NAME _____   DATE _____

Home Connection 36 ★ Worksheet

Charting the Possibilities

1 Rafael has 3 different shirts: a T-shirt, a flannel shirt, and a sweatshirt. He also has 3 different pairs of pants: jeans, corduroys, and sweatpants. When there are lots of possibilities, people 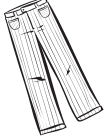sometimes use a chart to find and show them. Use the chart below to show all the different outfits Rafael can make. (The first box is filled in for you.)

	T-shirt	flannel shirt	sweatshirt
jeans	T-shirt and jeans		
corduroys			
sweatpants			

2 How many different outfits can Rafael make with these 3 shirts and 3 pairs of pants?

3a If Rafael gets dressed in the dark, what are the chances that he'll wind up wearing a flannel shirt with jeans?

b Explain your thinking.

NAME _____ DATE _____

Home Connection 37 ★ Worksheet
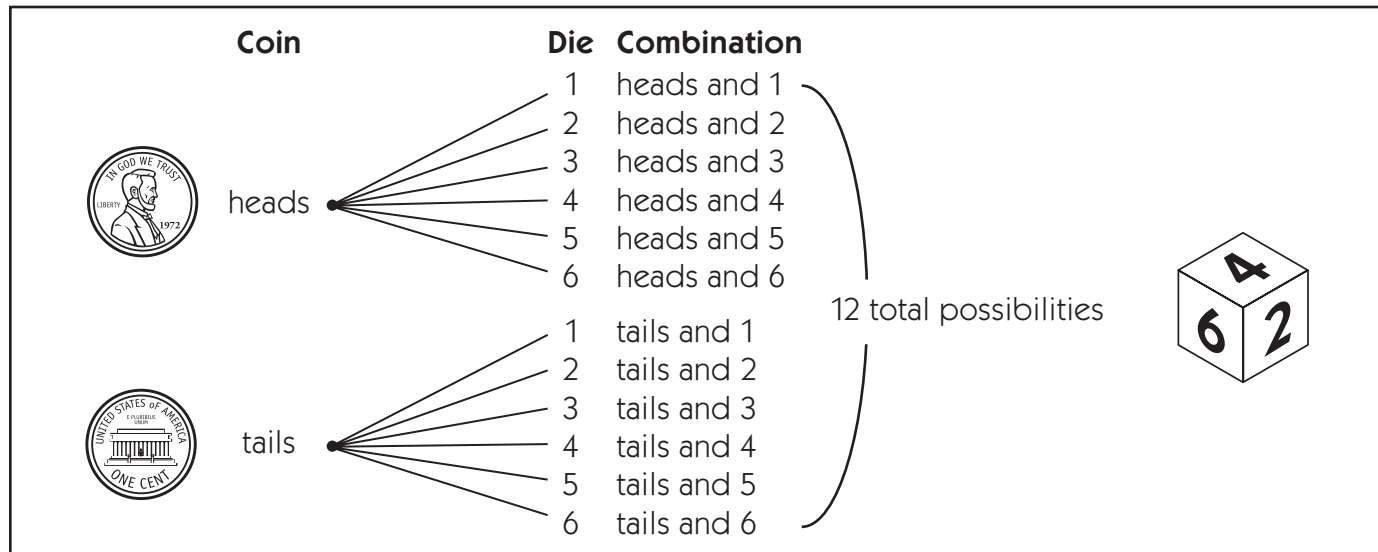
Tree Diagrams

A tree diagram can be a useful way to find and show all the possible outcomes of two or more events. For example, here is a list of all the possible outcomes if you flip a coin and roll a die numbered 1–6 at the same time.

Coin	Die	Combination
heads	1	heads and 1
	2	heads and 2
	3	heads and 3
	4	heads and 4
	5	heads and 5
	6	heads and 6
tails	1	tails and 1
	2	tails and 2
	3	tails and 3
	4	tails and 4
	5	tails and 5
	6	tails and 6

12 total possibilities

1 Suppose you have 1 red, 1 blue, 1 yellow, and 1 green tile in a bag. Use a tree diagram like the one above to list all the possible outcomes if you flip a coin and pull a tile out of the bag at the same time. Use a piece of scratch paper if you don't have enough room below.

R   B   Y   G

(Continued on back.)

2 At a school picnic you are allowed to choose a main dish and a drink from the lists below. Use a tree diagram or a chart to show all the different meals you could have if you chose one main course and one drink.

