon?
How do you know?



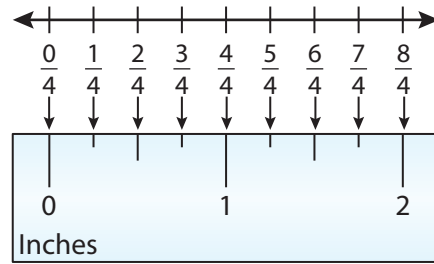
Reasoning Measure the line to the nearest half inch and the nearest quarter inch. Which measurement is better? Why?





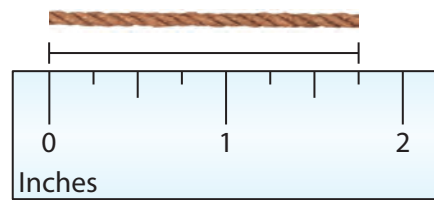
Think and Grow: Measure Lengths: Quarter Inch

You know how to use a ruler to measure lengths to the nearest half inch. You can also use a ruler to measure lengths to the nearest quarter-inch.



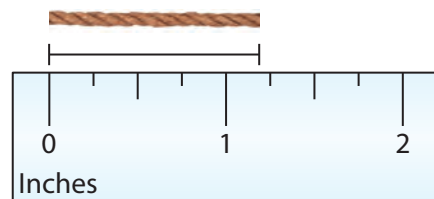
Example Measure the length of each string to the nearest quarter inch.

The string is $\frac{7}{4}$ inches long. You can also represent the length as 1 whole inch and three $\frac{1}{4}$ inches, or $1\frac{3}{4}$ inches.

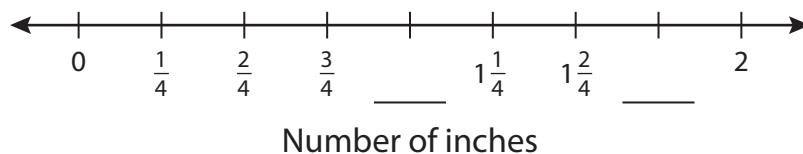


The string is between 1 inch and $1\frac{1}{4}$ inches long.

The quarter-inch marking that is closest to the end of the string is $1\frac{1}{4}$. So, the string is about $1\frac{1}{4}$ inches long.



Example Measure the length of each line to the nearest quarter inch. Then record each length on the line plot.



