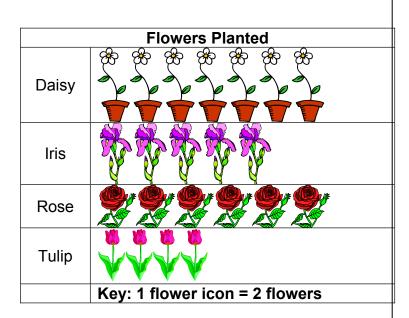
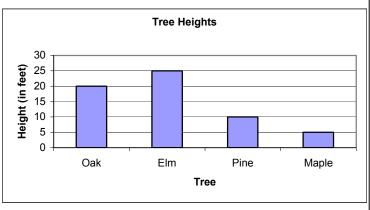
Lesson Objective: Solve multi-step word problems with picture graphs, bar graphs, or line graphs.

Vocabulary Box

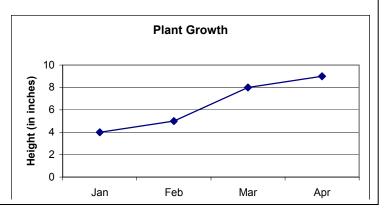
pictograph – A graph that uses pictures to show data. Example: The graph on the right uses pictures to show how many flowers were planted.



bar graph – A graph that uses bars to show data. Example: The graph on the right uses bars to show the heights of four trees.



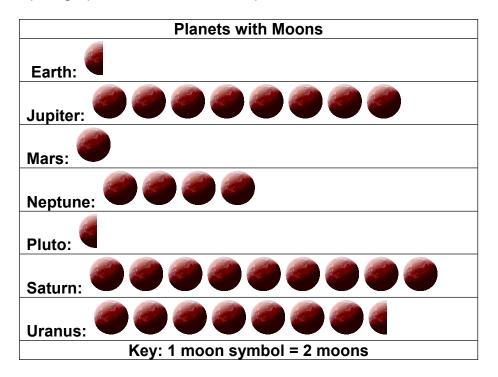
line graph – A graph that uses a line to show how data change over time. Example: The graph on the right uses a line to show how the height of a plant changed over four months.





<u>Directions</u>: Complete the following practice problems with your partner. Your teacher will review the answers. Make sure you show all your work.

I. Use the pictograph below to solve each problem.



1. Which planet has more moons: Uranus or Neptune? How many more?

2. Which planet has nine times as many moons as Mars?

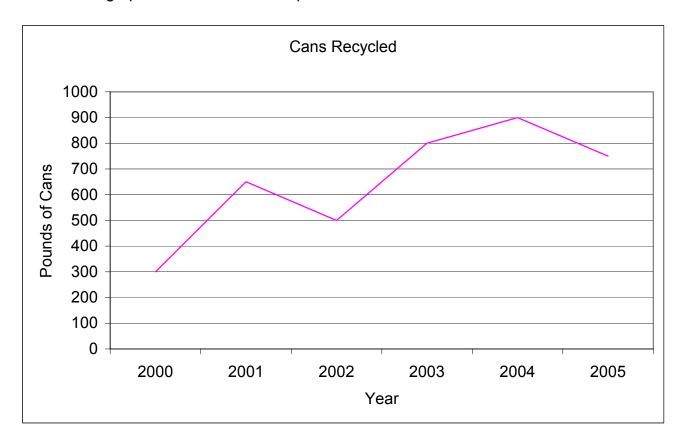
3. How many more moons does Jupiter have than Earth, Mars, and Pluto combined?

II. Use the bar graph below to solve each problem.



- 1. What is the difference between the longest and shortest bike trails?
- 2. Last weekend, Darius biked the entire blue trail. This weekend, he biked the entire white trail. Altogether, how many miles did Darius ride his bike?
- 3. If you ride your bike at a speed of 10 miles per hour, how long will it take you to ride the entire Green Trail? (Remember: distance = speed \times time.)

III. Use the line graph below to solve each problem.



- 1. How many more pounds of cans were recycled in 2001 than in 2002?
- 2. Half of all the cans recycled in 2002 and 2003 were empty soda cans. How many pounds of soda cans were recycled from 2002 to 2003?
- 3. What was the total amount of cans recycled from 2003 to 2005?



