

Algebra 1 – Unit 2 Study Packet

Solving and Writing Multistep Equations

Skill #1 – Identifying Properties to Solve Equations

1) Identify the property shown below:

$$5x = 5x$$

2) Identify the property shown below:

$$\text{If } y = 4x, \text{ then } 4x = y$$

3) Identify the property shown below:

$$\text{If } 9p = t \text{ and } t = 6s - 1 \\ \text{then } 9p = 6s - 1$$

4) Which property justifies this step?

$$5(y - 9) + 4 = 24$$

$$\text{Step 1: } 5(y - 9) = 20$$

5) Which property justifies the work between the original and Step 1?

$$11x = 3x - 8 + 0$$

$$\text{Step 1: } 11x = 3x - 8$$

6) Identify the property that justifies the work between Step 1 and Step 2 in solving the equation shown:

$$\text{Step 1: } 7 + 4x = 23$$

$$\text{Step 2: } 7 + (-7) + 4x = 23 + (-7)$$

$$\text{Step 3: } 0 + 4x = 23 + (-7)$$

$$\text{Step 4: } 0 + 4x = 16$$

$$\text{Step 5: } 4x = 16$$

$$\text{Step 6: } \frac{4x}{4} = \frac{16}{4}$$

$$\text{Step 7: } 1x = 4$$

$$\text{Step 8: } x = 4$$

7) Identify the property that justifies the work between Step 3 and Step 4 in solving the equation shown:

$$\text{Step 1: } 15 = -(4 - x) + 7$$

$$\text{Step 2: } 15 - 7 = -(4 - x) + 7 - 7$$

$$\text{Step 3: } 8 = -(4 - x)$$

$$\text{Step 4: } 8 = -4 + x$$

$$\text{Step 5: } 8 + 4 = -4 + 4 + x$$

$$\text{Step 6: } 12 = 0 + x$$

$$\text{Step 7: } 12 = x$$

$$\text{Step 9: } x = 12$$

- Skill #1
- I can identify and apply properties of real numbers and properties of equality while solving an equation.
 - Need more practice (IXL – H.4, H.1, J.7, H.3, H.2)

Skill #2 – Solve Multistep Equations

1) What is the solution to the following?

$$7 + \frac{4x}{-7} = -29$$

- A 49
- B 38.5
- C -38.5
- D 63

2) What is the solution to the following?

$$-8(x - 3.375) = -2(5x - 4) - 2.5$$

- A -1.5625
- B -10.75
- C -8.25
- D -6.75

3) What is the solution to the following?

$$5h - 7 = 4\left(h + \frac{1}{2}\right) - 4$$

4) What is the solution to the following?

$$-\frac{1}{2}(6x - 10) = -4$$

Skill #2 I can solve a multistep linear equation with one variable algebraically.
 Need more practice (IXL – J.5, J.6, J.11)

Skill #3 – One, No, or Infinite Solutions

1) Identify all that have infinite solutions:

$6x + 4 = -4 + 6x$	$6(-x + 2) = 12 - 6x$
$-7x = 14 + 7x$	$-7x - 5 = -5 + -7x$

2) Identify all that have no solutions:

$4x = 5 + 4x$	$4x + 3 = -11 - 3x$
$5(x + 1) = 1 + 5x$	$3(4 + 2x) = 2(2 + 3x)$

3) Match the solution description to the equation:

No Solution	One Solution	Infinite Solutions
$5x + 9 = 9x + 5$	$6(x + 2) = 6x + 12$	$2(x + 3) = 2x + 3$

Skill #3 I can determine whether a linear equation with one variable has one, an infinite, or no solutions.
 Need more practice (IXL – J.8, J.9)

Skill #4 – Literal Equations

1) What is the solution for r in the following equation?

$$6 = 5t - r$$

- A $r = 5t + 6$
- B $r = -5t + 6$
- C $r = 5t - 6$
- D $r = -5t - 6$

2) The formula for the area of a triangle is

$$A = \frac{1}{2}bh$$

Solve this equation for h :

3) The volume of a cylinder formula is used to find the number of cubic units that a cylindrical container will hold. Solve for r in the following equation:

$$V = \pi r^2 h$$

4) Solve for b in the following equation:

$$K = 3\pi y(B + b)$$

- A $b = \frac{3\pi y}{K} - B$
- B $b = \frac{K - 3\pi y}{B}$
- C $b = \frac{K}{3\pi y} - B$
- D $b = \frac{K - B}{3\pi y}$

- Skill #4
- I can solve a literal equation for a specified variable.
 - Need more practice (IXL – I.8)

Skill #5– Writing and Solving Practical Problems

1) When Mary makes a collect call to her friend Linda in Portugal, the phone company charges \$15 dollars to connect overseas and \$1.50 for each minute she talks. How many minutes did Mary and Linda talk if her final bill was \$52.50?

2) Which equation describes a tuxedo rental company that charges a fee of \$50.25 for every tuxedo it rents, plus \$20.15 for each day that the customer keeps it, if the final bill is \$191.30?

- A $20.15d + 191.30 = 50.25$
- B $20.15 + 50.25d = 191.30$
- C $50.25 + 20.15d = 191.30$
- D $191.30d + 20.15 = 50.25$

3) June wants to go on a helicopter tour over the Great Smoky Mountains. The cost of the tour is \$45.00 with a cost of \$10.00 for every hour that you are in the sky. If June pays \$62.00 for her tour, how many hours was she in the air?

- Skill #4
- I can write an equation from a given situation and I can solve the same equation for the given variable.
 - Need more practice (IXL – J.10)