Show and Grow

1. Measure the length of each line to the nearest quarter inch. Then record each length on the line plot above.

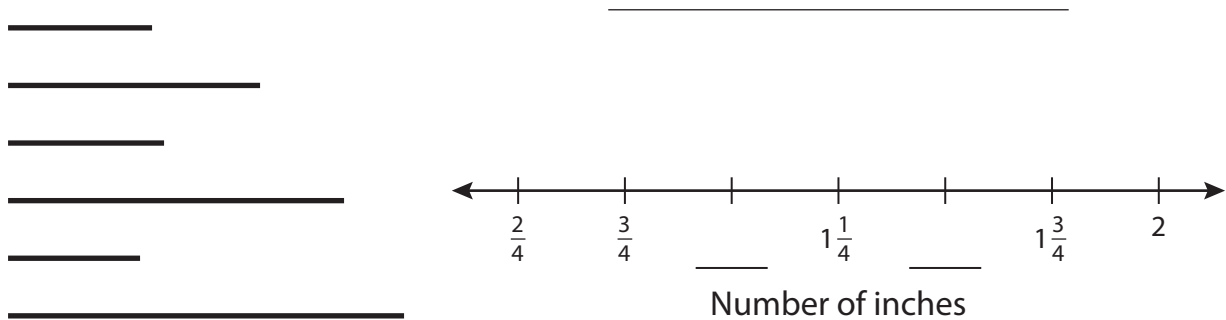


Name _____



Apply and Grow: Practice

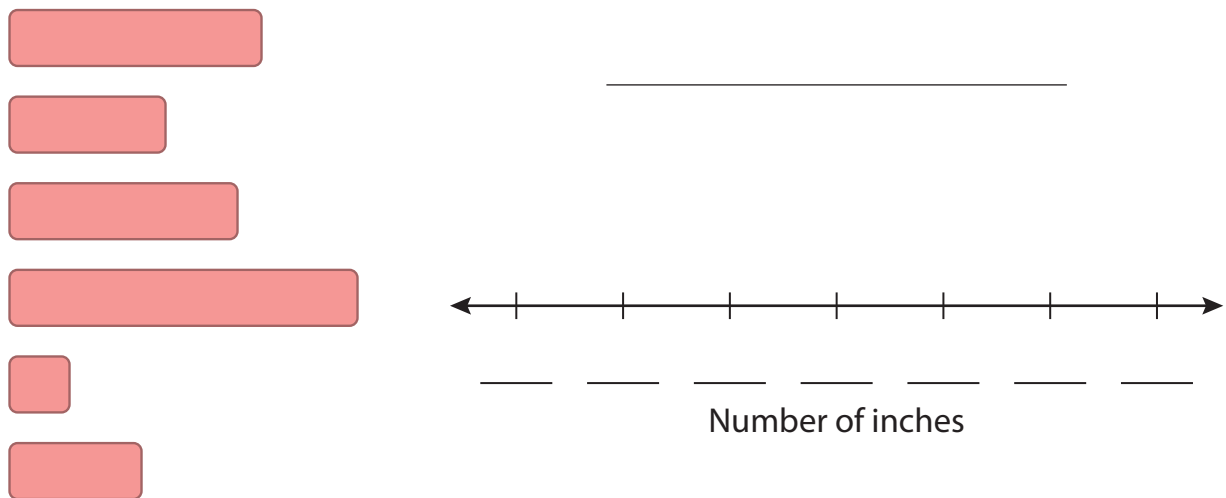
2. Measure the length of each line to the nearest quarter inch. Record each length on the line plot.



How might the scale change if the two lines below are recorded in the line plot?



3. Measure the length of each eraser to the nearest quarter inch. Then record each length on the line plot.

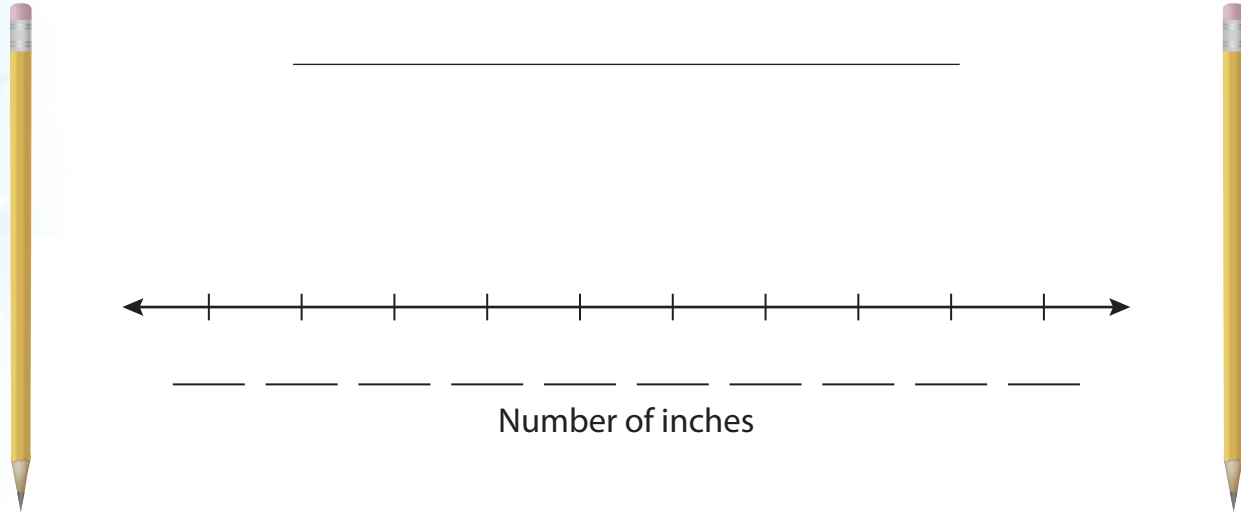


4. **MP Precision** Draw a line that measures $5\frac{3}{4}$ inches long.



Think and Grow: Modeling Real Life

Measure the lengths of 10 pencils to the nearest quarter inch. Record each length on the line plot.



