Name:_____ Date: _____

Ms. Napolitano Equations

Topic: Expressions, Equations, Inequalities, Ratios, Unit Rate, etc

CCSS: 6.NS.6, 6.EE.5, 6.EE.7, 6.EE.8 and 6.EE.9

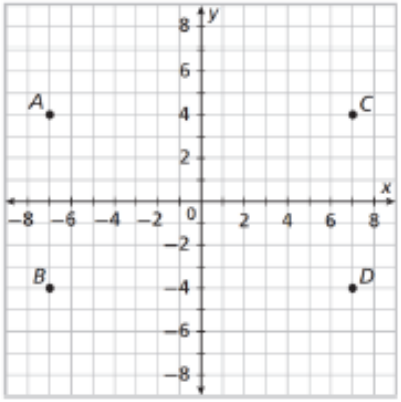
Try Now Day 5

THE NUMBER SYSTEM (6.NS.6)

Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

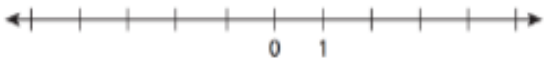
1. Both coordinates of a point in the coordinate plane are negative. In which quadrant is this point located?

2. Which of the points on the coordinate plane has coordinates (7, -4)?



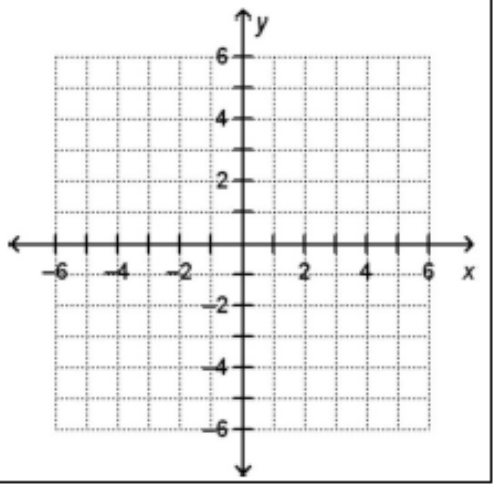
3. What is the opposite of the opposite of -5?

4. Graph the integers -1, 4, 2, and their opposites on the number line.



5. The coordinate plane represents a map of Leonardo and Christie's town. Graph and label each location on the coordinate plane.

Home: (-4, 2)
Coffee shop: (3, 2)
School: (4, -5)
Arcade: (-2, 0)



NOTES

a) ***A Ratio***: **_____ any two _____.**

b) ***A related Rate***: **an _____ ratio that compares the _____ quantity in a _____ to only one of the _____ quantity.**

c) ***Unit Rate***: **the _____ of the _____ that is being compared to _____.**

Use the diagram for questions 1 and 2.

1. What is the ratio of stars to hearts?

   A. 2:3
   B. 2:5
   C. 3:2
   D. 3:5

2. What is the ratio of all figures to stars?

   A. 5 to 2
   B. 5 to 3
   C. 3 to 5
   D. 2 to 3

A recipe for apple crisp uses 2 parts oats, 4 parts brown sugar, and 6 parts flour. In simplest form, how many parts of brown sugar are there for every part of flour?

A. $\frac{2}{3}$ part
B. $\frac{1}{2}$ part
C. $\frac{1}{3}$ part
D. $\frac{1}{4}$ part

Ling is driving at a constant speed of 55 miles per hour. At that rate, how long will it take him to drive 275 miles?

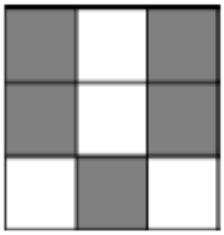
A. 4 hours
B. 5 hours
C. 6 hours
D. 7 hours

RATIOS AND PROPORTIONAL REASONING (6.RP.1)

Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

1. Last year the boys' softball team had 8 fifth-grade students and 7 sixth-grade students. What was the ratio of sixth-grade students to fifth-grade students on the team?

