<u>3.7: Solve Percent Problems</u>

Goals: *Understand percent as a comparison to 100 *Solve percent problems using proportions or equations *Solve percent of change problems

****RAPID REVIEW****

• To change a Percent to a Decimal: Move the decimal point two places to the left

• To change a Decimal to a Percent: Move the decimal point two places to the right

Use alphabet if you forget: a b c $\underline{\mathbf{D}}$ e f g....m n o $\underline{\mathbf{P}}$ q r.....

To get from D to P you go right, to get from P to D you go left

Change the following. If decimal, change to percent. If percent, change to decimal.

Ex: $73.5\% = _0.735_$	Ex: $0.175 = _17.5\%$	Ex: $0.1\% = \0.001\$
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• To change a fraction to percent: Make an equivalent fraction with a denominator of 100

• To change a percent to a fraction: Put the % over 100 and simplify

Change the following. If fraction, change to percent. If percent, change to fraction.

Ex: $\frac{2}{5} = -40\%$ Ex: $73\% = -\frac{73}{100}$

Ex: $\frac{3}{8} = _37.5\%$

Ex: $140\% = \frac{7}{5}$

To solve percent problems you can use either the:

PERCENT PROPORTION

 $\frac{is}{of} = \frac{\%}{100}$

PERCENT EQUATION or (good when want % of a #) "is" → = "of" → •

Solve using both methods. Then decide which you prefer.

What percent of 25 is 17?

Percent Proportion

"Is" is attached to 1 "Of" is attached to 25 We are missing the percent

 $\frac{17}{25} = \frac{x}{100}$

Solve like normal

x = 68%

Percent Equation

What percent of 25 is 17? Change "is" and "of" to their appropriate Symbols. Replace "What" with *x*

 $x \cdot 25 = 17$

x = 0.68Change the decimal to a percent 68%

Ex: What number is 30% of 90?

 $\frac{x}{90} = \frac{30}{100}$ *x* = 27

Ex: 20 is 12.5% of what number?

 $\frac{20}{x} = \frac{12.5}{100}$ *x* = 160

Ex: What percent of 136 is 51?

 $\frac{51}{136} = \frac{x}{100}$ *x*

Ex: What percent of 56 is 49?

$$\frac{49}{56} = \frac{x}{100}$$

$$x = 87.5\%$$

Ex: What percent of 55 is 11?

Ex: What number is 45% of 92?

Ex: What number is 12% of 85?

$$\frac{11}{55} = \frac{x}{100} \qquad \qquad \frac{x}{92} = \frac{45}{100} \\ x = 20\% \qquad \qquad x = 41.4$$

Ex: What number is 140% of 50?

$$\frac{x}{50} = \frac{140}{100} \qquad \qquad \frac{x}{85} = \frac{12}{100} x = 70 \qquad \qquad x = 10.2$$

Ex: A survey asked 220 students to name their favorite pasta dish. Find the percent of students who chose the given dish.

-)	Mar NI ² Channe	Туре	# Students
a)	Mac N Uneese	Spaghetti	83
	33 X	Lasagna	40
	$\frac{1}{220} = \frac{1}{100}$ $x = 15\%$	Mac N' Cheese	33
		Fettuccine Alfredo	22
b)	Lasagna	Baked Ziti	16
		Pasta Primavera	15
	$\frac{40}{220} = \frac{x}{100}$ $x = 18\%$	Other	11

Ex: A survey asked students how much they would tip for a \$28 meal. Find the percent of students who would tip:

a)	\$4 20	Amount of Tip	# Students
<i>u)</i>	ψτ.20	\$2.00	19
b)	$\frac{36}{183} = \frac{x}{100}$ $x = 20\%$	\$2.80	28
		\$3.00	45
	at least \$5.00	\$4.20	36
		\$5.00	47
	FF	\$5.60	8
	$\frac{55}{183} = \frac{x}{100}$ $x = 30\%$		

c) \$5.60

$$\frac{8}{183} = \frac{x}{100}$$
 $x = 4\%$

*What is the appropriate amount to leave for a tip if the service was adequate? 20% is appropriate which would be \$5.60

3.7 (Continued) Solve Percent of Change Problems

To find percent of change:

 $\frac{amount \ of \ change}{original} = \frac{\% \ of \ change}{100}$

Ex: A shirt was put on sale. Its original price was \$35 and it was sold for \$30. What was the percent of the sale?

 $\frac{5}{35} = \frac{x}{100}$ x = 14%

Ex: A store buys jeans for \$20 and sells them for \$35 each. Find the percent of the mark-up.

 $\frac{15}{20} = \frac{x}{100}$ x = 75%

Ex: Find the percent of change if a school's enrollment was 675 students last year and is 725 students this year.

 $\frac{50}{675} = \frac{x}{100}$ x = 7%