A. Vocabulary Words

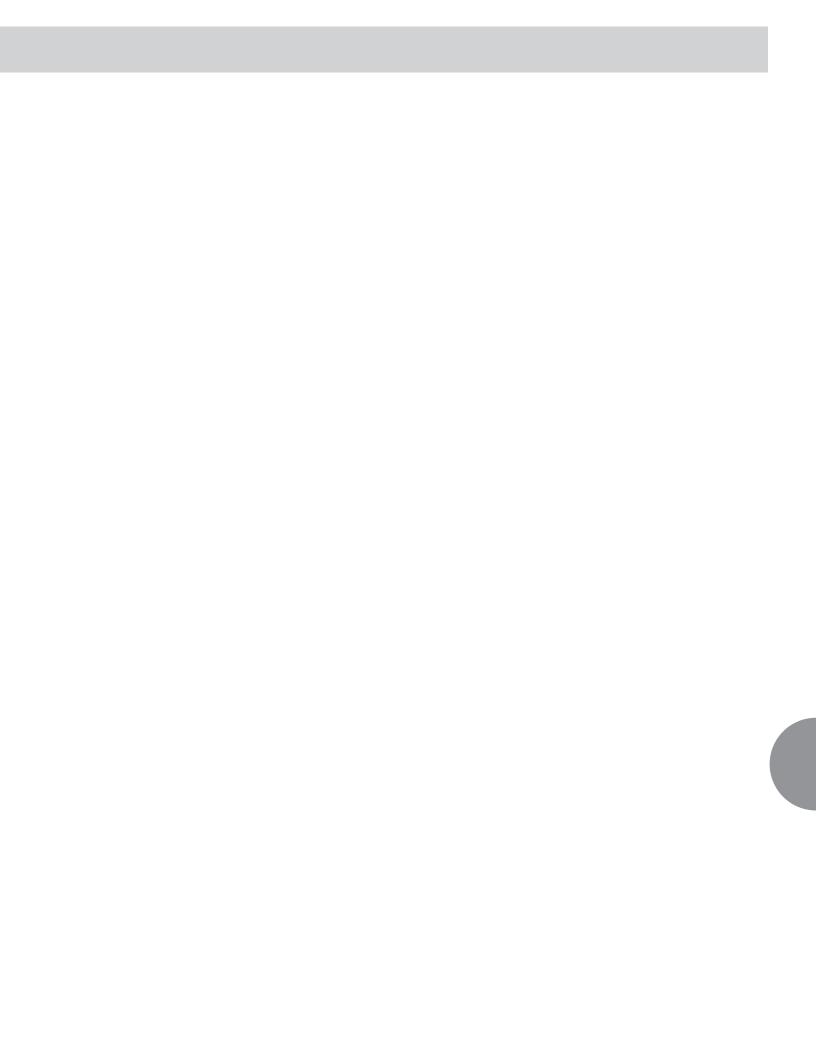
<u>Directions</u>: Complete each sentence to describe three kinds of graphs. Cirlce the data set that is best displayed on that kind of graph.

1.	Α_	uses bars to show data.
		DATA: The lengths of the four longest rivers in the United States DATA: The population of the United States each year from 2000 to 200-
2.	Α	uses a line to show how data change over time.

- A. DATA: The number of concert tickets sold each day for one week
- B. DATA: The number of seats in each section of a concert hall
- 3. A _____ uses pictures to show data.
 - A. DATA: The average temperature in a city each hour for one day
 - B. DATA: The number of postcards you have from five different cities

B. Summarize What We Learned Today

Write an example of a multi-step problem that can be solved by using one of the graphs in the Guided Practice section of this lesson. Solve the problem and explain each step you followed to solve it. You will use this explanation as a personal reminder.



Lesson Objective: Solve multi-step word problems with picture graphs, bar graphs, or line graphs.

Vocabulary Box

pictograph – A graph that uses pictures to show data. Example: The graph on the right uses pictures to show how many flowers were planted.

Planted

Daisy

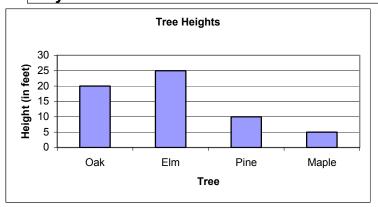
Iris

Rose

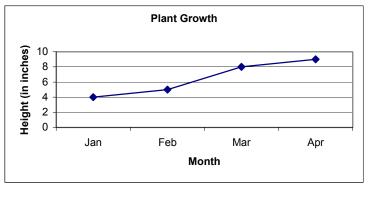
Tulip

Key: 1 Flower Icon = 2 Flowers

bar graph – A graph that uses bars to show data. Example: The graph on the right uses bars to show the heights of four trees.