2. The new floor in the school cafeteria is going to be constructed of square tiles that are either gray or white and in the pattern that appears below. What is the ratio of white tiles to the total number of tiles in the pattern?



3. The ratio of daisies to roses in a garden is 20:1. Does this garden have more roses or more daisies in the garden?

4. In Mrs. Williams's math class, there are 14 boys and 10 girls. Which statement is not true?

a) The ratio of boys to girls is 14:10.

b) The ratio of girls to boys is 7:5.

c) The ratio of boys to girls is $\frac{7}{5}$.

d) The ratio of girls to boys is $\frac{30}{42}$.

5. Write each ratio in three different ways.

Party Mix Makes 8 cups
3 cups pretzels
3 cups raisins
1 cup crackers
1 cup peanuts

a) raisins to peanuts

b) total party mix to peanuts

c) crackers to pretzels

RATIOS AND PROPORTIONAL REASONING (6.RP.2)

Understand the concept of a unit rate a/b associated with a ratio a:b with $b \neq 0$, and use rate language in the context of a ratio relationship.

1. Sabrina's car used 12 gallons of gas to travel 456 miles. How many miles did her car travel per gallon of gas?

2. Trina babysat 2 hours each night for 10 nights. She earned a total of $180 babysitting. Trina wants to calculate her hourly rate. How much did Trina earn per hour babysitting?

3. Daniel ran laps every day at the community track. He ran 45 minutes each day, 5 days each week, for 12 weeks. In that time, he ran 1,800 laps. What was his average rate in laps per hour?

4. A baker used 4 cups of flour to make 5 batches of brownies. How many cups of flour does the baker need to make 1 batch of brownies?

5. A grocery store sign indicates that plums are 6 for $1.50, and a sign by the apples indicates that they are 5 for $3.00. Find the total cost of buying 2 plums and 2 apples.

RATIOS AND PROPORTIONAL REASONING (6.RP.3)

Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

1. The table below shows the cups of orange juice needed to make different amounts of fruit smoothie. What is the total number of quarts of fruit smoothie that can be made with 24 cups of orange juice?

Cups of Orange Juice	Total Quarts of Fruit Smoothie
8	2
16	4
24	?
36	9

2. In Ms. Morant's class, 75% of the students are girls. There are 18 girls in the class. What is the total number of students in Ms. Morant's class?

3. Samantha drove 168 miles in $3\frac{1}{2}$ hours. She then drove the next $2\frac{1}{4}$ hours at a rate of 5 miles an hour faster than the first rate. How many miles did Samantha drive during the $5\frac{3}{4}$ hours?

4. The table below shows how much money a Pete's Healthy Grocery store receives for selling different amounts of carrots. If the unit rate is constant, what are the total sales for 12 pounds of carrots?

Pounds of Carrots	Total Sales
4	$10
6	$15
8	$20
10	?
12	?

5. Rodney has two 7-foot-long steel pipes. He needs to cut pieces that are 15 inches long from the pipes. What is the greatest number of 15-inch pieces he can cut from the two steel pipes?

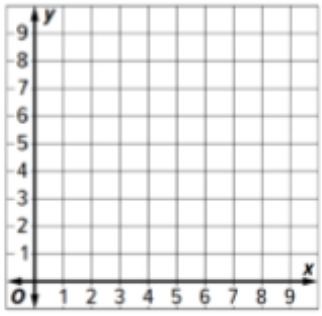
GEOMETRY (6.G.3)

Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

1. Tiffany is designing a patio for her backyard. She is using stakes and string to show the dimensions. On a coordinate plane, in which each unit represents one meter, the corners of the patio are at (−2, 3), (4, 3), (4, −1), and (−2, −1). How much string will Wendy need to show the dimensions of her patio?

