

**STUDY LINK**  
**6•11**

## Unit 7: Family Letter

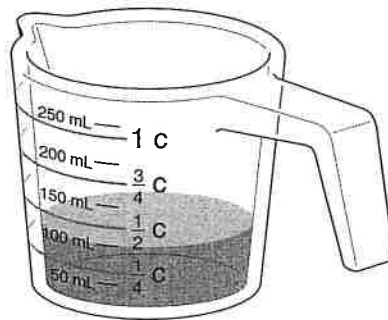


# Fractions and Their Uses; Chance and Probability

One of the most important ideas in mathematics is the concept that a number can be named in many different ways. For example, a store might advertise an item at  $\frac{1}{2}$  off its original price or at a 50% discount—both mean the same thing. Much of the mathematics your child will learn involves finding equivalent names for numbers.



A few weeks ago, the class studied decimals as a way of naming numbers between whole numbers. Fractions serve the same purpose. After reviewing the meaning and uses of fractions, students will explore equivalent fractions—fractions that have the same value, such as  $\frac{1}{2}$ ,  $\frac{2}{4}$ ,  $\frac{3}{6}$ , and so on. As in past work with fractions, students will handle concrete objects and look at pictures, because they first need to “see” fractions in order to understand what fractions mean.



A measuring cup showing fractional increments

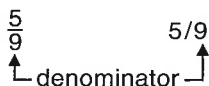
Fractions are also used to express the chance that an event will occur. For example, if we flip a coin, we say that it will land heads-up about  $\frac{1}{2}$  of the time. The branch of mathematics that deals with chance events is called **probability**. Your child will begin to study probability by performing simple experiments.

**Please keep this Family Letter for reference as your child works through Unit 7.**

## Vocabulary

Important terms in Unit 7:

**denominator** The number below the line in a fraction. In a fraction where the whole is divided into equal parts, the denominator represents the number of equal parts into which the whole (or ONE or unit whole) is divided. In the fraction  $\frac{a}{b}$ ,  $b$  is the denominator.



**equal chance outcomes or equally likely outcomes**

If each of the possible outcomes for a chance experiment or situation has the same chance of occurring, the outcomes are said to have an equal chance or to be equally likely. For example, there is an equal chance of getting heads or tails when flipping a coin, so heads and tails are equally likely outcomes.

**equivalent fractions** Fractions with different denominators that name the same number. For example,  $\frac{1}{2}$  and  $\frac{4}{8}$  are equivalent fractions.

**fair (coin, die, or spinner)** A device that is free from bias. Each side of a fair die or coin will come up about equally often. Each section of a fair spinner will come up in proportion to its area.

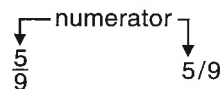


A die has six faces. If the die is fair, each face has the same chance of coming up.

**fair game** A game in which every player has the same chance of winning.

**mixed number** A number that is written using both a whole number and a fraction. For example,  $2\frac{1}{4}$  is a mixed number equal to  $2 + \frac{1}{4}$ .

**numerator** The number above the line in a fraction. In a fraction where the whole (or ONE or unit whole) is divided into a number of equal parts, the numerator represents the number of equal parts being considered. In the fraction  $\frac{a}{b}$ ,  $a$  is the numerator.



**probability** A number from 0 through 1 that tells the chance that an event will happen. The closer a probability is to 1, the more likely the event is to happen.

**whole (or ONE or unit whole)** The entire object, collection of objects, or quantity being considered; the ONE; the unit whole; 100%.

**“whole” box** In *Everyday Mathematics*, a box in which students write the name of the whole (or ONE or unit whole).

**Whole**

24 pennies

# As You Help Your Child with Homework

As your child brings assignments home, you may want to go over the instructions together, clarifying them as necessary. The answers listed below will guide you through some of the Study Links in this unit.

