Section 2.4: FORMULAS AND PERCENTS

When you are done with your homework you should be able to…

- Solve a formula for a variable
- Express a percent as a decimal
- Express a decimal as a percent
- Use the percent formula
- Solve applied problems involving percent change

WARM-UP:

Solve:

1. $4 = 0.25B$
2. $1.3 = P \cdot 26$

SOLVING A FORMULA FOR ONE OF ITS VARIABLES

Solving a formula for a variable means _____ the _____ so that the _____ is _____ on one side of the equation. To solve a formula for one of its variables, treat that _____ as if it were the only _____ in the _____.

PERIMETER

The _____ of a _____ _____ figure is the _____ of the _____ of its _____. Perimeter is measured in _____ units, such as _____, _____, _____, or _____.

PERIMETER OF A RECTANGLE

The perimeter, _____, of a rectangle with length ____ and width ____ is given by the formula

SQUARE UNITS

A _____ unit is a _____, each of whose sides is _____ unit in length. The _____ of a _____ _____ figure is the number of _____ _____ it takes to fill the interior of the figure.

AREA OF A RECTANGLE

The area, _____, of a rectangle with length ____ and width ____ is given by the formula

Example 1: Solve the following formulas for the specified variable.

1. $d = rt;\ t$
2. $P = C + MC;\ C$

Example 2: Consider a rectangle which has an area of 15 square feet and a width of 3 feet.

1. Find the length.
2. Find the perimeter.

BASICS OF PERCENTS

_____ are the result of _____ numbers as _____ of _____. The word _____ means _____ _____.

PERCENT NOTATION

_____ means _____.

STEPS FOR EXPRESSING A PERCENT AS A DECIMAL NUMBER

1. Move the _____ point _____ places to the _____.
2. Remove the _____ sign.

Example 3: Express each percent as a decimal.

1. 9.5%
2. 235%

STEPS FOR EXPRESSING A DECIMAL NUMBER AS A PERCENT

1. Move the _____ point _____ places to the _____.
2. Attach a _____ sign.

Example 4: Express each decimal as a percent.

1. 1.75
2. 0.01

A FORMULA INVOLVING PERCENT

_____ are useful in comparing two _____. To _____ the number _____ to the number _____ using a percent ____, the following formula is used:

Example 5: Solve.

1. What is 12% of 50?
2. 6 is 30% of what?
3. 200 is what percent of 20?

PERCENT INCREASE **PERCENT DECREASE**

APPLICATIONS

1. The average, or mean, *A*, of four exam grades, *x, y, z,* and *w,* is given by the formula $A = \dfrac{x + y + z + w}{4}$.

   a. Solve the formula for *w*.

   b. Use the formula in part (a) to solve this problem: On your first three exams, your grades are 76%, 78%, and 79%: $x = 76,\ y = 78,$ and $z = 79$. What must you get on the fourth exam to have an average of 80%?

2. A charity has raised $225,000, with a goal of raising $500,000. What percent of the goal has been raised?

3. Suppose that the local sales tax rate is 7% and you buy a graphing calculator for $96.
   a. How much tax is due?

   b. What is the calculator's total cost?

4. The price of a color printer is reduced by 30% of its original price. When it still does not sell, its price is reduced by 20% of the reduced price. The salesperson informs you that there has been a total reduction of 50%. Is the salesperson using percentages properly? If not, what is the actual percent reduction from the original price?