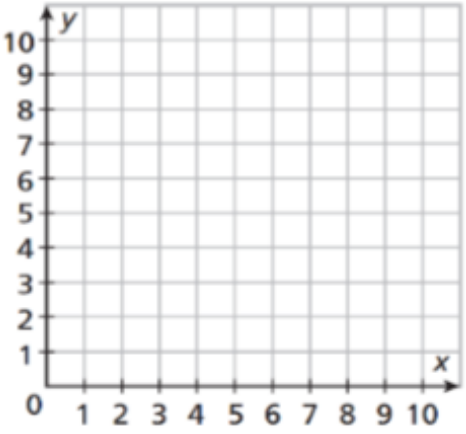
2. A rectangular plot of land is represented on a map by the vertices (8, 15), (8, 85), (50.5, 85), and (50.5, 15), where the x- and y-coordinates are measured in yards. What is the area of the plot of land?

3. Figure RSTV has vertices located at P(2,0), Q(2,3), R(8,3), and S(8,0). Graph the figure ABCD the coordinate plane. What is the area of the figure?



4. Ms. Wong is creating a scrapbook page with vertices $(3, 4), (8, 4), (8, 10)$, and $(3, 10)$. What is the area of the page she will be covering if each grid represents 4 square inches?

5. Kimberly is making a wall hanging. She has graphed the wall hanging as polygon $ABCDEF$ on a coordinate plane. The vertices of this polygon are $A(1, 5), B(1, 9), C(7, 9), D(7, 5), E(5, 3)$, and $F(3, 3)$. Graph the polygon on the coordinate plane. What is the area of Kimberly's wall hanging?



EXPRESSIONS AND EQUATIONS (6.EE. 9)

Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable.

1. A bus was traveling at a constant speed. The table below shows the distance, in miles, the bus traveled for the first 4 hours. Write an equation to represent the relationship between t, the time, and d, the total distance traveled by the bus.

Time (hours)	Distance (miles)
1	45
2	90
3	135
4	180

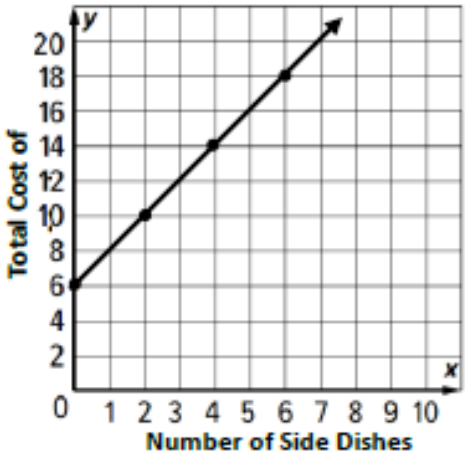
2. Nicole reads 25 minutes before school. She reads x more minutes after school. Write an equation to represent the total number of minutes y Nicole reads.

3. Milly's Magnificent Muffins tracked the number of muffins they sold and the total amount of money they earned. They charged the same price for each muffin they sold. They earned \$50 for 20 cars, \$55 for 22 cars, and \$70 for 28 cars. Write an equation to represent the relationship between m muffins sold, and e the total money earned

4. A cellular phone company charges an initial fee of \$40 plus \$20 per month for unlimited minutes of phone usage. Complete the table to show the relationship for the total cost t of using a cellular phone for m months.

Number of Months, m	1	2	3	4
Total Cost \$, t				

5. The lunch special cost \$6 at the Friendly Foods Restaurant. Each side dish is an additional \$2. The equation $y = 2x + 6$ describes the total cost, y, for the number of side dishes, x.
Graph the equation of the line.



THE NUMBER SYSTEM (6.NS.7)

Understand ordering and absolute value of rational numbers.

1. Write the numbers in order from least to greatest.

   $-2, -5, -9, 2.2, 2.7, -20, 2.5$

2. What is the absolute value of 34?

3. At a golf tournament, Tyrese scored +6, Whitney scored -16, and Maxwell scored -4. One of these three players was the winner of the tournament. Who won the tournament? The winner will be the player with the lowest score.

