Intro to college math: Chapter 2.4
Formulas

* Formula — is an equation that contains more than one variable.
* Solving for a variable — we isolate that variable on one side of the equal sign, and everything else will be on the other side.

1. Solve the following for the indicated variable. $4x + y = 2$ for y

$$4x + y = 2$$
$$-4x \qquad -4x$$
$$y = \boxed{2 - 4x}$$

* Since solving for y, we want y on one side & everything else on the other side of =
* We cannot combine the 2 terms on the left, because 1 has an x and one doesn't.

2. Solve the following for the indicated variable. $y + 4 = -(x - 5)$ for y

$$y + 4 = -(x - 5)$$

* First, use distributive property to get rid of ( ).

$$y + 4 = -x + 5$$
$$-4 \qquad -4$$
$$y = \boxed{-x + 1}$$

* Then move number on left to right by add / subtract. Be sure & combine it with like term.

3. Solve the following for the indicated variable. $y-4=\frac{1}{3}(x+6)$ for y

$y-4=\frac{1}{3}(x+6)$

$y-4=\frac{1}{3}x+2$

$+4 \qquad +4$

$y=\frac{1}{3}x+6$

* First use the distributive property to get rid of the ( ).

* Then move the number on the left to the right so adding or subtracting. (Make sure to combine it with a like term.)

4. Solve the following for the indicated variable. $6x+7y=42$

$6x+7y=42$

$-6x \qquad -6x$

$\frac{7y}{7}=\frac{42}{7}-\frac{6x}{7}$

$y=6-\frac{6}{7}x$

* Since we are solving for y, we must move the x's to the other side by adding or subtracting.

* Now, to get rid of the number in front of y, we divide everything by the number in front of y.

* Simplify if able. Use your calculator.

5. Use the formula $3x + 7y = 21$ to find y when:

a.) $x=7$

$3(7)+7y=21$

$21+7y=21$

$-21 \qquad -21$

$\frac{7y}{7}=\frac{0}{7}$

$y=0$

* Replace x with number given.

* Then solve for y.

b.) $x=1$

$3(1)+7y=21$

$3+7y=21$

$-3 \qquad -3$

$\frac{7y}{7}=\frac{18}{7}$

$y=\frac{18}{7}$

c.) $x = 0$

$3x + 7y = 21$

$3(0) + 7y = 21$

$0 + 7y = 21$

$\frac{7y}{7} = \frac{21}{7}$

$y = 3$

d.) $x = -7$

$3x + 7y = 21$

$3(-7) + 7y = 21$

$-21 + 7y = 21$

$+21 \qquad +21$

$\frac{7y}{7} = \frac{42}{7}$

$y = \boxed{6}$

6. In the following exercise, use the formula $5x + 4y = 20$ solve for y

a.) when $x = 4$

$5x + 4y = 20$

$5(4) + 4y = 20$

$20 + 4y = 20$

$-20 \qquad -20$

$\frac{4y}{4} = \frac{0}{4}$

$y = \boxed{0}$

b.) In general, $y =$

$5x + 4y = 20$

$-5x \qquad -5x$

$\frac{4y}{4} = \frac{20}{4} - \frac{5x}{4}$

$y = \boxed{5 - \frac{5}{4}x}$

7. Solve the formula 3x -y = 2 for y.

$3x - y = 2$

$-3x \qquad -3x$

$-y = 2 - 3x$

$\frac{-y}{-1} = \frac{2}{-1} - \frac{3x}{-1}$

$y = -2 + 3x$

* move x's to right by adding/subtracting
* Since there is a (-) in front of "y", we must divide everything by (-1).
* Remember: $\frac{(-)}{(-)} = (+)$

8. Solve the formula 5x - y = 1 for y.

$5x - y = 1$

$-5x \qquad -5x$

$-y = 1 - 5x$

$\frac{-y}{-1} = \frac{1}{-1} - \frac{5x}{-1}$

$y = -1 + 5x$

* move x's to right by adding/subtracting
* Since there is a (-) in front of "y", we must divide everything by (-1).