Hannah Ruebeck

Lehigh Valley Summerbridge

Summer 2013

7th Grade Week 4 Lesson Plans

Core Team 1

**DAY 14: July 8th**

**Topic: Introduction to Algebra**

* **Objectives:**
	+ Students will define the new concepts of variable, constant, and expression.
	+ Students will translate words to algebraic expressions.
* **Materials Used**
	+ Chalk and chalkboard
	+ Individual whiteboards and markers
	+ SMARTboard
	+ Table-races handouts
	+ Take-home sheet (handout)
	+ Homework (handout)
* **Methodology:**
	+ Warm-Up: [5 min]
		- Each student will receive a small eraser. I will hold an “unknown” number of erasers in my hands. I will ask one student to come up to the front of the room with me and I will ask them how many erasers we have in total, the one he has and the unknown number (called n) that I have in my hands. We will establish that we would describe the total number of erasers in math terms as n+1. I will have one more student join us. I will ask that student how many we now have. 2+n. I will have the students sit down and I will ask them how many small erasers are in the whole room, if there are 13 of them (adjust for absences) and I have n erasers. 13+n.
	+ Activity 1: Introduction of Expressions/Review of Key Words [15 min]
		- I will ask the class what the name is for n, or any letter used to represent an unknown value. I will explain that it is called a variable and that word itself variable means “something that can change.”
		- I will explain that we call these groupings of numbers “expressions” and that they represent something without comparing it to something else. Expressions can have all numbers or numbers and variables, but if they have variables then we call them algebraic expressions. For example, if I had 15 pens and I lose p pens, the expression would be 15-p. We aren’t comparing that to the number that I have now, and we have no way in an expression to find the value of p. It is simply representational.
		- I will ask the class to name some of the key words that we used in word problems to understand the operations. I will explain that the same ones can indicate operations for algebraic expressions as well.
		- We will illustrate some examples on the board.
			* Per**:** Gas costs 3.25 per gallon, or 3.25/g
			* Ratio: The ratio of something indicates division. There are 2 girls for every boy, or 2/b
			* Less than: if you are told that there is 7 less than n of something, you will think that it is 7-n. However, think about your erasers from the warm-up. If you all have 13 erasers, and I have x erasers less than you have, then I have 13-x erasers! So if there are 7 less than n, it is n-7.
			* Difference: if a problem says the difference between 5 and x, it is subtraction. 5-x.
			* You can use several of these words and operations at once. In those cases, we use parentheses. If we have 9 increased by a number, it would be 9+n. If we have 3 times the increase of 9 increased by a number, it would be 3(9+n). I will read out several more examples with parentheses and we will translate them as a class
				+ 14 less than p after p has been divided by 2
				+ 5 times a number that is then decreased by 4
				+ 3 more than a number divided by 5
				+ 7 times the total of 4 less than a number
	+ Activity 2: Table Races [20 minutes]
		- I will have three rounds of table-races handouts (attached). Students will be seated in mixed ability levels. The first pod to finish the worksheet gets 1 point, and the pod that has the most correct answers also gets a point. The team with the most points at the end wins. We will go over each worksheet after each round is over.
	+ I will then explain the worksheet that they will be filling out for homework, and pass out tonight’s homework and take-home sheet. [3min]
* **Homework:**
	+ Expressions Worksheet 1

**7th Grade Syllabus: Week 4**

*Summer 2013 Core Team 1 Hannah Ruebeck*

|  |  |  |  |
| --- | --- | --- | --- |
| DAY | LESSON TOPIC | TAKE-HOME SHEET | TONIGHTS’ HOMEWORK |
| Monday | Introduction to Expressions | Definitions, table-races problems | Expressions Worksheet 1 |
| Tuesday | Practice with Expressions | Jeopardy problems |  Expression Worksheet 2 |
| Wednesday | Introduction to Equations |  | Balancing Scales |
| Thursday | Importance of Algebra - research  |  | Importance of Algebra Worksheet |
| Friday | Importance of Algebra - presentations |  |  |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grade: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_

**EXPRESSIONS WORKSHEET 1**

1. Translate the following into mathematical expressions or equations.

3 more than s 5 times y 11 less than z 4 divided by t

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2. Mary gave Steve 5 books.

Write an expression showing how many books Steve has now.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Sean has five times as many fish as Becca has.

 Write an expression showing how many fish Sean has.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Write an expression showing how many fish Becca has.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. John is four years older than Anne.

 Write an expression showing how old John is.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Susan has one third as many cats as Ian has.

 Write an expression showing how many cats Susan has.

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 Write an expression showing how many cats Ian has.

