



## Percents, Fractions and Decimals

Suggested time: 75 min

### **What's important in this lesson:**

You will learn how to convert fractions – decimals – percents. Use this skill to work with some money problems.

### **Complete these steps:**

1. Read the lesson portion of the package on your own.
2. Complete the exercises as they appear in the lesson.
3. Check your answers with the answer key that your teacher has.
4. Ask for help at any point during the lesson.
5. Complete the “Unit 2, Lesson 2 Percents, Fractions and Decimals Assignment” and submit to your teacher for evaluation.

### **Hand-in the following to your teacher:**

1. “Unit 2, Lesson 2 Percents, Fractions and Decimals Assignment”

### **Questions for the teacher:**



**Percent means “part of”**

**Show the following percentages on the hundred charts given. Colour in the appropriate amount.**

**(a) 45%   (b) 17%   (c) 83%   (d) 3%**

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

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21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

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41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

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51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



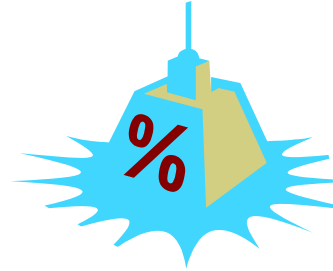


### Percents, Fractions and Decimals

Percent means divided by 100. So 35% means 35 divided by 100 (or 35 out of 100). A percent can be thought of as a ratio or a fraction.

$$35\% \rightarrow 35 : 100 \rightarrow \frac{35}{100} \rightarrow \frac{7}{20}$$

Percents are in common use. A key reason for using percents so frequently is that they are easy to compare. We know that 50% is a much better discount than 35%.



In order to use percents in different contexts, we must become proficient at converting to decimals and fractions.

Fraction to Decimal	Percent to Decimal	Percent to Fraction
$\frac{3}{5}$ A fraction is the same as 3 divide by 5. $= 3 \div 5$ $= 0.6$  <b>Hint: Divide.</b>	$60\%$ Percent means "over 100". $= \frac{60}{100}$ The fraction means divide by 100. $= 60 \div 100$ $= 0.6$  <b>Hint: divide by 100.</b>	$60\%$ Percent means "over 100" and then we can reduce to get simplest form. $= \frac{60}{100}$ $= \frac{6}{10}$ $= \frac{3}{5}$  <b>Hint: place over 100 and reduce.</b>
Decimal to Fraction	Decimal to Percent	Fraction to Percent
$0.6$ The place value of the last digit is tenths. We make the fraction with that denominator. Then we can reduce. $= \frac{6}{10}$ $= \frac{3}{5}$  <b>Hint: choose denominator by determining place value of last digit. Reduce if possible.</b>	$0.6$ 100% is the same as 1. We can multiply by 100% to get our percentage. and $100\% = \frac{1}{1}$ $0.6 \times 100\%$ $= 60\%$  <b>Hint: multiply by 100 and add the % sign</b>	$\frac{3}{5}$ Change the fraction to a decimal. $= 3 \div 5$ $= 0.6$ Multiply by 100%. $= 0.6 \times 100\%$ $= 60\%$  <b>Hint: Divide and then multiply by 100.</b>



**Exercise:**

**Complete. Numbers are rounded to the nearest hundredth.**

Fraction	Decimal	Percent
		50%
$\frac{1}{8}$		
	0.7	
$\frac{4}{5}$		
	0.75	
		5%
	0.06	
$\frac{23}{25}$		
		751%

Once we are able to move back and forth between the three representations, then we can approach more involved problems.

Examples	Solutions
Evaluate. 20% of \$50	$20\% \times 50$ $= 0.2 \times 50$ $= 10$
Evaluate. 16 is what percent of 40?	$\frac{16}{40} \times 100\%$ $= 0.4 \times 100\%$ $= 40\%$



Examples	Solutions:	
<p>Of the 550 workers at a factory, 7% belonged to a union. How many workers are in the union?</p>	<p>7% of 550 workers in union                      rewrite 7% as decimal                      "of" means multiply                      and we can translate..  <math>= 0.07 \times 550</math>  <math>= 38.50</math>                      →39 people belong to the union</p>	<p>Alternately                      We can write a proportion  <math>\frac{\text{union}}{\text{workers}} \rightarrow \frac{7}{100} = \frac{x}{550}</math>                      cross multiply  <math>\frac{7}{100} = \frac{x}{550}</math>  <math>100x = 7 \times 550</math>  <math>100x = 3850</math>  <math>x = 38.5</math>                      →39 people belong to the union</p>
<p>You buy a house for \$225 000, making a down payment of \$30 000 and paying the difference over time with a mortgage. What percent of the cost of the house was the down payment?</p>	<p><math>\frac{\text{downpayment}}{\text{houseprice}} \times 100</math>  <math>\frac{30000}{225000} \times 100</math>  <math>= 0.1\bar{3} \times 100</math>  <math>= 13.\bar{3}\%</math>                      →the down payment was 13.3% the cost of the house</p>	<p>Write the down payment as a fraction of the house price. Perform the division to get the decimal. Multiply by 100 to get the percent.</p>

(a) 40% of \$75

(b) 72 is what percent of 96?

(c) Frank works as a waiter. What tip should Frank receive if the bill is \$22.40? He usually received a 15% tip.

(d) A bike originally sells for \$140 and is on sale for 30% off. What is the discount?

(e) A make of chocolate bars increased the price of each bar by \$0.10. The original price was \$1.10. What was the percentage increase in the price?

Assessment and Evaluation:  
Unit 2 Lesson 2



**Percents, Fractions and Decimals Student Assignment**

1. Complete the following table.

Fraction	Decimal	Percent
		40%
$\frac{1}{6}$		
	0.125	
	0.3	
$\frac{11}{15}$		
		135%

2. Evaluate.  
(a) 15% of 12  
(b) 21 is what percent of 400?

3. About 95% of all animal species on Earth are insects. Express this percent as a fraction.



4. According to a survey, 78% of the arguments that couples have arguments in the morning. If the survey questioned 852 couples, how many couples have arguments in the morning?
5. A student council representative reported that he had only missed 12 of 1753 votes or 0.5% of the votes. Was he correct? Show your reasoning.