

# 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  $\boxed{\%}$  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.

<b>100% box</b>
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		
<b>1</b>	Australia	8%
<b>2</b>	Japan	21%
<b>3</b>	Russia	27%
<b>4</b>	Iran	33%
<b>5</b>	Turkey	34%
<b>6</b>	China	61%
<b>7</b>	Thailand	68%
<b>8</b>	India	72%
<b>9</b>	Vietnam	74%
<b>10</b>	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

# 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

**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.  $7\% = \frac{\square}{100} = \underline{\hspace{2cm}}$

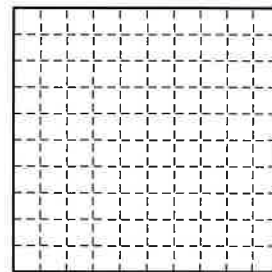
Rename each fraction as a decimal and a percent.

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: \_\_\_\_\_

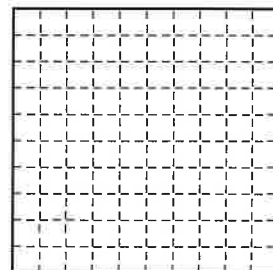
Percent: \_\_\_\_\_



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: \_\_\_\_\_

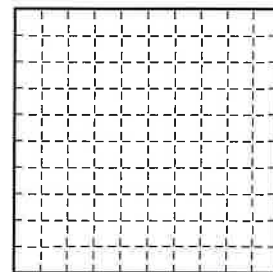
Percent: \_\_\_\_\_



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.)		

**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. \_\_\_\_\_ =  $28 * 903$



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	3
$\frac{1}{4}$								
$\frac{1}{5}$								
$\frac{1}{6}$								
$\frac{1}{7}$								
$\frac{1}{8}$								
$\frac{1}{9}$								
$\frac{1}{10}$								
$\frac{1}{11}$								
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$\frac{1}{17}$								
$\frac{1}{18}$								
$\frac{1}{19}$								
$\frac{1}{20}$								
$\frac{1}{21}$								
$\frac{1}{22}$								
$\frac{1}{23}$								
$\frac{1}{24}$								
$\frac{1}{25}$								

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



**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.

- 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

- According to the table, what is the most popular month for a wedding? \_\_\_\_\_

What is the least popular month for a wedding? \_\_\_\_\_

- 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 \_\_\_\_\_

**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.  $\frac{5}{8} - \frac{1}{4} =$  \_\_\_\_\_

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

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

**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.**  $88.8 / 6 = 148$

**2.**  $1.35 / 5 = 2700$

**3.**  $99.84 / 4 = 2496$

**4.**  $2.58 / 3 = 860$

**5.**  $163.8 / 7 = 234$

**6.**  $233.28 / 4 = 5832$

**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.**  $6 \overline{)25.2}$

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

**9.**  $4 \overline{)154.8}$

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

**10.**  $9 \overline{)5.85}$

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

**Practice**

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

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

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

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