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DISCRETE

Date: 5/9/18
TROICI/GOSSE

LESSON #6: SOLVING TWO-STEP EQUATIONS

Do Now: Solve the following equations

1) $x + 4 = 7$ $\begin{array}{r} x + 4 = 7 \\ -4 \quad -4 \\ \hline x = 3 \end{array}$	2) $3 + x = 5$ $\begin{array}{r} 3 + x = 5 \\ -3 \quad -3 \\ \hline x = 2 \end{array}$	3) $\frac{1}{4}x = \frac{16}{4}$ $\begin{array}{r} \frac{1}{4}x = \frac{16}{4} \\ \times 4 \quad \times 4 \\ \hline x = 4 \end{array}$	4) $2\frac{x}{2} = 5 \cdot 2$ $\begin{array}{r} 2\frac{x}{2} = 5 \cdot 2 \\ \hline x = 10 \end{array}$
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STEPS TO ISOLATE THE VARIABLE IN TWO-STEP EQUATIONS:

1. Take care of any addition or subtraction
2. Take care of any multiplying or dividing

Example 1:

$$\begin{array}{r} 7x + 15 = 71 \\ -15 \quad -15 \\ \hline 7x = 56 \\ \div 7 \quad \div 7 \\ \hline x = 8 \end{array}$$

Check
 $7(8) + 15 = 71$
 $71 = 71 \checkmark$

Example 2:

$$\begin{array}{r} \frac{a}{4} - 9 = 51 \\ +9 \quad +9 \\ \hline \frac{a}{4} = 60 \cdot 4 \\ \hline a = 240 \end{array}$$

Check
 $\frac{240}{4} - 9 = 51$
 $51 = 51 \checkmark$

Directions: Solve and Check the following equations.

1) $9b + 8 = 53$
 $\begin{array}{r} 9b + 8 = 53 \\ -8 \quad -8 \\ \hline 9b = 45 \\ \div 9 \quad \div 9 \\ \hline b = 5 \end{array}$

Check
 $9(5) + 8 = 53$
 $53 = 53 \checkmark$

5) $18 = 4a + 10$
 $\begin{array}{r} 18 = 4a + 10 \\ -10 \quad -10 \\ \hline 8 = 4a \\ \div 4 \quad \div 4 \\ \hline a = 2 \end{array}$

Check
 $18 = 4(2) + 10$
 $18 = 18 \checkmark$

3) $14 = 5x - 6$
 $\begin{array}{r} 14 = 5x - 6 \\ +6 \quad +6 \\ \hline 20 = 5x \\ \div 5 \quad \div 5 \\ \hline x = 4 \end{array}$

Check
 $14 = 5(4) - 6$
 $14 = 14 \checkmark$

2) $5 - 9x = 95$
 $\begin{array}{r} 5 - 9x = 95 \\ -5 \quad -5 \\ \hline -9x = 90 \\ \div -9 \quad \div -9 \\ \hline x = -10 \end{array}$

Check
 $5 - 9(-10) = 95$
 $95 = 95 \checkmark$

$$4) \quad 10 + 5a = -25$$

$$\begin{array}{r} -10 \quad -10 \\ \hline 5a = -35 \\ \frac{5a}{5} = \frac{-35}{5} \end{array}$$

$$a = -7$$

Check

$$10 + 5(-7) = -25 \\ -25 = -25 \checkmark$$

$$6) \quad \frac{1}{2}x - 6 = -10$$

$$\begin{array}{r} +6 \quad +6 \\ \hline \frac{1}{2}x = -4 \\ \frac{1}{2} \quad \frac{1}{2} \end{array}$$

$$x = -8$$

Check

$$\frac{1}{2}(-8) - 6 = -10 \\ -10 = -10 \checkmark$$

$$7) \quad 4x - 7 = 37$$

$$\begin{array}{r} +7 \quad +7 \\ \hline 4x = 44 \\ \frac{4x}{4} = \frac{44}{4} \\ x = 11 \end{array}$$

Check

$$4(11) - 7 = 37 \\ 37 = 37 \checkmark$$

$$8) \quad 8 - 9y = 35$$

$$\begin{array}{r} -8 \quad -8 \\ \hline -9y = 27 \\ \frac{-9y}{-9} = \frac{27}{-9} \end{array}$$

$$y = -3$$

Check

$$8 - 9(-3) = 35 \\ 35 = 35 \checkmark$$

$$9) \quad 3n - 9 = 9$$

$$\begin{array}{r} +9 \quad +9 \\ \hline 3n = 18 \\ \frac{3n}{3} = \frac{18}{3} \end{array}$$

$$n = 6$$

Check

$$3(6) - 9 = 9 \\ 9 = 9 \checkmark$$

$$10) \quad \frac{m}{3} + 7 = 10$$

$$\begin{array}{r} -7 \quad -7 \\ \hline 3 \cdot \frac{m}{3} = 3 \cdot 3 \end{array}$$

$$m = 9$$

Check

$$\frac{9}{3} + 7 = 10 \\ 10 = 10 \checkmark$$

- 11) Jamie was solving the following equation. Her teacher told her she did the problem incorrectly. Below is her work.

$$3x + 6 = 21$$

$$\frac{3x + 6 = 21}{3 \quad 3}$$

$$\begin{array}{r} x + 6 = 7 \\ -6 \quad -6 \\ \hline x = 1 \end{array}$$

Part A

Solve the equation correctly. Check your answer.

Show your work.

$$\begin{array}{r} 3x + 6 = 21 \\ -6 \quad -6 \\ \hline 3x = 15 \\ \frac{3x}{3} = \frac{15}{3} \\ x = 5 \end{array}$$

Answer: $x = \underline{5}$

Part B

On the lines below, clearly explain where Jamie made her mistake.

she divided before she subtracted

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LESSON #6: EXIT TICKET

<p>1) $2n - 5 = 17$</p> $\begin{array}{r} +5 \quad +5 \\ \hline 2n = 22 \\ \frac{2n}{2} = \frac{22}{2} \\ n = 11 \end{array}$	<p>2) $9 + 2m = 35$</p> $\begin{array}{r} -9 \quad -9 \\ \hline 2m = 26 \\ \frac{2m}{2} = \frac{26}{2} \\ m = 13 \end{array}$
<p>3) $-9 + \frac{m}{5} = 2$</p> $\begin{array}{r} +9 \quad +9 \\ \hline 5 \cdot \frac{m}{5} = 11.5 \\ m = 55 \end{array}$	<p>4) $9 = \frac{x}{4} + 6$</p> $\begin{array}{r} -6 \quad -6 \\ \hline 4.3 = \frac{x}{4} \cdot 4 \\ 12 = x \end{array}$

