DATA AND GRAPHING







Table of Contents

Data and Graphing

Collecting Data Sets Student Created Data Sources: Rectangles Student Created Data Sources: Lunch Items Tomato Fest: Reading a Pictograph * Say Cheese: Reading a Pictograph * Milk Helps You Grow: Reading a Pictograph * Building a New Town: Reading a Pictograph * Theater Goer: Reading a Pictograph * Taxi Company: Reading a Pictograph * Reading a Bar Graph * Getting to School * Popular Juice: Practice Reading a Bar Graph * Go Runners: Practice Reading a Bar Graph * Line Graphs * Bar Graph Worksheet Line Graph * Height Graph: Predictions **Comparing Data Between Groups** Collecting Data & Graphing: Student Age

> Certificate of Completion Answer Sheets

* Has an Answer Sheet

Want more workbooks? Join Education.com Plus to save time and money. http://www.education.com/education-plus/

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 81/2" 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.

			Charac	teristics	
		Salty			
	Crackers	III			
sma					
nch Ite					
Lur					



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		
Questio	ns:	👅 = 5 tomato	es

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:_____



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.



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.

	1
Month and Year	Number of houses built
January 2009	
April 2009	
August 2009	
December 2009	
March 2010	
	= 20 houses
Questions	
Questions.	
1. How many houses does th	is symbol erepresent?
Answer:	
	ild many than 100 have a
2. In what month did they bu	and more than 100 houses?
Answer:	
3. How many houses were bu	uilt from January 2009 to August 2009?
Answer:	
4. How many more houses no	eed to be built in April 2009 to be equal to those in December 2009?
Answer:	
C. The town woods to build 2	00 houses in March Drow the symphole in the short readed to small

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



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	$\bigcirc \bigcirc $					
Thursday	$\bigcirc \bigcirc $					
Friday						
	= 100 persons					
Questions:						
1. How many audience memb	pers does this symbol 🤄 represent?					
Answer:						
2. On what day did the theater have the fewest audience members?						
Answer:						
3. How many audience mem	pers 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.

Та	xi A
Week	Number of Miles
Week 1	
Week 2	
Week 3	
Week 4	





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:

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?



- 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.

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

How many more students t	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 sc	hool
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.



- 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?

3rd Grade **Go Runners!: Practice Reading a Bar Graph** Grade Read the record of each runner. Then answer the questions below. Show your work.



- 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?



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.



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.





This graph plots the number of hours George spent practicing his violin each weekday.

	INION	Tues	wea	Inurs	Fri	Sat		
How man Tuesday t	iy more than or	e hour 1 Mon	s did (day?	George	pract	ice the violi	n on	
Did the amount of assignments for Chloe increase or decrease between the months of March and May?						r	 	
Did the h decrease	ours p betwe	laying en Tue	the v esday	iolin fo and We	r Geoi dneso	rge increase day?	or	

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?					
	Name	3ft	4ft	5ft	6ft
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?					
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)					
	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	5	Во	ys
name	height	name	height

How many of the predictions were correct?

How many were not?

What does this tell us about guesswork?



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?

gir	rls	bo	ys
name	height	name	height



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)?





Data and Graphing

Tomato Fest: Reading a Pictograph Say Cheese: Reading a Pictograph Milk Helps You Grow: Reading a Pictograph Building a New Town: Reading a Pictograph Theater Goer: Reading a Pictograph Taxi Company: Reading a Pictograph Reading a Bar Graph Getting to School Popular Juice: Practice Reading a Bar Graph Go Runners: Practice Reading a Bar Graph Line Graphs Line Graph

Want more workbooks? Join Education.com Plus to save time and money. http://www.education.com/education-plus/ 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	
Question	ns:	🝎 = 5 tomatoes
1. How mar	ny tomatoes did th	e farmer pick on the first day?
Answer:	30	
2 What da		el the most temptees?
 vvnat da 	y did the farmer pi	ck the most tomatoes?
2. what da	n y did the farmer pi Day 1	
 What da Answer: Which da in total bot 	Day 1 Day 1 ays did the farmer th of those days?	pick the same amount of tomatoes? How many did he pick
 What da Answer: Which da in total bot Answer: 	Day 1 Day 1 ays did the farmer f th of those days? Day 2 and Day 3 /	pick the same amount of tomatoes? 40 tomatoes.
 What da Answer: Which da in total bot Answer: What's th 	by did the farmer pi Day 1 ays did the farmer p th of those days? Day 2 and Day 3 / ne difference betwo	pick the same amount of tomatoes? 40 tomatoes. een the number of tomatoes picked on Day 3 and Day 4?
 What da Answer: Which da in total bot Answer: What's th Answer: 	by did the farmer pi Day 1 The did the farmer pi th of those days? Day 2 and Day 3 / The difference betwo 5	pick the same amount of tomatoes? How many did he pick 40 tomatoes.
 What da Answer: Which da in total bot Answer: What's th Answer: How ma 	by did the farmer pi Day 1 Day 1 ays did the farmer pi th of those days? Day 2 and Day 3 / Day 2 and Day 3 / Day 5 any tomatoes in tot	pick the same amount of tomatoes? How many did he pick 40 tomatoes. een the number of tomatoes picked on Day 3 and Day 4? al did he picked for this season?