## Study Link 7•2

1. **b.** 4    **c.** 12    **d.** 8                      2. 6  
 3. 12                      4. 7                      5. 28  
 6. 10                      7. 30                      8. 10  
 9. 12                      10. 12                      11.  $2\frac{1}{2}$   
 12. 23                      13.  $19\frac{2}{3}$                       14. 13  
 15.  $41\frac{7}{9}$

## Study Link 7•3

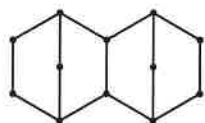
1. 50-50 chance                      2. very unlikely  
 4. 5                      5. 592                      6. 3,948  
 7. 1,690                      8. 16,170

## Study Link 7•4

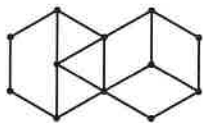
3. 8                      4. 0.881                      5. 9.845  
 6. 1.59                      7. 0.028

## Study Link 7•5

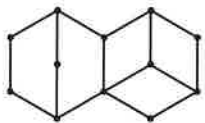
1. Less than \$1.00;  $0.75 + 0.10 = 0.85$   
 2.  $3\frac{3}{4}$                       3.  $\frac{1}{6}$                       4.  $2\frac{3}{8}$   
 5. Sample answers:



$$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = 1$$



$$\frac{1}{4} + \frac{3}{12} + \frac{3}{6} = 1$$



$$\frac{2}{4} + \frac{3}{6} = 1$$

6. 8                      7. 45                      8. 49                      9. 22

## Study Link 7•6

1. C, F, I                      2. B, D                      3. E, H                      4. A, G  
 5.  $\frac{2}{3}$                       7.  $\frac{5}{6}$                       9.  $\frac{1}{2}$                       10.  $\frac{1}{6}$

## Study Link 7•7

5.  $23\frac{3}{4}$                       6. 19                      7. 42

## Study Link 7•8

Sample answers for 1–10:

1.  $\frac{2}{10}, \frac{1}{5}, \frac{20}{100}$                       2.  $\frac{6}{10}, \frac{3}{5}, \frac{60}{100}$   
 3.  $\frac{5}{10}, \frac{1}{2}, \frac{50}{100}$                       4.  $\frac{3}{4}, \frac{30}{40}, \frac{75}{100}$   
 5. 0.3                      6. 0.63                      7. 0.7                      8. 0.4  
 9.  $0.70; \frac{70}{100}$                       10.  $0.2; \frac{2}{10}$                       11. 702                      12. 3,227  
 13. 975

## Study Link 7•9

1. >                      2. <                      3. =  
 4. =                      5. <                      6. >  
 7. Answers vary.                      8. Answers vary.  
 9.  $\frac{1}{4}, \frac{4}{10}, \frac{3}{7}, \frac{24}{50}$                       10.  $\frac{1}{12}, \frac{3}{12}, \frac{7}{12}, \frac{8}{12}, \frac{11}{12}$   
 11.  $\frac{1}{50}, \frac{1}{20}, \frac{1}{5}, \frac{1}{3}, \frac{1}{2}$                       12.  $\frac{4}{100}, \frac{4}{12}, \frac{4}{8}, \frac{4}{5}, \frac{4}{4}$   
 13. 5                      14. 100                      15. 36

## Study Link 7•10

3. 28                      4. 27                      5. 30                      6. 36

## Study Link 7•11

3. 29                      4.  $16\frac{1}{2}$                       5. 105                      6.  $141\frac{1}{5}$

## Study Link 7•12

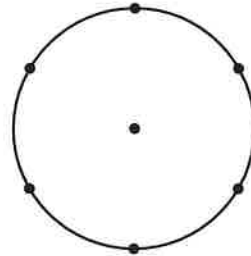
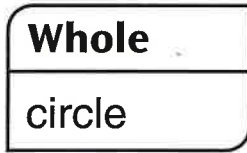
1. Answers vary.  
 2. Answers vary.  
 3. Answers vary.  
 4. **a.**  $\frac{1}{4}$                       **b.**  $\frac{1}{4}$                       **c.**  $\frac{1}{2}$   
 5. Sample answer: I think it will be about the same fraction for 1000 times as it was for 20.  
 6. 336                      7. 7,866                      8. 3,870                      9. 4,828

