

## Concept: Solving Multi-Step Equations

Name: \_\_\_\_\_

- You should have completed Equations – Section 4 Part A: Solving Multi-Step Equations before beginning this handout.

### Warm Up

Solve each multi-step equation below. *Show all your steps and make sure you check to see if your solution is correct.*

1.  $4(t - 2) - (t + 3) = t - 1$

2.  $5x + 5.4 = 2.9x - 0.9$

### COMPUTER COMPONENT

**Instructions:** In UMATH X follow the **Content Menu** path:

**Equations > Solving Multi-Step Equations**

NOTE: Use the **Menu** button in order to get to the lesson where you left off.



Work through all Sub Lessons of the following Lessons **in order**:

- *Summary*
- *Literal Equations*



As you work through the computer exercises, you will be prompted to make notes in your notebook/math journal.

**NOTES:**
**Fill in the following:**

1. Two ways to solve an equation.

(a) \_\_\_\_\_

(b) \_\_\_\_\_

2. To keep a balance balanced, you must perform the \_\_\_\_\_

\_\_\_\_\_

to \_\_\_\_\_.

3. You know when you have a solution when:

(a) \_\_\_\_\_

(b) \_\_\_\_\_

4. Combine like \_\_\_\_\_ if they are on the \_\_\_\_\_ side of the

\_\_\_\_\_.

5. Equations with fractions, require you to first \_\_\_\_\_

\_\_\_\_\_

(*three words*) by a \_\_\_\_\_ (*two words*).

This keeps the equation \_\_\_\_\_.

6. Use the \_\_\_\_\_ equation to check your answer by

\_\_\_\_\_ your \_\_\_\_\_ for the

\_\_\_\_\_ . Check each side of the equation. Your solution is

\_\_\_\_\_ if you have the same

\_\_\_\_\_.

**Literal Equations**

7. Are the following perimeter equations the same? Why or why not.

$$P = 2L \times 2W \quad \text{and} \quad L = \frac{P - 2w}{2}$$

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**Solving Linear Equations:** (You use similar steps to solve literal equations as you do for equations with one variable)

Solve  $4x + 2y = 16$  for  $y$

- The equation has \_\_\_\_\_ different variables, \_\_\_\_ and \_\_\_\_.
- Determine the variable you have to solve for: \_\_\_\_\_.
- You will need to isolate the variable to solve the literal equation.

Fill in the blanks.

Literal Equation	Similar Equation
$4x + 2y = 16$	$35 + 8y = 11$

- You will need to isolate the variable to solve the literal equation.

$4x \underline{\hspace{1cm}} + 2y = 16 \underline{\hspace{1cm}}$	$35 \underline{\hspace{1cm}} + 8y = 11 \underline{\hspace{1cm}}$
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- Simplify

$2y = 16 \underline{\hspace{1cm}}$	$8y = \underline{\hspace{1cm}}$
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➤ Isolate y

