Warm Up:
Solve each equation.

4p + 2 = 3p - 7

3 + 5q = 9 + 4q

ACT Question:
What is the value of x when 3x - 5 = 4x + 9?

A.) -14  B.) -5  C.) 0  D.) 1  E.) 2

2.5 Literal Equations and Formulas

Learning Goal: IWBAT rewrite and use literal equations and formulas.

Vocabulary:

Literal Equation: is an equation with two or more variables.

Formula: is an equation that states a relationship among quantities.

Examples 1 and 2:
Solve each equation for y. Then find the value of y for each value of x.

\[ y + 3x = 10; \ x = -1, 0, 3 \]

\[ y = -3x + 10 \]

\[ y = -3(-1) + 10 = 13 \]

\[ y = -3(0) + 10 = 10 \]

\[ y = -3(3) + 10 = 1 \]

\[ y + 4x = 8; \ x = -2, 1, 3 \]

\[ y = -4x + 8 \]

\[ y = -4(-2) + 8 = 16 \]

\[ y = -4(1) + 8 = 4 \]

\[ y = -4(3) + 8 = 0 \]

\[-2(3) + 4 = -2 \]

Examples 3 and 4:
Solve each equation for y. Then find the value of y for each value of x.

\[4x = 3y - 7; x = 4, 5, 6\]

\[
\begin{align*}
\frac{4x-7}{3} &= y \\
\frac{4(4)-7}{3} &= y \\
\frac{9}{3} &= y \\
3 &= y
\end{align*}
\]

\[x = 4, 5, 6\]

\[
\begin{align*}
\frac{4(5)-7}{3} &= y \\
\frac{18}{3} &= y \\
6 &= y
\end{align*}
\]

\[
\begin{align*}
\frac{4(6)-7}{3} &= y \\
\frac{17}{3} &= y
\end{align*}
\]

\[N = \frac{17}{3}, 9, 10\frac{1}{3}\]

Example 5:
(with your shoulder buddy)
Solve each equation for y. Then find the value of y for each value of x.

\[x - 4y = -4; x = -2, 4, 6\]

\[
\begin{align*}
4y &= x + 4 \\
y &= \frac{1}{4}(x + 1)
\end{align*}
\]

\[x = -2, 4, 6\]

Examples 6 and 7:
Solve each equation for x.

\[\frac{b}{y} = \frac{y - x}{x} + \frac{1}{y} + \frac{v}{b}\]

\[
\begin{align*}
4(x-1b) &= x \\
4x - 4b &= x \\
-4x &= -4b \\
\frac{-4b}{3} &= x
\end{align*}
\]

\[\text{Examples 8 and 9:}\]
Solve each problem. Round to the nearest tenth, if necessary. Use 3.14 for \(\pi\).

What is the radius of a circle with circumference 22m? \(r = 3.5031\text{, }r = \frac{c}{2\pi}\)

What is the length of a rectangle with width 10 in and area 75 in²? \(l = \frac{A}{w}\) \(l = 7.5\text{ in}\) \(A = lw\) \(75\text{ in}^2 = 10\text{ in}\) \(l = \frac{75}{10}\) \(l = 7.5\text{ in}\)
Example 10:
You can use the formula $a = \frac{h}{n}$ to find the batting average $a$ of a batter who has $h$ hits in $n$ times at bat. Solve the formula for $h$. If a batter has a batting average of .290 and has been at bat 300 times, how many hits does the batter have?

$N \cdot A = \frac{H}{N}$  
$(300)(.290) = H$  
$H = 87$ hits

Summary
What does literal equation mean?

Is solving for a letter without numbers any different then solving equations?

No!

Coursework
pg 112 # 11-17 odd, 25-31 odd, 35, 37, 39, 41