**STUDY LINK**  
**7•1**

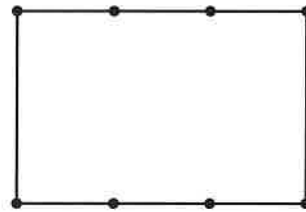
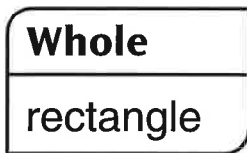
# Fractions



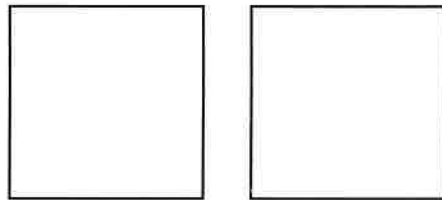
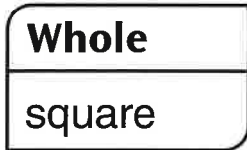
1. Divide the circle into 6 equal parts.  
Color  $\frac{5}{6}$  of the circle.



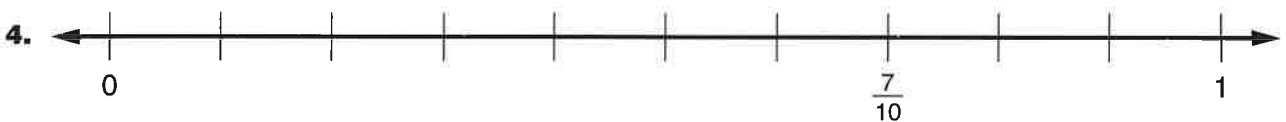
2. Divide the rectangle into 3 equal parts.  
Shade  $\frac{2}{3}$  of the rectangle.



3. Divide each square into fourths.  
Color  $1\frac{3}{4}$  of the squares.



Fill in the missing fractions and mixed numbers on the number lines.


**Practice**

6.  $854 + 267 = \underline{\hspace{2cm}}$

7.  $\underline{\hspace{2cm}} = 3,398 + 2,635$

8.  $\underline{\hspace{2cm}} = 6,374 - 755$

9.  $5,947 - 3,972 = \underline{\hspace{2cm}}$

**STUDY LINK**  
**7•2**

# “Fraction-of” Problems



1. Theresa had 24 cookies. She gave  $\frac{1}{6}$  to her sister and  $\frac{3}{6}$  to her mother.

<b>Whole</b>

- a. Fill in the “whole” box.
- b. How many cookies did she give to her sister? \_\_\_\_\_ cookies
- c. How many did she give to her mother? \_\_\_\_\_ cookies
- d. How many did she have left? \_\_\_\_\_ cookies

Solve.

2.  $\frac{1}{3}$  of 18 = \_\_\_\_\_      3.  $\frac{2}{3}$  of 18 = \_\_\_\_\_      4.  $\frac{1}{5}$  of 35 = \_\_\_\_\_
5.  $\frac{4}{5}$  of 35 = \_\_\_\_\_      6.  $\frac{1}{4}$  of 40 = \_\_\_\_\_      7.  $\frac{3}{4}$  of 40 = \_\_\_\_\_

**Try This**

8.  $\frac{5}{8}$  of 16 = \_\_\_\_\_      9.  $\frac{4}{9}$  of 27 = \_\_\_\_\_      10.  $\frac{3}{5}$  of 20 = \_\_\_\_\_
11. What is  $\frac{1}{4}$  of 10? \_\_\_\_\_ Explain. \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Practice**

12.  $92 \div 4 =$  \_\_\_\_\_      13.  $59 \div 3 =$  \_\_\_\_\_
14. \_\_\_\_\_ =  $104 \div 8$       15.  $9 \overline{)376} =$  \_\_\_\_\_

**STUDY LINK**  
**7•3**

# Color Tiles



There are 5 blue, 2 red, 1 yellow, and 2 green tiles in a bag.

- Without looking, Maren picks a tile from the bag. Which of these best describes her chances of picking a blue tile?
  - likely
  - 50-50 chance
  - unlikely
  - very unlikely
- Which of these best describes her chances of picking a yellow tile?
  - certain
  - likely
  - 50-50 chance
  - very unlikely
- Find the probability of each event. Then make up an event and find the probability.

