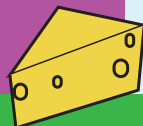# DATA AND GRAPHING

3RD Grade

How do you get to school?

What's in your lunch box?

education.com

Table of Contents

Data and Graphing

Collecting Data Sets

Collecting data is an important part of math and science. For practice, let's use the home or classroom as an investigative environment. Fill in the chart below by counting up the items that you see in your home or classroom.

desks									
books									
windows									
chairs									
lamps									
pictures on walls									
shelves									
	1	2	3	4	5	6	7	8	9

The data collection process is more than just counting. For example, the set of desks in a classroom will likely include a large number of student desks, but it will also include the teacher's desk and maybe other desks or tables.

How do you record the teacher's desk? It's not a "student" desk, but it still belongs in the set of desks. How do you record the difference?

_____

_____

_____

In the set of shelves, other choices will have to be made. What if some of your shelves are attached to the walls, and some are not? They all belong in the set of shelves, but how will you record the difference?

_____

_____

_____
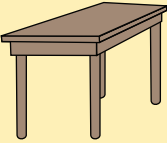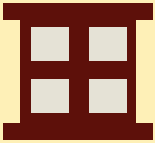
Collecting Data Sets

Think of different ways to organize each set into categories. Some sets may have only two categories, but others may have a lot. Record the number of items in each category using tally marks.

Student Created Data Sources: Rectangles

Collecting data is an important part of math and science. Let's create our data items.

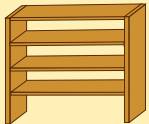- Cut three rectangles from a single piece of 8½" by 11" paper.
- Cut four rectangles from a second piece of paper.
- Cut five rectangles from a third piece of paper.
- Cut eight rectangles from a fourth piece of paper.

Organize your pieces by size and measure them. Record your data on the chart below.

Length	Width

Student Created Data Sources: Lunch Items

Collecting data is an important part of math and science. For practice, let's create our data items by investigating the contents of your lunchbox! If you don't bring your lunch to school, write out what you will be eating today, or what you'd like to be eating. Group lunch items by their different characteristics, and put tally marks in the boxes to keep track of each type of item.

Characteristics

	Salty			
Crackers	|||			

Lunch Items

Tomato Fest! Reading a Pictograph

Harvest season has begun, and the farmers are busily picking their tomatoes. The numbers of tomatoes are shown in the pictograph below. Note: each tomato in the pictograph stands for 5 tomatoes picked. Use the information provided to answer the questions.

Day	Picked Tomato
Day 1	🍅🍅🍅🍅🍅🍅
Day 2	🍅🍅🍅🍅
Day 3	🍅🍅🍅🍅
Day 4	🍅🍅🍅

🍅 = 5 tomatoes

Questions:

1. How many tomatoes did the farmer pick on the first day?

Answer: _____

2. What day did the farmer pick the most tomatoes?

Answer: _____

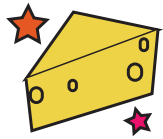3. Which days did the farmer pick the same amount of tomatoes? How many did he pick in total both of those days?

Answer: _____

4. What's the difference between the number of tomatoes picked on Day 3 and Day 4?

Answer: _____

5. How many tomatoes in total did he picked for this season?

Answer: _____

Say Cheese! Reading a Pictograph

Giovanni sells cheese at the town market. Look at his sales record below and answer the questions. Note: each cheese in the pictograph stands for 5 pounds (lbs.) of cheese.

Type of Cheese	Number of Cheese Sold
Mozzarella	🧀🧀🧀🧀
Cheddar	🧀🧀🧀🧀🧀🧀
Blue Cheese	🧀🧀🧀
Feta	🧀🧀🧀🧀
Goat Cheese	🧀🧀🧀🧀🧀

🧀 = 5 lbs. of cheese

Questions:

1. How much goat cheese did Giovanni sell?

Answer: _____

2. What kind of cheese was the most popular? How much was sold?

Answer: _____

3. What kind of cheese sold the least? How much more cheese does Giovanni need to sell in order to make it equal to cheddar cheese?

Answer: _____

**4. How much feta cheese and mozzarella cheese did he sell in total?**

Answer: _____

5. If all the cheese cost $2 per pound, how much did he earn today?

Answer: _____

Milk Helps You Grow: Reading a Pictograph

Have you had your milk today yet? Use the pictograph to see how many Tommy had in the past few weeks and answer the questions below. Note: Each milk container in the pictograph stands for 3 glasses.

Week	Amount of Milk
Week 1	M M M
Week 2	M M M M M
Week 3	M M M M
Week 4	M M M M M M
Week 5	M M M M M
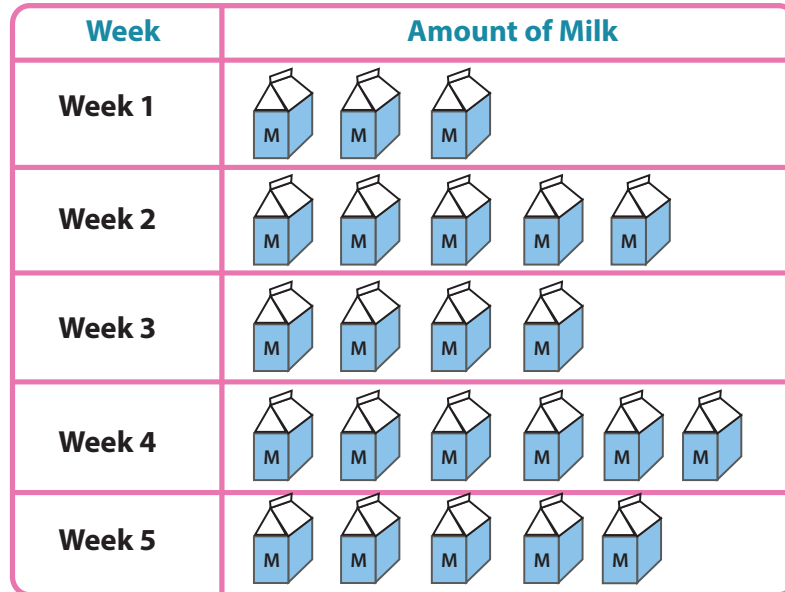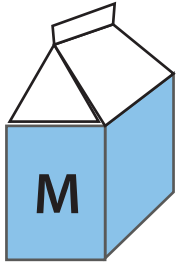
M = 3 glasses of milk

Questions:

1. How many glasses of milk did Tommy have in the first week?

Answer: _____

2. How many glasses of milk did Tommy have in week 4?

Answer: _____

3. Which week did Tommy have the least amount of milk?

Answer: _____

4. Which week did Tommy have the most milk? How much more was this compared to to week 5?

Answer: _____

5. How many glasses of milk in total did he drink from week 1 to week 5?

Answer: _____

Building A New Town: Reading a Pictograph

Building a new town takes a lot of time. See the construction progress in the pictograph.
Answer the questions below. Note: each house in the pictograph stands for 20 houses.

Month and Year	Number of houses built
January 2009	🏠🏠🏠🏠🏠🏠🏠🏠
April 2009	🏠🏠🏠🏠🏠
August 2009	🏠🏠🏠🏠🏠🏠
December 2009	🏠🏠🏠🏠🏠🏠🏠
March 2010	🏠🏠

🏠 = 20 houses

Questions:

1. How many houses does this symbol 🏠 represent?

Answer: _____

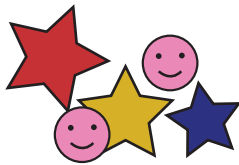2. In what month did they build more than 100 houses?

Answer: _____

3. How many houses were built from January 2009 to August 2009?

Answer: _____

4. How many more houses need to be built in April 2009 to be equal to those in December 2009?

Answer: _____

5. The town needs to build 200 houses in March. Draw the symbols in the chart needed to equal 200 houses.

Theater Goer! Reading a Pictograph

The theater recorded the numbers of audience members who attended this week's play. Read the pictograph and answer the questions below. Note: each symbol in the pictograph stands for 100 persons.

Day	Number of Audience Members
Monday	🙂 🙂 🙂 🙂 🙂
Tuesday	🙂 🙂 🙂 🙂 🙂 🙂 🙂 🙂
Wednesday	🙂 🙂 🙂 🙂 🙂 🙂 🙂 🙂 🙂 🙂
Thursday	🙂 🙂 🙂 🙂 🙂 🙂 🙂 🙂 🙂 🙂 🙂
Friday	

🙂 = 100 persons

Questions:

1. How many audience members does this symbol 🙂 represent?

Answer: _____

2. On what day did the theater have the fewest audience members?

Answer: _____

3. How many audience members attended the theater from Tuesday to Thursday?

Answer: _____

4. How many more audience members did they need on Wednesday to be equal to those on Thursday?

Answer: _____

5. If the entrance fee is $5 per person, how much did the theater earn on Tuesday?

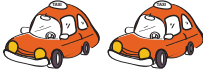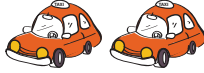Answer: _____

Taxi Company: Reading a Pictograph

These two pictographs compare the miles two taxis traveled in a month.
Answer the questions below using information from the pictographs.
Note: each taxi in the pictograph stands for 150 miles.

