

## Unit 9: Family Letter



### Fractions, Decimals, and Percents

In Unit 9, we will be studying percents and their uses in everyday situations. Your child should begin finding examples of percents in newspapers and magazines, on food packages, on clothing labels, and so on, and bring them to class. They will be used to illustrate a variety of percent applications.

As we study percents, your child will learn equivalent values for percents, fractions, and decimals. For example, 50% is equivalent to the fraction  $\frac{1}{2}$  and to the decimal 0.5. The class will develop the understanding that **percent** always refers to a **part out of 100**.

Converting “easy” fractions, such as  $\frac{1}{2}$ ,  $\frac{1}{5}$ ,  $\frac{1}{10}$ , and  $\frac{3}{4}$ , to decimal and percent equivalents should become automatic for your child. Such fractions are common in percent situations and are helpful with more difficult fractions, decimals, and percents. To help memorize the “easy” fraction/percent equivalencies, your child will play *Fraction/Percent Concentration*.

“Easy” Fractions	Decimals	Percents
$\frac{1}{2}$	0.50	50%
$\frac{1}{4}$	0.25	25%
$\frac{3}{4}$	0.75	75%
$\frac{2}{5}$	0.40	40%
$\frac{7}{10}$	0.70	70%
$\frac{2}{2}$	1.00	100%

Throughout the unit, your child will use a calculator to convert fractions to percents and will learn how to use the percent key ( $\%$ ) to calculate discounts, sale prices, and percents of discount.

As part of the World Tour, your child will explore population data, such as literacy rates and percents of people who live in rural and urban areas.

Finally, the class will begin to apply the multiplication and division algorithms to problems that contain decimals. The approach used in *Everyday Mathematics* is straightforward: Students solve the problems as if the numbers were whole numbers. Then they estimate the answers to help them locate the decimal point in the exact answer. In this unit, we begin with fairly simple problems. Your child will solve more difficult problems in *Fifth* and *Sixth Grade Everyday Mathematics*.

**Please keep this Family Letter for reference as your child works through Unit 9.**

## Vocabulary

Important terms in Unit 9:

**discount** The amount by which the regular price of an item is reduced in a sale, usually given as a fraction or percent of the original price, or as a “percent off.”

**illiterate** An illiterate person cannot read or write.

**life expectancy** The average number of years a person may be expected to live.

**literate** A literate person can read and write.

**100% box** The entire object, the entire collection of objects, or the entire quantity being considered.

**100% box**

24 books

**percent (%)** Per hundred or out of a hundred. For example, “48% of the students in the school are boys” means that, on average, 48 out of 100 students in the school are boys;  $48\% = \frac{48}{100} = 0.48$

**percent of literacy** The percent of the total population that is literate; the number of people out of 100 who are able to read and write. For example, 92% of the population in Mexico is literate—this means that, on average, 92 out of 100 people can read and write.

**percent or fraction discount** The percent or fraction of the regular price that you save in a “percent off” sale. See example under *regular price*.

**rank** To put in order by size; to sort from smallest to largest or vice versa.

Countries Ranked from Smallest to Largest Percent of Population, Rural		
1	Australia	8%
2	Japan	21%
3	Russia	27%
4	Iran	33%
5	Turkey	34%
6	China	61%
7	Thailand	68%
8	India	72%
9	Vietnam	74%
10	Bangladesh	76%

**regular price or list price** The price of an item without a discount.

Regular Price	Sale!	Sale Price	You Saved
\$19.95	25% OFF	\$14.96	\$4.99

**rural** In the country

**sale price** The amount you pay after subtracting the discount from the regular price. See example under *regular price*.

**urban** In the city

## Do-Anytime Activities

To work with your child on the concepts taught in this unit, try these interesting and rewarding activities:

1. Help your child compile a percent portfolio that includes examples of the many ways percents are used in everyday life.
2. Encourage your child to incorporate such terms as “whole,” “halves,” “thirds,” and “fourths” into his or her everyday vocabulary.
3. Practice renaming fractions as percents, and vice versa, in everyday situations. For example, when preparing a meal, quiz your child on what percent  $\frac{3}{4}$  of a cup would be.
4. Look through advertisements of sales and discounts. If the original price of an item and the percent of discount are given, have your child calculate the amount of discount and the sale price. If the original price and sale price are given, have your child calculate the amount and percent of discount.

### Building Skills through Games

In this unit, your child will play the following games:

**Fraction Match** See *Student Reference Book*, page 243.

This game is for 2 to 4 players and requires one deck of *Fraction Match* cards. The game develops skill in naming equivalent fractions.

**Fraction/Percent Concentration** See *Student Reference Book*, page 246.

Two or three players need 1 set of *Fraction/Percent Tiles* and a calculator to play this game. Playing *Fraction/Percent Concentration* helps students recognize fractions and percents that are equivalent.

**Over and Up Squares** See *Student Reference Book*, page 257.

This is a game for 2 players and will require a playing grid. The game helps students practice using ordered pairs of numbers to locate points on a rectangular grid.