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.

T	ype of Cheese	Number of Cheese Sold	
N	lozzarella		
c	heddar		
В	lue Cheese		
F	eta		
G	ioat Cheese		
Questio	ons:	o o = 5 lbs. of cheese	
1. How mu	ıch goat cheese did Giova	nni sell?	
Answer:	25		
2. What ki	nd of cheese was the mos	st popular? How much was sold?	
Answer:	Cheddar 30 pound	S	
3. What kir make it eq	nd of cheese sold the leas Jual to cheddar cheese?	t? How much more cheese doesGiovanni need	to sell in order to
Answer:	Blue Cheese 15 pour	nds	
4. How mu	ich feta cheese and mozza	arella cheese did he sell in total?	
Answer:	40 pounds		
5. If all the	e cheese cost \$2 per poun	d, how much did he earn today?	
Answer:	\$220		

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.



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				
Questions:	= 20 houses			
1. How many houses does thi Answer:10 Houses	s symbol represent?			
2. In what months did they be	uild more than 100 houses?			
Answer: January, Au	igust, and December			
3. How many houses were bu	ilt from January 2009 to August 2009?			
Answer: 360 Hous	es			
4. How many more houses ne	eed 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:	
Questions.	
1. How many audience memb	pers does this symbol 🤆 represent?
Answer: 50 Audie	ence Members
2. On what day did the theat	er have the fewest audience members?
Answer: Friday	
3. How many audience mem	pers attended the theater from Tuesday to Thursday?
2 000 A	ion so Mombors
Answer: 2,800 Aud	
4. How many more audience those on Thursday?	e members did they need on Wednesday to be equal to
Answer: 50 Aug	dience Members
5. If the entrance fee is \$5 pe	r person, how much did the theater earn on Tuesday?
Answer:\$3,750)



education.com Copyright © 2009-2010 by Education.com

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.

		Tax	ki B
Week	Number of Miles	Week	Number of Miles
Week 1		Week 1	
Week 2		Week 2	
Week 3		Week 3	
Week 4		Week 4	
			= 150 miles
Quest	ions:		
Quest	10115.		
1. How m	any miles did Taxi A travel in total?		
Answer:	1650		
2 Low m			
2. HOW II	iany miles did Taxi B travel in total?		
Answer:	1950		
Answer: 3. Which he have t	taxi went more miles in total? taxi went? taxi went?	e other taxi want	ed to catch up, how many miles wo
Answer: 3. Which he have t Answer:	taxi went more miles in total? taxi went more miles in total? If the to go in a month? Taxi B / Taxi A would need 300 more	e other taxi want e miles.	ed to catch up, how many miles wo
Answer: 3. Which he have t Answer: 4. How m	taxi went more miles in total? taxi went more miles in total? If the taxi B / Taxi A would need 300 more taxi B / Taxi A would need 300 more	e other taxi want e miles. tal?	ed to catch up, how many miles wo
Answer: 3. Which he have t Answer: 4. How m Answer:	taxi went more miles in total? taxi went more miles in total? If the to go in a month? Taxi B / Taxi A would need 300 more tany miles did the two taxis go in tot 3600 miles	e other taxi want e miles. tal?	ed to catch up, how many miles wo
Answer: 3. Which he have t Answer: 4. How m Answer: 5. If Taxi	taxi went more miles in total? taxi went more miles in total? If the to go in a month? Taxi B / Taxi A would need 300 more tany miles did the two taxis go in tot 3600 miles	e other taxi want e miles. tal?	ence in total from Taxi B?
Answer: 3. Which he have t Answer: 4. How m Answer: 5. If Taxi A	taxi went more miles in total? taxi went more miles in total? If the taxi went more miles in total? If the taxi B / Taxi A would need 300 more many miles did the two taxis go in total 3600 miles A traveled 300 more miles, what would 0 miles	e other taxi want e miles. tal? uld be the differe	ed to catch up, how many miles wo

More worksheets at www.education.com/worksheets





www.education.com/worksheets



- 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



- 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



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. \longrightarrow





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.



education.com Copyright © 2012-2013 by Education.com

More worksheets at www.education.com/worksheets

increased

decreased