Show and Grow

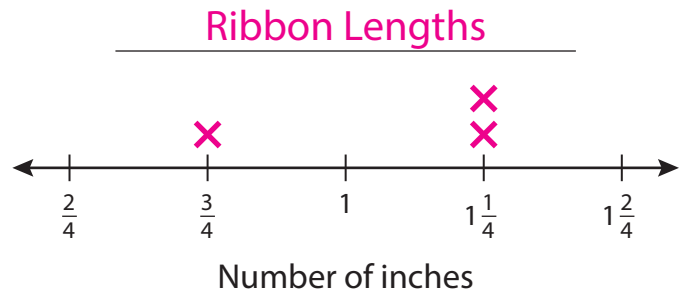
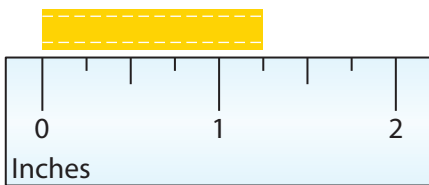
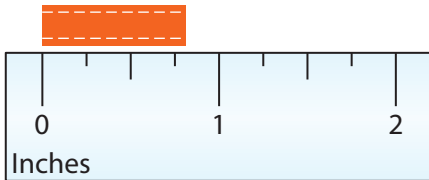
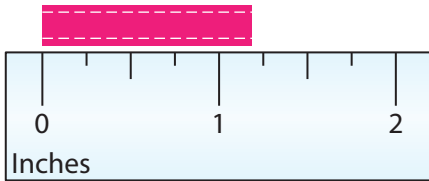
5. Measure the heights of 10 books to the nearest quarter inch. Record each length on the line plot.



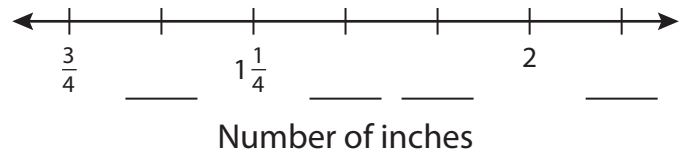
Write and answer a question about your line plot.

Learning Target: Measure objects to the nearest quarter inch and make line plots.

Example Measure the length of each ribbon to the nearest quarter inch. Then record each length on the line plot.



1. Measure the length of each celery stick to the nearest quarter inch. Record each length on the line plot.

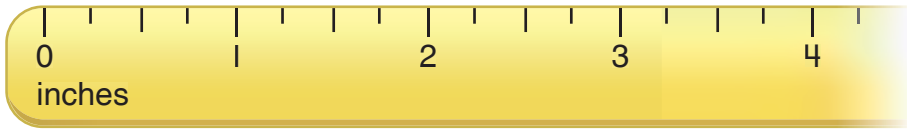


Which celery stick length is the most common?

2. **Which One Doesn't Belong?** Which does *not* belong with the other three?



3. **MP Precision** Find the length of the caterpillar to the nearest quarter inch. Explain.



4. **Modeling Real Life** Measure the lengths of your 10 fingers to the nearest quarter inch. Record each length on the line plot.



Write and answer a question about your line plot.

Review & Refresh

What fraction of the whole is shaded?

5. $\frac{\square}{\square}$ is shaded.

6. $\frac{\square}{\square}$ is shaded.

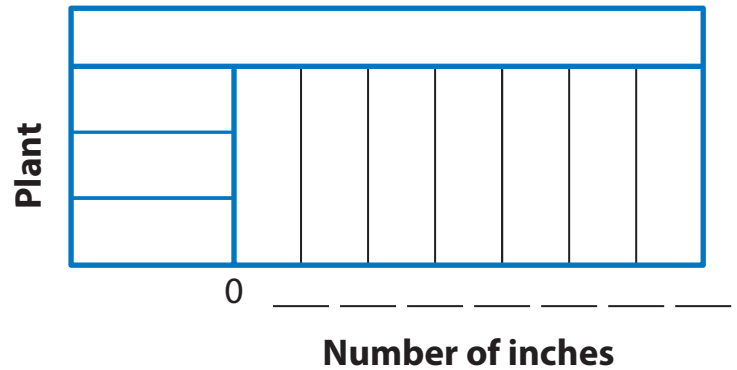
1. You plant 3 bamboo seeds during the first week. You measure and record the growth of your bamboo plants for the next 3 weeks.

Week 2	
Plant	Growth
A	3 in.
B	2 in.
C	4 in.

Week 3	
Plant	Growth
A	3 in.
B	3 in.
C	4 in.

Week 4	
Plant	Growth
A	4 in.
B	3 in.
C	4 in.