Taxi A	
Week	**Number of Miles**
Week 1	🚕 🚕 🚕
Week 2	🚕 🚕
Week 3	🚕 🚕 🚕
Week 4	🚕 🚕 🚕

Taxi B	
Week	**Number of Miles**
Week 1	🚕 🚕
Week 2	🚕 🚕 🚕 🚕
Week 3	🚕 🚕 🚕
Week 4	🚕 🚕 🚕 🚕

🚕 = 150 miles

Questions:

1. How many miles did Taxi A travel in total?

Answer: _____

2. How many miles did Taxi B travel in total?

Answer: _____

3. Which taxi went more miles in total? If the other taxi wanted to catch up, how many miles would he have to go in a month?

Answer: _____

4. How many miles did the two taxis go in total?

Answer: _____

5. If Taxi A traveled 300 more miles, what would be the difference in total from Taxi B?

Answer: _____

More worksheets at www.education.com/worksheets

Reading a Bar Graph

Bar graphs are used to show changes over time or to compare items.

Can you identify the x-axis on this graph? What does it show?

_____

Can you identify the y-axis on this graph? What does it show?

_____

number of players on the field

Sport	Players
American Football	11
Baseball	9
Basketball	5
Beach Volleyball	2
Ice Hockey	6
Lacrosse	10
Soccer	11
Volleyball	6

0 1 2 3 4 5 6 7 8 9 10 11
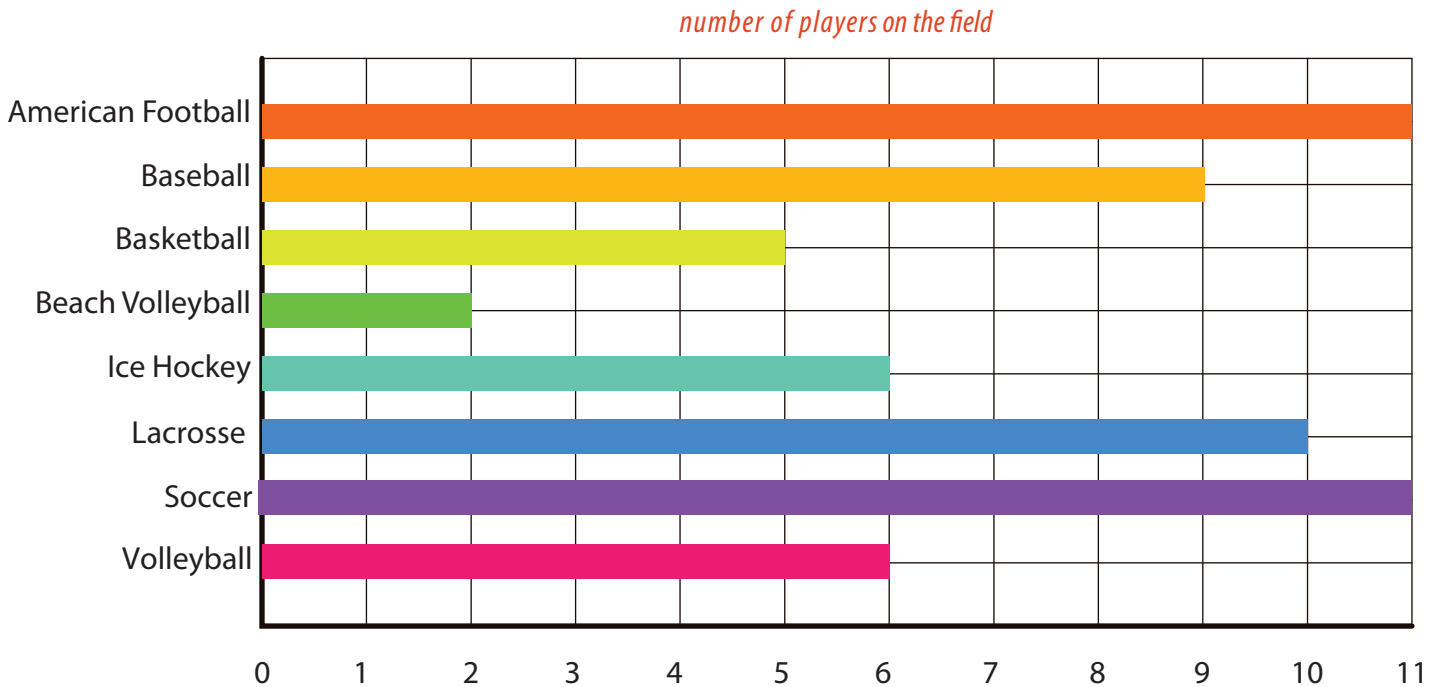
1. Which sports have the most number of players on the field?

_____

2. How many more players does the basketball team have than the beach volleyball team?

_____

3. Which sports have the same number of players?

_____

4. Which sport has the least amount of players?

_____

5. How many fewer players does the lacrosse team have than the soccer team?

_____

6. Which sport has 9 players?

_____

Getting to School
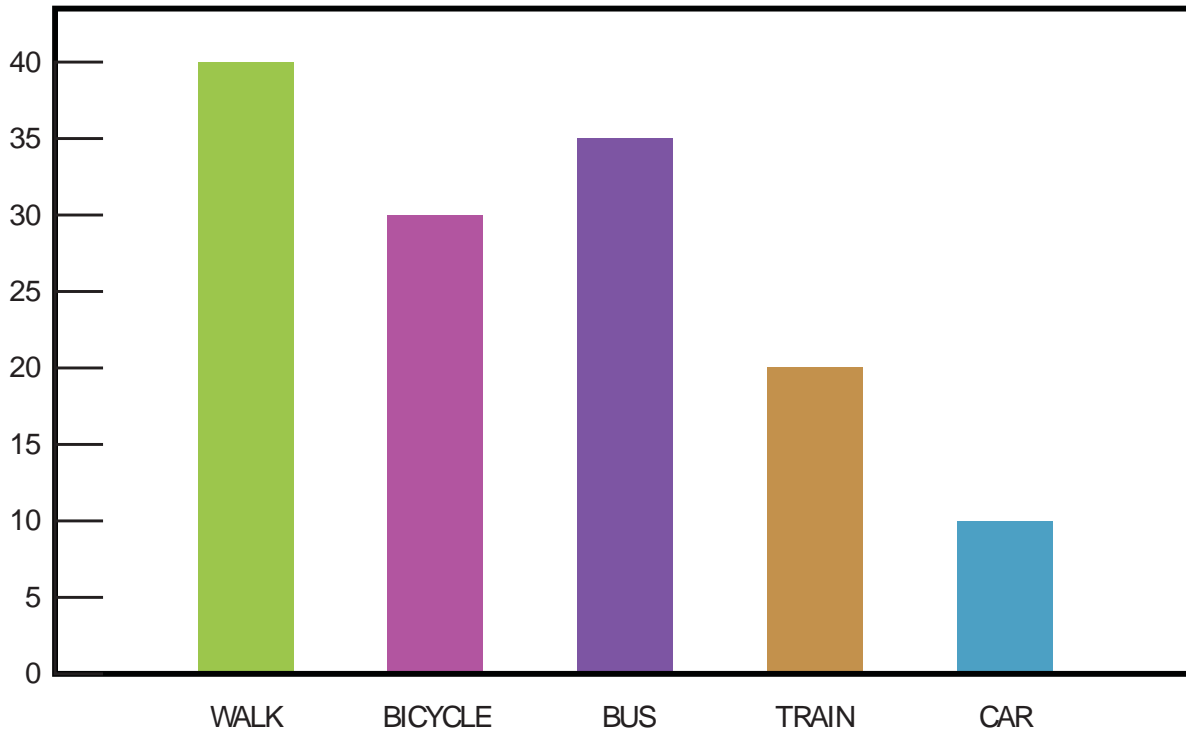
Use the **bar graph** to answer the questions.

A group of students at Parkside Elementary School made a bar graph to show how they get to school.

How many students ride their bicycle to school? _____

Do more students ride their bicycle or get a ride in a car? _____

How many more students take the bus to school than take the train? _____

How many students ride in a car to school? _____

How many students take the train and walk to school combined? _____

How do most of the students get to school? _____

Popular Juice: Practice Reading a Bar Graph

Read today's juice selling record. Then answer the questions below. Show your work.