**Polygon Pair-Up** See *Student Reference Book*, page 258.

This game provides practice in identifying properties of polygons. It requires a *Polygon Pair-Up Property Deck* and *Polygon Deck*.

**Rugs and Fences** See *Student Reference Book*, pages 260 and 261.

This is a game for 2 players and requires a *Rugs and Fences Polygon Deck*, *Area and Perimeter Deck*, and *Record Sheet*. The game helps students practice computing the area and perimeter of polygons.

# 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 this unit's Study Links.

## Study Link 9•1

1.  $\frac{90}{100}$ ; 90%    2.  $\frac{53}{100}$ ; 53%    3.  $\frac{4}{100}$ ; 4%  
 4.  $\frac{60}{100}$ ; 0.60    5.  $\frac{25}{100}$ ; 0.25    6.  $\frac{7}{100}$ ; 0.07  
 7. 0.50; 50%    8. 0.75; 75%    9. 0.06; 6%

## Study Link 9•2

1. 100;  $\frac{1}{100}$ ; 0.01; 1%    2. 20;  $\frac{1}{20}$ ; 0.05; 5%  
 3. 10;  $\frac{1}{10}$ ; 0.10; 10%    4. 4;  $\frac{1}{4}$ ; 0.25; 25%  
 5. 2;  $\frac{1}{2}$ ; 0.50; 50%    6. 0.75; 75%  
 7. 0.20; 20%

## Study Link 9•3

1.

$\frac{1}{2}$	0	.	5					
$\frac{1}{3}$	0	.	3	3	3	3	3	3
$\frac{1}{4}$	0	.	2	5				
$\frac{1}{5}$	0	.	2					
$\frac{1}{6}$	0	.	1	6	6	6	6	6
$\frac{1}{7}$	0	.	1	4	2	8	5	7
$\frac{1}{8}$	0	.	1	2	5			
$\frac{1}{9}$	0	.	1	1	1	1	1	1
$\frac{1}{10}$	0	.	1					
$\frac{1}{11}$	0	.	0	9	0	9	0	9
$\frac{1}{12}$	0	.	0	8	3	3	3	3
$\frac{1}{13}$	0	.	0	7	6	9	2	3
$\frac{1}{14}$	0	.	0	7	1	4	2	8
$\frac{1}{15}$	0	.	0	6	6	6	6	6
$\frac{1}{16}$	0	.	0	6	2	5		
$\frac{1}{17}$	0	.	0	5	8	8	2	3
$\frac{1}{18}$	0	.	0	5	5	5	5	5
$\frac{1}{19}$	0	.	0	5	2	6	3	1
$\frac{1}{20}$	0	.	0	5				
$\frac{1}{21}$	0	.	0	4	7	6	1	9
$\frac{1}{22}$	0	.	0	4	5	4	5	4
$\frac{1}{23}$	0	.	0	4	3	4	7	8
$\frac{1}{24}$	0	.	0	4	1	6	6	6
$\frac{1}{25}$	0	.	0	4				

## Study Link 9•4

1. 34%    2. 67%    3. 84%    4. 52%  
 5. 85%    6. 20%    7. 25%    8. 30%

9. 62.5%    10. 70%    11. 15%    12. 37.5%

13. Sample answer: I divided the numerator by the denominator and then multiplied by 100.

14. 86%    15. 3%    16. 14%    17. 83.5%

## Study Link 9•5

1. 7%; 7%; 7%; 8%; 10%; 11%; 10%; 10%; 9%; 8%; 7%  
 3. Sample answer: I divided the number of marriages for each month by the total number of marriages, then multiplied by 100 and rounded to the nearest whole number.

## Study Link 9•6

1. The varsity team. They won  $\frac{8}{10}$  or 80% of their games. The junior varsity team only won  $\frac{6}{8}$  or 75% of their games.  
 2. 2: 11;  $\frac{5}{11}$ ; 45%    3: 3;  $\frac{3}{3}$ ; 100%  
 4: 11;  $\frac{9}{11}$ ; 82%    5: 7;  $\frac{4}{7}$ ; 57%  
 6: 16;  $\frac{11}{16}$ ; 69%    7: 10;  $\frac{6}{10}$ ; 60%  
 8: 2;  $\frac{1}{2}$ ; 50%

## Study Link 9•7

1. 50%    2. Tuvalu    3. 5%  
 4. Dominica; Antigua and Barbuda; and Palau  
 5. 300%

## Study Link 9•8

1. 25.8    2. 489.6    3. 45.12    4. 112.64  
 7. Sample answer: I estimated that the answer should be about  $5 * 20 = 100$ .  
 8. 212.4    9. 38.64    10. 382.13

## Study Link 9•9

1. 14.8    2. 0.2700    3. 24.96    4. 0.860  
 5. 23.4    6. 58.32  
 7. Sample answer: I estimated that the answer should be about  $\frac{100}{4} = 25$ .  
 8. 4.2    9. 38.7    10. 0.65

## **Unit 9 Assessment Outline:**

The following topics will be covered in the upcoming math assessment:

- Qu 1-2, 6** - Finding equivalent names for percent SRB pg300
- Qu 3** - Converting easy fractions for decimals and percent SRB pg38, 246, 316
- Qu 4-5** - Converting fractions to percent using a calculator SRB pg246
- Qu 7-9** - Finding the perimeter of polygons SRB pg131, 133
- Qu 10** - Using parenthesis SRB pg150, 195
- Qu 11-12** - Percent story sums SRB pg38
- Qu 13-16** - Making balanced equations equal while working with decimals  
SRB pg 3, 26, 54, 316

To prepare for the assessment, practice the following exercises to prepare yourself for the upcoming assessment:

- Qu 1-2, 6** - SMJ pg252-253
- Qu 3** - SMJ pg254 (qu1), SMJ pg259 (1), SMJ pg260 (3)
- Qu 4-5** - Study Link 9.3 (pg284)
- Qu 7-9** - SMJ pg254 (5), SMJ pg259 (5), SMJ pg260 (1), SMJ pg262 (5)  
SMJ 263 (5), SMJ pg267 (5)
- Qu 10** - SMJ pg260 (2), SMJ pg263 (2), SMJ pg272 (2)
- Qu 11-12** - SMJ pg256-257, SMJ pg287
- Qu 13-16** - SMJ pg271

**STUDY LINK**  
**9•1**

# Fractions, Decimals, and Percents



Rename each decimal as a fraction and a percent.

1.  $0.90 = \frac{\square}{100} = \underline{\hspace{2cm}}\%$     2.  $0.53 = \frac{\square}{100} = \underline{\hspace{2cm}}\%$     3.  $0.04 = \frac{\square}{100} = \underline{\hspace{2cm}}\%$

Rename each percent as a fraction and a decimal.

4.  $60\% = \frac{\square}{100} = \underline{\hspace{2cm}}$     5.  $25\% = \frac{\square}{100} = \underline{\hspace{2cm}}$     6.  $7\% = \frac{\square}{100} = \underline{\hspace{2cm}}$

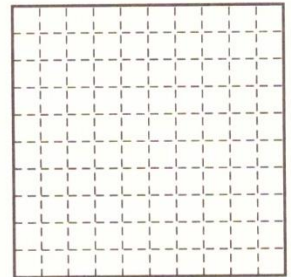
Rename each fraction as a decimal and a percent.

7.  $\frac{50}{100} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}\%$     8.  $\frac{75}{100} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}\%$     9.  $\frac{6}{100} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}\%$

10. Shade more than  $\frac{10}{100}$  and less than  $\frac{30}{100}$  of the grid.  
Write the value of the shaded part as a decimal and a percent.

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

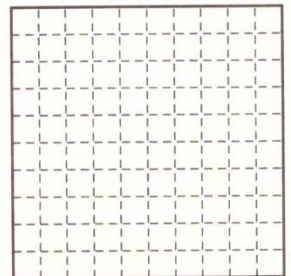
Percent: \_\_\_\_\_



11. Shade more than 25% and less than 60% of the grid.  
Write the value of the shaded part as a decimal and a percent.

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

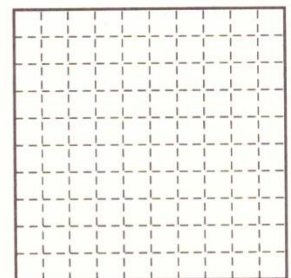
Percent: \_\_\_\_\_



12. Shade more than 0.65 and less than 0.85 of the grid.  
Write the value of the shaded part as a decimal and a percent.

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

Percent: \_\_\_\_\_


**Practice**

Order the fractions from smallest to largest.

13.  $\frac{3}{6}, \frac{3}{3}, \frac{3}{5}, \frac{3}{7}$  \_\_\_\_\_

14.  $\frac{2}{3}, \frac{6}{7}, \frac{1}{2}, \frac{19}{20}$  \_\_\_\_\_

**STUDY LINK**  
**9•1**

# Trivia Survey



**Conduct the survey below. The results will be used in Lesson 9-6.**

Find at least five people to answer the following survey questions. You can ask family members, relatives, neighbors, and friends.



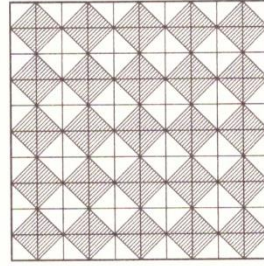
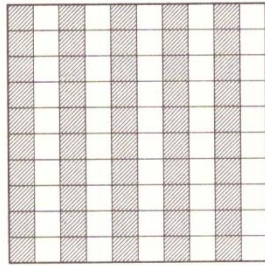
**BE CAREFUL!** You will not ask every person every question. Pay attention to the instructions that go with each question.

Record each answer with a tally mark in the Yes or No column.