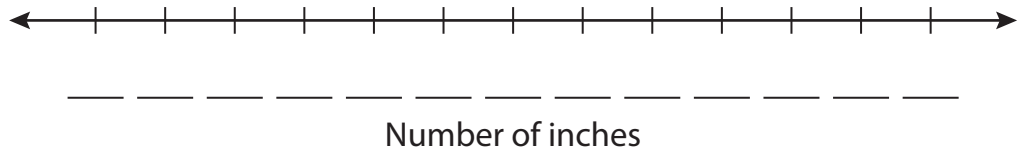
- a. Find the height of each plant after the fourth week. Make a bar graph of the plant heights.



- b. Do you think any of the plants will be taller than 15 inches after 5 weeks? Explain.

2. a. Measure and record the height of each bamboo plant on Bamboo Growth to the nearest quarter inch.

Bamboo Growth



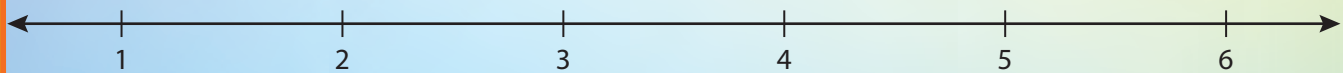
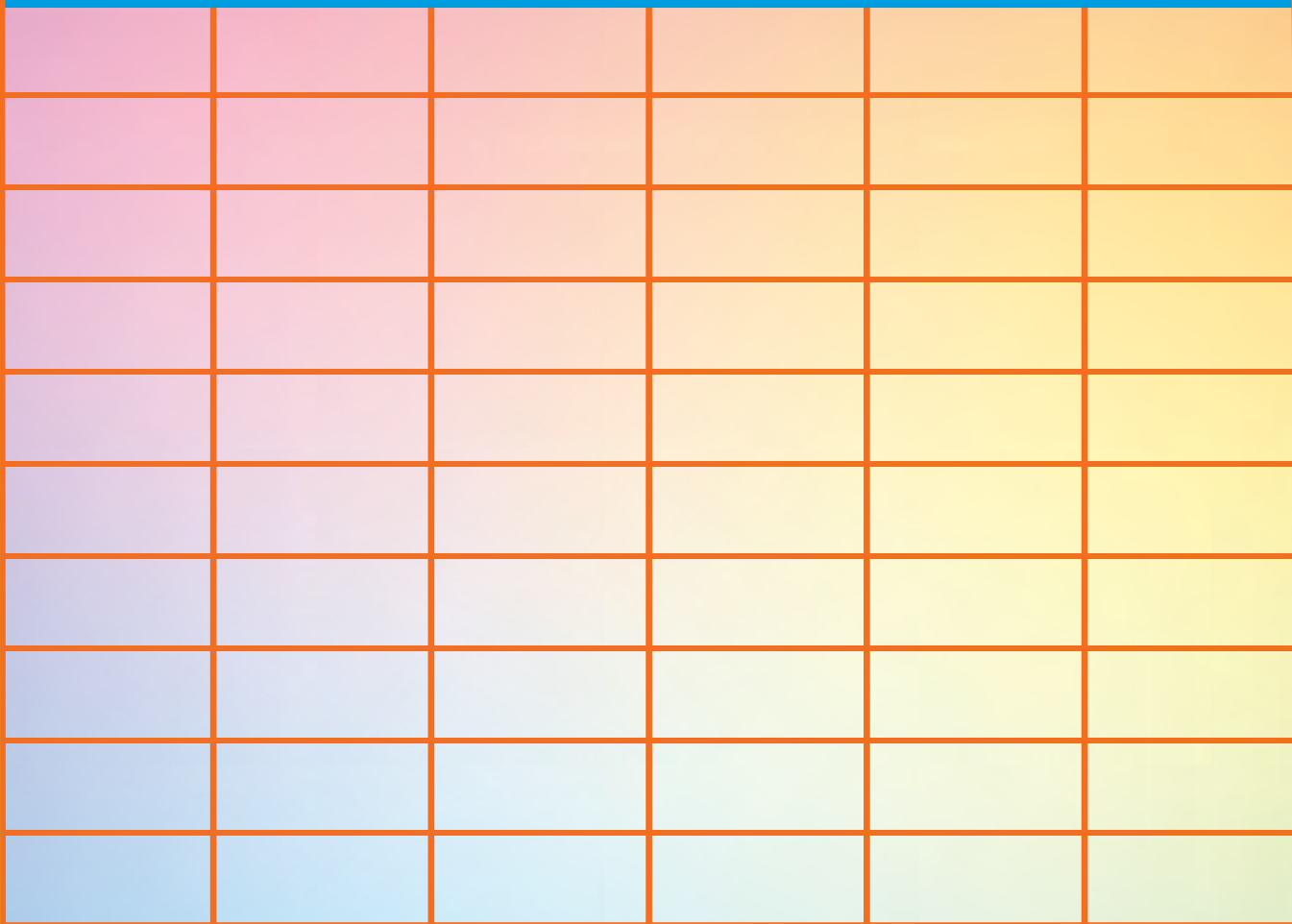
- b. Which height occurs the most?

