8th Grade Mathematics

2013-2014 Portfolio Notebook

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TEACHER: _____



ORANGE PUBLIC SCHOOLS OFFICE OF CURRICULUM AND INSTRUCTION OFFICE OF MATHEMATICS

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Purpose of the Portfolio

In 8th grade, you have learned many things that will prepare you for middle school, high school, college, and careers. This Portfolio is filled with problems that let you show what you know and stretch your mathematical mind! This portfolio will move on with you in 9th grade so that you and your future teachers can get a better understanding of how you problem solve, work in groups, and organize your work. Please keep your work in this portfolio complete and neat. It should be a showcase of how ready you are for 9th grade! Each page has a task and workspace. Please show all of your work and explain or annotate every diagram, label, and drawing. This is your 9th grade teacher's first impression of you and your work – keep it neat and thorough!

Sugar Packets – Three Act Math Task (Proportions)

Act 1: How many sugar packets do you think are inside a 20-oz bottle of soda?

Guess as close as you can.

Give an answer you know is too high.

Give an answer you know is too low.

Act 2: What information will you need to know to solve the problem?



Act 3 (Solution):

Bus and Car – Illustrative Math Task (Proportions)

Julio went to Germany to watch an international soccer tournament. He first watched Argentina play Germany in Berlin, Germany. The next day Julio went to Frankfurt, Germany to watch Brazil play France.

To get from Berlin to Frankfurt for this second game, Julio took a bus from Berlin to Erfurt (303 km); then he rented a car and drove from Erfurt to Frankfurt (254 km). Julio drove on German highways, called autobahns, which have no general speed limit for passenger vehicles; however, buses have an enforced speed limit of 80 km/hr.

- a. If the bus drove km/hr from Berlin to Erfurt and Julio drove 130 km/hr from Erfurt to Frankfurt, what was the total amount of time it took Julio to travel from Berlin to Frankfurt (not counting the transfer time between the bus and the car)? Give your answer to a reasonable level of accuracy.
- b. What fraction of the time during the trip did Julio spend on the bus? In the car?
- c. What was Julio's average speed for the entire trip?
- d. If Julio had rented a car and driven from Berlin to Erfurt at km/hr and then taken a bus from Erfurt to Frankfurt at km/hr, would he have arrived sooner? Explain your answer.
- e. How long would Julio's trip have taken if he had ridden the bus the entire way?



Finals Week – Three Act Math Task (Proportions)

Act 1:

- 1. Which drink will have the strongest caffeine concentration?
- 2. Can you rank all the drinks from strongest concentration to weakest?
- Act 2:
 - 3. What information would be useful to know here?

4. What information doesn't matter?

Act 3 (Solution):

Sequel: Which drink gets you biggest "bang" for your buck?

Area and Missing Side – Connected Math (Equations)

Each figure below has an area of 24 square meters. Find each x in each figure and show your calculations.



2.



3.



Ditch Digging – Three Act Math Task (Equations)

Act 1:

1. Guess whether or not the two ditch diggers will meet.

2. If they don't meet, what is the closest you think they will come to each other?

Act 2:

- 3. What information would be useful to know here?
- 4. What information doesn't matter?

Act 3: Solution, show your work!

Pennants and Flags – Connected Math (Systems)

A sixth-grade class sells Yankees pennants and American Flags. They earn \$1 profit for each pennant sold and \$6 for each flag sold. They sell 50 items in total for a profit of \$115.

a. Write two equations that represent the relationship between the number of pennants sold, p, and the number of flags sold, f.



Mouse Pads and Phone Cases – Connected Math (Systems)

A seventh-grade class sells mouse pads and cell phone cases with their school logo on them. The class earns \$2 profit for each mouse pad sold and \$4 profit for each cell phone case sold. They sell 100 items in total for a profit of \$268.

a. Write two equations that represent the relationship between the number of mouse pads sold, m, and the number of cell phone cases sold, c.



