Section 3.7 Formulas and Functions

There are several Formulas that we used in math, science and business to calculate other missing quantities. Examples of these formulas follow:

Area of a Rectangle	$A = \ell w$	Area=(length)(width)
Conversion from Fahrenheit to Celsius	$C = \frac{5}{9}(F - 32)$	C = degrees Celsius F = degrees Fahrenheit
Interest of P dollars at an interest rate r for t years	$I = \text{Pr}\,t$	
Distance/Rate/Time	$d = rt$	

To solve using these formulas, write the formula first then identify each variable with the given values in the problem. You can then either plug in all known values and solve for the unknown or first isolate the unknown value and plug in the known values to get your answer.

Example: How long will it take you to drive 100 miles at 40 miles per hour?

d = rt	Write down the formula
d = 100 miles r = 40 miles/hour t = ?	Identify each variable
$\frac{d}{r} = \frac{rt}{r}$ $\quad t = \frac{d}{r}$	Isolate the unknown variable t.
$t = \frac{100 miles}{40 miles / hour}$	Plug in all the known values
$t = 100 miles \bullet \frac{hour}{40 miles}$	Multiply by the reciprocal and cancel out the miles.
$t = \frac{100 hour}{40} = \frac{10 hour}{4} = 2\frac{1}{2} hours$	

Writing Equations in Function Form

Writing equations in Function Form is simply solving for y (getting y by itself on one side).

Example: Write 3x – 5y = 10 in function form.

3x – 5y (–3x) = 10 (–3x) -5y = 10 – 3x	Subtract 3x from both sides
$\frac{-5y}{-5} = \frac{10 - 3x}{-5}$	Divide both sides by –5
$y = \frac{10}{-5} - \frac{3x}{-5}$	Distribute the division
$y = -2 + \frac{3}{5}x$	Simplify