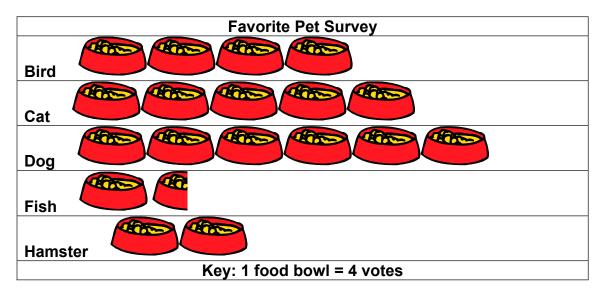
line graph – A graph that uses a line to show how data change over time. Example: The graph on the right uses a line to show how the height of a plant changed over four months.





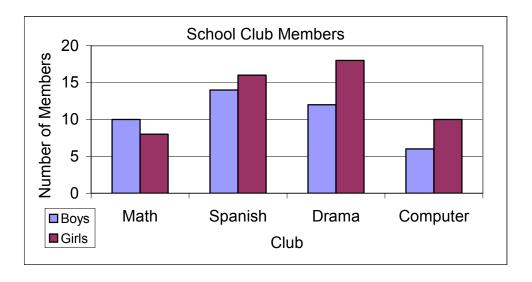
<u>Directions</u>: Complete the following practice problems on your own. Your teacher will review the answers. Make sure you show all your work.

I. Use the pictograph below to solve each problem.



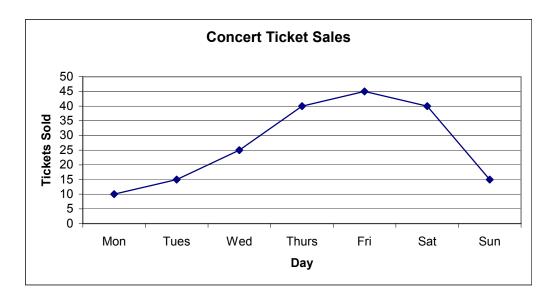
1.	Which pet got more votes, a cat or a dog? How many more?
2.	Which pet got twice as many votes as a hamster got?
3.	How many people voted in the favorite pet survey?

II. Use the double-bar graph below to solve each problem.



- 1. In which club are there more boys than girls?
- 2. What is the mean number of girls in the four clubs?
- 3. Are there more boys or more girls in the four clubs? How many more?

III. Use the line graph below to solve each problem.



- 1. How many more tickets were sold on Saturday than on Monday?
- 2. On which day were three times as many tickets sold as were sold on Tuesday?
- 3. Each ticket to the concert costs \$10. According to the graph, what is the total amount of money collected for tickets sold during the week?



There are four main ways to describe an entire set of data:

range: The difference between the greatest and least item in the set.

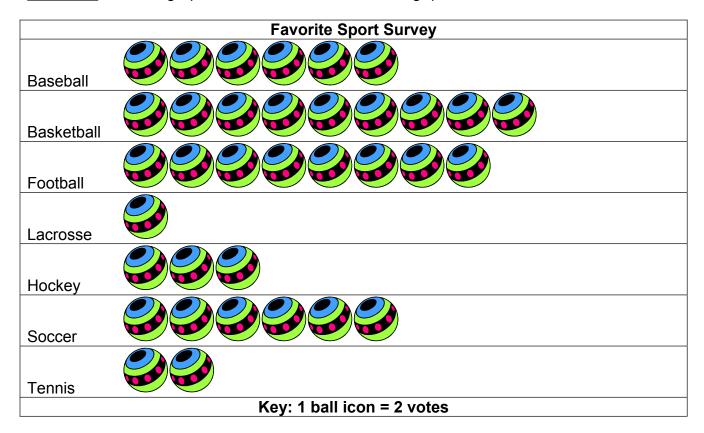
mean: The sum of the data values divided by the number of data items.

mode: The number that occurs most often in the data set.

median: The middle number in the data set when the data are ordered from least to

greatest.

<u>Directions</u>: Use the graph below to answer the following questions.



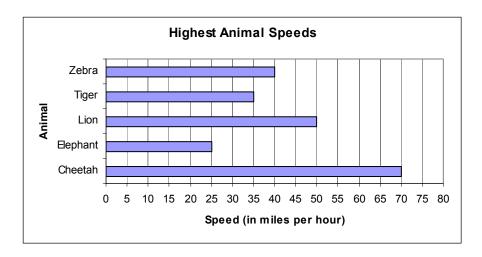
- 1. What is the range of the graph's data?
- 2. What is the mean of this data set?

3. What is the mode of this data set?

4. What is the median of this data set?

Problem Solving

You are doing a report about animals in Africa for your science class. You find the bar graph shown below in a book at the library. You decide to use the graph to include some facts about animal speeds in your report.



1. How much farther can a cheetah run than a lion in two hours? Both run at one-tenth of their top speeds.

Use the graph to find how fast each animal can run.

The cheetah can run _____ miles per hour at top speed.