Question	Yes	No
<b>1.</b> Is Monday your favorite day? (Ask everyone younger than 20.)		
<b>2.</b> Have you gone to the movies in the last month? (Ask everyone older than 8.)		
<b>3.</b> Did you eat breakfast today? (Ask everyone over 25.)		
<b>4.</b> Do you keep a map in your car? (Ask everyone who owns a car.)		
<b>5.</b> Did you eat at a fast-food restaurant yesterday? (Ask everyone.)		
<b>6.</b> Did you read a book during the last month? (Ask everyone over 20.)		
<b>7.</b> Are you more than 1 meter tall? (Ask everyone over 20.)		
<b>8.</b> Do you like liver? (Ask everyone.)		

**LESSON**  
**9•1**
**50% of a Square**


Benito and Silvia each shaded 50% of a grid.



1. Do you think they shaded the grids correctly? Explain your reasoning.

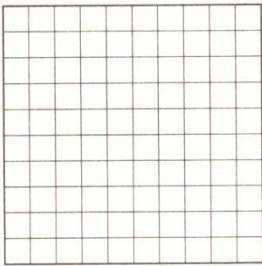
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2. Shade 50% of the grids below in different ways. Explain how you know you have shaded 50%.

a.




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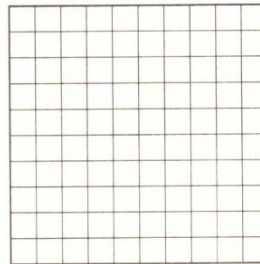


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b.




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**Try This**

3. Shade 50% of the grid. Explain how you know you have shaded 50%.




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**STUDY LINK**  
**9•2**

## Coins as Percents of \$1



1. How many pennies in \$1? \_\_\_\_\_ What fraction of \$1 is 1 penny? \_\_\_\_\_

Write the decimal that shows what part of \$1 is 1 penny. \_\_\_\_\_

What percent of \$1 is 1 penny? \_\_\_\_\_%

2. How many nickels in \$1? \_\_\_\_\_ What fraction of \$1 is 1 nickel? \_\_\_\_\_

Write the decimal that shows what part of \$1 is 1 nickel. \_\_\_\_\_

What percent of \$1 is 1 nickel? \_\_\_\_\_%

3. How many dimes in \$1? \_\_\_\_\_ What fraction of \$1 is 1 dime? \_\_\_\_\_

Write the decimal that shows what part of \$1 is 1 dime. \_\_\_\_\_

What percent of \$1 is 1 dime? \_\_\_\_\_%

4. How many quarters in \$1? \_\_\_\_\_ What fraction of \$1 is 1 quarter? \_\_\_\_\_

Write the decimal that shows what part of \$1 is 1 quarter. \_\_\_\_\_

What percent of \$1 is 1 quarter? \_\_\_\_\_%

5. How many half-dollars in \$1? \_\_\_\_\_ What fraction of \$1 is 1 half-dollar? \_\_\_\_\_

Write the decimal that shows what part of \$1 is 1 half-dollar. \_\_\_\_\_

What percent of \$1 is 1 half-dollar? \_\_\_\_\_%

6. Three quarters (75¢) is  $\frac{3}{4}$  of \$1.

Write the decimal. \_\_\_\_\_

What percent of \$1 is

3 quarters? \_\_\_\_\_%

7. Two dimes (20¢) is  $\frac{2}{10}$  of \$1.

Write the decimal. \_\_\_\_\_

What percent of \$1 is

2 dimes? \_\_\_\_\_%

### Practice

8. \_\_\_\_\_ =  $748 * 6$     9.  $51 * 90 =$  \_\_\_\_\_    10. \_\_\_\_\_ =  $28 * 903$

**LESSON**  
**9•2****Percent Patterns**

Complete each set of statements. Use grids or base-10 blocks, or draw pictures to help you. Look for patterns in your answers.

**Example:**

50% is the same as 50 per 100.

If there are 50 per 100, then there are

5 per 10.    500 per 1,000.

10 per 20.    100 per 200.

- 1.** 20% is the same as 20 per 100.

If there are 20 per 100, then there are

\_\_\_\_\_ per 10.    \_\_\_\_\_ per 1,000.

\_\_\_\_\_ per 20.    \_\_\_\_\_ per 200.

- 2.** 30% is the same as 30 per 100.

If there are 30 per 100, then there are

\_\_\_\_\_ per 10.    \_\_\_\_\_ per 1,000.

\_\_\_\_\_ per 20.    \_\_\_\_\_ per 200.

- 3.** 80% is the same as 80 per 100.

If there are 80 per 100, then there are

\_\_\_\_\_ per 10.    \_\_\_\_\_ per 1,000.

\_\_\_\_\_ per 20.    \_\_\_\_\_ per 200.

- 4.** 60% is the same as 60 per 100.

If there are 60 per 100, then there are

\_\_\_\_\_ per 10.    \_\_\_\_\_ per 1,000.

\_\_\_\_\_ per 20.    \_\_\_\_\_ per 200.

**Try This**

- 5.** 75% is the same as 75 per 100.

If there are 75 per 100, then there are

\_\_\_\_\_ per 10.    \_\_\_\_\_ per 1,000.

