

CLO:

Students will solve equations for a specific variable when the equations consist only of variables to see if the process is the same as solving equations with numbers and variables

Warm-up

Solve for the variable.

$$\begin{aligned} 1. \quad \frac{3x+5}{2} &= 13 \cdot 2 \\ 3x+5 &= 26 \\ -5 &\quad -5 \\ \hline 3x &= 21 \quad x=7 \end{aligned}$$

$$\begin{aligned} 2. \quad 2(3x-7) + 5 &= 15 \\ 6x-14+5 & \\ 6x-9 &= 15 \quad \boxed{x=4} \\ +9 &\quad +9 \\ \hline 6x &= 24 \\ \frac{6x}{6} &= \frac{24}{6} \end{aligned}$$

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We have been working with equations that have both numbers and variables and have been solving for the specific variable.

Example:

$$\begin{array}{rcl} \frac{4x-6}{3} + 9 & = & 11 \\ -9 & -9 & \\ \hline 4x-6 & = & 2 \cdot 3 \\ 4x-6 & = & 6 \\ +6 & +6 & \\ \hline 4x & = & 12 \\ \frac{4x}{4} & = & \frac{12}{4} \end{array}$$

$$x=3$$

$$3(m+7) - 4 + 8 = 46$$

$$\begin{array}{l} 3m + 21 - 4 + 8 = 46 \\ 3m + 25 = 46 \\ 3m = 46 - 25 \\ 3m = 21 \\ m = \frac{21}{3} = 7 \end{array}$$

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What would happen if we had an equation that looked like the following?

Solve for x .

$$y = mx + b$$

Write your thoughts on what you would do.

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When we have an equation that has only variables, we approach it the same we would approach an equation with number and variables. So when you see,

Solve for x.

$$y = mx + b$$

1. What is your goal? Isolate x
2. What would you do first? Subtract b from both sides
3. What would you do second? Divide both sides by m
4. Is there anything else you need to do? circle answer

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Let's Try It!!

Solve for x.

$$y = mx + b$$

$$\begin{array}{r} -b \quad -b \\ \hline \frac{y-b}{m} = \frac{mx}{m} \end{array}$$

$$\begin{array}{l} \frac{y-b}{m} = x \\ \frac{y}{m} - \frac{b}{m} = x \end{array}$$

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Solve for b. $A = bh$

1. What is your goal? Isolate b
2. What would you do first? Divide both sides by h
3. What would you do second? circle answer
4. Is there anything else you need to do? _____

Solve it!

$$\frac{A}{h} = \frac{bh}{h} \quad \left(\frac{A}{h} = b \right)$$

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Solve for h. $A = \frac{bh}{2}$

- 1. What is your goal?_____**
- 2. What would you do first?_____**
- 3. What would you do second?_____**
- 4. Is there anything else you need to do?_____**

Solve it!

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Solve for w . $P = 2L + 2w$

1. What is your goal? Isolate w
2. What would you do first? Subtract $2L$ from both sides
3. What would you do second? Divide both sides by 2
4. Is there anything else you need to do? circle answer

Solve it!

$$\begin{array}{r} P = 2L + 2w \\ -2L \quad -2L \\ \hline \frac{P-2L}{2} = \frac{2w}{2} \end{array}$$

$$\frac{P-2L}{2} = w$$

$$\frac{P}{2} - L = w$$

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Solve for x . $Ax + By = C$

1. What is your goal? Isolate x
2. What would you do first? Subtract By from both sides
3. What would you do second? Divide both sides by A
4. Is there anything else you need to do? circle answer

Solve it!

$$\begin{aligned} Ax + By &= C \\ -By &= -By \\ C - By &= Ax \\ \frac{C - By}{A} &= \frac{Ax}{A} \end{aligned}$$

$$\frac{-By}{A} = x$$

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Solve for r . $I = pt$ $I = p \cancel{t} r$

1. What is your goal? Isolate r
2. What would you do first? Divide both sides by pt
3. What would you do second? circle answer
4. Is there anything else you need to do? _____

Solve it!

$$\frac{I}{pt} = \frac{p \cancel{t} r}{\cancel{pt}} \quad \frac{I}{pt} = r$$

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Solve for t. $d = rt$

- 1. What is your goal?_____**
- 2. What would you do first?_____**
- 3. What would you do second?_____**
- 4. Is there anything else you need to do?_____**

Solve it!

$$\frac{d}{r} = t$$

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Solve for r. $C = 2\pi r$

1. What is your goal? _____
2. What would you do first? _____
3. What would you do second? _____
4. Is there anything else you need to do? _____

Solve it!

$$\frac{C}{2\pi} = r$$

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Solve for L $V = lwh$

1. What is your goal? _____
2. What would you do first? _____
3. What would you do second? _____
4. Is there anything else you need to do? _____

Solve it!

$$\frac{V}{wh} = L$$