Unit 7 Percents

7-1 Percents, Fractions, and Decimals

Percent	"out of 100"
Converting Decimals into Percents Ex #1: Change these decimals into percents: a. 0.67 b. 0.4 c. 1.02 d. 0.0007	To change a decimal to a percent… 1. Move the decimal point two spaces to the right 2. Add a percent sign. Ex: 0.43 0.09
Converting Fractions into Percents Ex #2: Write these fractions as percents: a. $\frac{17}{40}$ b. $4\frac{1}{2}$ c. $\frac{9}{200}$	To write a fraction as a percent: <u>Method 1:</u> 1. Set up a proportion to equal $\frac{p}{100}$ 2. Solve for *p* 3. Add a percent sign. <u>Method 2:</u> 1. Write the fraction as a decimal 2. Write the decimal as a percent.

Converting Percents into Decimals

To change a percent into a decimal
1. Remove the percent sign
2. Move the decimal two places to the left.

Ex: 89%

112%

Ex #3: Change these percents into decimals

a. 45%

b. 7%

c. 123%

d. 0.05%

Converting Percents into Fractions

Since percent means "out of 100"
1. Drop the percent sign
2. Make a fraction with 100 as the denominator.
3. Simplify if possible.

Ex: 15%

***Note: you may NOT have decimals in your final answer!**

Ex #4: Change these percents into fractions

a. 18%

b. 7.5%

c. $66\frac{2}{3}\%$

7-2 Working with Percents

is	equals
of	multiply
%	for equations, turn into a decimal
what number	the variable

Solve:

Ex #1: What is 22% of 350?

Ex #2: $12\frac{1}{2}\%$ of 36 is what number?

Ex #3: What percent of 80 is 16?

Ex #4: 250 is 125% of what number?

7-3 Percent of Increase or Decrease

Formula #1:
amount of change =
(% of change)(original)

Find the percent of increase or decrease.

Ex #1: 20 to 17

Ex #2: 40 to 73%

Formula #2:
new = (1 ± %) (original)

Find the new number produced when the given number is increased or decreased by the given %.

Ex #3: 165; 20% decrease

Ex #4: 84; 145% increase

Formula #1:

$$\frac{\text{amount of change}}{\text{original}} = \frac{\text{percent of change}}{100}$$

Formula #2:

$$\frac{\text{new number}}{\text{original number}} = \frac{100 \pm \%\text{ of change}}{100}$$

Find the new number produced when the given number is changed by the first percent, and then the resulting number is changed by the second percent.

Ex #5: 80; increase by 50%; decrease by 50%

Find the original number if the given number is the result of increasing or decreasing the original number by the given percent.

Ex #6: 80; original number increased by 25%

Application:
Ex #7: A $45 ski jacket is now on sale for $36. What is the percent of decrease?

Ex #8: At the beginning of the school year there were 25 students in a karate class. By May, the class had increase by 20%. How many students were in class in May?

Ex #9: The population of a city is now 12,000 people. The population is expected to increase 15% in 10 years. What is the projected population?

7-4 Commissions, Discounts, Royalties, & Markup

Commission	An amount of money made by a salesperson for selling an item or service (usually in addition to a salary)
Royalty	An amount paid to the creator or owner of a musical or literary work, an invention, or a service.
Discount	The difference between the regular price and the sale price
Markup	The difference between the price that the store pays for an item and the price that the item is sold for
Income	Costs + Profit of a business
Profit	Income – Cost
Costs	Income – profit

Formulas:

Commission = (% commission)(total sales)

Royalty = (% royalty)(sales)

% profit = profit/income

Examples

Original price of a TV: $650
Discount: 25%

Original price of a ipad: $130
Markup: 175%

Ex #1: A real estate agent sold a house for $85,000 and earned a 5% commission. How much did the agent earn?	Ex #2: A book salesman earned $28,000 during the past year. If these earnings were based on a 12% rate of commission, what was the value of the books he sold?
Ex #3: Martha bought a bike that had been discounted 60%. If she paid $96, what was the original price?	Ex #4: If a store buys a shirt at a wholesale price of $13.50 and sells the shirt for $24.95, what is the amount and percent of markup?
Ex #5. A company had a standard markup of 55%. If they buy a pair of jeans at $60. What price do they sell them at?	Ex #6. The Furniture store sold a table for $4200. If had a discount of 35% then what the original price?

7-5 Percents & Word Problems

Ex #1. Homer earns $250 a week and lives in a state that taxes income at 5%. How much does Homer pay in state tax each week?

Ex #2. A basketball player made 62 out of 80 free-throws. What percent of the free throws did she make?

Ex #3. A gummy bear is 65% sugar by weight. If the gummy weighs 12.4 ounces, how much sugar is in the gummy bear?

Ex #4. In a class of 40 students, 36 received passing grades on the comic strip assignment. What percent of the students in the class did not receive passing grades?

Ex #5. Of the 427 students responding to the types of cookies EW should have, 224 students answered sugar and 154 answered chocolate chip. What percent of students answered something different? Round to the nearest tenth of a percent.

7-6 Interest

Interest	Money that is paid for the use of money that is borrowed or invested

Simple Interest Formula: $I = prt$

I = the interest p = principal r = interest rate t = time

Ex #1: Suppose you deposit $400 in a savings account. If the interest rate is 5% per year, find the interest earned in six years.	Ex #2: Tom invested $1600 in a 6 month savings certificate that paid simple interest. After six months, he received $1698.88. What was the annual interest rate?
Ex #3: How long will it take $1200 to earn $150 interest at 10% per year?	Ex #4: If Ron repaid $4310.50 at the end of 18 months. If the interest rate was 11%, find the amount borrowed?