\_\_\_\_\_ per 20.    \_\_\_\_\_ per 200.

- 6.** 120% is the same as 120 per 100.

If there are 120 per 100, then there are

\_\_\_\_\_ per 10.    \_\_\_\_\_ per 1,000.

\_\_\_\_\_ per 20.    \_\_\_\_\_ per 200.

**LESSON**  
**9•2****Adding Tenths and Hundredths**

You can use base-10 blocks to model adding fractions with 10 and 100 in the denominator.

Use a long  $|$  to represent  $\frac{1}{10}$ .

Use a cube  $\blacksquare$  to represent  $\frac{1}{100}$ .

**Example:**  $\frac{3}{10} + \frac{23}{100} = \frac{53}{100}$

$$||| + ||\dots$$

Model the problems with longs and cubes. Record your answer.

1.  $\frac{5}{10} + \frac{16}{100} =$  \_\_\_\_\_

2.  $\frac{2}{100} + \frac{8}{10} =$  \_\_\_\_\_

3. Write your own problem. Have your partner solve it and record the answer.

Solve. You may use base-10 blocks or any other method.

4.  $\frac{34}{100} + \frac{17}{100} =$  \_\_\_\_\_

5.  $\frac{55}{100} + \frac{25}{100} =$  \_\_\_\_\_

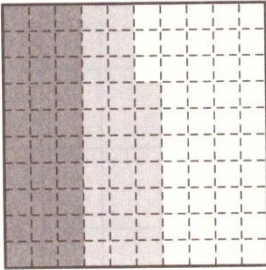
6.  $\frac{33}{100} + \frac{4}{10} =$  \_\_\_\_\_

7.  $\frac{9}{100} + \frac{7}{10} =$  \_\_\_\_\_

**LESSON**  
**9•2**
**Adding Tenths and Hundredths** *continued*


You can also model adding tenths and hundredths by shading a grid.

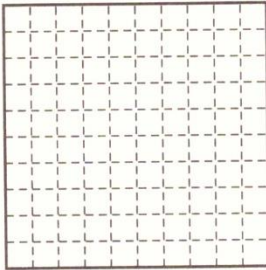
**Example:**



$$\frac{3}{10} + \frac{27}{100} = \frac{57}{100}$$

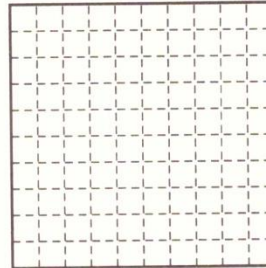
Shade the grid to help find the sum.

8.



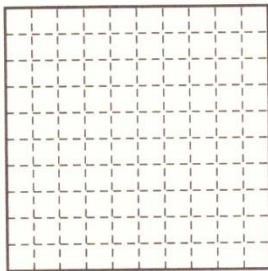
$$\frac{5}{10} + \frac{36}{100} = \underline{\hspace{2cm}}$$

9.



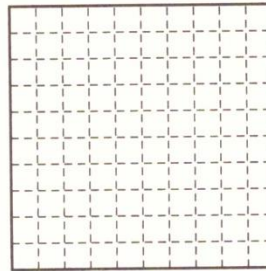
$$\frac{19}{100} + \frac{4}{10} = \underline{\hspace{2cm}}$$

10.



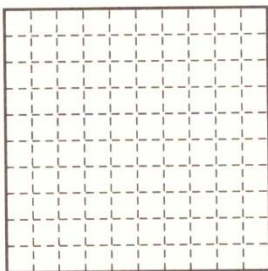
$$\frac{6}{10} + \frac{14}{100} = \underline{\hspace{2cm}}$$

11.



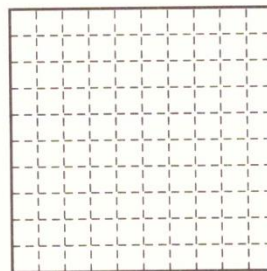
$$\frac{30}{100} + \frac{3}{10} = \underline{\hspace{2cm}}$$

12.



$$\frac{2}{10} + \frac{64}{100} = \underline{\hspace{2cm}}$$

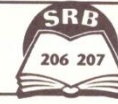
13.



$$\frac{9}{100} + \frac{9}{10} = \underline{\hspace{2cm}}$$

**STUDY LINK**  
**9•3**

# Calculator Decimals



1. Use your calculator to rename each fraction below as a decimal.

$\frac{1}{2}$	0	.	5				
$\frac{1}{3}$	0	.	3	3	3	3	3
$\frac{1}{4}$							
$\frac{1}{5}$							
$\frac{1}{6}$							
$\frac{1}{7}$							
$\frac{1}{8}$							
$\frac{1}{9}$							
$\frac{1}{10}$							
$\frac{1}{11}$							
$\frac{1}{12}$							
$\frac{1}{13}$							

$\frac{1}{14}$							
$\frac{1}{15}$							
$\frac{1}{16}$							
$\frac{1}{17}$							
$\frac{1}{18}$							
$\frac{1}{19}$							
$\frac{1}{20}$							
$\frac{1}{21}$							
$\frac{1}{22}$							
$\frac{1}{23}$							
$\frac{1}{24}$							
$\frac{1}{25}$							