Roll and Graph

Directions:

1. Players take turns rolling a die.
2. Record each of your rolls on your line plot.
3. The first player to get 10 rolls of one number wins!



















Die Rolls




Roll

14.1 Read and Interpret Picture Graphs

- Use the graph to answer the questions.
How many tickets were sold in August?

Amusement Park Ticket Sales	
May	 
June	   
July	    
August	    
September	 


How many more tickets were sold in July or August than in May, June, or September?

Each  = 20 tickets.

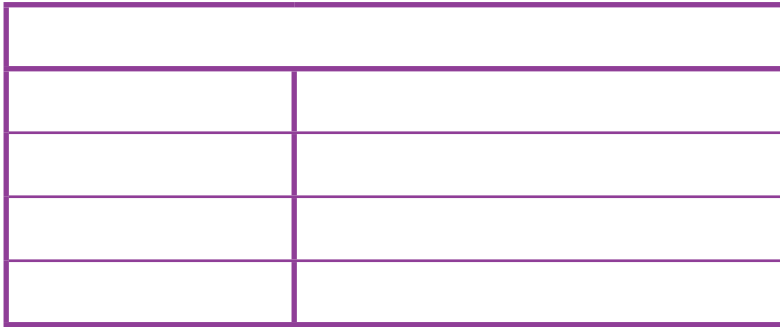
Which month had more ticket sales than June, but fewer ticket sales than July? How many tickets were sold this month?

14.2 Make Picture Graphs

- You collect supplies for an animal shelter. You receive 4 collars, 20 tennis balls, 18 dog bones, and 12 cat toys. Complete the picture graph.

Each  = _____ supplies.

3. A zookeeper takes care of 30 animals. There are 6 monkeys, 12 flamingos, and 9 kangaroos. The rest of the animals are giraffes. Complete the picture graph.

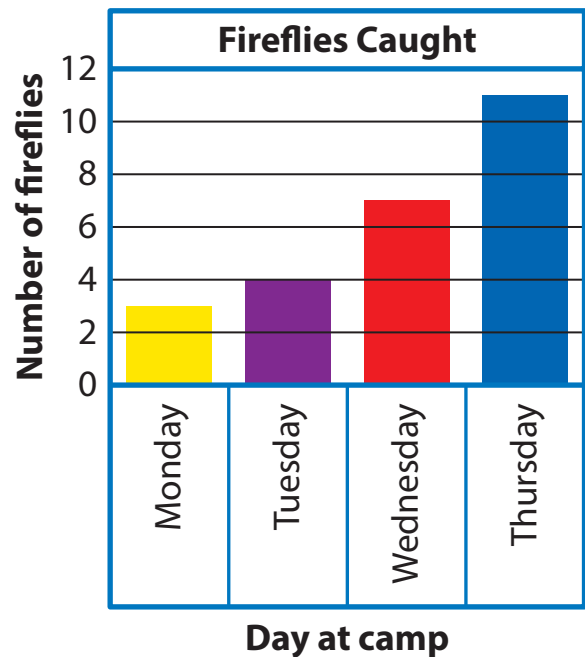


Each ○ = _____ animals.

14.3 Read and Interpret Bar Graphs

4. Use the graph to answer the questions.
How many more fireflies does your friend catch on Thursday than on Monday?

MP Patterns What do you notice about the number of fireflies caught from Monday to Thursday?



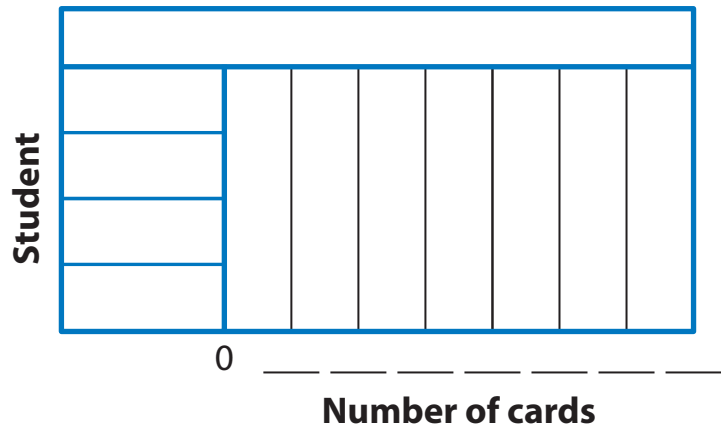
On which two days did your friend catch 10 fireflies combined?