Juice	Number of glasses
Coconut	**8**
Orange	
Pineapple	
Grape	
Kiwi	

Number of glasses: 2 4 6 8 10 12 14 16
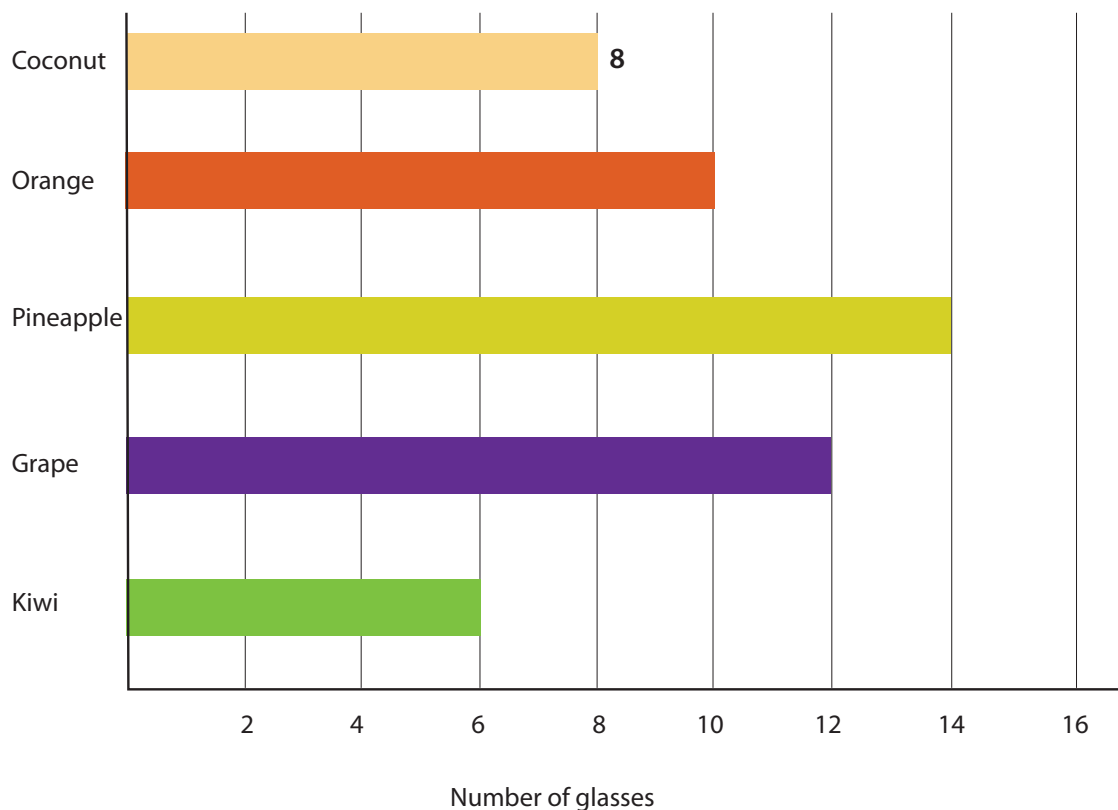
1. What unit of measurement is used to express how much juice was sold?

2. Write a number at the end of each bar to indicate the amount of juice sold.

3. List the juice in order of popularity.

4. If 5 more glasses of coconut juice were sold, what rank would pineapple be?

5. How many more glasses of kiwi juice need to be sold to make it the most popular drink?

Go Runners!: Practice Reading a Bar Graph 3rd Grade

Read the record of each runner. Then answer the questions below. Show your work.

Runner A — 24
Runner B
Runner C
Runner D
Runner E

Distance (miles)

1. **What unit of measurement is used to determine how long each runner ran?**
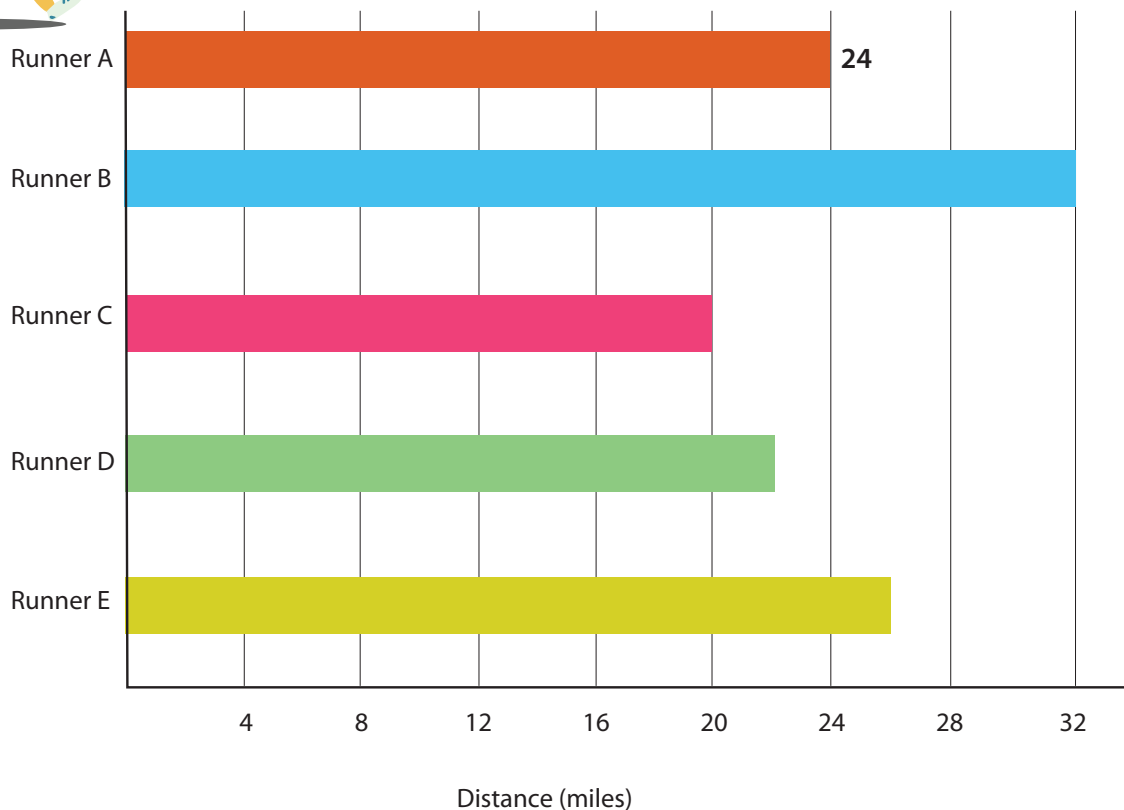
2. **Write a number at the end of each bar to indicate the distance each runner ran.**

3. **List the runners in order from greatest to shortest distance run.**

4. **How much farther did Runner B run compared to Runner E?**

5. **How many more miles does Runner D need to run to catch up with Runner B?**
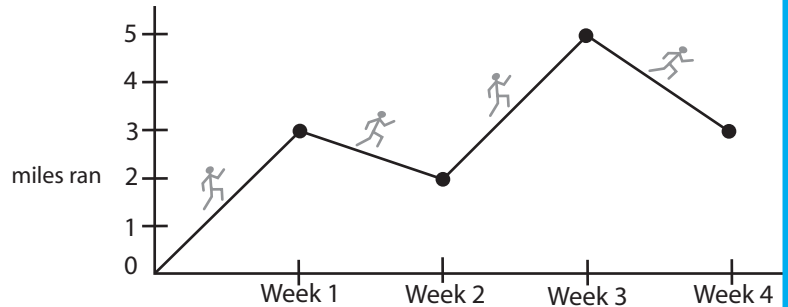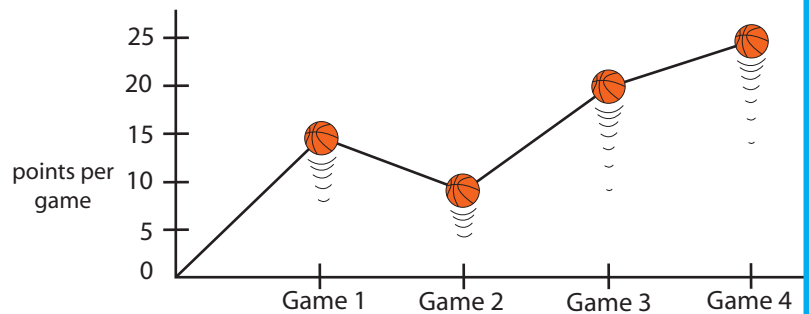
Line Graphs

Line graphs shows changes in data.
The points on the graphs are connected to plot the changes.

The graph on the right shows the number of miles John ran each week for four weeks.

In this graph, we see how many points James scored in four basketball games.

1. In what game did James score the most points? _____

2. In what game he did he score the least? _____

3. How many points did he score in Game 3? _____

4. What is the point difference between Game 2 and Game 4? _____

5. What is his point total in four games? _____
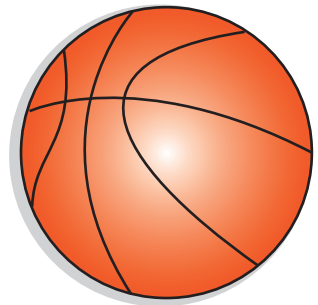
Make your own line graph!

Robert sells tickets to the basketball games.
Draw and plot a line graph to show the number of tickets he sold in four games.