2. Make up some of your own.

$\frac{1}{73}$	0	.	0	1	3	6	9	8
$\frac{1}{}$								
$\frac{1}{}$								

$\frac{1}{}$							
$\frac{1}{}$							
$\frac{1}{}$							

**Practice**

3.  $6\overline{)96} = \underline{\hspace{2cm}}$

4.  $91 \div 5 = \underline{\hspace{2cm}}$

5.  $\underline{\hspace{2cm}} = 864 \div 8$

6.  $575 \div 7 = \underline{\hspace{2cm}}$

**STUDY LINK**  
**9•4**

# Fractions and Decimals to Percents



Do NOT use a calculator to convert these fractions to percents.  
 On the back of this page, show your work for Problems 3–6.

**1.**  $\frac{34}{100} = \underline{\hspace{2cm}}\%$

**2.**  $\frac{67}{100} = \underline{\hspace{2cm}}\%$

**3.**  $\frac{42}{50} = \underline{\hspace{2cm}}\%$

**4.**  $\frac{13}{25} = \underline{\hspace{2cm}}\%$

**5.**  $\frac{17}{20} = \underline{\hspace{2cm}}\%$

**6.**  $\frac{25}{125} = \underline{\hspace{2cm}}\%$

Use a calculator to convert these fractions to percents.

**7.**  $\frac{23}{92} = \underline{\hspace{2cm}}\%$

**8.**  $\frac{12}{40} = \underline{\hspace{2cm}}\%$

**9.**  $\frac{20}{32} = \underline{\hspace{2cm}}\%$

**10.**  $\frac{49}{70} = \underline{\hspace{2cm}}\%$

**11.**  $\frac{60}{400} = \underline{\hspace{2cm}}\%$

**12.**  $\frac{21}{56} = \underline{\hspace{2cm}}\%$

**13.** Describe how you used your calculator to convert the fractions in Problems 7–12 to percents.

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Do NOT use a calculator to convert these decimals to percents.

**14.**  $0.86 = \underline{\hspace{2cm}}\%$

**15.**  $0.03 = \underline{\hspace{2cm}}\%$

**16.**  $0.140 = \underline{\hspace{2cm}}\%$

**17.**  $0.835 = \underline{\hspace{2cm}}\%$

**Practice**

Order the fractions from smallest to largest.

**18.**  $\frac{7}{16}, \frac{7}{8}, \frac{7}{12}, \frac{7}{9}$  \_\_\_\_\_

**19.**  $\frac{7}{15}, \frac{3}{15}, \frac{8}{15}, \frac{4}{15}$  \_\_\_\_\_

**20.**  $\frac{5}{9}, \frac{15}{16}, \frac{1}{4}, \frac{9}{10}$  \_\_\_\_\_

**LESSON**  
**9.4**
**“Percent-of” Problems**


Use counters to solve the problems on this page.

○○○○○

1. If ○○○○○ is 100%, draw 50%.

50% of 10 = \_\_\_\_\_

○○○○  
○○○○  
○○○○

2. If ○○○○ is 100%, draw 25%.

25% of 16 = \_\_\_\_\_

○○○○○  
○○○○○  
○○○○○

3. If ○○○○○ is 100%, draw 10%.

10% of 20 = \_\_\_\_\_

○○○

4. If ○○○ is 50%, draw 100%.

50% of \_\_\_\_\_ = 6

○○○  
○○○

5. If ○○○ is 75%, draw 100%.

75% of \_\_\_\_\_ = 9

○○○○

6. If ○○○○ is 40%, draw 100%.

40% of \_\_\_\_\_ = 8

7. Pick one of the problems from above and explain how you got your answer.

Problem \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**LESSON**  
**9•4****Discount Number Stories**

1. A store is having a sale on gym shoes.

- ◆ The regular price of the High Flyers is \$50. Now they are on sale for \$38.
- ◆ The Zingers are \$15 off the regular price. When not on sale, the Zingers cost \$75 a pair.



Which pair has the greater “percent-of” discount? Explain your answer.

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2. The same store is also having a sale on tennis rackets.

- ◆ The regular price of the Smasher is \$54.00. It is on sale for 25% off the regular price.
- ◆ The regular price of the Fast Flight is \$75.00. It is on sale for 20% off the regular price.

For which tennis racket are you getting more money taken off the regular price? Explain your answer.

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**STUDY LINK**  
**9•5**

## Renaming Fractions as Percents



In 2001, there were about 2,317,000 marriages in the United States.  
The table below shows the approximate number of marriages each month.

1. Use a calculator to find the percent of the total number of marriages that occurred each month. Round the answers to the nearest whole-number percent.

