Objective

The student will be able to:

solve literal equations (formulas) for a specified variable.

SOL: A.4a

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1) Solve $2x - 4y = 7$ for x

To get x by itself, what is the first step?

1. Add 2x
2. Subtract 2x
3. ✓ Add 4y
4. Subtract 4y

Answer Now

1) Solve 2x - 4y = 7 for x

Use a DO-UNDO chart to help determine the steps

Ask yourself,

- What is the first thing we are doing to x?
- What is the second thing?

DO	UNDO
· 2	+4y
-4y	÷ 2

Complete the undo column by writing the opposite operations in opposite order.

Follow the steps in the 'undo' column to isolate the variable.

D	U
· 2	+4y
-4y	÷ 2

1) Solve $2x - 4y = 7$ for x

1. Draw "the river"
2. Add 4y to both sides
3. Simplify
4. Divide both sides by 2
5. Does it simplify?

$$2x - 4y = 7$$
$$+4y \quad +4y$$
$$\frac{2x}{2} = \frac{7 + 4y}{2}$$
$$x = \frac{7 + 4y}{2}$$

This fraction cannot be simplified because both terms in the numerator are not divisible by 2.

2) Solve $2x - 4y = 7$ for y

To get y by itself, what is the first step?

1. Add 2x
2. ✓ Subtract 2x
3. Add 4y
4. Subtract 4y

Answer Now

D	U
· -4	-2x
+2x	÷ -4

2) Solve $2x - 4y = 7$ for y

1. Draw "the river"
2. Subtract 2x from both sides
3. Simplify
4. Divide both sides by -4
5. Does it simplify? Nope!

$$\begin{array}{rr|l} -2x & -2x & \\ \hline -4y & = 7 - 2x & \\ \hline -4 & -4 & \\ & & y = \dfrac{7-2x}{-4} \end{array}$$

3) Solve $\frac{y+a}{3} = c$ for y.

What is the first step?

1. Multiply by 3
2. Divide by 3
3. Add a
4. Subtract a

Answer Now

D	U
+ a	· 3
÷ 3	- a

3) Solve for y:

1. Draw "the river"
2. Clear the fraction – multiply both sides by 3
3. Simplify
4. Subtract a from both sides
5. Simplify

$$\frac{y+a}{3} = c$$

$$3 \gamma \frac{y+a}{3} = c \gamma 3$$

$$y + a = 3c$$

$$-a \quad -a$$

$$y = 3c - a$$

4) Solve for y: $4x - 2y = 12$

1. $-4x + 12$
2. $4x - 12$
3. $-2x + 6$
4. ✓ $2x - 6$

Answer Now

D	U
· -2	- 4x
+ 4x	÷ -2

4) Solve for y: $4x - 2y = 12$

1. Draw "the river"
2. Subtract 4x from both sides
3. Simplify
4. Divide both sides by -2
5. Does it simplify?

Yes!

$$\begin{array}{r|l} -4x & -4x \\ \hline -2y = 12 - 4x & \\ \hline -2 \quad -2 & \end{array}$$

$$y = -6 + 2x$$

or

$$y = 2x - 6$$

5) The formula for the volume of a rectangular prism is V = LWH. Which equation solves the formula for L?

1. $L = V - WH$

2. $L = \frac{VH}{W}$

3. $L = \frac{VW}{H}$

4. ✓ $L = \frac{V}{HW}$

Answer Now

6) The formula for the volume of a pyramid is $V = \frac{1}{3}bh$. Which equation solves the formula for h?

1. $h = 3Vb$

2. $h = \frac{3b}{V}$

3. ✓ $h = \frac{3V}{b}$

4. $h = \frac{V}{3b}$

Answer Now