Notes - Solving Literal Equations

- **Literal Equations** are _____. Each variable represents something specific.

    Ex: A = ½ b *h*   A= _____   b= _____   *h*=_____

- When solving a **literal equation,** use the same steps you use to solve other equations. Remember to solve an equation, we use _____.

Example #1	Steps
Solve for *x*:	
a*x* + *b* = *c*	1. Move ***b***
***a*x = c - b**	2. Move ***a***
$x =$	3. ***x*** is what we are solving for and it stands alone.

Application Problem	
Shoe sizes and foot length are related by the formula ***S* = 3*F* - 24,** where ***S*** represents the shoe size and ***F*** represents the length of the foot, in inches. Solve the formula for ***F***.	
Solution:	**Steps:**
S = 3*F* - 24	

Application Problem	
Brandon knows that his truck route from Illinois to Tennessee is 430 miles long. He also knows that Distance = rate • time ($D = rt$) .How long will his route take if he averages a speed of 50 mi/hr? Start by first solving the formula for time.	
Solution:	**Steps:**
$D = rt$	solve for t (time)
$\dfrac{D}{r} = \dfrac{rt}{r}$	
$\dfrac{D}{r} = t$	
$\dfrac{430}{50} = 8.6$	

You try:

1.   P = 2l + 2w   **Solve for w**   **2.**   V = (3k)/t   **Solve for t**

3.   Q = (c + d)/2   **Solve for d**   **4.**   R = 3a + 5c   **Solve for a**

Notes - Solving Literal Equations – Teacher Notes

- **Literal Equations** are equations with . Each variable represents something specific.

    Ex: $A = \frac{1}{2} b\, h$ A= **Area** b= **base**   h= **height**

- When solving a **literal equation,** use the same steps as you would use to solve other equations. Remember to solve an equation, we use **inverse operations**.

Example #1	Steps
Solve for *x*:	
$ax + b = c$ $- b \quad -b$	1. Move **b** (the opposite of add is subtract)
$ax = c - b$ $\dfrac{ax}{a} = \dfrac{c-b}{a}$	2. Move **a** (the opposite of multiply is divide)
$x = \dfrac{c-b}{a}$	3. **x** is what we are solving for and it stands alone.

Application Problem	
Shoe sizes and foot length are related by the formula **S = 3F - 24,** where **S** represents the shoe size and **F** represents the length of the foot, in inches. Solve the formula for **F**.	
Solution:	**Steps:**
$S = 3F - 24$	add 24 to both sides
$S + 24 = 3F$	divide both sides by 3
$\dfrac{S+24}{3} = \dfrac{3F}{3}$	simplify
$\dfrac{S+24}{3} = F$	

Application Problem

Brandon knows that his truck route from Illinois to Tennessee is 430 miles long. He also knows that Distance = rate • time ($D = rt$) .How long will his route take if he averages a speed of 50 mi/hr? Start by first solving the formula for time.

Solution:	Steps:
$D = rt$	solve for t (time)
$\dfrac{D}{r} = \dfrac{rt}{r}$	
$\dfrac{D}{r} = t$	substitute 430 in for D and 50 in for r and solve.
$\dfrac{430}{50} = 8.6$	It will take Brandon **8.6** hours.

You try:

1.   P = 2l + 2w   **Solve for w**

W=(P – 2l)/2

2.   V = (3k)/t   **Solve for t**

t= (3k)/V

3.   Q = (c + d)/2   **Solve for d**

d=2Q – c

4.   R = 3a + 5c   **Solve for a**

a=(R – 5c)/3