Month	Approximate Number of Marriages	Approximate Percent of Total Marriages
January	147,000	6%
February	159,000	
March	166,000	
April	166,000	
May	189,000	
June	237,000	
July	244,000	
August	225,000	
September	224,000	
October	217,000	
November	191,000	
December	152,000	

Source: U.S. Department of Health and Human Services

2. According to the table, what is the most popular month for a wedding? \_\_\_\_\_  
What is the least popular month for a wedding? \_\_\_\_\_
3. Describe how you used your calculator to find the percent for each month.

\_\_\_\_\_

\_\_\_\_\_

### Practice

Name all the factors of each number.

4. 63 \_\_\_\_\_

5. 28 \_\_\_\_\_

**LESSON**  
**9•5**

# Rounding Percents



The number lines below are curved like hills. You can use them to help you **round** percents to the nearest whole-number percent.

**Example:**

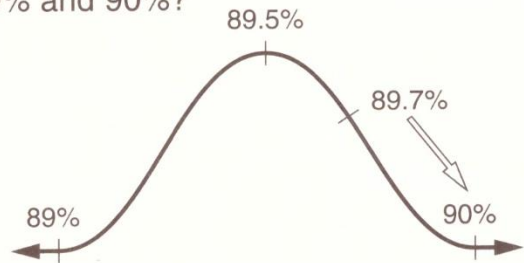
Round 89.7% to the nearest whole-number percent.

- ◆ Think: Which whole-number percents are nearest to 89.7%?
- ◆ If I look at the number line, **89%** is the whole-number percent to the left of 89.7%.
- ◆ If I look at the number line, **90%** is the whole-number percent to the right of 89.7%.
- ◆ What number would be exactly halfway between 89% and 90%?

Mark 89.7% on the curved number line.

Would 89.7% slide down to 89% or 90%?

89.7% rounded to the nearest whole-number percent is 90%.



- 1.** Round 23.6% to the nearest whole-number percent.

Label the curved number line. Mark 23.6%.

23.6% would slide down to \_\_\_\_\_.

23.6% rounded to the nearest whole-number percent is \_\_\_\_\_.

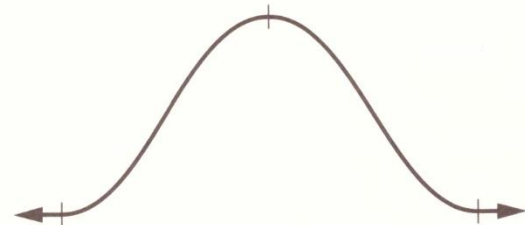


- 2.** Round 92.1% to the nearest whole-number percent.

Label the curved number line. Mark 92.1%.

92.1% would slide down to \_\_\_\_\_.

92.1% rounded to the nearest whole-number percent is \_\_\_\_\_.



**STUDY LINK**  
**9•6**

# Use Percents to Compare Fractions



1. The girls' varsity basketball team won 8 of the 10 games it played. The junior varsity team won 6 of 8 games. Which team has the better record? Explain your reasoning.

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2. Complete the table of shots taken (not including free throws) during a game. Calculate the percent of shots made to the nearest whole percent.

Player	Shots Made	Shots Missed	Total Shots	$\frac{\text{Shots Made}}{\text{Total Shots}}$	% of Shots Made
1	5	12	17	$\frac{5}{17}$	29%
2	5	6			
3	3	0			
4	9	2			
5	4	3			
6	11	5			
7	6	4			
8	1	1			

3. The basketball game is tied. Your team has the ball. There is only enough time for one more shot. Based only on the information in the table, which player would you choose to take the shot? Why?

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**Practice**

4.  $\frac{1}{3} + \frac{1}{6} =$  \_\_\_\_\_    5. \_\_\_\_\_  $= \frac{3}{4} - \frac{1}{2}$     6. \_\_\_\_\_  $= \frac{7}{10} + \frac{1}{5}$     7.  $\frac{5}{8} - \frac{1}{4} =$  \_\_\_\_\_

**STUDY LINK**  
**9•7**

## Least-Populated Countries



The table below shows the approximate population for the 10 least-populated countries in the world. Use the data to estimate answers to the problems.



Country	Population
Vatican City	900
Tuvalu	11,000
Nauru	13,000
Palau	20,000
San Marino	28,000
Monaco	32,000
Liechtenstein	33,000
St. Kitts and Nevis	39,000
Antigua and Barbuda	68,000
Dominica	69,000

Source: *Top Ten of Everything 2004*

- The population of Liechtenstein is about \_\_\_\_\_% of the population of Dominica.
- What country's population is about 33% of Liechtenstein's population? \_\_\_\_\_
- The population of Vatican City is about \_\_\_\_\_% of the population of Palau.
- The population of the 10 countries listed is 314,900. What 3 country populations together equal about 50% of that total?  
\_\_\_\_\_
- The population of St. Kitts and Nevis is about \_\_\_\_\_% of Nauru's population.

### Practice

6.  $27 * 4 =$  \_\_\_\_\_

7. \_\_\_\_\_  $= 508 * 8$

8. \_\_\_\_\_  $= 63 * 86$

9.  $849 * 52 =$  \_\_\_\_\_

**LESSON**  
**9•7**
**Color-Coded Map for Percent of Literacy**


A **literate** person is a person who can read and write. People who cannot read and write are said to be **illiterate**.