Event	Favorable Outcomes	Possible Outcomes	Probability
Pick a blue tile	5	10	$\frac{5}{10}$
Pick a red tile		10	$\frac{\square}{10}$
Pick a yellow tile		10	$\frac{\square}{10}$
Pick a green tile		10	$\frac{\square}{10}$
Pick a blue, red, or green tile		10	$\frac{\square}{10}$
		10	$\frac{\square}{10}$

- Suppose you picked a color tile from the bag 10 times. After each pick, you put the tile back in the bag. How many times would you expect to pick a blue tile? \_\_\_\_\_ times  
Try the experiment. Compare your prediction with the actual results.

**Practice**

- $74 * 8 =$  \_\_\_\_\_
- \_\_\_\_\_ =  $4 * 987$
- \_\_\_\_\_ =  $65 * 26$
- $35 * 462 =$  \_\_\_\_\_

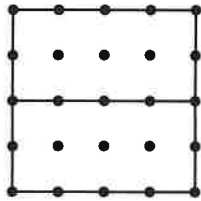
**STUDY LINK**  
**7•4**

# Dividing Squares

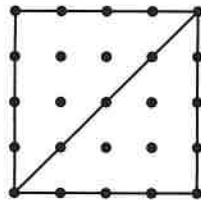


Use a straightedge and the dots below to help you divide each of the squares into equal parts.

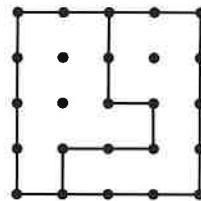
**Example:** Squares A, B, C, and D are each divided in half in a different way.



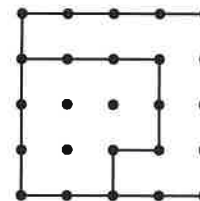
A



B

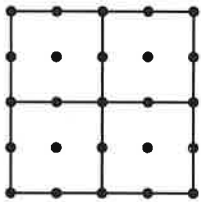


C

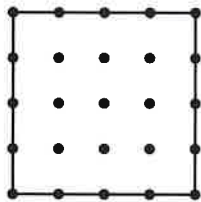


D

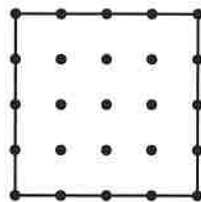
1. Square E is divided into fourths. Divide squares F, G, and H into fourths, each in a different way.



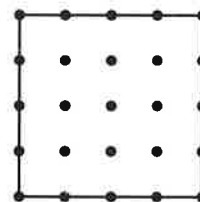
E



F



G

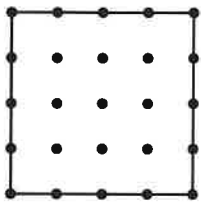


H

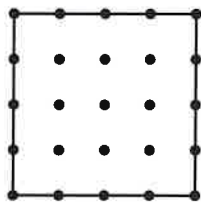
2. Square I is divided into eighths. Divide squares J, K, and L into eighths, each in a different way.



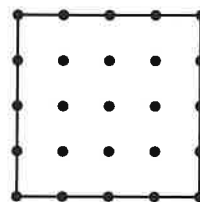
I



J



K



L

3. Rosa has 15 quarters and 10 nickels. She buys juice from a store for herself and her friends. The juice costs 35 cents per can. She gives the cashier  $\frac{2}{3}$  of the quarters and  $\frac{3}{5}$  of the nickels. The cashier does not give her any change.

How many cans of juice did she buy? \_\_\_\_\_ cans

Show your work on the back of this paper.