Main Dish	Drink
caesar salad	lemonade
cheese pizza	orange juice
turkey sandwich	milk

3 Now that you have shown all the possible meals, circle the one you would choose.

Home Connection 38 ★ Worksheet

Organized Lists

Part of a mathematician's job is to organize data so that it is easy to see patterns and trends. In the last two Home Connections, you used charts and tree diagrams to show all the possible outcomes of a situation. Another way is to make an organized list.

Imagine you have a bag that contains a red marble, a blue marble, and a green marble. You reach in the bag to pick a marble. After writing down the color of the marble, you put the marble back in the bag, shake up the marbles, and then pull another marble out of the bag. Again, you write down the color of the marble.

One way to determine how many different outcomes there are for this activity is to write down every combination of two marbles you could get from the bag.

If the first marble is red, what could the second marble be? Because you put the red marble back in the bag, the second marble could be red, blue, or green. If red is the first color you pull out, here are all the possible outcomes.

(R)(R)   (R)(B)   (R)(G)

1 What if you pull the blue marble out first? Color or write letters in the marbles below to show all the possible outcomes if the first marble you pick is blue.

◯◯   ◯◯   ◯◯

2 Green is another possibility for the first color, too. Color in the marbles below to show all the possible outcomes if the first marble you pick is green.

◯◯   ◯◯   ◯◯

You have no more possible colors for the first marble, so your list is complete. There are 9 possible outcomes for pulling two marbles from the bag.

NAME _____   DATE _____

Home Connection 39 ★ Activity

Coin Flipping Experiment

Get a coin to flip in this assignment. Look at the coin and then answer the questions below.

1 How likely is it that you will get heads if you flip the coin one time? (circle one)

      impossible   unlikely   as unlikely as likely   likely   certain

2 How likely is it that you will get tails if you flip the coin one time? (circle one)

      impossible   unlikely   as unlikely as likely   likely   certain

3a If you flip the coin 10 times, about how many times will you get heads?

b Explain your answer to part a.

4a If you flip the coin 10 times, about how many times will you get tails?

b Explain your answer to part a.

5 Now flip the coin 10 times and keep track of how many heads and tails you get below. You can use tally marks or some other marking to keep track.

6 How do your actual results in 5 compare to your predictions in 3 and 4?

(Continued on back.)

7a If you flip the coin 20 times, about how many times will you get heads?

b Explain your answer to part a.

8a If you flip the coin 20 times, about how many times will you get tails?

b Explain your answer to part a.

9 Now flip the coin 20 times and keep track of how many heads and tails you get below. You can use tally marks or some other marking to keep track.

10 How do your actual results in 9 compare to your predictions in 7 and 8?

11 If you flipped the coin again 20 times, do you think you would get the same number of heads and tails you got in part 9? Why or why not?

NAME _____   DATE _____

Home Connection 40 ★ Worksheet

Sports Statistics

Below are the top 10 scoring leaders from a recent regular season of the Women's National Basketball Association (WNBA). Look at this chart and then answer the questions below. (The players below are fictional.)

Player	Total Games Played	Total Points Scored in All Games	Average Points per Game
Laura Jackson	31	634	20.5
Talia Smith	26	520	20.0
Leila Rowlands	34	598	17.6
Daisy Brown	34	578	17.0
Jada Dawson	34	568	16.7
Andrea Hawking	32	526	16.4
Shanice Larsen	34	517	15.2
Donna Pratt	31	459	14.8
Kendra Hastings	34	494	14.5
Shawna Reynolds	31	445	14.4

1 Which player scored the most total points during the season?

2 Which player scored the most average points per game?

3 Look at the statistics for Talia Smith and Leila Rowlands (the second and third players on the chart). Leila scored more points, but Talia scored more points per game. Explain how this is possible.

4 Which player(s) played in the most games?

5a Just by looking at the chart, how many games do you think are in the WBNA season?

b Why?

(Continued on back.)