You catch 5 fireflies on Monday, 4 fireflies on Tuesday, 8 fireflies on Wednesday, and 7 fireflies on Thursday. Who caught more fireflies at camp?

14.4 Make Bar Graphs

5. Use the frequency table to complete the bar graph.

Trading Cards	
Student A	30
Student B	15
Student C	10
Student D	15

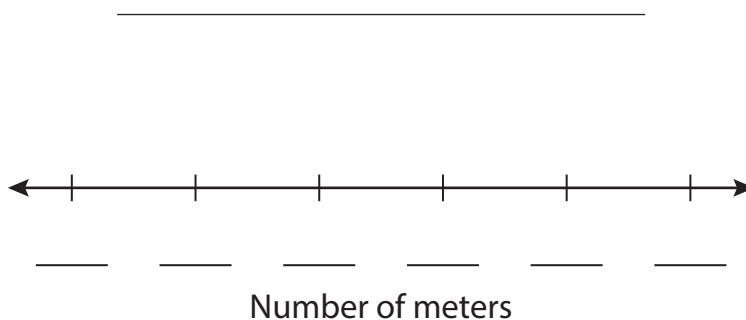


Another student, Student E, has 45 trading cards. How would the bar graph change?

Modeling Real Life Including the number of trading cards of Student E, order the numbers of cards from least to greatest.

14.5 Make Line Plots

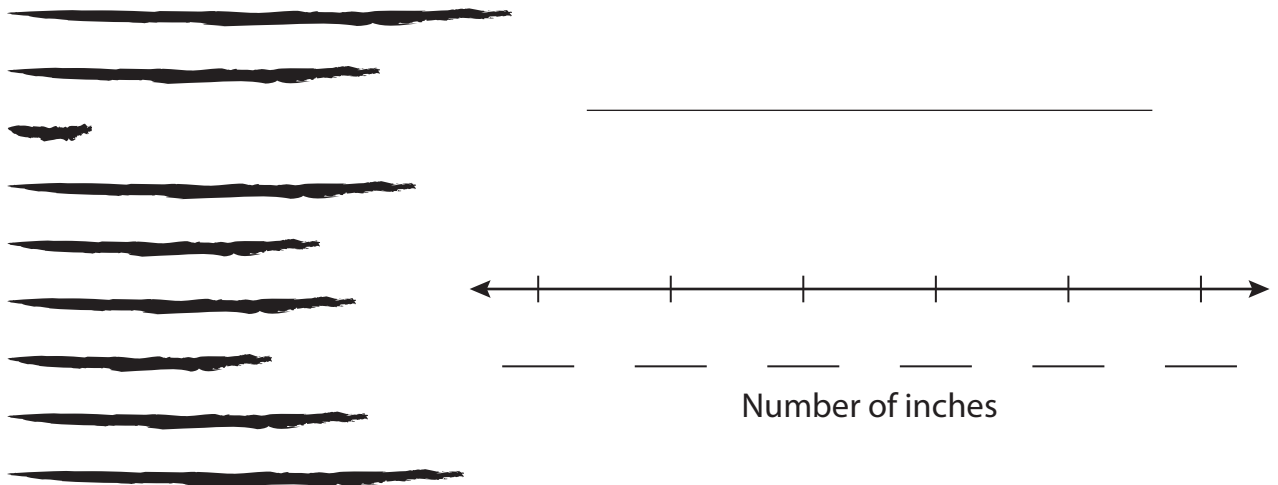
6. Use the table to complete the line plot.



Tree Heights (meters)	
23	19
19	24
24	21
21	22
24	21
19	19

14.6 Measure Lengths: Half Inch

7. Measure the length of each snail trail from a snail race to the nearest half inch. Record each length on the line plot.



Modeling Real Life What is the length of the longest snail trail? What is the length of the shortest snail trail?



14.7 Measure Lengths: Quarter Inch

8. Measure the length of each feather to the nearest quarter inch. Then record each length on the line plot.