- He sold 10 tickets for Game 1.
- He tripled his sale for Game 2.
- 20 tickets were sold for Game 3.
- For the final game, he sold 50 tickets.
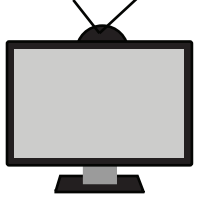
Bar Graph Worksheet

Take a poll of your friends and family about what they prefer to do for entertainment: go to the movies, watch TV, read books, surf the web, or listen to music. Then tally your responses. Using your data, create a bar graph by drawing a bar for each category.

Name of Graph:

Forms of Entertainment

People Polled					
Totals					

Line Graph

Line graphs can be used to show how something changes over time. The points on the graph are connected to plot the changes. The line graph to the right shows the number of assignments Chloe did in 4 months. ⟶

Chloe's Assignments
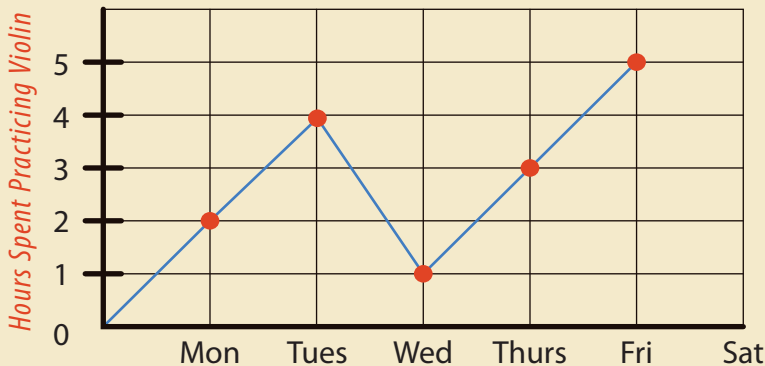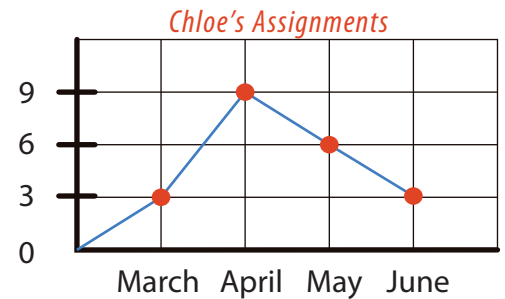
This graph plots the number of hours George spent practicing his violin each weekday.

How many more hours did George practice the violin on Tuesday than on Monday?

_____

Did the amount of assignments for Chloe increase or decrease between the months of March and May?

_____

Did the hours playing the violin for George increase or decrease between Tuesday and Wednesday?

_____

Draw and plot a line graph to show the number of muffins that were sold by Mrs. Ell's kindergarten class from Tuesday through Friday.

25 muffins were sold on Tuesday.
10 less were sold on Wednesday.
45 were sold on Thursday.
Twice as many were sold on Friday than were sold on Wednesday.

Height Graph: Predictions

Let's make some predictions about the height of a group of people. They can be students in a class, friends in a neighborhood, or family members. Remember: No actual measurements can be made. Use the tally chart to make your predictions.

What is the group you chose?

Who do you think is tallest?

Who do you think is shortest?

If you made a stack of the five tallest girls in the group and a stack of the five tallest boys in the group, which would be taller?

If you made a stack of the five shortest girls in the group and a stack of the five shortest boys in the group, which would be taller?

What do you think the average height of the group is?

Who do you think the boy right in the middle will be? (median)

What do you think the most common height will be? (mode)

Name	3ft	4ft	5ft	6ft
Total				

Height Graph: Actual Heights

Let's collect the actual data. Measure the height of each person in the group and record the heights on the chart below. Make a bar graph of the data, then compare the actual data to the predictions made on the previous worksheet.

Girls		Boys	
name	height	name	height

How many of the predictions were correct?

How many were not?

What does this tell us about guesswork?

Height of individuals in feet

7
6
5
4
3

Names
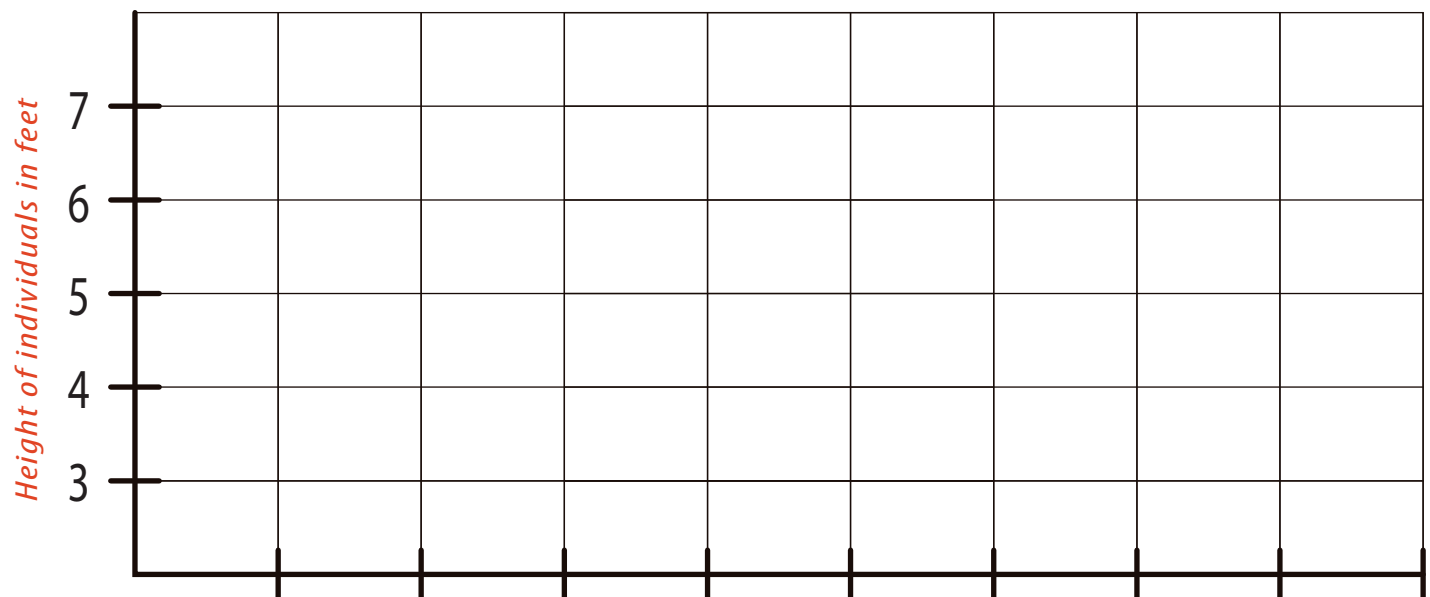
Comparing Data Between Groups

Measure the heights of a different group of people than you did for the previous worksheet. Make a graph to show your results, and compare it to the first group. What are the similarities and differences between the two groups?

girls		boys	
name	height	name	height

_____

_____

_____

_____

_____

_____

_____

_____

Height of individuals in feet

7

6

5

4

3

Names
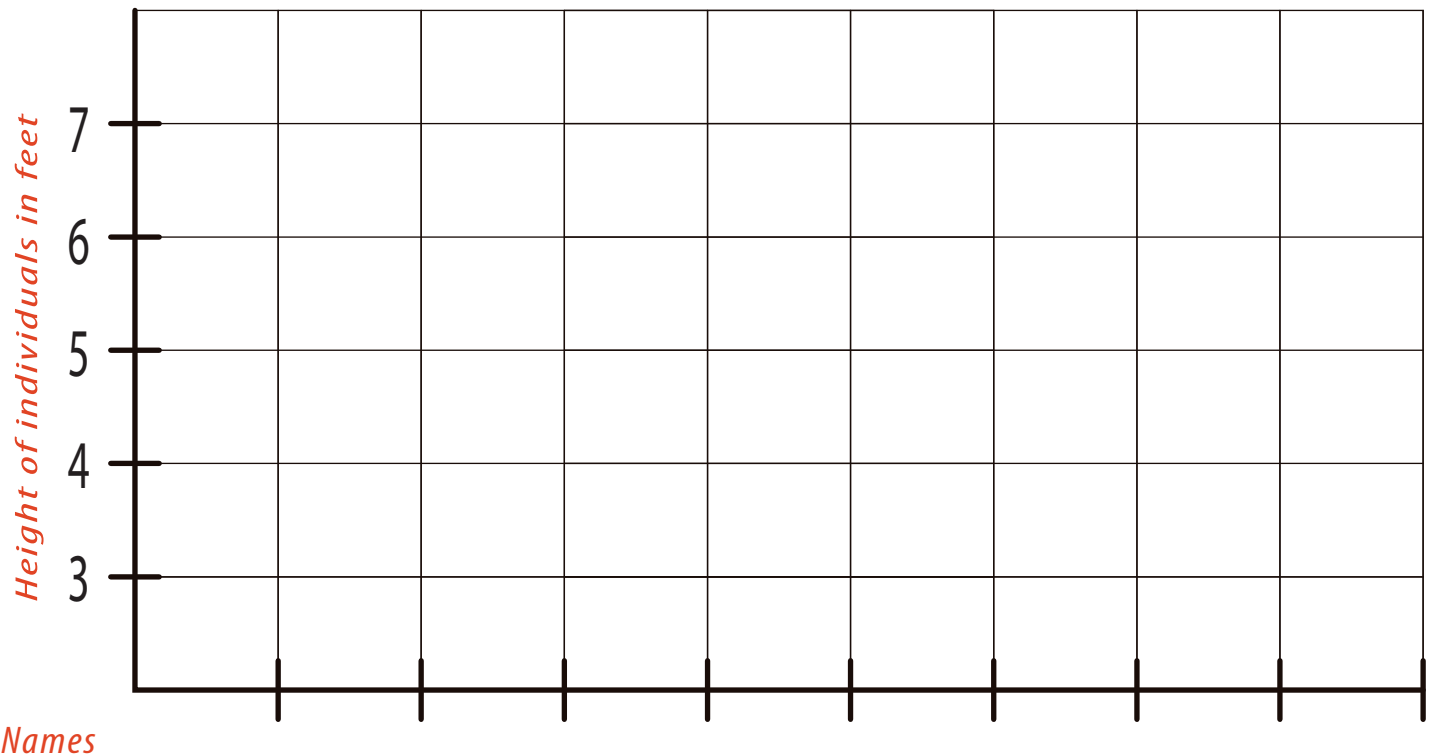
Collecting Data and Graphing: Student Age

