## 2.8 Rewrite Equations & Formulas

The equation ax + b = c is called a literal equation because the coefficients & constants have been replaced by letters.

When you solve a literal equation, you can use the result to solve any equation that has the same form.

1. a) Solve 
$$\frac{ax + b}{ax} = \frac{c}{a}$$
 for x.  
 $x = \frac{c - b}{a}$ 

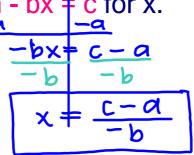
b) Use the solution to solve 
$$2x + 5 = 11$$
.

$$x = \frac{11 - 5}{2}$$

$$x = \frac{6}{2}$$

$$x = 3$$

2. a) Solve  $\frac{a-bx}{-a} = \frac{c}{-a}$  for x.



a - bx = c

b) Use the solution to solve 12 - 5x = -3. c - a a = 12 b = 5 c = -3

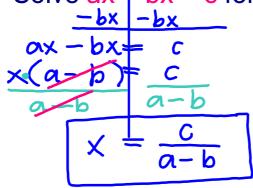
$$X = \frac{c - a}{-b}$$

$$X = \frac{-3 - 12}{-5}$$

$$X = \frac{-15}{-5}$$

$$X = 3$$

3. a) Solve  $\frac{ax}{-bx} = \frac{bx}{-bx} + c$  for x.



$$ax = bx + c$$

b) Use the solution to solve 11x = 6x + 20.  $\alpha = 11$  b = 6 c = 20

$$X = \frac{C}{a - b}$$

$$X = \frac{20}{11 - 6}$$

$$X = \frac{20}{5}$$

$$X = 4$$

An equation in two variables...

$$-5a + 3b = -35$$
  
 $4x + 3y = 12$   
 $-7m - 3n = 8$ 

or a formula in two or more variables...

A = 
$$\frac{1}{2}$$
bh  
C =  $\frac{5}{9}$  (F - 32)

can be rewritten so that one variable is a function of the other variable(s).

4. Write 3x + 2y = 8 so that y is a function of x.

In other words...

$$3X + 2y = 8$$

$$-3X$$

$$2y = 8 - 3x$$

$$y = 4 - \frac{3}{2}X$$

5. Write -2x + 3y = 6 so that y is a function of x. +2x +2x +2x -6 + 2x

$$y = 2 + \frac{2}{3}\chi$$

## Solve for x.

6. 
$$8x = y$$

$$x = \frac{y}{8}$$

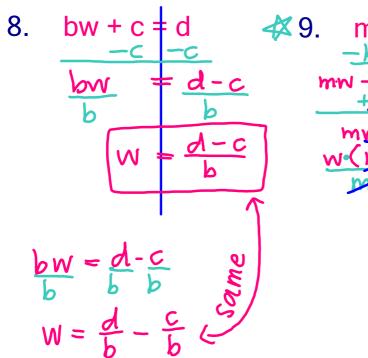
$$76.\frac{(X-C)}{-6} = d.-6$$

$$X-C = -6d$$

$$+c$$

$$X = -6d+c$$

## Solve for w.



9. 
$$mw - n = ad + kw$$

$$-kw$$

$$mw - n = ad + kw$$

$$-kw$$

$$mw - kw = ad$$

$$+n$$

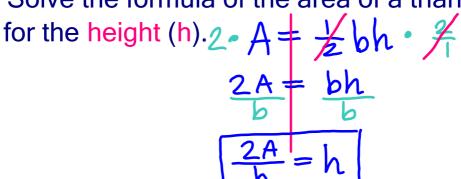
$$w(m-k) = ad + n$$

$$m-k$$

$$W = ad + n$$

$$m-k$$

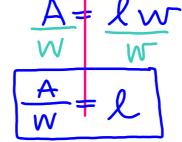
10.a) Solve the formula of the area of a triangle



b) Use the rewritten formula to find the height of a triangle with a base of 12 m and an

area of 48 m<sup>2</sup>. 
$$\frac{2 \cdot 48}{12} = h$$
$$8 m = h$$

11.a) Solve the formula of the area of a rectangle for the length (I).



b) Use the rewritten formula to find the length of a rectangle with a width of 13 cm and an area of 351 cm<sup>2</sup>.

$$\frac{351}{13} = 1$$
 $27 \text{ cm} = 1$ 

- 12.a) What is the formula for the perimeter of a rectangle? 2l + 2w = P
  - b) Solve the formula for the width (w).

$$2l + 2w = P$$

$$-2l$$

$$2W = P - 2l$$

$$2$$

$$W = P - 2l$$

$$2$$

13.a) Rewrite the formula for temperature by solving for F.

$$\frac{2}{5} \cdot C = \frac{1}{5} (F - 32) \cdot \frac{1}{5}$$

$$\frac{2}{5} C = F - 32$$

$$+32$$

$$\frac{2}{5} C + 32 = F$$

b) Find the temperature for Saturday in degrees Fahrenheit if it's 14°C.