**Practice**

4.  $0.636 + 0.245 =$  \_\_\_\_\_      5. \_\_\_\_\_  $= 9.085 + 0.76$   
 6. \_\_\_\_\_  $= 1.73 - 0.14$       7.  $0.325 - 0.297 =$  \_\_\_\_\_

**STUDY LINK**  
**7•5**

**Fractions**



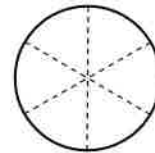
1. Jake has  $\frac{3}{4}$  of a dollar. Maxwell has  $\frac{1}{10}$  of a dollar.  
Do they have more or less than \$1.00 in all? \_\_\_\_\_

Number model: \_\_\_\_\_

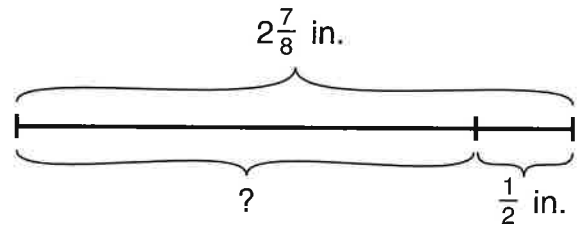
2. Jillian draws a line segment  $2\frac{1}{4}$  inches long. Then she makes the line segment  $1\frac{1}{2}$  inches longer. How long is the line segment now? \_\_\_\_\_ inches



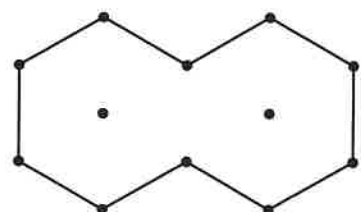
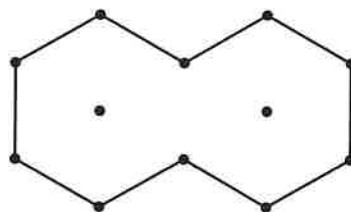
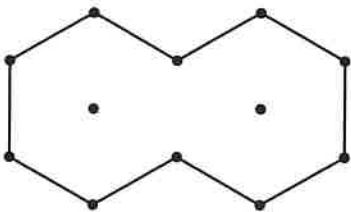
3. A pizza was cut into 6 slices. Benjamin ate  $\frac{1}{3}$  of the pizza and Dana ate  $\frac{1}{2}$ . What fraction of the pizza was left? \_\_\_\_\_



4. Rafael drew a line segment  $2\frac{7}{8}$  inches long. Then he erased  $\frac{1}{2}$  inch. How long is the line segment now? \_\_\_\_\_ inches



5. Two hexagons together are one whole. Draw line segments to divide each whole into trapezoids, rhombuses, and triangles. Write a number model to show how the parts add up to the whole.



\_\_\_\_\_

**Practice**

6.  $\frac{1}{4}$  of 32 = \_\_\_\_\_    7. \_\_\_\_\_ =  $\frac{9}{10}$  of 50    8.  $\frac{7}{8}$  of 56 = \_\_\_\_\_    9. \_\_\_\_\_ =  $\frac{11}{12}$  of 24



**STUDY LINK**  
**7•6**

# Many Names for Fractions



Write the letters of the pictures that represent each fraction.