6 Complete the pictograph below to show the number of games played by each player.

Key : ◯ = **2 games played**

Player	Games Played
Laura Jackson	
Talia Smith	
Leila Rowlands	
Daisy Brown	
Jada Dawson	
Andrea Hawking	
Shanice Larsen	
Donna Pratt	
Kendra Hastings	
Shawna Reynolds	

CHALLENGE

7 In a book or newspaper, or on the Internet, find some statistics for a sport that you enjoy. Attach a copy of what you find to this paper. Write 2 different things you notice about the data you found.
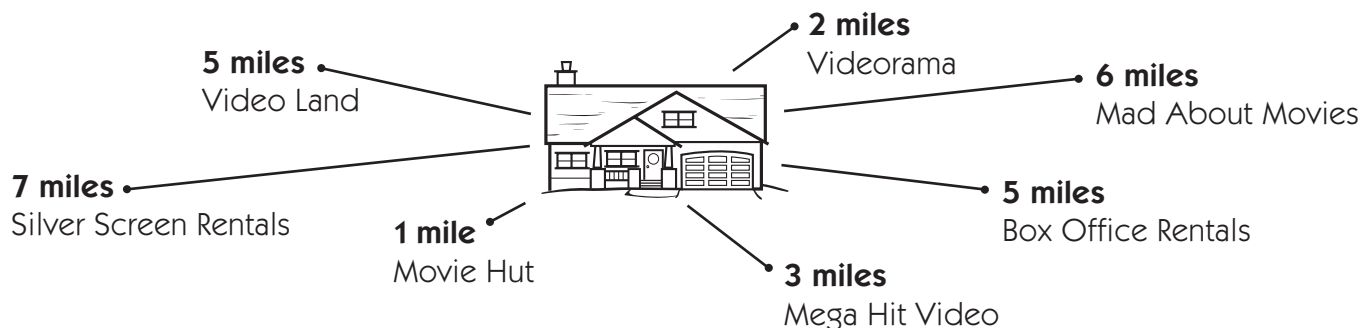
NAME _____   DATE _____

Home Connection 41 ★ Worksheet

Distance Data

Tiana made a diagram to show the distance from her house to each of several video rental stores.

2 miles
Videorama

5 miles
Video Land

6 miles
Mad About Movies

7 miles
Silver Screen Rentals

5 miles
Box Office Rentals

1 mile
Movie Hut

3 miles
Mega Hit Video

See the definitions on the next page if you cannot remember what *mode*, *median*, and *range* mean

1 Color in a column on the graph below to show the distance from Tiana's house to the 7 different video stores. Put them in order from least to greatest. The first distance has been entered on the grid for you.
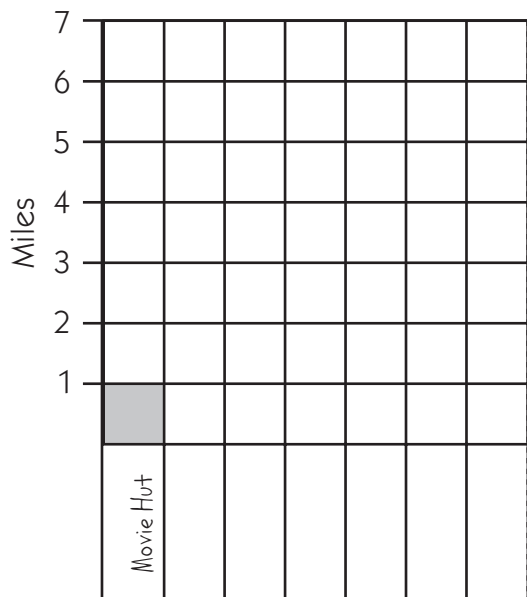
2a What is the range of the distances from Tiana's house to the 7 different video stores? _____

b Show your work.

3 What is the mode of the distances?

4a What is the median distance from Tiana's house to the video stores?

b Show your work.

(Continued on back.)

5 Tiana realized that she forgot to include the distance from her house to Video Wonderland. That distance is 3 miles. If the new distance is included in the list from problem 1, how will the median, mode, and range change?

a new median: _____

b new mode: _____

c new range: _____

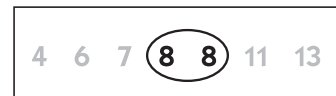**6** Create a list of 6 numbers with a range of 5.

7 Create a list of 5 numbers with a median of 10.

8 Create a list of 7 numbers with a median of 12.

9 Create a list of 5 numbers with a mode of 11.

Words to Remember	
Mode The number or numbers that appears most frequently in a set. In any set, there may be 1 mode, more than 1 mode, or no mode at all.	4 6 7 (8 8) 11 13
Median The middle number when the numbers in a set are arranged from lowest to highest. If there is an even number of numbers in the set, the median is the average of the 2 middle numbers	4 6 7 (8) 8 11 13
Range The difference between the highest and lowest number in a set.	4 6 7 8 8 11 13 **13 − 4 = 9**