Unit: Linear Equations
Student Handout 7

Name _____

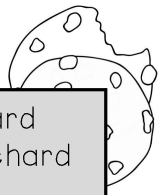
Date _____Pd_____

WRITING EQUATIONS WITH VARIABLES ON BOTH SIDES

Use the table below to review different synonyms for mathematical operations. Then, use the keywords to help you write and solve the following real-world problems.

ADD:	SUBTRACT:	MULTIPLY:	DIVIDE:	EQUALS:

For 1 and 2, use a-d to help you write an equation that could be used to solve the problem.



1. Richard purchased a box of 12 cookies and Meagan purchased a bag of 10 cookies. Richard ate x number of cookies from his box, while Meagan ate half the number of cookies that Richard ate. How many cookies did Richard eat if they have the same number of cookies left over?			
a. Define the variable:	b. Write an expression to represent Richard:	c. Write an expression to represent Meagan:	d. Write an equation:

2. Nolan set out a beaker containing 2.8 inches of rainwater which increased by an average of 3.1 inches per day. Tina set out a beaker containing 5.3 inches of rainwater which increased by an average of 1.7 inches per day. After how many days will the two beakers hold the same amount of rainwater?			
a. Define the variable:	b. Write an expression to represent Nolan:	c. Write an expression to represent Tina:	d. Write an equation:

Use the keywords to help you set up and solve an equation for each of the situations below.

SITUATION	EQUATION & SOLUTION
3. Celebrity A has 400 followers on social media and gains 75 followers each day. Celebrity B has 1,000 followers on social media and loses 25 followers a day. After how many days will the celebrities have the same number of followers?	
4. Ben and his friends are going to play putt putt. One location charges a $2.00 fee plus $7.50 per game. A second location charges an $8.00 fee plus $6.00 per game. How many games would they have to play for both locations to cost the same amount?	
5. Isabelle pays $2.50 each time she rides the bus to work. She could buy a bus pass for a one-time fee of $15.00 and then would only pay $1.00 per bus ride. After how many bus rides would the two options cost Isabelle the same amount?	
6. Thirty-five more than 0.8 times a number is the same as 43 less than the product of -7 and the number.	
7. Decreasing $\frac{3}{4}$ times a number by 18 is equal to increasing $\frac{1}{2}$ times the number by 5.	

8. Write a real-world situation that could be represented by the equation $12.5x + 30 = -7.5x + 90.5$.

Situation:_____

_____

_____

What does the variable represent? _____

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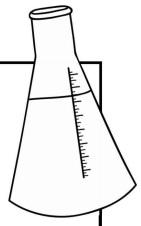
In 1-5, write an equation to represent the situation. Then, solve the equation.



1. Garrett can order stickers from two companies. Company A charges a $30 design fee plus $0.80 per sticker. Company B charges a $14 design fee plus $1.20 per sticker. How many stickers would Garrett have to order for the cost at both companies to be the same?

a. Equation: _____

b. Solution: _____

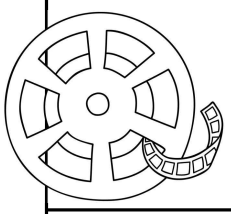
2. Maria is monitoring the temperature of two substances in her science lab. Substance A is currently 96.2° and rising 1.5° each minute. Substance B is currently 98.5° and cooling 0.8° each minute. After how many minutes will the two substances be at the same temperature?

a. Equation: _____

b. Solution: _____

3. Jaycie has a VIP membership to a movie theater which costs $27 a year and $6.00 for each movie she sees. Claire doesn't have a membership, so she pays $8.25 for each movie she sees. How many movies would the two girls have to see in a year in order to pay the same amount?

a. Equation: _____



b. Solution: _____

4. Gayle started with 30 pairs of shoes and donated x pairs. Her sister Bonnie started with 22 pairs of shoes and donated half as many pairs as Gayle did. How many pairs of shoes did Gayle donate if they had the same number of shoes remaining?

a. Equation: _____

b. Solution: _____

5. Two more than a certain number is 15 less than the product of $\frac{7}{8}$ and the number.

a. Equation: _____

b. Solution: _____