Find out how old your classmates are in months. To do this, first find their ages. Multiply the number of years by 12. For example, if Sophie is 8 years old then we'd muliply that by 12 months and get 96 months. Finally, add any additional months that have passed since their last birthday.

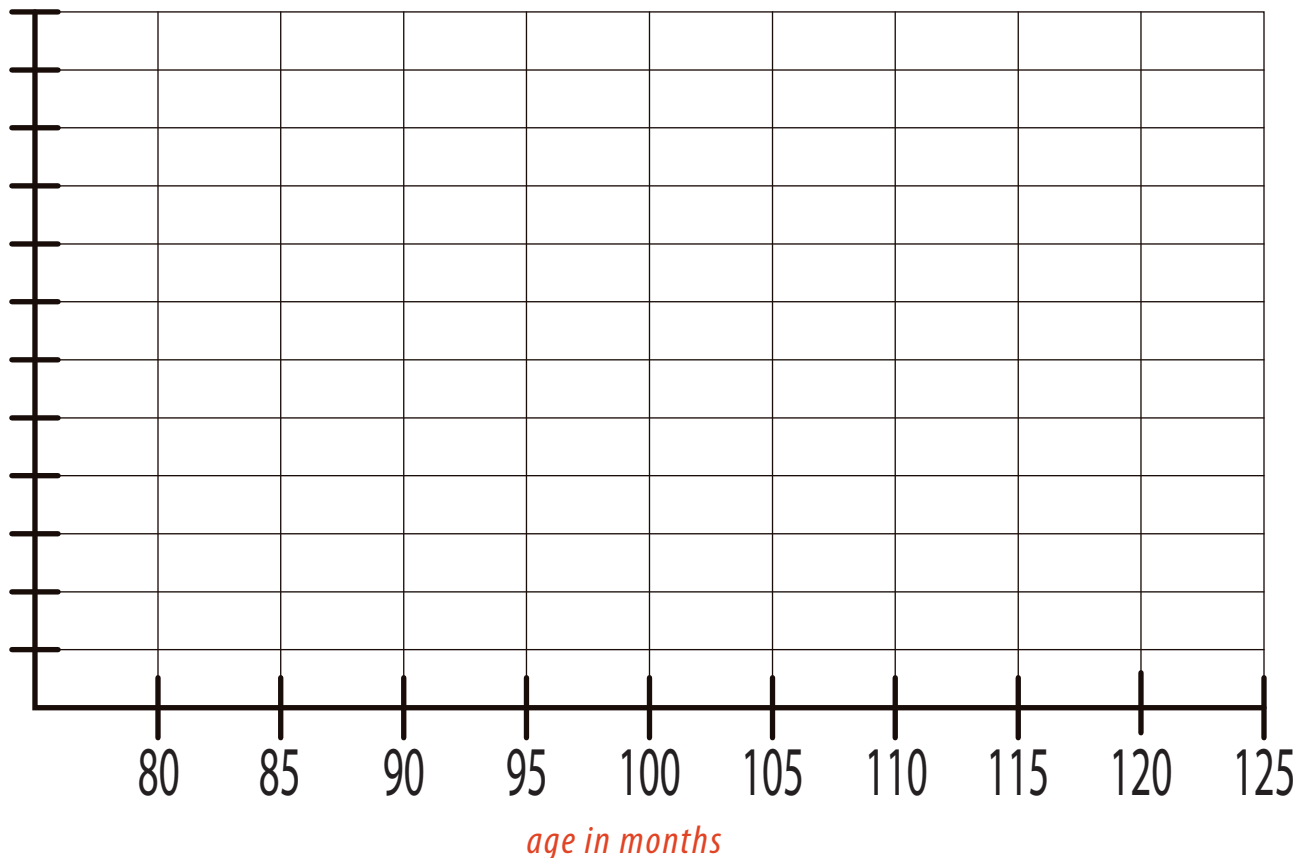| name	age	x 12	+ extra months	months old

Finish this activity by graphing the age in months of each of your fellow classmates. Then answer the following questions.

On average, are the boys or the girls older?

_____

What is the age right in the middle (median)?

_____

What is the most popular age (mode)?

_____

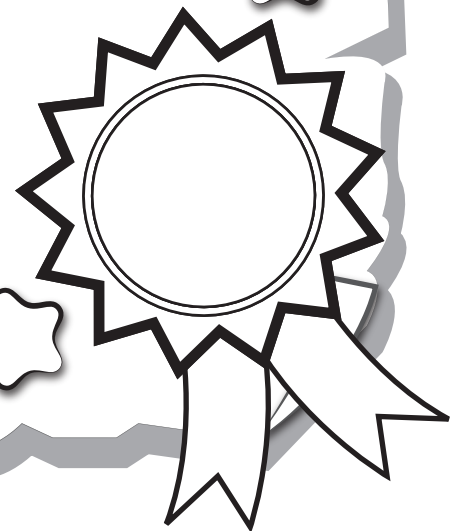*names of classmates*

80   85   90   95   100   105   110   115   120   125

age in months

Great job!

_____

is an Education.com math superstar

education.com

Answer Sheets

Data and Graphing

Answer Sheet

🍅 Tomato Fest! Reading a Pictograph

Harvest season has begun, and the farmers are busily picking their tomatoes. The numbers of tomatoes are shown in the pictograph below. Note: each tomato in the pictograph stands for 5 tomatoes picked. Use the information provided to answer the questions.

Day	Picked Tomato
Day 1	🍅🍅🍅🍅🍅🍅
Day 2	🍅🍅🍅🍅
Day 3	🍅🍅🍅🍅
Day 4	🍅🍅🍅
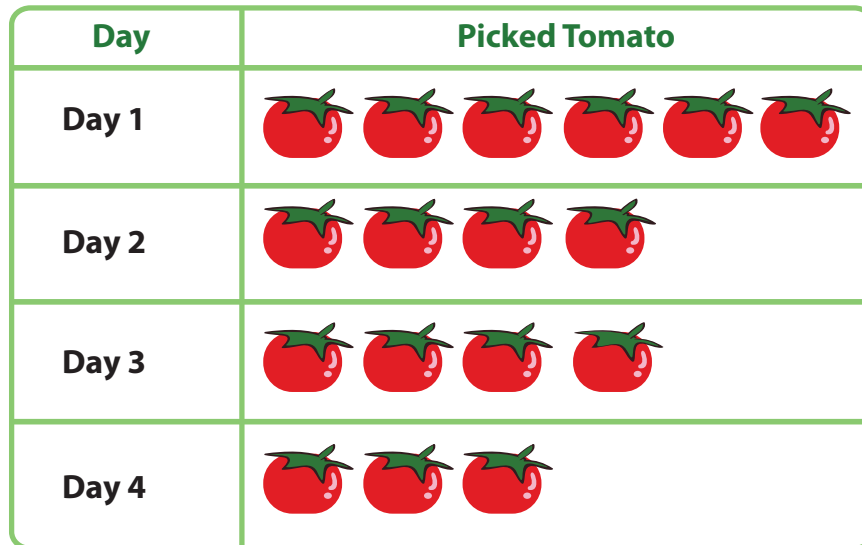
Questions: 🍅 = 5 tomatoes

1. How many tomatoes did the farmer pick on the first day?

Answer: _____30_____

2. What day did the farmer pick the most tomatoes?

Answer: _____Day 1_____

3. Which days did the farmer pick the same amount of tomatoes? How many did he pick in total both of those days?
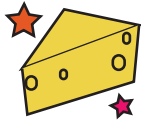
Answer: _____Day 2 and Day 3 / 40 tomatoes._____

4. What's the difference between the number of tomatoes picked on Day 3 and Day 4?

Answer: _____5_____

5. How many tomatoes in total did he picked for this season?

Answer: _____85_____

Say Cheese! Reading a Pictograph

Giovanni sells cheese at the town market. Look at his sales record below and answer the questions.
Note: each cheese in the pictograph stands for 5 pounds (lbs.) of cheese.

