

# Test Review: Solving Multi-Step Equations

Name: Key

Show all your work- every step! Check your answers when you finish. Go back and redo any problems you miss!

I can use inverse operations to solve two-step equations.

$$1.) \quad 18 = -\frac{4}{5}a + 3$$

$$+3 \quad +3$$


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$$-\frac{5}{4} \cdot \frac{21}{1} = -\frac{4}{5}a \cdot \frac{5}{4}$$

$$\frac{-105}{4} = a$$

or

$$-26.25 = a$$

$$2.) \quad \frac{v-6}{1} = \frac{-12 \cdot 8}{1 \cdot 1}$$

$$v-6 = -96$$

$$+6 \quad +6$$


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$$v = -90$$

$$3.) \quad -3.6n + 3 = -12.12$$

$$-3 \quad -3.00$$


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$$-3.6n = -15.12$$

$$\frac{-3.6n}{-3.6} = \frac{-15.12}{-3.6}$$

$$n = 4.2$$

I can write a two-step equation involving a real-world scenario.

- 4 steps:
- Define a variable
  - Write an equation
  - Solve the equation
  - Write a statement answering the question.

4.) The difference of 7 times a number and 14 is -63. Find the number.

①  $x = \text{the number}$

$$② \quad 7n - 14 = -63$$

$$+14 \quad +14$$

$$n = -7$$

④ The number is -7.

$$③ \quad 7n = -49$$

$$\frac{7n}{7} = \frac{-49}{7}$$

5.) Shea wants to save \$400 for a new skateboard. She has saved \$150 already and earns \$25.00 a week babysitting. Find the number of weeks Shea needs to work to have enough money to purchase the skateboard.

①  $x = \# \text{ of weeks}$

$$② \quad 25x + 150 = 400$$

$$-150 \quad -150$$

$$③ \quad \frac{25x}{25} = \frac{250}{25}$$

$$x = 10$$

④ She needs to work for 10 weeks.

I can solve multi-step equations requiring expanding expressions using the distributive property and combining like terms

$$6.) \quad 8 = 4(3c + 5)$$

$$8 = 12c + 20$$

$$-20 \quad -20$$


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$$-12 = 12c$$

$$\frac{-12}{12} = \frac{12c}{12}$$

$$-1 = c$$

$$7.) \quad 7 = 7(m - 3)$$

$$7 = 7m - 21$$

$$+21 \quad +21$$


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$$28 = 7m$$

$$\frac{28}{7} = \frac{7m}{7}$$

$$4 = m$$

$$8.) \quad 5t + 3t - 9 = 7$$

$$\begin{array}{r} 8t - 9 = 7 \\ +9 \quad +9 \\ \hline 8t = 16 \\ \frac{8}{8} \quad \frac{16}{8} \\ \hline t = 2 \end{array}$$

$$9.) \quad 2x + 6(x - 2) = 12$$

$$\begin{array}{r} 2x + 6x - 12 = 12 \\ 8x - 12 = 12 \\ +12 \quad +12 \\ \hline 8x = 24 \\ \frac{8}{8} \quad \frac{24}{8} \\ \hline x = 3 \end{array}$$

$$10.) \quad -20 = 5n - 3(n + 4)$$

$$\begin{array}{r} -20 = 5n - 3n - 12 \\ -20 = 2n - 12 \\ +12 \quad +12 \\ \hline -8 = 2n \\ \frac{-8}{2} \quad \frac{2n}{2} \\ \hline -4 = n \end{array}$$

I can solve multi-step equations with variables on both sides of the equation.

$$11.) \quad 5k - 9 = 7 - 3k$$

$$\begin{array}{r} 5k - 9 = 7 - 3k \\ +3k \quad +3k \\ \hline 8k - 9 = 7 \\ +9 \quad +9 \\ \hline 8k = 16 \\ \frac{8}{8} \quad \frac{16}{8} \\ \hline k = 2 \end{array}$$

$$k = 2$$

Check answers in calculator for practice.

$$12.) \quad 3(1 + d) - 5 = 6d - 11$$

$$\begin{array}{r} 3 + 3d - 5 = 6d - 11 \\ -2 + 3d = 6d - 11 \\ -3d \quad -3d \\ \hline -2 = 3d - 11 \\ +11 \quad +11 \\ \hline 9 = 3d \\ \frac{9}{3} = \frac{3d}{3} \end{array}$$

$$d = 3$$

$$13.) \quad -2(1 + -5p) = 8p - 1$$

$$\begin{array}{r} -2 + 10p = 8p - 1 \\ -8p \quad -8p \\ \hline -2 + 2p = -1 \\ +2 \quad +2 \\ \hline 2p = 1 \\ \frac{2p}{2} = \frac{1}{2} \end{array}$$

$$p = \frac{1}{2} \text{ or } 0.5$$

Check Your Answers (rework if necessary)

1.)  $a = -26.25$     2.)  $v = -90$     3.)  $n = 4.2$

4.) The # is -7.    5.) 10 weeks    6.)  $c = -1$     7.)  $m = 4$     8.)  $t = 2$     9.)  $x = 3$

10.)  $n = -4$     11.)  $k = 2$     12.)  $d = 3$     13.)  $p = \frac{1}{2}$