

CLO: Students will describe, verbally, to someone how to isolate a variable in order to solve a multi-step equation expanding their knowledge of the order of operations.

Warm Up:

Simplify and solve the following problem.

1. $18 \div 6 \times 3^2 + 7$

$18 \div 6 = 9$

$9 \times 3 = 27$
 $27 + 7 = 34$

When you are done get your planner out and fill it in.

1. Summer homework due Friday
2. Materials due Friday
3. Syllabus due Friday

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What are you going to be doing today in class?

Why are you going to be doing this?

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$$6 \div (4 + -6 - (5 - 6))$$

parentheses
division

Order of operations
can be used
multiple math
operations

$$-5 = m + 4 + 8m$$

variables
equal sign

With the person next to you, talk about the similarities and differences between the two problems.



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In your notes, write these two words down and write what you think the definitions of each are.

1. Variable *an unknown value that is solved for in an equation*
2. Inverse *- do something opposite of what is already being done.*

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What are the solutions to the problems below and how do you know?

$$15 - \boxed{11} = 4$$

$$12 + x = 23$$

$$12 + 11 = 23$$

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What does it mean to isolate something?

Why would we want to isolate something in mathematics?

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In your notes please write the following:

Solving for a variable

1. If you can combine any like terms or if you need to distribute anything.
2. If there is division under all other operations, you must do that first.
3. If there is addition/subtraction, do the inverse to get rid of it
4. If there is multiplication/division touching the variable, do the inverse last to get the variable alone.

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Lets try solving for some basic type problems. Pick two of these to try on your own.

1. $3x = 12$ $4 = x$

$12 \div 3 = 4$
 $4 \times 3 = 12$

4. $t + 8 = 21$ $21 - 8 = 13$
 $13 + 8 = 21$

$-5 + -3$
2. $-5 + x = 15$
 $x = 20$

5. $\frac{h}{6} = 4$ 24
 $h = 24$

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Now lets take it up one step and do two things to get the variable alone: You will write the problem in your notes and do the steps with me...the second problem you will try on your own.

1. $4x + 8 = 4$



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Combine like terms then solve: Again, we will do the first one together, then you will try the second on your own.

1) $3n - 3 + 1 = -2$

$$\begin{array}{rcl} 3n - 3 + 1 & = & -2 \\ +2 & +2 & \\ \hline 3n & = & 0 \\ \frac{3n}{3} & & \frac{0}{3} \\ n & = & 0 \end{array}$$

2) $7 = 1 + 4x + 2$

$$\begin{array}{rcl} 7 & = & 3 + 4x \\ -3 & -3 & \\ \hline 4 & = & 4x \\ \frac{4}{4} & \frac{4x}{4} & x=1 \end{array}$$

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Practice: Practice these problems, Ask each other questions, Check each others work, Ask me for help or to check your answer...after you practice these, we will discuss as a class.

1) $2n - 3 + 3 = -12$

2) $13 = -2a + 5 + 4$

3) $14 = 6n + n$

4) $1 + 2a + 4 = -3$



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You are going to be given a set of practice problems, get them checked, talk about them with people are around you, and then make sure all the work and answers are on your sheet to keep in your portfolio