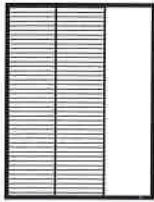
1.  $\frac{1}{2}$  C, \_\_\_\_\_

2.  $\frac{3}{4}$  \_\_\_\_\_

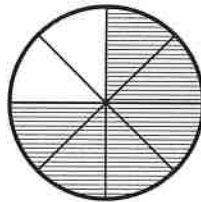
3.  $\frac{4}{5}$  \_\_\_\_\_

4.  $\frac{2}{3}$  \_\_\_\_\_

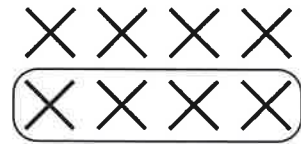
**A**



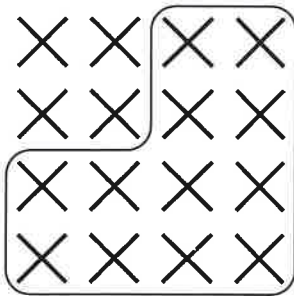
**B**



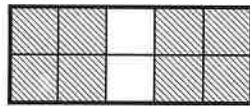
**C**



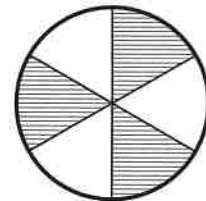
**D**



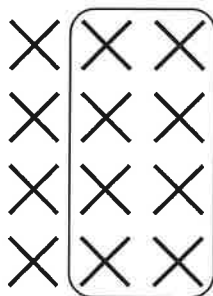
**E**



**F**



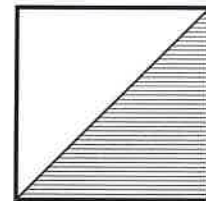
**G**



**H**



**I**



**Practice**

5. \_\_\_\_\_ =  $\frac{1}{6} + \frac{3}{6}$

6.  $\frac{2}{4} + \frac{1}{4} =$  \_\_\_\_\_

7.  $\frac{1}{2} + \frac{2}{6} =$  \_\_\_\_\_

8.  $\frac{5}{6} - \frac{2}{6} =$  \_\_\_\_\_

9.  $\frac{3}{4} - \frac{1}{4} =$  \_\_\_\_\_

10.  $\frac{1}{3} - \frac{1}{6} =$  \_\_\_\_\_

**STUDY LINK**  
**7•7**

# Fraction Name-Collection Boxes



In each name-collection box:

Write the missing number in each fraction so that the fraction belongs in the box. Write one more fraction that can go in the box.

1.

$\frac{1}{2}$
$\frac{\square}{4}$
$\frac{5}{\square}$
$\frac{10}{\square}$
$\frac{\square}{18}$

2.

$\frac{2}{3}$
$\frac{\square}{9}$
$\frac{12}{\square}$
$\frac{20}{\square}$
$\frac{\square}{12}$

3.

$\frac{1}{4}$
$\frac{\square}{12}$
$\frac{5}{\square}$
$\frac{10}{\square}$
$\frac{\square}{100}$

4. Make up your own name-collection box problems like the ones above. Ask a friend to solve your problems. Check your friend's work.

a.


b.


**Practice**

5. \_\_\_\_\_ =  $95 / 4$     6.  $57 \div 3 =$  \_\_\_\_\_    7. \_\_\_\_\_ =  $882 / 21$

**STUDY LINK**  
**7•8**

# Fractions and Decimals



Write 3 equivalent fractions for each decimal.

**Example:**

$$0.8 \quad \frac{8}{10} \quad \frac{4}{5} \quad \frac{80}{100}$$

1. 0.20      \_\_\_\_\_      \_\_\_\_\_      \_\_\_\_\_

2. 0.6      \_\_\_\_\_      \_\_\_\_\_      \_\_\_\_\_

3. 0.50      \_\_\_\_\_      \_\_\_\_\_      \_\_\_\_\_

4. 0.75      \_\_\_\_\_      \_\_\_\_\_      \_\_\_\_\_

Write an equivalent decimal for each fraction.

5.  $\frac{3}{10}$  \_\_\_\_\_

6.  $\frac{63}{100}$  \_\_\_\_\_

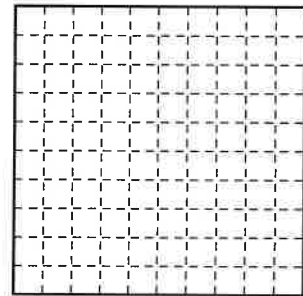
7.  $\frac{7}{10}$  \_\_\_\_\_

8.  $\frac{2}{5}$  \_\_\_\_\_

9. Shade more than  $\frac{53}{100}$  of the square and less than  $\frac{8}{10}$  of the square. Write the value of the shaded part as a decimal and a fraction.

Decimal: \_\_\_\_\_

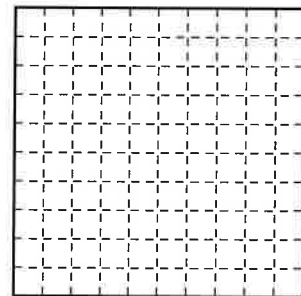
Fraction: \_\_\_\_\_



10. Shade more than  $\frac{11}{100}$  of the square and less than  $\frac{1}{4}$  of the square. Write the value of the shaded part as a decimal and a fraction.

