ALGEBRA I

Unit 2

MULTI-STEP EQUATIONS & INEQUALITIES

NOTES • HOMEWORK • QUIZZES • TEST

Created by: ALL THINGS ALGEBRA®

Unit 2 – Multi-Step Equations & Inequalities: Sample Unit Outline

	TOPIC	HOMEWORK
DAY 1	Multi-Step Equations	HW #1
DAY 2	Variables on Both Sides	HW #2
DAY 3	Infinite & No Solution Equations	HW #3
DAY 4	Algebraic Proportions	HW #4
DAY 5	**Quiz 2-1**	None
DAY 6	Absolute Value Equations	HW #5
DAY 7	Multi-Variable (Literal) Equations	HW #6
DAY 8	Equations Review	HW #7
DAY 9	Word Problems	HW #8
DAY 10	More Word Problems	↓
DAY 11	Equations & Word Problems Review	HW #9
DAY 12	**Quiz 2-2**	None
DAY 13	Multi-Step Inequalities	HW #10
DAY 14	Compound Inequalities	HW #11
DAY 15	Absolute Value Inequalities	HW #12
DAY 16	Inequalities Review	HW #13
DAY 17	**Quiz 2-3**	None
DAY 18	Review for Test; Complete Study Guide	HW #14
DAY 19	**UNIT TEST**	None

See sample images of the pages on the next page.

Name: Date:

Topic: Class:

Main Ideas/Questions	Notes/Examples
Steps to Solve a Multi-Step Equation	
Examples	1. $9x + 1 - 7x - 5 =$
	2. $91 = -7(3a - 1) =$

Name: Da

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Main Ideas/Questions	Notes/Examples
STEPS TO SOLVE	
GUIDED EXAMPLES	1 $\frac{4}{3} = \frac{x}{6}$

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Main Ideas/Questions	Notes/Examples
Literal Equations	
	SOLVE EACH OF THE EQUATIONS BELOW FO
	$2x - 5 = 13$ $ax - b$

Properties of Equality

The steps to solve an equation are justified by properties of equality. They ensure that the equations stays balanced in order to solve for the missing variable.

- Addition Property of Equality
- Subtraction Property of Equality
- Multiplication Property of Equality
- Division Property of Equality
- Distributive Property

Directions: Identify which property justifies each step used to solve the equations below.

	Equation Steps	Properties/R
1	1. $2(x - 9) = -10$	1. Given

Name: _____ **Algebra I**

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Quiz 2-1: Equations

Directions: Solve each equation. ***SHOW ALL WORK!***

1. $6y - 8 - 6 - 8y = 4$ **2.** $-7(x + 7) = -56$

ANSWERS

1.

Using Algebra to Solve Word Problems

1 **DEFINE A VARIABLE** Use "**LET STATEMENTS**" to define your variable.

2 **SET UP EQUATION & SOLVE** Translate into an equation using using your let statements. Then solve!

3 **DEFINE ANSWER** Give exactly what the problem is asking for.

Set 1: Finding Two Numbers

1. The larger of two numbers is four more than the smaller number. If the sum of the numbers is 74, find the numbers.

2. The larger of two numb
the numbers is 61, find t

Group Members: Per: _____

REVIEW: Equations & Word Problems

Directions: Work together to solve each problem. **SHOW ALL WORK!** Each person should be participating. At the end of class, one person's paper will be chosen at random and graded for the group.

Directions: Solve each equation. **SHOW ALL STEPS!**

1. $-2(4x + 3) - (x - 7) = 46$
2. $-\frac{4}{3}(12k + 27) = -57 - 9k$
3. $23 - 2(5a + 9) = 5(2a - 11)$
4. $\frac{5}{2}(6w - 16) = 18w - (3w + 40)$
6. $\frac{g}{8} = \frac{g-1}{10}$

Name: Date:

Topic: Class:

Main Ideas/Questions	Notes/Examples
Interval Notation	**Interval Notation** is another way of expre to an inequality. It uses parentheses and where the graph starts and
Symbols	(Parentheses mean "**not included**", or " Use when a graph starts or ends on a C
	[Brackets mean "**included**", or "**closed**" Use when a graph starts or ends on a C
	Always use _____ with infi

Directions: Solve, graph, and write the solution to each inequality in interv

SOLVE	GRAPH
1. $4(x+3) > -24$	
2. $x - 3(x+2) > 4$	
3. $7x - 2(x-4) \le -2$	
4. $-8(x-1) - x \le -28$	

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Name:

Topic:

Main Ideas/Questions	Notes
Absolute Value Inequalities	CASE 1 GREATER THAN Example: $\|x\| \ge 5$ Inter
	CASE 2 LESS THAN Example: $\|x\| \le 8$ Inte
What does this mean?	
Steps to Solve	ISOLATE the absolute value
	CREATE TWO CASES: Use the set up the two cases.
	SOLVE both inequalities.
	GRAPH the solution and wri

Directions: Solve, graph, and write the solutions to the follow

1. $|x| < 7$
2. $|x| \ge 4$
3. $|x - 1| > 6$
4. $|x + 2| \le 7$

Interval Notation:

Unit 2 Test Study Guide
Equations & Inequalities

Name: _____

Date: _____

Topic 1: Multi-Step Equations

1. $-5(x - 2) - (x + 2) = 50$
2. $8 - 3(k + 2) = 2 - 3k$
3. $3w - (7w + 12) = 2(w - 3)$
4. $-7(a - 3) = 11 - 7a$
5. $9(n - 4) - 7n = 32 - 2(n + 8)$
6. $4(4y - 3) - (y - 5) = -52$

Topic 2: Proportions

7. $\frac{2}{9} = \frac{4}{x+8}$
8. $\frac{6}{a-6} = \frac{3}{a-3}$
9. $\frac{5}{y-7} = \frac{3}{y-5}$
10. $\frac{6}{2n-5} = \frac{2}{n-7}$

Name: _____ **Algebra I Unit 2 Test**

Date: _____ **Bell:** _____ (Equations & Inequalities)

SHOW ALL WORK NEEDED TO ANSWER EACH QUESTION!
PLACE YOUR FINAL ANSWER IN THE BOX. GOOD LUCK! ☺

1. Solve the equation below.
$-12x + 8 + 5x = 36$

2. Solve the equation below.
$8k - (6k - 4) = 10$

3. Solve the equation below.
$-2y + 4 = 8y - 6$

4. Solve the equation below.
$13w - 2(4w + 1) = w - 58$

5. Solve the equation below.
$3h - 2(4h - 5) = 10 - 5h$

6. Solve the equation below.
$9(m + 5) - 3(m - 2) = 8m + 31$