Type of Cheese	Number of Cheese Sold
Mozzarella	
Cheddar	
Blue Cheese	
Feta	
Goat Cheese	

= 5 lbs. of cheese

Questions:

1. How much goat cheese did Giovanni sell?

Answer: _____25_____

2. What kind of cheese was the most popular? How much was sold?

Answer: ____Cheddar 30 pounds_____

3. What kind of cheese sold the least? How much more cheese doesGiovanni need to sell in order to make it equal to cheddar cheese?

Answer: ____Blue Cheese 15 pounds_____

4. How much feta cheese and mozzarella cheese did he sell in total?

Answer: ____40 pounds_____

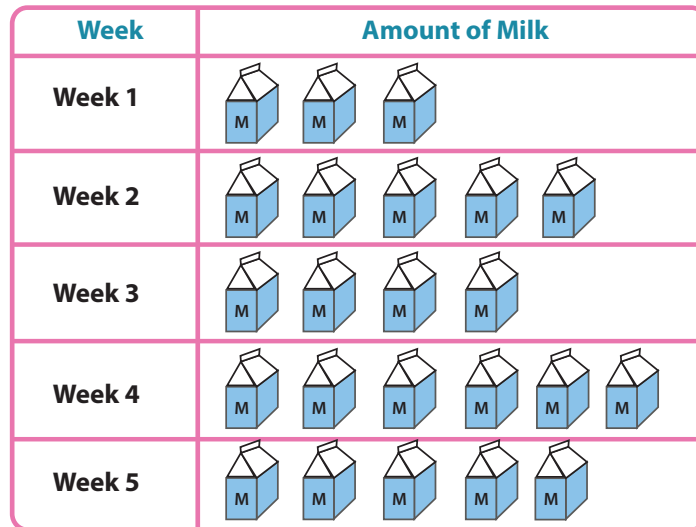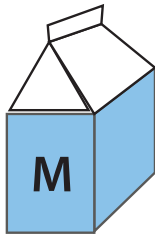5. If all the cheese cost $2 per pound, how much did he earn today?

Answer: ____$220_____

More worksheets at www.education.com/worksheets

Milk Helps You Grow: Reading a Pictograph

Have you had your milk today yet? Use the pictograph to see how many Tommy had in the past few weeks and answer the questions below. Note: Each milk container in the pictograph stands for 3 glasses.

Week	Amount of Milk
Week 1	M M M
Week 2	M M M M M
Week 3	M M M M
Week 4	M M M M M M
Week 5	M M M M M

M = 3 glasses of milk

Questions:

1. How many glasses of milk did Tommy have in the first week?

Answer: _____9 Glasses_____

2. How many glasses of milk did Tommy have in week 4?

Answer: _____18 Glasses_____

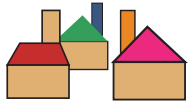3. Which week did Tommy have the least amount of milk?

Answer: _____Week 1_____

4. Which week did Tommy have the most milk? How much more was this compared to to week 5?

Answer: _____Week 4; 3 more glasses_____

5. How many glasses of milk in total did he drink from week 1 to week 5?

Answer: _____69 Glasses_____

Answer Sheet

Building A New Town: Reading a Pictograph

Building a new town takes a lot of time. See the construction progress in the pictograph. Answer the questions below. Note: each house in the pictograph stands for 20 houses.

Month and Year	Number of houses built
January 2009	
April 2009	
August 2009	
December 2009	
March 2010	

= 20 houses

Questions:

1. How many houses does this symbol ▲ represent?

Answer: _____ 10 Houses _____

2. In what months did they build more than 100 houses?

Answer: _____ January, August, and December _____

3. How many houses were built from January 2009 to August 2009?

Answer: _____ 360 Houses _____

4. How many more houses need to be built in April 2009 to be equal to those in December 2009?

Answer: _____ 50 Houses _____

5. The town needs to build 200 houses in March. Draw the symbols in the chart needed to equal 200 houses.

Add 8 house symbols
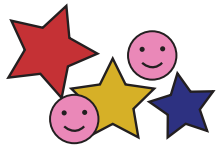
Theater Goer! Reading a Pictograph

The theater recorded the numbers of audience members who attended this week's play. Read the pictograph and answer the questions below. Note: each symbol in the pictograph stands for 100 persons.

Day	Number of Audience Members
Monday	☺ ☺ ☺ ☺ ☺
Tuesday	☺ ☺ ☺ ☺ ☺ ☺ ☺ ◖
Wednesday	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺
Thursday	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ◖
Friday	
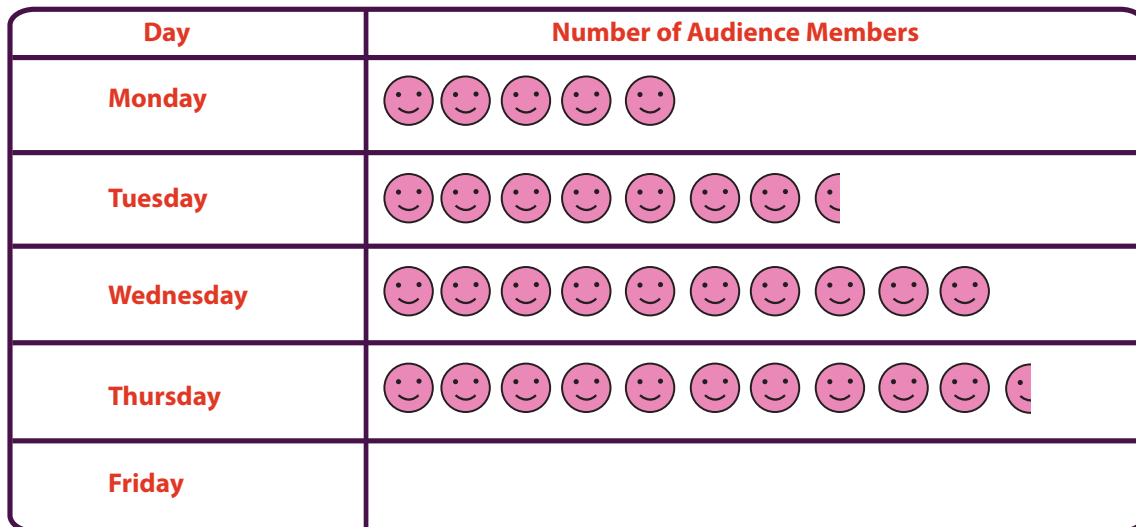
☺ = 100 persons

Questions:

1. How many audience members does this symbol ◖ represent?

Answer: _____ 50 Audience Members _____

2. On what day did the theater have the fewest audience members?

Answer: _____ Friday _____

3. How many audience members attended the theater from Tuesday to Thursday?

Answer: _____ 2,800 Audience Members _____

4. How many more audience members did they need on Wednesday to be equal to those on Thursday?

Answer: _____ 50 Audience Members _____

5. If the entrance fee is $5 per person, how much did the theater earn on Tuesday?

Answer: _____ $3,750 _____

Answer Sheet

Taxi Company: Reading a Pictograph

These two pictographs compare the miles two taxis traveled in a month.
Answer the questions below using information from the pictographs.
Note: each taxi in the pictograph stands for 150 miles.

Taxi A

Week	Number of Miles
Week 1	🚕 🚕 🚕
Week 2	🚕 🚕
Week 3	🚕 🚕 🚕
Week 4	🚕 🚕 🚕

Taxi B

Week	Number of Miles
Week 1	🚕 🚕
Week 2	🚕 🚕 🚕 🚕
Week 3	🚕 🚕 🚕
Week 4	🚕 🚕 🚕 🚕

🚕 = 150 miles

Questions:

1. How many miles did Taxi A travel in total?

Answer: _____1650_____

2. How many miles did Taxi B travel in total?

Answer: _____1950_____

3. Which taxi went more miles in total? If the other taxi wanted to catch up, how many miles would he have to go in a month?