$$\frac{2y}{2} = \frac{16}{2}$$

$$= \frac{16}{2} - \frac{x}{2}$$

$$\frac{8y}{8} = \frac{\quad}{8}$$

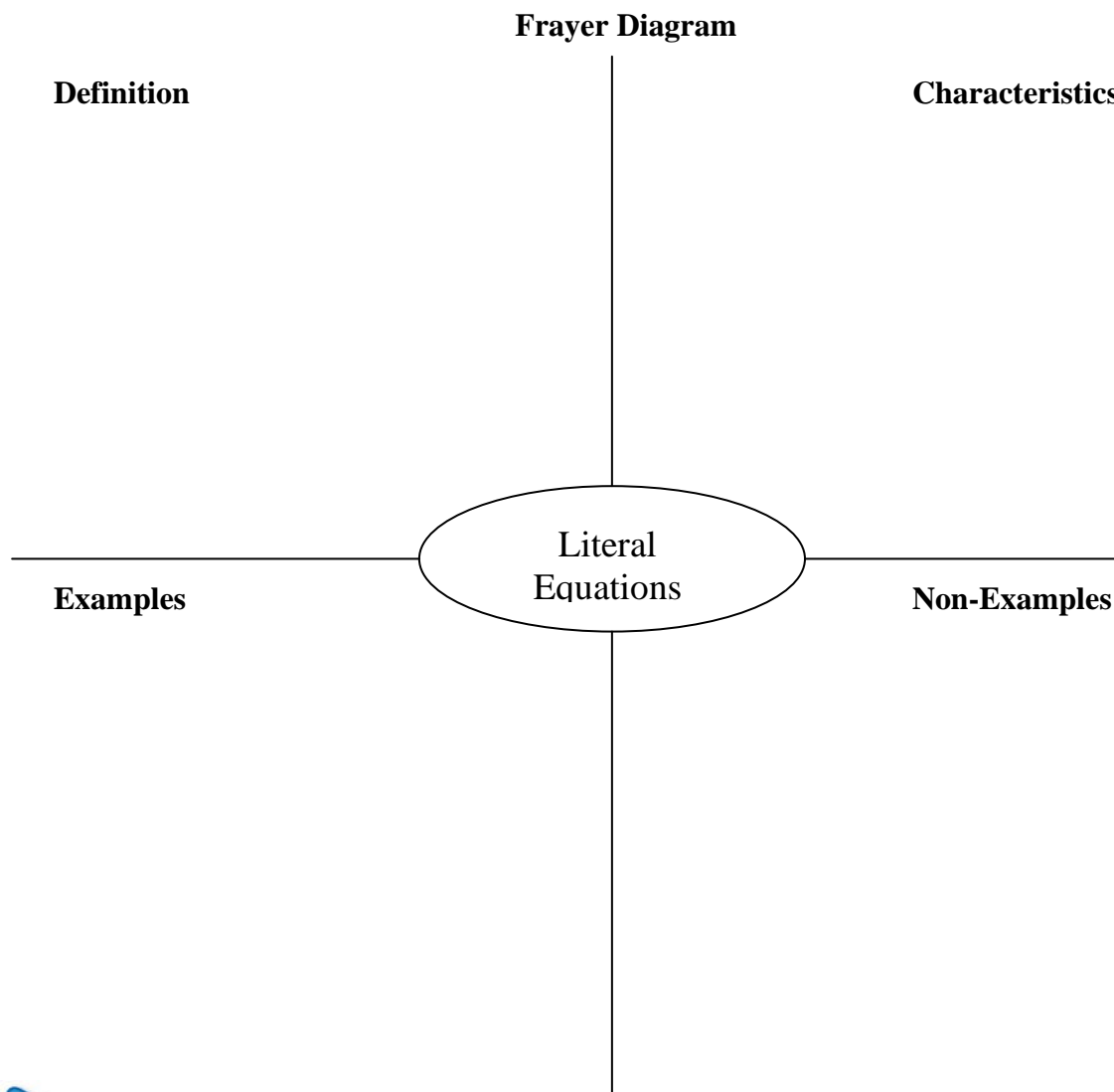
➤ Simplify

$$y = \underline{\quad}$$

$$y = \underline{\quad}$$

### Literal Equations:

Use the Frayer Diagram to demonstrate your understanding of the meaning of the word “Literal Equations”. First fill in examples and then the non- examples. Using these, determine the characteristics of “Literal Equations”. With the information in the chart, write your definition of “Literal Equations”.



**OFF COMPUTER EXERCISES**

1. Solve the following equations. (*Remember to show your work and check your answers.*)

(a)  $9 + 3(m - 4) = 5m + 1$

(b)  $3m - 4(m + 6) = 2(m + 2) - 13$

(c)  $3 - 2(x + 4) = -3(1 - 2x) + 14$

(d)  $6 + 3(m - 4) = 5m - 3$

(e)  $\frac{2n - 3}{2} = \frac{-n - 1}{4}$

$$(f) \quad \frac{3}{5} - \frac{x}{3} = \frac{x}{2}$$

$$(g) \quad \frac{3}{4} (2x - 1) = \frac{5}{6} (2 - 4x)$$

$$(h) \quad \frac{6a - 5}{3} - 2 = \frac{5a - 1}{4} + \frac{1}{3}$$

2. Solve each literal question.

a) Solve:  $y = mx + b$  for  $x$

- b) Solve:  $C = 2pr + w$  for  $p$
- c) Solve:  $P = 2L + 2W$  for  $L$  (*Hint: use a diagram.*)
- d) As you know,  $P = 2L + 2W$  is the formula for perimeter. If a field has a width of 25m and a perimeter of 206 m, *find the length by using your answer in (c).* (*Hint: use a diagram.*)