4. On January 25th, the high temperature in Portland, Oregon, was 48 °F. On February 2nd, the high temperature was 24 °F. Which day was warmer?

5. Which costs more, a hamburger or chicken salad? Use the given prices to write an inequality that shows your answer.

Hamburger	$4.30
Hot Dog	$2.35
Chicken Salad	$4.49
Pizza	$2.49

Name:_____ Date: _____

Ms. Napolitano Equations

Topic: Expressions and Equations

CCSS: 6.NS.6, 6.EE.5, 6.EE.7, 6.EE.8 and 6.EE.9

Homework Day 5

THE NUMBER SYSTEM (6.NS.8)

Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

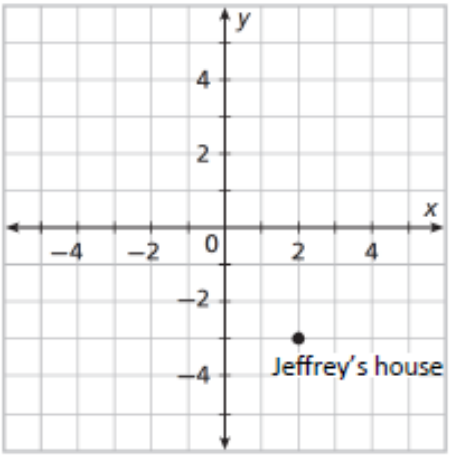
1. The coordinates of the vertices of a rectangle are $(-1, 4)$, $(5, 4)$, $(5, -3)$, and $(-1, -3)$. What are the dimensions of the rectangle?

2. The point $(-3, -3)$ is reflected across the x-axis. What are the coordinates of the new point?

3. The coordinates of point A are $(-5, 6)$. The coordinates of point B are $(2, 6)$. Find the length of the line segments with end points A and B.

4. The coordinates of point C are $(0, -2)$. The coordinates of point D are $(0, 9)$. Find the length of the line segments with end points C and D.

5. Jeffrey's walks to the library every day after school. The library is located at $(-5, -3)$ on the map. Graph and label this point. Each unit on the coordinate plane represents 1 block. What is the distance from Jeffrey's house to the library in blocks?



GEOMETRY (6.G.2)

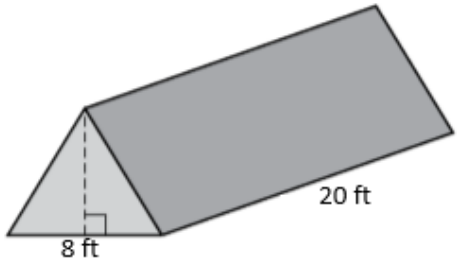
Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism.

1. The base of a right rectangular prism has an area of 84.6 square centimeters and a height of 7 centimeters. What is the volume, in cubic centimeters, of the right rectangular prism?

2. A box in the shape of a right rectangular prism has a length of 6 inches, a width of 3.5 inches, and a height of 4.65 inches. What is the volume, in cubic inches, of the box?

3. A flower box is 3 ft. long $2\frac{3}{4}$ ft. wide and $\frac{1}{2}$ ft. deep. How many cubic feet of dirt can it hold?

4. The diagram shows a 580-cubic-feet storage room. What is the height of the storage room?

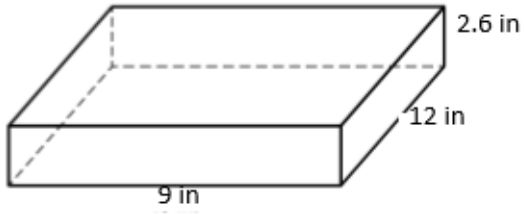


5. A bakery ships products in a 20-inch by 10-inch by 10-inch rectangular carton. Boxes of cupcakes are packaged in a 6-inch by 2-inch by 5-inch box. The company places 20 boxes of cupcakes in a carton and fills the rest of the space with packing material. What volume of space was filled with packing material?

