Name:_____   Date:_____

Notes
Algebra Section 3.7
Pages 176-181

Goal: "I will solve percent problems"

Percent as a Proportion:

$$\frac{is}{of} = \frac{\%}{100}$$ and $$\frac{part}{whole} = \frac{\%}{100}$$ and $$\frac{change}{original} = \frac{\%}{100}$$

Examples:

What number is 30% of 90?

$$\frac{is}{of} = \frac{\%}{100} \qquad \frac{x}{90} = \frac{30}{100}$$

Solve: $$100x = 2700$$
                        $$x = 27$$

What percent of 136 is 51?

$$\frac{is}{of} = \frac{\%}{100} \qquad \frac{51}{136} = \frac{x}{100}$$

$$5100 = 136x$$
$$37.5 = x \qquad 37.5\%$$

Try These:

Ex: 20 is 12.5% of what number?

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

$$x = 160$$

Ex: What percent of 56 is 49?

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

$$x = 87.5\%$$

Ex: What percent of 55 is 11?

$$\frac{11}{55} = \frac{x}{100}$$

$$x = 20\%$$

Ex: What number is 45% of 92?

$$\frac{x}{92} = \frac{45}{100}$$

$$x = 41.4$$

Ex: What number is 140% of 50?

$$\frac{x}{50} = \frac{140}{100}$$

$$x = 70$$

Ex: What number is 12% of 85?

$$\frac{x}{85} = \frac{12}{100}$$

$$x = 10.2$$

Word Problems:

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

a) Mac N' Cheese

$$\frac{33}{220} = \frac{x}{100} \qquad x = 15\%$$

b) Lasagna

$$\frac{40}{220} = \frac{x}{100} \qquad x = 18\%$$

Type	# Students
Spaghetti	83
Lasagna	40
Mac N' Cheese	33
Fettuccine Alfredo	22
Baked Ziti	16
Pasta Primavera	15
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

$$\frac{36}{183} = \frac{x}{100} \qquad x = 20\%$$

b) at least $5.00

$$\frac{55}{183} = \frac{x}{100} \qquad x = 30\%$$

Amount of Tip	# Students
$2.00	19
$2.80	28
$3.00	45
$4.20	36
$5.00	47
$5.60	8

c) $5.60

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

*What is the appropriate amount to leave for a tip if the service was adequate?

20% is appropriate which would be $5.60

Ex: 30% of the school is wearing hats today. If 120 students are wearing hats, how many students are in the school?

$$\frac{30}{100} = \frac{120}{x}$$ 400 students

Ex: There are 10,240 people sitting in preferred seating. This is 25% of the stadium's capacity. What is the stadium's capacity?

$$\frac{25}{100} = \frac{10240}{x}$$ 40,960 seats

Percent Change:

To find percent of change: $\dfrac{change}{original} = \dfrac{\%}{100}$

To find the change: <u>subtract</u>

The original is <u>what happened first</u>

You must include <u>increase</u> or <u>decrease</u> in your final answer.

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?

$\dfrac{5}{35} = \dfrac{x}{100}$ $x = 14$ 14% decrease

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

$\dfrac{15}{20} = \dfrac{x}{100}$ $x = 75$ 75% increase

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

$\dfrac{50}{675} = \dfrac{x}{100}$ $x = 7$ 7% increase

Ex: A house sold for \$250,000 in 2000. Last year it sold for \$360,000. What was the percent change?

$\dfrac{110000}{250000} = \dfrac{x}{100}$ $x = 44$ 44% increase