Answer: _____Taxi B / Taxi A would need 300 more miles._____

4. How many miles did the two taxis go in total?

Answer: _____3600 miles_____

5. If Taxi A traveled 300 more miles, what would be the difference in total from Taxi B?

Answer: _____0 miles_____
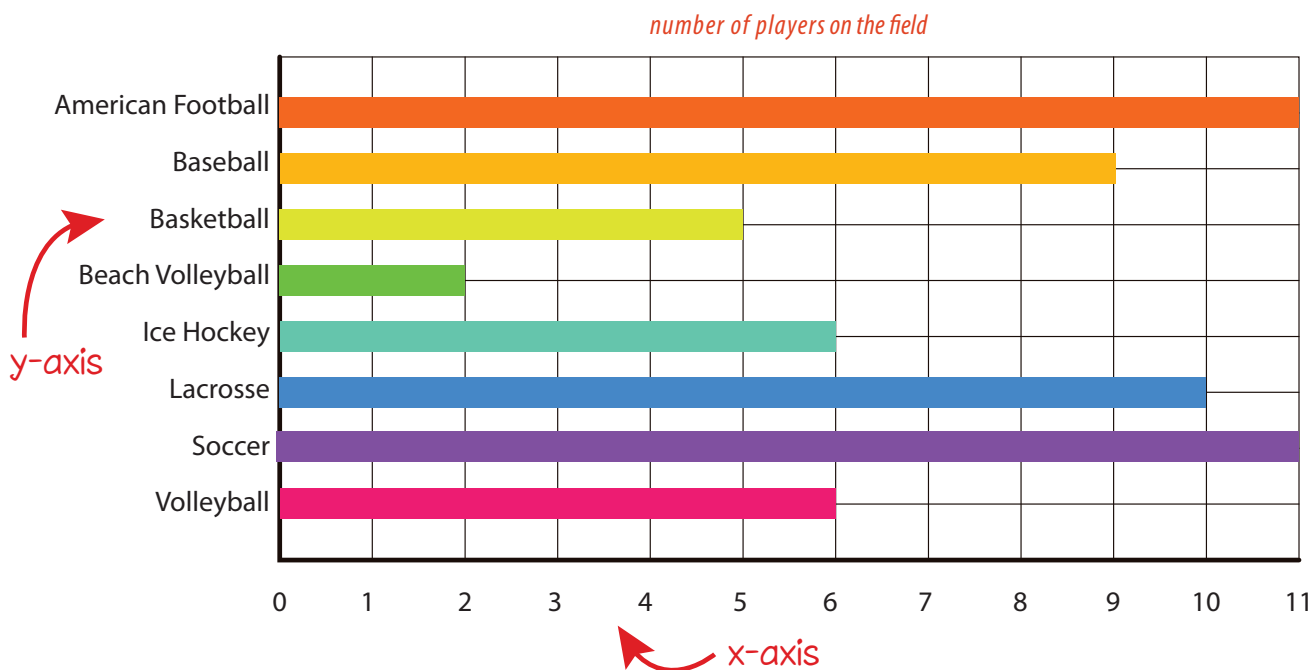
Answer Sheet

Reading a Bar Graph

Bar graphs are used to show changes over time or to compare items.

Can you identify the x-axis on this graph? What does it show?
The x-axis shows the number of players on a team.

Can you identify the y-axis on this graph? What does it show?
The y-axis shows the different types of sports

number of players on the field

y-axis

x-axis

1. Which sports have the most number of players on the field? *American football and soccer*

2. How many more players does the basketball team have than the beach volleyball team? *3 more players*

3. Which sports have the same number of players? *ice hockey and volleyball (6) American football and soccer (11)*

4. Which sport has the least amount of players? *beach volleyball*

5. How many fewer players does the lacrosse team have than the soccer team? *1 less player*

6. Which sport has 9 players? *baseball*
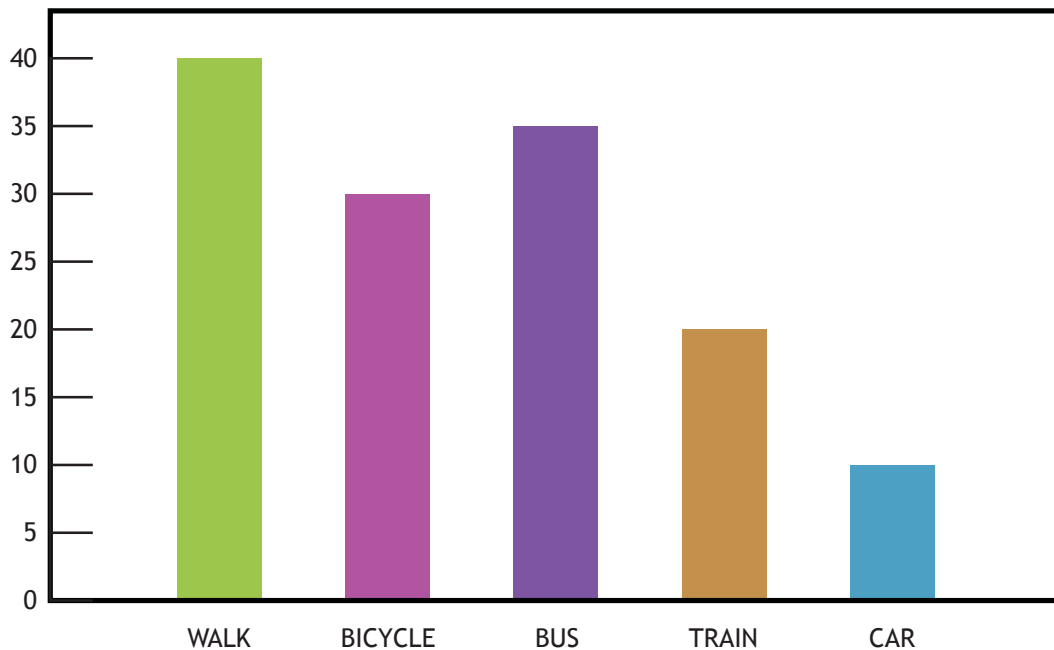
Getting to School

Use the **bar graph** to answer the questions.

A group of students at Parkside Elementary School made a bar graph to show how they get to school.

How many students ride their bicycle to school? ___**30**___

Do more students ride their bicycle or get a ride in a car? ___**Bicycle**___

How many more students take the bus to school than take the train? ___**15**___

How many students ride in a car to school? ___**10**___

How many students take the train and walk to school combined? ___**60**___
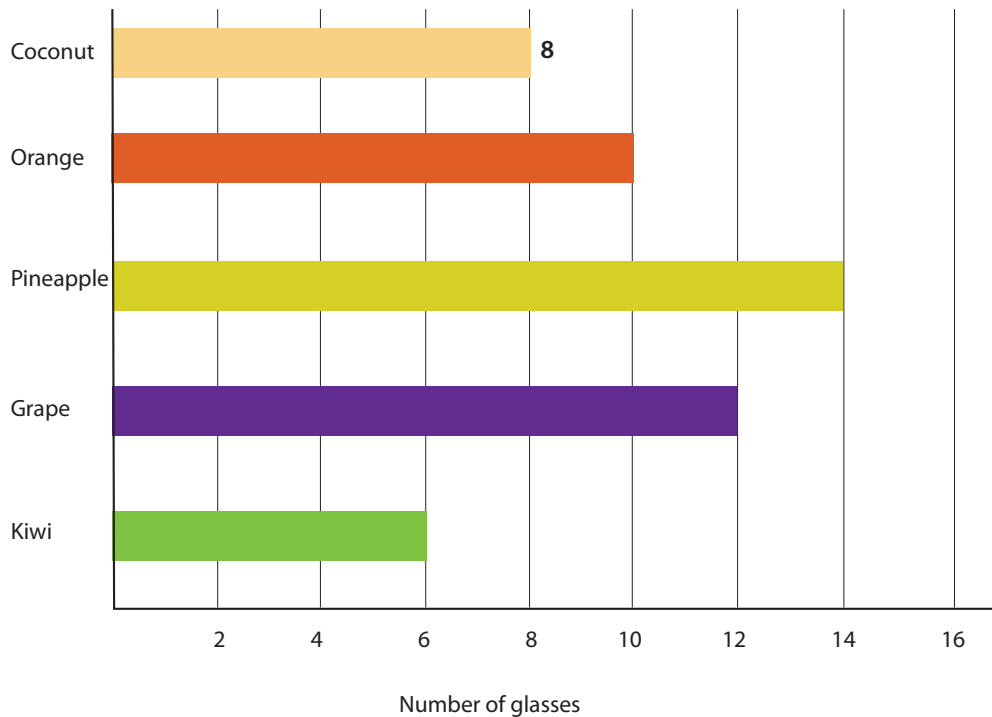
How do most of the students get to school? ___**Walking**___

Answer Sheet

Popular Juice: Practice Reading a Bar Graph

Read today's juice selling record. Then answer the questions below. Show your work.