Lemonade Stand – Connected Math (Systems)

On a hot summer day, Jay set up a lemonade stand. He kept track of how many glasses he sold on his phone.



a. Write two equations that relate the number of large glasses sold, L, and the number of small glasses sold, S.

b. Solve the system of equations.

Cajun Truck – Connected Math (Systems)

Pablo and Jasmine decide to try a Cajun food truck. Pablo buys 3 servings of jambalaya and 2 drinks for \$18.00. Jasmine buys 1 serving of jambalaya and 2 drinks for \$9.00.

- a. Write two equations based on the information.
- b. Solve the system of equations to determine the price of 1 serving of food and the price of 1 drink or bag of chips.

Grilled Cheese Truck – Connected Math (Systems)

Pablo and Jasmine decide to try a grilled cheese truck next. Pablo buys 4 sandwiches and 4 bags of chips for \$24.00. Jasmine buys 8 sandwiches and 4 bags of chips for \$43.00.

- a. Write two equations based on the information.
- b. Solve the system of equations to determine the price of 1 serving of food and the price of 1 drink or bag of chips.

Zucchini Truck – Connected Math (Systems)

Next, Pablo and Jasmine decide to try some other food trucks after eating at the first two. At the Zucchini Truck, Pablo buys 3 loaves of zucchini bread and 5 cups of tea for \$15.00. Jasmine buys 5 loaves of zucchini bread and 3 cups of tea for \$21.00.

- a. Write two equations based on the information.
- b. Solve the system of equations.

Apple Pie Truck – Connected Math (Systems)

For the last food truck, Pablo and Jasmine find a pie truck! Pablo buys 6 apple pies and 2 juices for \$39.00. Jasmine buys 2 apple pies and 4 juices for \$18.00.

- a. Write two equations based on the information.
- b. Solve the system of equations to determine the price of 1 serving of food and the price of 1 drink or bag of chips.

Picture Boarder – Engage NY (Functions)

FrameWorks creates picture frames with a 2-inch white border for any sized square picture.

Write a function that would allow you to calculate the area, A, of a 2-inch white border from any sized square figure with sides of length s measured in inches.



Reading Times – Engage NY (Functions)

1. A linear function has the table of values below. The information in the tables shows the number of pages a student can read in a certain book as a function of time in minutes. Assume a constant rate.

Time in Minutes (x)	2	6	11	20
Total Number of Pages Read in a Certain Book (y)	7	21	38.5	70

- a. Write the rule or equation that represents the linear function that describes the total number of pages read, y, in x minutes.
- b. How many pages can be read in 45 minutes?
- c. This certain book has 396 pages. The student has already read $\frac{3}{8}$ of the pages. Write the equation that describes the number of pages read as a function of time for reading this book, including the number pages that have already been read.
- d. Approximately how much time, in minutes, will it take to finish reading the book?

Let's Go Fly a Kite - Connected Math (Pythagorean Theorem)

Kala and Ali are making a kite. To make the frame, they place a 40-inch stick horizontally across a 60inch stick so that both sides of the horizontal stick are equal in length. Then they tie the two sticks together with the string to form right angles. The longer part of the 60-inch stick measures 50 inches, as shown below.



Kala says that 130 inches of string will be enough to stretch all around the kite frame. Ali says that they will need at least 153 inches of string. Who is correct? Explain.

Wireless Signal - Connected Math (Pythagorean Theorem)

Jada's parents get a new wireless router that has signal range up to 1,400 feet. Jada wants to know whether she will have internet access in her tree house. She makes a coordinate map of their house with the router at the origin.

a. Jada's tree house is located at (600, 800) on her coordinate map. Will Jada have an Internet connection? Explain.



Cable Car – Connected Math (Pythagorean Theorem)

The diagram shows tram cars gliding along a cable at Six Flags. How long is the entire cable, to the nearest tenth of a meter?



Taco Truck – Three Act Math Task (Pythagorean Theorem)

Act 1:

1. Who will reach the taco cart first?

2. Write a guess.

Act 2:

3. What information do you need?

Act 3: Solution, show your work!