# INTERMEDIATE ALGEBRA

**Useful Formulas:** $r = rate$, $p = principal$, $t = time$

Distance: $d = rt$; Simple Interest: $I = prt$; Perimeter: $P = 2L + 2W$

To solve for a specified variable,

Step 1: Make a sketch or table, if possible.
Step 2: Assign a variable to the unknown value.
Step 3: Write an equation using the variable.
Step 4: Gather all terms without that variable to the other side of the equation.
Step 5: Solve for that variable until the coefficient of the variable is one.

1. Find the following formulas for $x$:

a) $20 = 2y + 2x$
$-2y \quad -2y$

$\dfrac{20 - 2y}{2} = \dfrac{2x}{2}$

$\boxed{10 - y = x}$

b) $P = 2y + 2x$

$\dfrac{P - 2y}{2} = \dfrac{2x}{2}$

$\boxed{\frac{1}{2}P - y = x}$

2. It took 30 minutes for James to drive at the speed of 40 miles per hour to work. What was the distance between his home and work?

$d = rt$

$r = 40\,mph$ or $40\frac{miles}{hour}$
$t = 30\,minutes = 30\,min\left(\dfrac{1\,hr.}{60\,min}\right) = \frac{1}{2}\,hr.$

$d = (40)\left(\frac{1}{2}\right)$
$= \boxed{20\,miles}$

3. If Fernando invests $1,000.00 in a mutual fund account at the estimated annual interest rate of 15 percent. What is the estimated interest earned after 1 year?
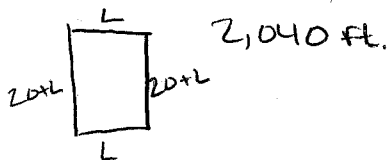
$I = prt$

$P = 1,000.00$
$r = 15\% = 0.15$
$t = 1\,yr.$

$I = (1,000)(0.15)(1)$

$\boxed{I = \$150.00}$

*So neat!*

4. The width of a rectangle farm land is 20 feet more than the length. Find the width and the length of the rectangle farm land if the perimeter of the farm land is 2,040 feet.

$P = 2L + 2W$

$2,040\,ft.$

$P = 2L + 2W$
$2040 = 2L + 2(20 + L)$
$2040 = 2L + 40 + 2L$
$2040 = 4L + 40$
$\quad -40 \qquad -40$
$\dfrac{2000}{4} = \dfrac{4L}{4}$

$\boxed{L = 500\,ft}$

$W = L + 20$
$\boxed{= 520\,ft.}$

5. The sum of three consecutive even integers is 18. What are the integers?  2, 4, 6, 8, 10

$\boxed{X} + \boxed{x+2} + \boxed{x+4} = 18$

$X + (x + 2) + (x + 4) = 18$

$3x + 6 = 18$
$\quad -6 \quad -6$
$\dfrac{3x}{3} = \dfrac{12}{3} \quad \boxed{X = 4}$