Juice	Number of glasses
Coconut	8
Orange	10
Pineapple	14
Grape	12
Kiwi	6

Number of glasses (x-axis): 2, 4, 6, 8, 10, 12, 14, 16

1. **What unit of measurement is used to express how much juice was sold?**

   Glasses

2. **Write a number at the end of each bar to indicate the amount of juice sold.**

   Orange: 10, Pineapple: 14, Grape: 12, Kiwi: 6

3. **List the juice in order of popularity.**

   Pineapple, Grape, Orange, Coconut, Kiwi

4. **If 5 more glasses of coconut juice were sold, what rank would pineapple be?**

   First

5. **How many more glasses of kiwi juice need to be sold to make it the most popular drink?**
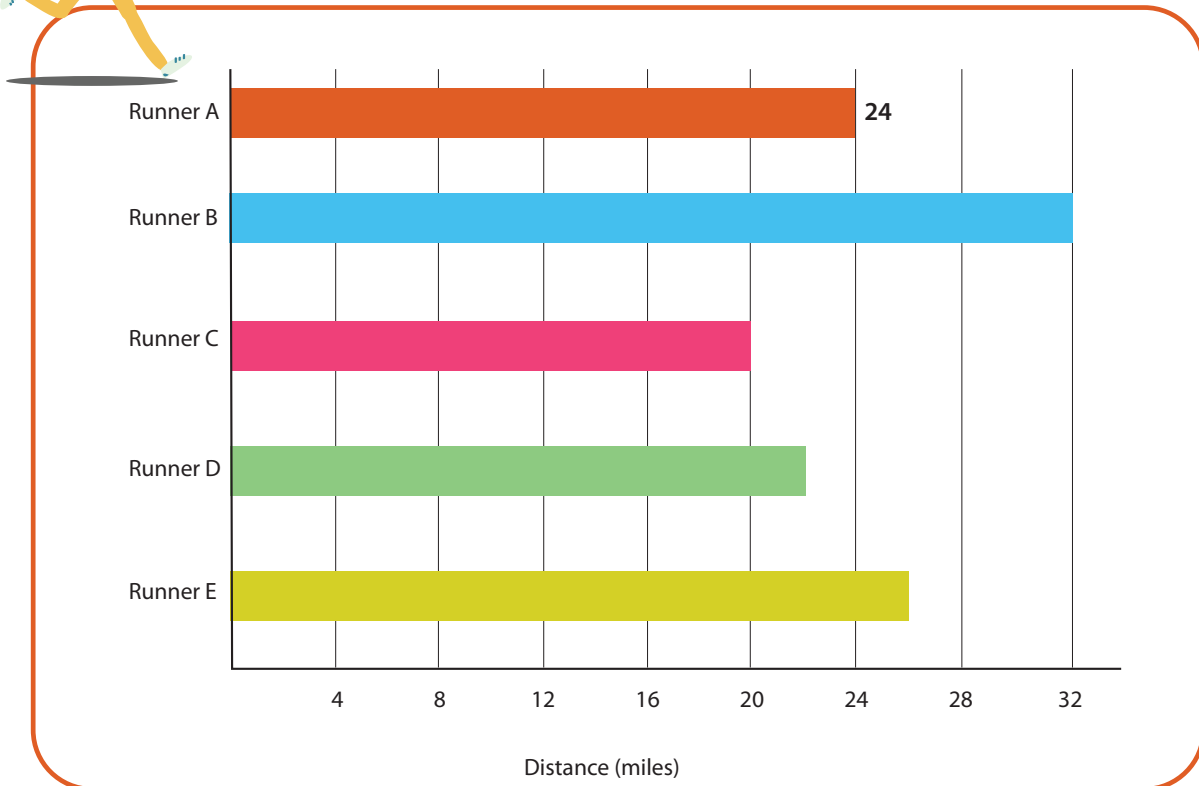
   9 Glasses

Answer Sheet

Go Runners!: Practice Reading a Bar Graph [3rd Grade]

Read the record of each runner. Then answer the questions below. Show your work.

	Distance (miles)
Runner A	**24**
Runner B	
Runner C	
Runner D	
Runner E	

Distance (miles): 4 8 12 16 20 24 28 32

1. What unit of measurement is used to determine how long each runner ran?

    Miles

2. Write a number at the end of each bar to indicate the distance each runner ran.
    Runner B: 32, Runner C: 20, Runner D: 22, Runner E: 26

3. List the runners in order from greatest to shortest distance run.

    Runner B, Runner E, Runner A, Runner D, Runner C

4. How much farther did Runner B run compared to Runner E?

    6 Miles

5. How many more miles does Runner D need to run to catch up with Runner B?
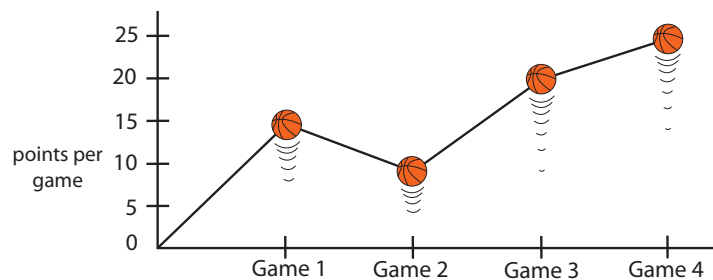
    10 More Miles

Answer Sheet

Line Graphs

Line graphs shows changes in data.
The points on the graphs are connected to plot the changes.

The graph on the right shows the number of miles John ran each week for four weeks.
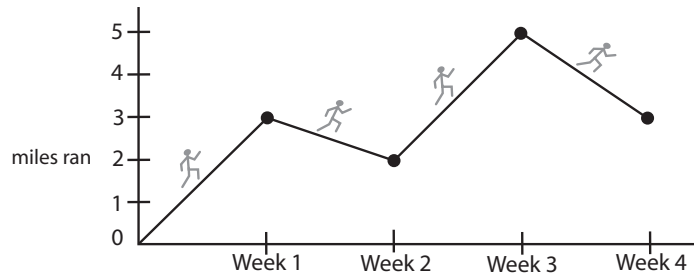
In this graph, we see how many points James scored in four basketball games.

1. In what game did James score the most points? __Game 4__

2. In what game he did he score the least? __Game 2__

3. How many points did he score in Game 3? __20 points__

4. What is the point difference between Game 2 and Game 4? __15 points__

5. What is his point total in four games? __70 points__
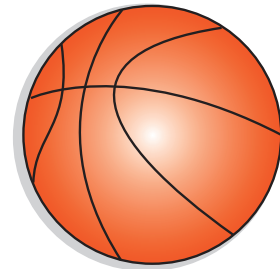
Make your own line graph!

Robert sells tickets to the basketball games.
Draw and plot a line graph to show the number of tickets he sold in four games.

- He sold 10 tickets for Game 1.
- He tripled his sale for Game 2.
- 20 tickets were sold for Game 3.
- For the final game, he sold 50 tickets.
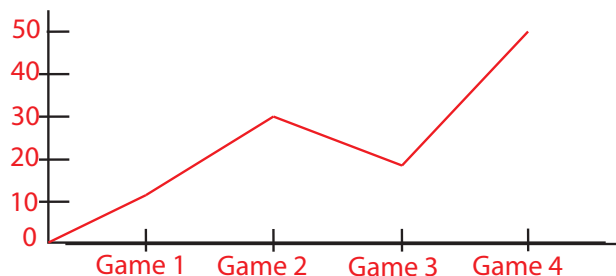
Answer Sheet

Line Graph

Line graphs can be used to show how something changes over time. The points on the graph are connected to plot the changes. The line graph to the right shows the number of assignments Chloe did in 4 months. ⟶

Chloe's Assignments
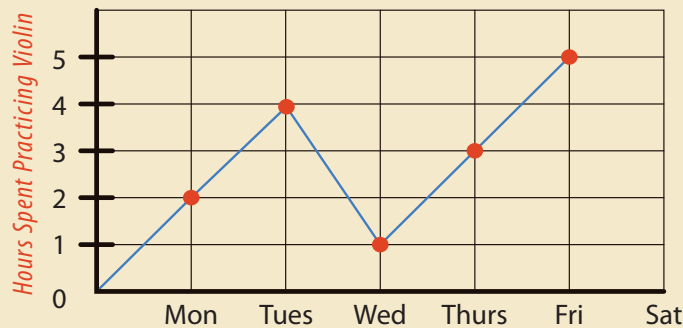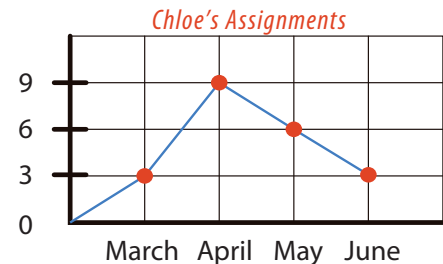
This graph plots the number of hours George spent practicing his violin each weekday.

How many more hours did George practice the violin on Tuesday than on Monday?

2 more hours

Did the amount of assignments for Chloe increase or decrease between the months of March and May?

increased

Did the hours playing the violin for George increase or decrease between Tuesday and Wednesday?

decreased

Draw and plot a line graph to show the number of muffins that were sold by Mrs. Ell's kindergarten class from Tuesday through Friday.

25 muffins were sold on Tuesday.
10 less were sold on Wednesday.
45 were sold on Thursday.
Twice as many were sold on Friday than were sold on Wednesday.

Muffins Sold