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List 3-4 **jobs** that use algebraic expressions or equations everyday.

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List 1-2 ways that **you** use algebraic expressions or equations everyday.

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**TABLE RACES 1**

Five more than x

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Seven less than y

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Twelve times z

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

w split by 12

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b less than 3

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Eight per g

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Four less than j

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Eighteen more than t

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**TABLE RACES 2**

Two more than the total of x divided by 3

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Eight times the total of 5 more than y

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Twelve times z plus 4

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Three less than w split by 2

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b less than 3, all split by b

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Eight times m, per g

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Four less than j times 4

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Nine more than five times t

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**TABLE RACES 3**

y more than the total of x times four

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ten times the total of z more than y

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

All of twelve plus w times all of z plus 4

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

h less than w times 2

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b times seven, all split by all of n more than six

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Eight times m, divided by seven less than g

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

All of four less than j times all of q less than 4

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Nine more than five times t more than k

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**EXPRESSIONS TAKE-HOME SHEET**

 **7/8/13**

A **variable** is the part of an equation that changes, or a letter that represents an unknown value.

A **constant** is the part of an equation that stays the same, or a number that is known.

An **expression** is a grouping of numbers, variables, and operators that show the value of something. There is no equals sign in an expression.

Table Races 1:

Five more than x 5 + x

Seven less than y y - 7

Twelve times z 12z

w split by 12 w/12

b less than 3 3 - b

Eight per g 8/g

Four less than j j - 4

Eighteen more than t 18 + t

Table Races 2:

Two more than the total of x divided by 3 2 + x/3

Eight times the total of 5 more than y 8(5+y)

Twelve times z plus 4 12z + 4

Three less than w split by 2 (w/2) -3

b less than 3, all split by b (3-b)/b

Eight times m, per g 8m/g

Four less than j times 4 4j - 4

Nine more than five times t 9 + 5t

Table Races 3:

y more than the total of x times four y +4x

Ten times the total of z more than y 10(z + y)

All of twelve plus w times all of z plus 4 (12+w)(z+4)

h less than w times 2 2w - h

b times seven, all split by all of n more than six (7b)/(n+6)

Eight times m, divided by seven less than g (8m)/(g-7)

All of four less than j times all of q less than 4 (j – 4)(4 – q)

Nine more than five times t more than k 9 + 5t + k

**DAY 15: July 9th**

**Topic: Practice with Expressions**

* **Objectives:**
	+ Students will evaluate expressions for given variables.
	+ Students will practice translating words to mathematical expressions.
* **Materials Used**
	+ Chalk and chalkboard
	+ Individual whiteboards and markers
	+ SMARTboard
	+ Jeopardy Powerpoint
	+ Take-home sheet (handout)
	+ Homework (handout)
* **Methodology:**
	+ Warm-Up: [5 min]
		- Students will pair up with their next-door neighbor to compare answers to the homework from last night. I will answer any questions.
	+ Activity 1: Evaluating Expressions (Lecture) [5 min]
		- I will ask the class what they think we would do with an expression if we knew the value of the variable. I will lead them to conclude that we “plug in” the value of the variable and solve like any integer expression that we have been working with.
		- I will remind the students that we must always follow the order of operations after we plug in our variable.
		- We will do several examples as a class
			* 3(7+x) where x = 2 [=27]
			* (5 + y)(2 - z) where y = -3 and z = 1 [= 2]
	+ Activity 2: Expression Jeopardy [30 min]
		- Students will be split into teams of 3 or 4 by mixed ability level
		- I will create a Jeopardy board on PowerPoint. The questions will be as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Words to Expressions** | **Evaluating Expressions (1-variable)** | **Evaluating Expressions (2-variable)** | **Evaluating Expressions (3-variable)** | **Definitions** |
| **$200** | 7 more than three times x | 8-xx = -5 | 5t-7ut= 2u= -4 | 7x + 4y -2zx= -3y= 2z= 8 | A \_\_\_\_\_\_ is the part of an expression that stays the same. |
| **$400** | 9 less than 5 divided by y | 4y – 5y = -3 | x/6 +8rx=12r= 3 | 9/b + 6c –fb = -3c= 2f = -7 | A \_\_\_\_\_\_ is the part of an expression that is unknown.  |
| **$600** | The total of 8 more than z times the total of 6 less than w | z/3 + 8z = 9 | (5+y)(z-3)y= -8z= -2 | y(s+4)(t-3)y= -5s= -9t= 11 | A \_\_\_\_\_\_\_\_\_ is a grouping of variables, constants, and multiples of variables. |
| **$800** | The total of 10 per t more than six times s | 7u + 3u u = 2 | (7-e)/(8+d)e= -5d= -2 | (g+1)(h-3)/(j)g= -8h=5j=2 | A \_\_\_\_\_\_\_ sets two expressions equal to each other |
| **$1000** | The total of 11 times g more than the total of h divided by 3 | 8t +9t – 2tt = -5 | (9-t)(8+s)/tt = 2s = -6 | (f-2)+(g-4)/(h+3)f= -4g= 22h= 3 | A \_\_\_\_\_\_\_ solves an equation.  |

* + I will then explain the worksheet that they will be filling out for homework, and pass out tonight’s homework. [3min]
* **Homework:**
	+ Expressions Worksheet 2

**EVALUATING EXPRESSIONS TAKE-HOME SHEET**

 **7/9/13**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Words to Expressions** | **Evaluating Expressions (1-variable)** | **Evaluating Expressions (2-variable)** | **Evaluating Expressions (3-variable)** | **Definitions** |
| **$200** | Q: 7 more than three times xA: 7 + 3x | Q: 8-x x = -5A: 13 | Q: 5t-7u t= 2 u= -4A: 38 | Q: 7x + 4y -2z x= -3 y= 2 z= 8A: -29 | Q: A \_\_\_\_\_\_ is the part of an expression that stays the same.A: constant |
| **$400** | Q: 9 less than 5 divided by yA: 5/y - 9 | Q: 4y – 5 y = -3A: -17 | Q: x/6 +8r x=12 r= 3A: 26 | Q: 9/b + 6c –f b = -3 c= 2 f = -7A: 16 | Q: A \_\_\_\_\_\_ is the part of an expression that is unknown. A: variable |
| **$600** | Q: The total of 8 more than z times the total of 6 less than wA: (8+z)(w-6) | Q: z/3 + 8 z = 9A: 11 | Q: (5+y)(z-3) y= -8 z= -2A: 15 | Q: y(s+4)(t-3) y= -5 s= -9 t= 11A: 225 | Q: A \_\_\_\_\_\_\_\_\_ is a grouping of variables, constants, and multiples of variables.A: expression |
| **$800** | Q: The total of 10 per t more than six times sA: (10/t)+6s | Q: 7u + 3u  u = 2A: 20 | Q: (7-e)/(8+d) e= -5 d= -2A: 2 | Q: (g+1)(h-3)/(j)g= -8h=5j=2A: -7 | Q: A \_\_\_\_\_\_\_ sets two expressions equal to each other. A: equation |
| **$1000** | Q: The total of 11 times g more than the total of h divided by 3A: 11g + (h/3) | Q: 8t +9t – 2t t = -5A: -75 | Q: (9-t)(8+s)/t t = 2 s = -6A: 7 | Q: (f-2)+(g-4)/(h+3)f= -4g= 22h= 3A: -3 | Q: A \_\_\_\_\_\_\_ solves an equation. A: solution |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Grade: \_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**EXPRESSIONS WORKSHEET 2**

Evaluate the following expressions for x = 5 and y = -3

6(5x-y) (11-x)(y-2)+x

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Evaluate the following expressions for x = -8, y = 4, and z= -3

3x/y +5(z+2) 7z +2(x+y) -9/z

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Evaluate the following expressions for x = 2, y = -10, z= 4, and w = 15

6x-3(z-y)-w/5 +xy

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y/x +3(z-w) +4x

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write your own algebraic expression with at least 3 variables

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Pick values for your variables

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Evaluate your expression for the values you picked above

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**DAY 16: July 10th**

**Topic: Introduction to Equations**

* **Objectives:**
	+ Students will develop the relationship between expressions and equations.
	+ Students will be exposed to balancing equations and their applications to everyday life.
* **Materials Used**
	+ Chalk and chalkboard
	+ Individual whiteboards and markers
	+ SMARTboard
	+ Take-home sheet (handout)
	+ Homework (handout)
* **Methodology:**
	+ Warm-Up: [5 min]
		- I will ask students how we can apply expressions to solving problems. I will prompt them to come to the conclusion that we have to set expressions equal to each other in order to use them effectively in everyday life.
		- I will ask students what the difference is between an expression and an equation. We will determine that an equation has an equal sign, while an expression does not.
	+ Activity 1: Introduction to Equations [15 min]
		- I will introduce the following introduction to equations. <http://www.bbc.co.uk/bitesize/ks3/maths/algebra/equations1/activity/>

[**http://www.bbc.co.uk/bitesize/ks3/maths/algebra/equations2/activity/**](http://www.bbc.co.uk/bitesize/ks3/maths/algebra/equations2/activity/)

The second web activity expands on the first in a similar way.

* + - The two interactive activities use a balancing scale to explain how we manipulate equations to find unknown values without complicating the situation by explaining how to isolate variables. **[**We will be discussing how to solve equations next week – what is important for now is an understanding of how we can use equations to solve problems.] I want the students to come away from this activity understanding how to set two things equal to each other and to think about how to manipulate those scenarios into ones they are familiar with.]
		- We will practice several scale-balancing problems as a class.
	+ Activity 2: Balancing scales [20 min]
		- Students will work independently on the attached “Balancing Scales” worksheet.
		- I will monitor the students and use this as a time to asses which students will be comfortable starting equations next week.
		- I will help any students struggling with the worksheet.
		- When students finish the balancing scales worksheet I will offer them a worksheet with simple one step equations (also attached). I will suggest that they attack the problems the same way they would the balancing scales. Students will work together. I expect that Amber, Omer, Chenla, Tanezha, Douglas, and Justin will be the students who get to this worksheet. They will be then be split among the groups for the project on the following two days so that each group has someone who understands the connections between expressions, equations, and balance.
	+ Activity 2: Brainstorming [10 min]
		- Students will work in groups at their pods to come up with problems in their everyday life that could be explained or solved using algebra. We do not yet need to know how to solve equations but it is important that we recognize their importance for the next two days of class.
	+ I will then explain the worksheet that they will be filling out for homework, and pass out tonight’s homework. [3min]
* **Homework:**
	+ Balancing Scales

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Grade: \_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**HOMEWORK - BALANCING SCALES 1**

Answer the following questions in 1-2 sentences.

What is an equation? Give an example.

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What is a solution?

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Balance the following scale by adding or crossing out shapes or numbers:

Find the weight of the bag if each square is worth 1:



Find the weight of the bag if each square is worth 2:





**BALANCING SCALES IN-CLASS WORKSHEET**

Balance the scales by adding or crossing out shapes.

If each square is worth 1, find the value of each sack.



















**BALANCING SCALES EXTENSION: 1-STEP EQUATIONS**

**IN-CLASS WORKSHEET**

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**DAY 17: July 11th**

**Topic: Introduction to Algebra**

* **Objectives:**
	+ Students will generate structured lists of ways we use algebra in travel, shopping, jobs, and cooking/food.
	+ Students will recall research guidelines and computer lab rules.
	+ Students will research in groups on specific applications of algebra in everyday life.
* **Materials Used**
	+ Chalk and chalkboard
	+ Individual whiteboards and markers
	+ SMARTboard
	+ Importance of Algebra handout
	+ Take-home sheet (handout)
	+ Homework (handout)
* **Methodology:**
	+ Warm-Up: [5 min]
		- I will explain to the class that algebra is the study and application of expressions and equations. I will ask for a volunteer to explain what an equation is. I will prompt the class and we will come to the conclusion that an equation is an expression set equal to a constant or to another expression. I will explain that the purpose of algebra is to solve problems, and that those problems can appear in any facet of everyday life.
		- I will have on the board the following:
		- Each of the four pods (2-3 students each) will brainstorm ideas for one of the subtopics. We will create a web diagram. The groups will be mixed ability levels.
	+ Activity 1: Introduction to project (5 minutes)
		- I will explain that each group will be researching their topics more in-depth and presenting to the class on the importance of algebra in one subtopic (pick one job and will present on how algebra is important in that job, etc.) Groups will have 1 minute to pick a topic.
		- They will have the rest of class time today to research in the Computer Lab and the first half of class tomorrow to work on their presentation. Then they will present to the class in a 3-minute presentation.
		- I will review research guidelines.
			* Use only verified websites
			* Be skeptical of any information that doesn’t “sit right”
			* Use key words to narrow your search.
	+ Activity 2: Research **In the Computer Lab** [25 minutes]
		- Students will have this time to research the applications of algebraic expressions and equations in real life. As they research, they will fill out the attached worksheet.
		- I will monitor the students and help them as necessary.
	+ I will then explain the worksheet that they will be filling out for homework, and pass out tonight’s homework and take-home sheet. [3min]
* **Homework:**
	+ Algebra in Real Life

**IN-CLASS WORKSHEET: RESEARCH**

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

**Group Members: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Group Topic: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

How is algebra used in your topic? List at least 3 ways.

Do you (as seventh grade students) ever use algebra in a way similar to how it is used in your topic?

What is one way that algebra can be used to improve the experience you are researching?

While researching, you have probably realized new other ways we use algebra in every day life. List at least 2.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Grade: \_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**ALGEBRA IN REAL LIFE - HOMEWORK**

To prepare for tomorrow’s presentation, please answer the following questions.

List 3 things that make a good presentation.

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List 3 things that we should avoid while presenting.

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In 4-5 sentences, explain your research. What do you want to explain to your classmates tomorrow? What was the most important information you found?

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Write one mathematical expression or equation to illustrate how algebra is used in your topic. Be creative!

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**DAY 18: July 12th**

**Topic: Algebra in real life and presentations**

* **Objectives:**
	+ Students will discuss good and bad presentation techniques.
	+ Students will develop in groups a presentation on an application of algebra.
	+ Students will present in groups a presentation on an application of algebra.
* **Materials Used**
	+ Chalk and chalkboard
	+ Posterboard, markers
	+ SMARTboard
* **Methodology:**
	+ Warm-Up: [3 min]
		- I will ask students to volunteer good things to do while presenting to a class. I will ask students to volunteer what we want to avoid while presenting to a class.
	+ Activity 1: Group Work [20 minutes]
		- Students will work in their groups of 2-3 to decide on their presentation. I will have poster board and markers available to make visual aids.
		- Each student will need to speak for an equal amount of time. They must cover what their topic is, how it uses algebra, and ways that algebra could be used to improve the job or subject that they are presenting on. The presentation must also discuss ways that we use similar algebra in our everyday lives. All of these requirements will appear on the rubric, which students will have during this time.
		- I will move about the students and make sure that everyone is on track to present during the second half of the class period.
	+ Activity 2: Presentations [15 minutes] **RECORD** **VIDEO**
		- Each group will present for 3 minutes on why algebra is important to their topic. Each member will be encouraged to speak and I will fill out a rubric for each group as they present.
		- After each presentation, I will ask one audience member to comment on one thing that they liked. Students will be taking notes on the provided sheet (attached)
	+ Wrap-up: (5 min)
		- Every student will fill out the participation sheet, which I will collect (attached).
* **Homework:**
	+ None

**RUBRIC: ALGEBRA IN REAL LIFE:**

CONTENT:

Did your presentation explain what your topic is?

Did your presentation explain how your topic uses algebra? Did you give an example?

Did your presentation explain how algebra could be used to make your topic simpler?

Did your presentation explain a way that we use similar algebra in our every day lives? (Math class doesn’t count)

GROUP WORK:

Did your group work well together?

Did every member of your group participate in planning the presentation?

Did every member of your group speak during your presentation?

VISUALS:

If your group used a visual, was it effective at proving your point?

If your group used a visual, was it neatly and efficiently made?

**NOTE-TAKING DURING PRESENTATIONS**

Presentation 1:

Topic: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How is algebra used? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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What is one thing you liked about this presentation?

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What is one thing from this presentation that you want to learn more about?

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Presentation 2:

Topic: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How is algebra used? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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What is one thing you liked about this presentation?

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What is one thing from this presentation that you want to learn more about?

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Presentation 3:

Topic: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How is algebra used? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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What is one thing you liked about this presentation?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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What is one thing from this presentation that you want to learn more about?

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**GROUP PARTICIPATION WORKSHEET**

Do you think your group worked well together? Do you think everyone in your group did their fair share of the work? Use constructive criticism when applicable.

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If you had to change one thing about your group’s presentation, what would it be?

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Did you like this project? Why or why not?

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Hannah Ruebeck

Lehigh Valley Summerbridge

Summer 2013

8th Grade Week 4 Lesson Plans

Core Team 1

**DAY 14: July 8th**

**Topic: Equation Practice**

* **Objectives:**
	+ Students will solve multi-step equations using the distributive property, combining like terms, and the order of operations.
* **Materials Used**
	+ Chalk and chalkboard
	+ Individual whiteboards and markers
	+ Equation Worksheets
	+ SMARTboard
	+ Flyswatter
	+ Homework (handout)
* **Methodology:**
	+ Warm-Up: [5 min]
		- Reflection: Each student will write a 1-paragraph reflection on his or performance in the scavenger hunt we did last week. They will reflect on what they need to improve on, what they did well, and if they performed their role on the team effectively.
	+ Activity 1: Equation Review [25 min]
		- Students will work independently (I will be separating each student to a different pod to eliminate distraction) on an equation practice sheet. Last week, in the scavenger hunt, students demonstrated that they are not yet comfortable solving complex equations and that rote practice is necessary. Therefore, we will backtrack – students will start with 1 step equations, then 2 step, then problems that incorporate the distributive property and combining like terms. I will rotate among the students and help sort out their confusions. The worksheets are attached.
	+ Activity 2: Review Game [10 minutes]
		- The class will come back together. I will give each student a problem to solve on his or her whiteboard. When a student finishes a problem, they have to slap the board with the flyswatter provided. Then we check everyone’s work and the student who finished first explains the problem to the class. The student who gets the most correct answer wins.
	+ I will then explain the worksheet that they will be filling out for homework, and pass out tonight’s homework and take-home sheet. [3min]
* **Homework:**
	+ Equation Review

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Grade: \_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**EQUATION REVIEW - HOMEWORK**

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Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Grade: \_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**EQUATION REVIEW – IN-CLASS WORKSHEETS**

**Combining like terms on one side of the equals sign**

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**Combining like terms on both sides of the equals sign**

**The distributive property and combining like terms**

**8th Grade Syllabus: Week 4**

*Summer 2013 Core Team 1 Hannah Ruebeck*

|  |  |  |  |
| --- | --- | --- | --- |
| DAY | LESSON TOPIC | TAKE-HOME SHEET | TONIGHTS’ HOMEWORK |
| Monday | Equation Practice |  | Equation Review |
| Tuesday | Introduction to the Coordinate Plane | The Coordinate Plane and Plotting Points | Graphing Initials Project |
| Wednesday | Plotting Points and Area | Area Formulas | Area Worksheet |
| Thursday | Graphing equations with t-tables |  | Graphing Equations Worksheet 1 |
| Friday | Graphing equations with t-tables |  |  |

**DAY 15: July 9th**

**Topic: The Cartesian Plane and Point Plotting**

* **Objectives:**
	+ Students will review the importance of the number line.
	+ Students will be introduced to the Cartesian Plane as two number lines and will be comfortable plotting points.
* **Materials Used**
	+ Chalk and chalkboard
	+ SMARTboard
	+ Graph paper and markers
	+ Take-home sheet (handout)
	+ Homework (handout)
* **Methodology:**
	+ Warm-Up: [5 min]
		- I will ask for any questions from last night’s homework. When all have been answered, I will remind the students of how helpful it is to draw a picture when we are answering math problems. Now, however, a number line cannot be used because we have unknown variables. I will ask students if they know how we draw pictures of equations.
	+ Activity 1: Lecture [10 minutes]
		- I will then project an image of a Cartesian Plane on the SMARTboard and ask the students if they have ever seen this image before. If they have, I will ask them what it is used for. I will explain that we can think about this image, called a “Cartesian Plane” as two intersecting number lines. We will label the origin, and recognize that the number lines intersect at the point where both are zero. I will explain that the horizontal axis is the “x axis” and the vertical axis is the “y axis.” So as x increases, we move to the right, and as x decreases we move to the left. As y increases we move up, and as y decreases we move down.
		- I will draw a point on the Cartesian Plane with dotted lines leading to each axis. Pausing for a minute, I will ask the students how we identify each other. We have a first and a last name, right? I will show them that we can label points on a graph in the same way. The “x-value” tells us where on the x-axis (or number line) the point falls, and the “y-value tells us where on the y-axis (or number line) the point falls. When we write these pairs of numbers down, we call them “coordinate pairs” and they are written in the form (x, y). The x-coordinate is like the point’s first name, and the y-coordinate is like the point’s last name.
		- I will ask each student to come up to the board to plot a point from the coordinate pair that I give them. Then I will ask what quadrant the point is found in.
	+ Activity 2: Architecture/Interior Design/City Planning/Fashion [20 min]
		- I will provide each student with a piece of graph paper. I will task them with designing a realistic building, city, or piece of clothing on the coordinate plane. Quadrants 1 and 2 will be above ground and quadrants 3 and 4 will be below ground if the student is drawing buildings/cities. For fashion, it will be Q1 and 2 above the waist and Q 3 and 4 below the waist. They will label all of the important points with the appropriate coordinate pairs.
	+ Wrap-Up: [5 min]
		- Each student will share his or her building design and explain how they used the coordinate plane to help their designing (symmetry, order, realism, etc). The plans will be hung up in the classroom.
	+ I will then explain the project that they will be making for homework, and hand out graphing paper, homework instructions, and today’s take-home sheet. [3min]
* **Homework:**
	+ Plotting your initials:
		- Each student will be given a piece of graphing paper on which there is a copy of the Cartesian plane that we worked with in class today. They will plot and label at least 10 points, with at least one point in each quadrant, which can be connected to illustrate their initials. Students are welcome to decorate their plots, as they will be hung around the classroom. I will show them my hand-made example as well as the digitally made one on their homework sheet.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grade: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_

**GRAPH YOUR INITIALS PROJECT**

The goal:

Your finished project should illustrate your first and last initials.

The procedure:

1. Using pencil, plot 10 points that can be connected to form the first letters of your first and last name. There should be at least 1 point in each quadrant.
2. Still using pencil, connect the points and make sure that you are happy with your product. You are welcome to change any points.
3. Using a marker or dark pen, go over the points that you plotted. Using pen or pencil, label each point with its coordinate pair in the form (x, y).
4. Get creative! You are welcome to add any colors or other decorations that you want – these will be hung in our classroom!

Here is an example:



**COMPARING NUMBERS AND TAKE-HOME SHEET**

**THE CARTESIAN PLANE 7/9/13**

The Cartesian plane, or the Coordinate Plane:

Second quadrant

First quadrant

4

3

2

1

0

-1

-2

-3

-4

 -4 -3 -2 -1 0 1 2 3 4

Third quadrant

Fourth quadrant

**DAY 16: July 10th**

**Topic: The Cartesian Plane and Point Plotting**

* **Objectives:**
	+ Students will plot points on a coordinate plane.
	+ Students will calculate the areas of basic geometric shapes.
	+ Students will estimate the areas of non-geometric shapes.
* **Materials Used**
	+ Chalk and chalkboard
	+ SMARTboard
	+ Graph paper
	+ Take-home sheet (handout)
	+ Homework (handout)
* **Methodology:**
	+ Warm-Up: [5 min]
		- Students will share their initial plots from their homework last night. I will collect them to be hung in the classroom. I will ask students if they know how to calculate the area of a square. I will give each student a grid with a square outlined and ask them to count the area. We will discuss how to find the area of any shape on a grid.
	+ Activity 1: Graphing [15 minutes]
		- Students will be paired up by ability level/attendance record. Each pair will receive 6 sheets of graph paper that have a geometric shape drawn on them. One partner will give the other partner coordinate pairs to draw on a blank sheet of graph paper. The goal is for the second partner to figure out the correct shape from the clues given by the first partner. When students have finished, they will find the area of each shape. I will check all work before each pair moves on to Activity 2.
	+ Activity 2: Estimation [15 min]
		- When each pair finishes Activity 1, they will move on to activity 2. The idea is exactly the same, but the shapes are no longer geometric ones. Because they don’t fill in whole squares, students will have to use estimation skills to estimate the area of each shape. Before each group starts this activity, I will explain methods of estimation.
	+ Wrap-Up: [5 min]
		- We will come together as a class and students will share their estimations from Activity 2. Different groups will have most likely gotten slightly different answers, and so we will talk about how that is entirely okay!
	+ I will then hand out tonight’s homework and today’s take-home sheet. [3min]
* **Homework:** Area Worksheet

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grade: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_

**AREA WORKSHEET**

***Find*** the area of the following shapes:



Area = Area = Area =

***Estimate*** the area of the following shapes:



Area ~ Area ~ Area ~

Using the formulas on your Take-Home Sheet, find the areas of the following:

1. A rectangle with base 6 and height 7
2. A circle with radius 3
3. A triangle with height 2 and base *b*
4. A trapezoid with bases 8 and 3 and height *h*

In 6-8 sentences, explain why it is important to be able to calculate area. Explain two ways that you use area in your everyday life, outside of the classroom. Explain how one job or career in real life uses area calculations

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CALCULATING AREA TAKE-HOME SHEET**

 **7/10/13**

**LETTERS, ARROWS, AND FORMULAS WILL BE ADDED BY HAND BEFORE MAKING COPIES**

The area of a rectangle is the product of the base and the height:

The area of a circle is pi times the radius squared:

The area of a trapezoid is one-half times the height times the sum of the two bases:

The area of a triangle is one-half times the product of the base times the height.

**DAY 17: July 11th**

**Topic: Graphing Equations with T-Tables**

* **Objectives:**
	+ Students will plot equations on a coordinate plane using t-tables
* **Materials Used**
	+ Chalk and chalkboard
	+ SMARTboard
	+ Graph paper
	+ Take-home sheet (handout)
	+ Homework (handout)
* **Methodology:**
	+ Warm-Up: [5 min]
		- Students will share their answers to the last homework question: ways that we use area in real life. I will ask them to brainstorm reasons to graph equations in real life. I will make a list on the board.
	+ Activity 1: Lecture/Example [10 minutes]
		- I will project an image of a Cartesian plane and I will write an equation on the board (in y = mx+ b form). I will ask the students what is different about this equation from ones that we know how to solve – it has two variables. I will explain that this is a function and that for any x value, there is a corresponding y value. This is also called a linear equation because the graph is always going to be a straight line. Since we don’t know how to solve it, I will ask the students if they know how to graph this equation. I will explain that there are two different ways and that we will be doing one way, called t-tables, this week, and the other way, using the slope and intercept, next week. If the students know how to make a t-table, I will have them help me do the first example. If they are not familiar with the process, I will walk them through the first one. We will then do a second example as a class. If the students seem confused, we will do a third example as a class.
		- When we make a t-table, we test out lots of different x’s and see what y’s they correspond to. Then we plot those points and connect the dots to make a line. The line never ends and goes on forever in each direction.
	+ Activity 2: Graphing practice [20 min]
		- I will give each student a list of 16 equations and 1 piece of graph paper. They will have to plot each line in order to complete the picture. They will label each line. I will monitor the students’ work and encourage them to help each other when stuck.
	+ Activity 3: Analysis/Wrap-Up [5 minutes]
		- I will ask the students to look at the lines they plotted and look at ones going in similar directions. What do the equations have in common? I will ask students to look at the lines that cross the y-axis in similar places. What do those have in common? Without naming slope and intercept, students will be aware of their importance before applying them to graphing.
	+ I will then hand out tonight’s homework. [3min]
* **Homework:**
	+ Graphing Equations Worksheet 1

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grade: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_

**GRAPHING EQUATIONS WORKSHEET 1**

Graph the following equations using t-tables:

y = 5x -2



y = -3x + 4

y = $\frac{1}{2}$x – 8



y = $\frac{-1}{4}$x + 6



y = -x + 8

y = 7x - 4

**DAY 18: July 12th**

**Topic: Graphing Equations with T-Tables**

* **Objectives:**
	+ Students will plot equations on a coordinate plane using t-tables.
	+ Students will manipulate equations into y=mx+b form.
* **Materials Used**
	+ Chalk and chalkboard
	+ SMARTboard
	+ Laminated coordinate planes
	+ Dry erase markers
* **Methodology:**
	+ Warm-Up: [5 min]
		- I will answer any questions from last night’s homework. I will put the following problem on the board: 5y+10x = 45. I will ask students to write down how they would go about graphing this problem and to do it if they can.
	+ Activity 1: Lecture/Example [10 minutes]
		- I will ask students to explain how we would graph the problem from the warm up. If they know how to graph it, students will walk us through the problem. If not, I will solve the example from the warm up. I will explain that we simplify the equation just as we would an equation with one variable, but that instead of trying to get x alone in terms of constants, we are trying to get y alone in terms of x and constants. Then we can graph it the same way we did the already simplified equations from yesterday. We will simplify several more examples as a class and then graph the last one.
	+ Activity 2: Simplification and graphing practice: Stations [25 min]
		- Each of the 5 stations will have a laminated coordinate plane and a dry erase marker with 4 clues arranged around it. The first clue will be given to each student at their seats, which will lead them to their first station. There will be an unsimplified equation at each station – 4 different ones, designated specifically for each student. Students will simplify the expression next to their name and then graph the resulting function. The line will point at one of the 5 clues (colors), which will tell them which station to go to next. Students will check in with me before going to the next station. The first student to work their individual way around the circuit (to get to the blue station) will win! Plots and equations are attached.
			* Terran goes from her seat to red to yellow to green to purple to blue
			* Kaylee goes from her seat to purple to green to yellow to red to blue
			* Miguel goes from his seat to yellow to purple to red to green to blue
			* Dazhia goes from her seat to green to red to purple to yellow to blue
	+ Activity 3: Friday Wrap-Up [5 minutes]
		- Students will write down their favorite thing in math class this week, their least favorite thing in math class this week, and their favorite thing at Summerbridge so far.
* **Homework:**
	+ None

Solid plans. You have produced consistently meaningful and well thought out plans and it seems like you are executing them well in the classroom. It is exciting to see the students having fun with math and learning at the same time. Keep it up.



**Station 1 – At seats**

Terran:

4y + x + 3 = 4

Kaylee:

-5x - 5y = -10

Miguel:

2x= - 18

Dazhia:

9 = -2x + y

**Red Station**

Terran:

2y + 8 = -2x

Kaylee:

2y - 6 = 2x

Miguel:

2y – 8x + 20 = 0

Dazhia:

4y = -20x



**Green Station**

Terran:

2y= 14

Kaylee:

3y = 6

Miguel:

5y= -25

Dazhia:

2y= -20



**Purple Station**

Terran:

4y +4 = -4x

Kaylee:

y +2x -10 = -1

Miguel:

y + 2 = x - 3

Dazhia:

4y= -2x + 4

Terran:

y + 7 = -x + 6

Kaylee:

12y - 6x + 4 = -8

Miguel:

y - 1 = 9x +1

Dazhia:

3 - 9 = 3x

**Yellow Station**