Decimal: \_\_\_\_\_

Fraction: \_\_\_\_\_


**Practice**

11. \_\_\_\_\_ =  $78 * 9$

12.  $461 * 7 =$  \_\_\_\_\_

13. \_\_\_\_\_ =  $39 * 25$




**STUDY LINK**  
**7•10**

# What Is the ONE?



For Problems 1 and 2, use your Geometry Template or sketch the shapes.

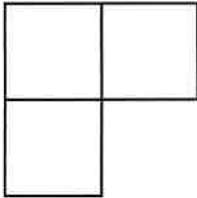
1. Suppose  is  $\frac{1}{4}$ . Draw each of the following:

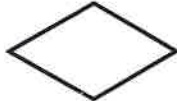
**Example:**  $\frac{3}{4}$

**a.** 1

**b.**  $1\frac{1}{2}$

**c.** 2



2. Suppose  is  $\frac{2}{3}$ . Draw each of the following:

**a.**  $\frac{1}{3}$

**b.** 1

**c.**  $\frac{4}{3}$

**d.** 2

Use counters to solve the following problems.

3. If 14 counters are  $\frac{1}{2}$ , then what is the ONE?

\_\_\_\_\_ counters

4. If 9 counters are  $\frac{1}{3}$ , then what is the ONE?

\_\_\_\_\_ counters

5. If 12 counters are  $\frac{2}{5}$ , then what is the ONE? \_\_\_\_\_ counters

6. If 16 counters are  $\frac{4}{9}$ , then what is the ONE? \_\_\_\_\_ counters

## Practice

7. \_\_\_\_\_ =  $\frac{1}{4} + \frac{1}{2}$

8.  $\frac{1}{3} + \frac{1}{6} =$  \_\_\_\_\_

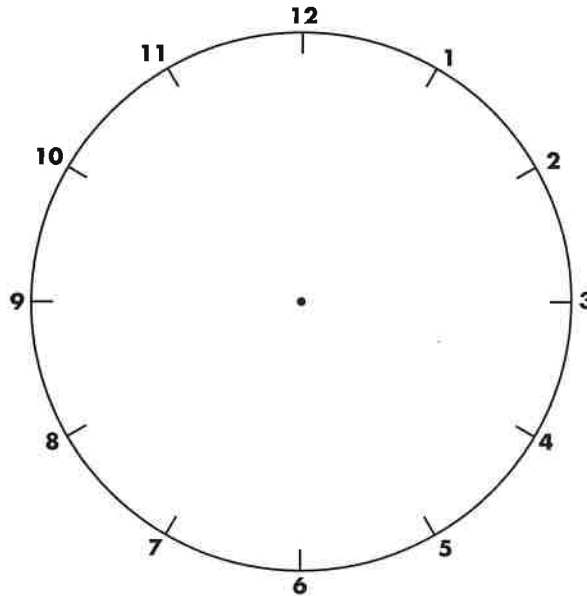
9.  $\frac{3}{4} - \frac{1}{4} =$  \_\_\_\_\_

10. \_\_\_\_\_ =  $\frac{5}{6} - \frac{1}{3}$

# Spinners and Fractions



1. Design your own spinner with as many colors as you wish. Use a pencil until you are satisfied with your work, then color your spinner.



2. Describe your spinner.

- a. The chances of the paper clip landing on \_\_\_\_\_ are \_\_\_\_\_ out of \_\_\_\_\_.  
(color)
- b. The paper clip has a \_\_\_\_\_ chance of landing on \_\_\_\_\_.  
(color)
- c. It is unlikely that the paper clip will land on \_\_\_\_\_.  
(color)
- d. It is \_\_\_\_\_ times as likely to land on \_\_\_\_\_ as on \_\_\_\_\_.  
(color) (color)
- e. It is more likely to land on \_\_\_\_\_ than \_\_\_\_\_.  
(color) (color)