**Percent of literacy** is the fraction of the total population that is literate—the number of people out of 100 who are literate. Young children are not counted until they reach an age at which they are expected to read and write.

1. Make a prediction: Do you think there is a relationship among population statistics on literacy, age, and rural or urban living? \_\_\_\_\_
2. In the table below, list the countries in Region 4 from *greatest* to *least* according to the percent of the population that is literate. (See *Student Reference Book*, page 299.)

Rank	Country	Percent of Literacy	Color Code
<b>1</b>	<i>Australia</i>	<i>100%</i>	blue
<b>2</b>			blue
<b>3</b>			blue
<b>4</b>			green
<b>5</b>			green
<b>6</b>			green
<b>7</b>			green
<b>8</b>			red
<b>9</b>			red
<b>10</b>			red

3. Color these countries on the map on *Math Masters*, page 293 according to the color code in the table.
4. Compare this map with the population ages 0–14 and percent rural maps. Do the data support the prediction you made in Problem 1? \_\_\_\_\_

Explain your answer on the back of this page. Include reasons why you think a country might be colored red or blue on all three maps.

**STUDY LINK**  
**9•8**

# Multiplying Decimals



For each problem below, the multiplication has been done correctly, but the decimal point is missing in the answer. Correctly place the decimal point in the answer.

**1.**  $6 * 4.3 = 258$

**2.**  $72 * 6.8 = 4896$

**3.**  $0.96 * 47 = 4512$

**4.**  $5.12 * 22 = 11264$

**5.**  $8,457 * 9.8 = 828786$

**6.**  $0.04 * 140 = 56$

**7.** Explain how you decided where to place the decimal point in Problem 4.

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**Try This**

Multiply. Show your work.

**8.**  $5.9 * 36 = \underline{\hspace{2cm}}$

**9.**  $0.46 * 84 = \underline{\hspace{2cm}}$

**10.**  $\underline{\hspace{2cm}} = 7.21 * 53$

**Practice**

**11.**  $\underline{\hspace{2cm}} = 96 \div 6$

**12.**  $4 \overline{)67} = \underline{\hspace{2cm}}$

**13.**  $\underline{\hspace{2cm}} = 411 / 3$

**14.**  $9 \overline{)903} = \underline{\hspace{2cm}}$

**LESSON**  
**9•8****Multiplying Whole Numbers**

Write a number model to estimate each product. Then multiply with a paper-and-pencil algorithm. Show your work.



**1.**  $7 * 68 =$  \_\_\_\_\_

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

**2.**  $534 * 6 =$  \_\_\_\_\_

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

**3.** \_\_\_\_\_ =  $58 * 67$

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

**4.**  $33 * 275 =$  \_\_\_\_\_

Number model:  
  
\_\_\_\_\_**Try This**

- 5.** Margo's favorite socks are on sale for \$2.89 per pair. She has \$25. Can she buy 6 pairs? \_\_\_\_\_

Explain how to solve this problem without using a paper-and-pencil algorithm.

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**STUDY LINK**  
**9•9**

## Dividing Decimals



For each problem below, the division has been done correctly, but the decimal point is missing in the answer. Correctly place the decimal point in the answer.

1.  $88.8 \div 6 = 148$

2.  $1.35 \div 5 = 2700$

3.  $99.84 \div 4 = 2496$

4.  $2.58 \div 3 = 860$

5.  $163.8 \div 7 = 234$

6.  $233.28 \div 4 = 5832$

7. Explain how you decided where to place the decimal point in Problem 3.

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### Try This

Divide. Show your work.

8.  $6 \overline{)25.2}$

9.  $4 \overline{)154.8}$

10.  $9 \overline{)5.85}$

Answer: \_\_\_\_\_

Answer: \_\_\_\_\_

Answer: \_\_\_\_\_

### Practice

11. \_\_\_\_\_ =  $\frac{5}{8} + \frac{2}{8}$

12.  $\frac{5}{9} - \frac{1}{3} =$  \_\_\_\_\_

13. \_\_\_\_\_ =  $\frac{7}{10} + \frac{2}{10}$

14.  $\frac{9}{10} - \frac{1}{2} =$  \_\_\_\_\_



**LESSON**  
**9•9****Dividing Whole Numbers**

Write a number model to estimate each quotient. Then divide with a paper-and-pencil algorithm. Show your work.

1.  $79 / 6 =$  \_\_\_\_\_

Number model:

\_\_\_\_\_

2.  $92 / 3 =$  \_\_\_\_\_

Number model:

\_\_\_\_\_

3. \_\_\_\_\_ =  $573 / 4$

Number model:

\_\_\_\_\_

4.  $945 / 18 =$  \_\_\_\_\_

Number model:

\_\_\_\_\_

**Try This**

5. The school has \$357 to spend on new science books.  
If the books cost \$9 each, how many books can they buy? \_\_\_\_\_ books

Explain how to solve this problem without using a paper-and-pencil algorithm.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_