Solving Literal Equations 2.8

Bellwork: Solve the following equations for the variable.	Show your work here!
1. $2x = 4$ $x =$ 2. $4y + 8 = -12$ $y =$ 3. $3z - 6 = -2z + 9$ $z =$	1) $\frac{2x}{2} = \frac{4}{2}$ $x = 2$ 2) $4y + 8 = -12$ $-8 \quad -8$ $\frac{4y}{4} = \frac{-20}{4}$ $y = -5$ 3) $3z - 6 = -2z + 9$ $+6 \quad +6$ $3z = -2z + 15$ $+2z \quad +2z$ $\frac{5z}{5} = \frac{15}{5}$ $z = 3$

Definition of Literal Equations

Examples of Literal Equations:

$3x + 2y = z$

$d = rt$

$A = \frac{1}{2}bh$

A literal equation is an equation that has more than one variable.

What is the most common type of literal equation? formula.

Give an example of a formula. $A = l \cdot w$.

In formulas you are given values for some of the variables and you need to solve for the unknown. variable.

What does it mean to solve for x?

To solve for x would mean to get x by itself on one side of the equation, with no x's on the other side.

For what variable are the follow equations already solved for?	1. $d = rt$	2. $A = \frac{1}{2}bh$	3. $3x + 2y = z$
1. $d = rt$ 2. $A = \frac{1}{2}bh$ 3. $3x + 2y = z$	Solved for: d	Solved for: A	Solved for: z
How would we solve the equations above for a new variable?	Solve for r. $\frac{d}{t} = \frac{rt}{t}$ $\frac{d}{t} = r$	Solve for h. $\frac{2}{1} \cdot A = \frac{1}{2}bh \cdot \frac{2}{1}$ $\frac{2A}{b} = \frac{bh}{b}$ $\frac{2A}{b} = h$	Solve for x. $3x + 2y = z$ $-2y \quad -2y$ $\frac{3x}{3} = \frac{-2y + z}{3}$ $x = \frac{-2y+z}{3}$ or $x = -\frac{2}{3}y + \frac{z}{3}$

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What is the difference between the equations we just solved and the equations we solved for bellwork?	The bellwork had only one variable + the equations we just solved had two or more variables.
Getting Started... Solve the equations for the indicated variable. $3x - 4y = 7, for\ x$ $15y + 1 = x, for\ y$ $ex - 2y = 3z, for\ x$ $y = mx + b, for\ m$ $km + 5x = 6y, for\ m$	$3x - 4y = 7, for\ x$ $+4y \quad +4y$ $\frac{3x}{3} = \frac{4y+7}{3}$ $x = \frac{4}{3}y + \frac{7}{3}$ $ex - 2y = 3z, for\ x$ $+2y \quad +2y$ $\frac{ex}{e} = \frac{2y+3z}{e}$ $x = \frac{2y}{e} + \frac{3z}{e}$ $km + 5x = 6y, for\ m$ $15y + 1 = x, for\ y$ $-1 \quad -1$ $\frac{15y}{15} = \frac{x-1}{15}$ $y = \frac{x}{15} - \frac{1}{15}$ $y = mx + b, for\ m$ $-b \quad -b$ $\frac{y-b}{x} = \frac{mx}{x}$ $\frac{y-b}{x} = m$ OR $\frac{-b+y}{x} = m$
Stay on Course... Solve the equations for the indicated variable. $\frac{by+2}{3} = c, for\ y$ $P = \frac{E^2}{R}, for\ R$ $\frac{3}{5}y + a = b, for\ y$	3. $\frac{by+2}{3} = c, for\ y$ $by + 2 = 3c$ $-2 \quad -2$ $\frac{by}{b} = \frac{3c-2}{b}$ $y = \frac{3c-2}{b}$ R. $P = \frac{E^2}{R}, for\ R$ $\frac{RP}{P} = \frac{E^2}{P}$ $R = \frac{E^2}{P}$ $\frac{5}{3}$ $\frac{3}{5}y + a = b, for\ y$ $y + a = \frac{5}{3}b$ $-a \quad -a$ $y = \frac{5}{3}b - a$
Finish Line... Solve the equations for the indicated variable. $\frac{3ax-n}{5} = -4, for\ x$ $p(t+1) = -2, for\ t$	5. $\frac{3ax-n}{5} = -4, for\ x$ $3ax - n = -20$ $+n \quad +n$ $\frac{3ax}{3a} = \frac{n-20}{3a}$ $x = \frac{n-20}{3a}$ $\frac{p(t+1)}{P} = \frac{-2}{P}, for\ t$ $t + 1 = -\frac{2}{P}$ $-1 \quad -1$ $t = -\frac{2}{P} - 1$ or distribute

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