The lion can run _____ miles per hour at top speed.

Divide each top speed by 10 to find their running speed.

The cheetah is running _____ miles per hour.

The lion is running _____ miles per hour.

Fir	nd how far each animal could run in two hours at that speed.
dis	stance = speed × time
Th	e cheetah will run miles in two hours.
Th	e lion will run miles in two hours.
	Find the difference in those two distances.
	Write your answer in a complete sentence. Use words from the problem.
2.	What is the average, or mean, highest speed of the all animals? Remember to write your answer in a complete sentence.
	what I Knon

- 1. What kind of graph uses a line to show how data change over time?
- 2. What kind of graph uses pictures to show data?
- 3. Look at the bar graph in the Problem Solving section of this lesson. How far could a zebra run in four hours if it could run at maximum speed?

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Lesson Objective: Choose and use an appropriate problem-solving strategy.



<u>Directions</u>: Complete the following practice problems with your partner. Your teacher will review the answers. Make sure you show all your work, check your answers, and write your answers in complete sentences.

an	Swers in complete sentences.
1.	Matt went to the state fair, today. It cost him \$15.75 to get into the fair. Then, he spent \$18.00 on ride tickets. After that, Matt bought lunch for \$9.50. When Matt left the fair, he had \$4.25. How much money did Matt bring to the fair?
	Step 1: What do you want to know?
	Step 2: What do you know?
	Matt spent to get into the fair.
	He spent on ride tickets.
	He spent on lunch.
	He had when he left the fair.
	Step 3: Choose a strategy to solve the problem, and plan how to use it.
	Strategy: Work backward.
	I will start with the that Matt had when he left the fair.
	Then I will add each amount he spent.
	My result will be the amount he brought to the fair.
	Step 4: Use the strategy to solve the problem.
	Amount he had before buying lunch: \$4.25 + \$9.50 =
	Amount he had before buying ride tickets: + \$18.00 =
	Amount he had before paying admission: + \$15.75 =
	Amount he brought to the fair:
	Step 5: Check your answer, and write the answer in a complete sentence.
	Work forward to check your answer.
	Amount he brought to the fair:

	Amount he had after paying admission: – \$15.75 =				
	Amount he had after buying ride tickets: \$18.00 =				
	Amount he had after buying lunch: \$9.50 =				
	Amount he had when he left the fair: \$4.25				
	Answer:				
2.	Cheryl used 300 square tiles to cover her patio. Each tile is 5 inches long on each side. The patio is a rectangle that is 75 inches long. How wide is the patio?				
	Step 1: Identify what you want to know.				
	Step 2: Identify what you know.				
	The patio has the shape of a				
	The patio is inches long.				
	She used tiles to cover the patio.				
	Each tile has the shape of a				
	Each tile is inches long on each side.				
	Step 3: Choose a strategy to solve the problem, and plan how to use it.				
	Strategies: Use a formula and work backward.				
	I will use the formula for the area of a rectangle to find the area of each tile.				
	Then I will multiply that area by 300 to find the area of the patio.				
	Then I will use the formula for the area of a rectangle and work backward to find the width				
	of the patio.				
	Step 4: Use the strategy to solve the problem. Area of each tile = × =				
	Area of the patio = × 300 =				
	Width of patio = ÷ 75 inches =				

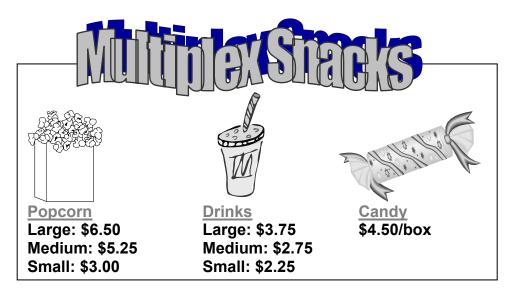
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Step 5: Check your answer, and write the answer in a complete sentence.
Area of patio = length × width
Area of patio = 75 inches × =
Answer:



<u>Directions</u>: Complete the following practice problems on your own. Your teacher will review the answers. Make sure you show all your work, check your answers, and write your answers in complete sentences.

Jake and Aleesha went to the movies. Each ticket cost \$7.50. Jake bought his ticket, a large popcorn, and a large soda. Aleesha bought her ticket, a box of candy, and a medium lemonade. When they left the movies, Jake and Aleesha both counted their money. Jake had \$3.00, and Aleesha had \$7.25.



What do you know?

What do you know?

1. How much money did Jake bring to the movie theater?

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	What strategy will you use to solve the problem?
	How will you use that strategy to solve the problem?
	How can you check your answer?
	Answer:
2.	How much money did Aleesha bring to the movie theater?
	Answer:

