Hannah Ruebeck

Lehigh Valley Summerbridge

Summer 2013

7th Grade Week 6 Lesson Plans

Core Team 1

**DAY 24: July 22nd**

**Topic: Word Problems with Equations**

* **Objectives:** 
  + Students will identify unknown values in word problems with variables.
  + Students will relate quantities to each other in word problems using algebraic expressions.
  + Students will solve word problems using algebraic equations using all four integer operations.
* **Materials Used**
  + Chalk and chalkboard
  + Individual whiteboards and markers
  + SMARTboard
  + Take-home sheet (handout)
  + Homework (handout)
* **Methodology:**
  + Warm-Up: [5 min]
    - I will ask each student to write down his or her own method to solving word problems. 2 volunteers will then share their methods with the class. I will project the following word problem explanation and we will identify new key words that indicate that a word problem requires algebraic equations.
      * [**http://www.wisc-online.com/Objects/ViewObject.aspx?ID=TMH5206**](http://www.wisc-online.com/Objects/ViewObject.aspx?ID=TMH5206)
  + Activity 1: Examples [15 min]
    - We will solve the following word problems as a class. Students will take notes on the attached worksheets.
      * Joe is 3 years older than Nevin. Nevin is 12 years older than Donna. If together all three are 39 years old, how old is each person?
      * There are 80 trees and bushes in John’s backyard. There are 20 fewer trees than bushes. How many trees are there in John’s backyard? How many bushes?
      * Lucy bought apples, bananas, and peaches at the store today. Apples each cost 2 dollars, bananas each cost 1 dollar, and peaches each cost 3 dollars. Lucy bought twice as many apples as bananas and half as many peaches as bananas. If Lucy spent 18 dollars on fruit, how many apples did she buy? How many bananas? How many peaches?
      * Harriet, Cara, and David, each brought in books for the book drive. Harriet brought in 25 more than Cara, and Cara brought in 10 more than David. If the three students together brought in 523 books, how many did each student bring in?
  + Activity 2: Practice [15 min]
    - Students will be paired according to ability level (high, medium, low). Each pair will write one word problem that uses an algebraic equation and solve it. Then pairs of similar ability level will exchange problems and solve each other’s problems using algebra.
  + Wrap-Up: Exit Ticket [5-10 minutes]
    - I will pass out the attached worksheet that has 1 word problem on it. Each student will work silently to solve the word problem using the step-by-step guide.
  + 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:** 
  + Word Problems with Equations 1

**7th Grade Syllabus: Week 6**

*Summer 2013 Core Team 1 Hannah Ruebeck*

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| DAY | LESSON TOPIC | TAKE-HOME SHEET | TONIGHTS’ HOMEWORK |
| Monday | Word Problems with Equations |  | Word Problems with Equations Worksheet |
| Tuesday | Equation-Solving Practice |  | Equation Worksheet 4 |
| Wednesday | Review for skills test |  | Review Worksheet 1 |
| Thursday | Review for skills test |  | Review Worksheet 2 |
| Friday | Review for skills test |  |  |

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| --- | --- |
| Joe is 3 years older than Nevin. Nevin is 12 years older than Donna. If together all three are 39 years old, how old is each person? | **Draw your picture here:** |
| **Step 1: Identify the variable, define quantities** | |
| **Step 2: Identify key words** | |
| **Step 3: Create an algebraic equation** | |
| **Step 4: Solve the equation** | |

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| There are 80 trees and bushes in John’s backyard. There are 20 fewer trees than bushes. How many trees are there in John’s backyard? How many bushes? | **Draw your picture here:** |
| **Step 1: Identify the variable, define quantities** | |
| **Step 2: Identify key words** | |
| **Step 3: Create an algebraic equation** | |
| **Step 4: Solve the equation** | |

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| Lucy bought apples, bananas, and peaches at the store today. Apples each cost 2 dollars, bananas each cost 1 dollar, and peaches each cost 3 dollars. Lucy bought twice as many apples as bananas and half as many peaches as bananas. If Lucy spent 18 dollars on fruit, how many apples did she buy? How many bananas? How many peaches? |
| **Step 1: Identify the variable, define quantities** |
| **Step 2: Identify key words** |
| **Step 3: Create an algebraic equation** |
| **Step 4: Solve the equation** |

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| Harriet, Cara, and David, each brought in books for the book drive. Harriet brought in 25 more than Cara, and Cara brought in 10 more than David. If the three students together brought in 523 books, how many did each student bring in? | **Draw your picture here:** |
| **Step 1: Identify the variable, define quantities** | |
| **Step 2: Identify key words** | |
| **Step 3: Create an algebraic equation** | |
| **Step 4: Solve the equation** | |

***IN-CLASS WORKSHEET***

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| I am splitting a piece of string among my friends. The second piece must be 3 times as long as the first, and the third piece must be 20 inches longer than the second. If the original piece of string is 160 inches, how long should I cut each piece of rope? | **Draw your picture here:** |
| **Step 1: Identify the variable, define quantities** | |
| **Step 2: Identify key words** | |
| **Step 3: Create an algebraic equation** | |
| **Step 4: Solve the equation** | |

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

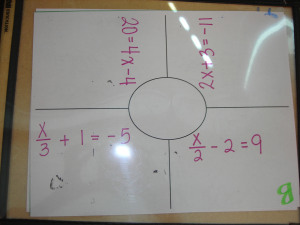
**WORD PROBLEMS WITH EQUATIONS WORKSHEET**

Solving Word Problems with One-Step Equations

1. The sum of 2 and a number is 7. Write and solve an equation to find the missing number.
2. The product of 3 and a number is 21. Write and solve an equation to find the missing number.
3. A number minus 3 is 5. Write and solve an equation to find the missing number.
4. A number divided by 4 is 7. Write and solve an equation to find the missing number.
5. Jennifer and her brother have 7 tacos. Her brother eats 4. Write and solve an equation to find how many tacos Jennifer eats.
6. 4 boys decide to equally share some money they found on the ground. If each boys gets $5, write and solve an equation to find out how money they found.
7. John earns $5 per hour mowing lawns. Write and solve an equation to find how many hours he must work to earn $40.
8. Paula has 3 more dolls than her friend. If Paula has 10 dolls, write and solve an equation to find out how many dolls her friend has.
9. After his payment, Mr. Gonzales had a credit card balance of $70. He paid $20. Write and solve an equation to find the amount of his credit card bill.
10. Carol earns $8/h. Write and solve an equation to find how many hours she must work to earn $288.
11. A used book costs $17 less than the same book new. The used book costs $9. Write and solve an equation to find out how much the new book cost.
12. Ricky rides his bike 12 miles every day. He stops after 7 miles to rest. Write and solve an equation to find out how much further he has to ride.
13. Marcy’s CD player cost $115 less than her DVD player. Her CD player cost $78. Write and solve an equation to find out how much her DVD player cost.
14. The best price Steven found on a new compact car with a sports option package was $10,935. If the option package cost $850, what was the price of the car? Write and solve an equation to find the price of the car.

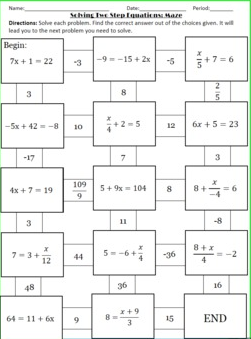
**DAY 25: July 23rd**

**Topic: Equation Review**

* **Objectives:** 
  + Students will solve 2-step equations.
  + Students will collaborate in problem solving.
  + Students will check their work and find errors in their own work.
* **Materials Used**
  + Chalk and chalkboard
  + Individual whiteboards and markers
  + SMARTboard
  + Placemats
  + Homework (handout)
* **Methodology:**
  + Warm-Up: [5-10 min as needed]
    - I will answer any questions from the homework last night. We will do any problem that caused trouble as a class.
  + Activity 1: Table Races - 2-step equations [15 min]
    - Students will compete on teams of mixed ability level to complete the attached worksheets. We will play 3 rounds. The first team to finish each worksheet gets half a point. The team with the most correct on each worksheet gets a point. The first person does the first problem. The second person can either correct the first problem or do the second, and so on.
  + Activity 2: “Placemat Equations” [15 min]
    - I will split the class into 2 groups of 4 and one group of 5. The groups will be split by ability level (high, medium, and low). Each group will get 5 “placemats.” The placemats will be set up like this: 
    - Each person on the team will solve one equation, and they will add together all of their answers and write it in the middle. I will check the answer in the middle and tell them if they are correct, but I won’t know who made a mistake if it is incorrect. The group will work together to find the mistake and correct their answer. The group with 5 people will alternate – 4 people will solve equations and the 5th will check everyone’s work. The high ability group will have harder equations than the other two groups. This activity emphasizes teamwork, which will be important in our review games the rest of the week.
  + Wrap-Up: [5min]
    - I will ask for volunteers to remind the class of everything we did this summer. I will explain that starting tomorrow, we will be reviewing everything for the skills test. I will ask one student to recall what we did during week 1, one student to recall what we did during week 2, etc. through week 5.
  + I will then explain the worksheet that they will be filling out for homework, and pass out tonight’s homework. [3min]
* **Homework:** 
  + Equations Worksheet 4

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

**EQUATIONS WORKSHEET 4**



Do your work here

**Answer the following questions:**

What was your favorite topic covered in this math class? Why? (3-4 sentences)

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What is one thing that you learned in this class that you will use in your everyday life? How will you use it? (6-7 sentences)

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List 3 goals you had when coming to Summerbridge.

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How did you fulfill those goals? (5-6 sentences)

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**Lesson Plans for Wednesday, Thursday, and Friday of Week 6 will be submitted by Shannon as all of the math classes will be collaborating.**

Hannah Ruebeck

Lehigh Valley Summerbridge

Summer 2013

8th Grade Week 6 Lesson Plans

Core Team 1

**DAY 24: July 22nd**

**Topic:**

* **Objectives:** 
  + Students will identify functions and 1-variable equations.
  + Students will identify ways that we use functions and 1-variable equations in real life.
  + Students will create a poster that explains how we use functions and 1-variable equations in real life.
* **Materials Used**
  + Chalk and chalkboard
  + Individual whiteboards and markers
  + SMARTboard
  + Posterboard, markers
  + Take-home sheet (handout)
  + Homework (handout)
* **Methodology:**
  + Warm-Up: [5 min]
    - I will have the following equations up on the board. I will ask students to identify which are functions and which are 1-variable equations. After they have identified them, I will ask a student for a definition of a function.
      * Functions:
        + y=3x+2
        + 4(x+1)=y
        + f= x+ 2
        + f= 3g-5
      * Equations:
        + 3x(2+x)=4
        + 5(x+3)-6=8
        + 5x+4 = 3(x-2)
        + -3x+8 = 7x – 12
  + Activity 1: Brainstorming [5-10 min]
    - I will ask students to brainstorm at their seats ways that we can use functions or equations in our everyday lives. I will provide subtopics: jobs, food, sports, travel.
    - We will make a web diagram on the board and I will star viable project topics (probably nutrition, currency exchange, temperature conversion, input-output machines like vending machines, d = rt, etc).
  + Activity 2: Project work [25 min]
    - Each student will pick a topic that I have okayed and will start to think about how it uses functions or equations. I will walk around and spend a few minutes working with each student to make sure she is on the right track.
  + Wrap-Up: [5 minutes]
    - Each student will share her topic and whether it uses functions or 1-variable equations.
  + I will then explain the worksheet that they will be filling out for homework, and pass out tonight’s homework. [3min]
* **Homework:** 
  + Finish presentation
  + Presentation worksheet

**8th Grade Syllabus: Week 6**

*Summer 2013 Core Team 1 Hannah Ruebeck*

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| --- | --- | --- | --- |
| DAY | LESSON TOPIC | TAKE-HOME SHEET | TONIGHTS’ HOMEWORK |
| Monday | Equations in Real Life |  | Presentation Worksheet |
| Tuesday | Equation and Graphing Review |  | Equation and Graphing Worksheet |
| Wednesday | Review for skills test |  | Review Worksheet 1 |
| Thursday | Review for skills test |  | Review Worksheet 2 |
| Friday | Review for skills test |  |  |

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

**PRESENTATION WORKSHEET**

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 topic. 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 24: July 22nd**

**Topic: Algebra in Real Life and Equation Review**

* **Objectives:** 
  + Students will present on a topic that uses algebra in real life.
  + Students will solve equations using the distributive property and combining like terms.
  + Students will graph equations using slope-intercept form.
* **Materials Used**
  + Chalk and chalkboard
  + Individual whiteboards and markers
  + SMARTboard
  + Posterboard, markers
  + Take-home sheet (handout)
  + Homework (handout)
* **Methodology:**
  + Warm-Up: [3 min]
    - I will ask students to share good and bad presentation tips. We will make a list on the board.
  + Activity 1: Presentations [10 min]
    - Each student will present on her topic. Each presentation will last about 2 minutes. After each presentation, each audience member will share something that she learned.
  + Activity 2: Equation review [15 min]
    - Students will exchange the equation part of their homework from last night. They will check each other’s work and will explain to each other any mistakes that they made. I will stop the class and walk through any problems that proved difficult for everybody.
  + Wrap-Up: Graphing Review [15 minutes]
    - Each student will graph the lines I provide on one piece of graph paper using slope-intercept form to decode my message. (it spells U R # 1) (Worksheet attached)
  + I will then explain the worksheet that they will be filling out for homework, and pass out tonight’s homework. [3min]
* **Homework:** 
  + Equations and Graphing Worksheet

**IN-CLASS GRAPHING EXERCISE**

Graph the following equations:

In the first quadrant: In the second quadrant:

x = 4, 2 < y < 8 x = -7, 3 < y < 8

y = -1 + 10, 3 < x < 8 x = -3, 2 <y < 8

y = 3, -7 < x < -3

In the third quadrant: In the fourth quadrant:

x = -6, -7<y<-4 y= 2x -7, 2 < x < 3

x = -2, -7<y<-4 x = 3, -7 < y < -1

y = -6, -1 < x < -7 y = -7, 1 < x < 5

y = -3, -1 < x < -7

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

**EQUATIONS AND GRAPHING WORKSHEET**

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**Graph the following equations by converting them into slope-intercept form.**



5y-1=3(5x+3)



4y – 6 =2(x – 10) – 6



9y – 5 + x = -2 x + 13

**Answer the following questions:**

What was your favorite topic covered in this math class? Why? (3-4 sentences)

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What is one thing that you learned in this class that you will use in your everyday life? How will you use it? (6-7 sentences)

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List 3 goals you had when coming to Summerbridge.

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How did you fulfill those goals? (5-6 sentences)

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**Lesson Plans for Wednesday, Thursday, and Friday of Week 6 will be submitted by Shannon as all of the math classes will be collaborating.**