## Practice

3. \_\_\_\_\_ =  $87 \div 3$

4.  $6 \overline{)99} =$  \_\_\_\_\_

5.  $945 \div 9 =$  \_\_\_\_\_

6.  $706 \div 5 =$  \_\_\_\_\_

**STUDY LINK**  
**7•11**

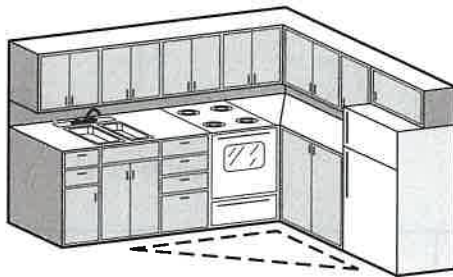
# Layout of a Kitchen



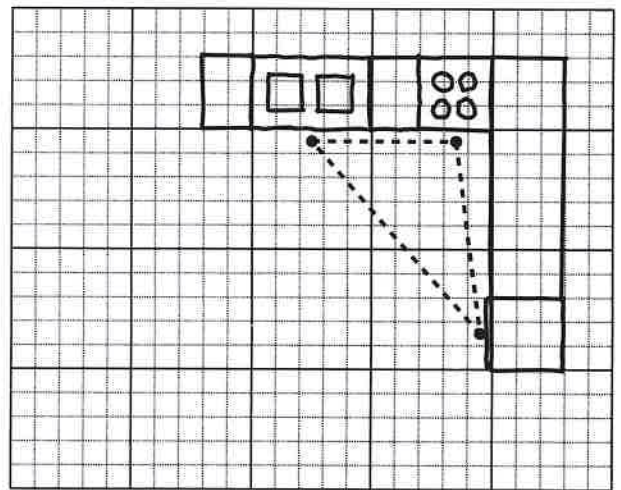
Pages 235 and 236 will be needed to do Lesson 8-1 in the next unit.  
 Please complete the pages and return them to class.

Every kitchen needs a stove, a sink, and a refrigerator. Notice how the stove, sink, and refrigerator are arranged in the kitchen below. The triangle shows the work path in the kitchen. Walking from the stove to the sink and to the refrigerator forms an invisible “triangle” on the floor.

Front View of Kitchen



Bird's-Eye View of Kitchen  
 (looking down at appliances  
 and countertops)



The side of a grid square represents 1 foot.

- Put one coin or other marker on the floor in front of your sink, one in front of your stove, and one in front of your refrigerator.
- Measure the distance between each pair of markers. Use feet and inches, and record your measurements below.

Distance between

- stove and refrigerator      About \_\_\_\_\_ feet \_\_\_\_\_ inches
- refrigerator and sink      About \_\_\_\_\_ feet \_\_\_\_\_ inches
- sink and stove      About \_\_\_\_\_ feet \_\_\_\_\_ inches

**STUDY LINK**  
**7•12**

## What Are the Chances?



1. You are going to toss 2 pennies 20 times. How many times do you expect the 2 pennies will come up as

- a. 2 heads? \_\_\_\_\_ times      b. 2 tails? \_\_\_\_\_ times
- c. 1 head and 1 tail? \_\_\_\_\_ times

2. Now toss 2 pennies together 20 times. Record the results in the table.

A Penny Toss	
Results	Number of Times
2 heads	
2 tails	
1 head and 1 tail	

3. What fraction of the tosses came up as

- a. 2 heads? \_\_\_\_\_      b. 2 tails? \_\_\_\_\_      c. 1 head and 1 tail? \_\_\_\_\_

4. Suppose you were to flip the coins 1,000 times. What fraction do you expect would come up as

- a. 2 heads? \_\_\_\_\_      b. 2 tails? \_\_\_\_\_
- c. 1 head and 1 tail? \_\_\_\_\_

5. Explain how you got your answers for Problem 4.

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### Practice

6.  $7 * 48 =$  \_\_\_\_\_

7.  $874 * 9 =$  \_\_\_\_\_

8. \_\_\_\_\_  $= 45 * 86$

9. \_\_\_\_\_  $= 34 * 142$