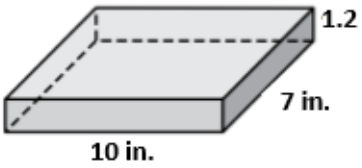
GEOMETRY (6.G.4)

Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

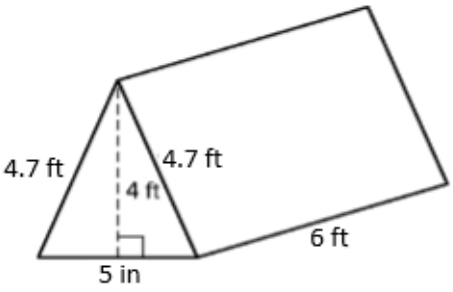
1. The diagram shows the dimensions of a gift box that Gloria needs to wrap. What is the least amount of wrapping paper needed to completely cover the box?



2. The diagram shows the gift box Fernando plans to wrap. He wants to use the least amount of wrapping paper needed to completely cover the box. A sheet of wrapping paper is 600 square inches. How much wrapping paper would Fernando have left after wrapping the box?

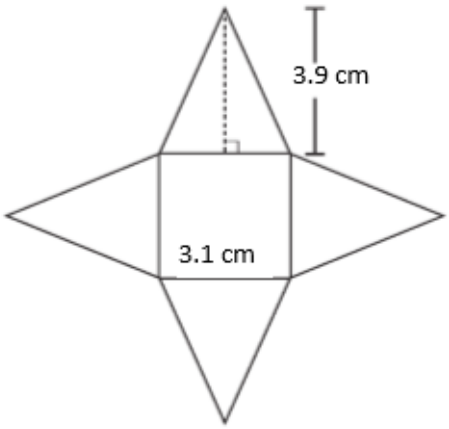


3. The diagram shows the dimensions of a canvas tent. How much canvas fabric does Lorna need to make the tent, including the floor?



4. Lorna uses a sheet of paper to make a model of a pyramid. The model has a square base with side lengths of 6 inches. The slant height of the model is 7 inches. How much paper was used to make the model, including the base?

5. A net of a square pyramid is shown.
What is the surface area, in square centimeters, of the pyramid?



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Ms. Napolitano Equations

Topic: Expressions and Equations

CCSS: 6.NS.6, 6.EE.5, 6.EE.7, 6.EE.8 and 6.EE.9

Extra Practice Day 5

1 Steve provides lawn care services in his neighborhood. For each lawn he charges a flat fee of $6 for clean-up and $10 per hour. Write an equation to represent the relationship between the total charge, *c*, and the number of hours he works, *h*.

2 What is the constant in the expression $9x^3 + 3x^2 + 4 + 5x$?

A 9

B 3

C 4

D 5

3 A company sells speakers for $23 each. At the end of the week, they have sold $851 worth of speakers. How many speakers did they sell? Write and solve an equation to find the answer.

Show your work.

The company sold _____ speakers.

4 Donna opens a savings account with an initial balance of $50. She then deposits $25 each month. Use an equation, a table, and a graph to explain the relationship between the amount of money in the account, a, and the number of months since Donna opened the account, m.

Part A

Write an equation to represent the problem. Explain how the value of a changes as m increases.

Part B

Make a table to show the relationship between m and a. Find 5 ordered pairs.

Part C

Use your table from Part B to draw a graph to represent the situation.

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5 Which value makes the equation $4x - 5 = 43$ true?

A 10

B 12

C 14

D 16

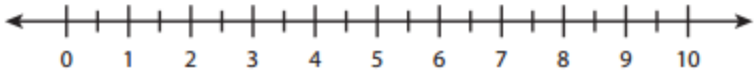
6 Brandon wants to practice his trombone for at least 5.5 hours this week.

Part A

Write an inequality to represent the number of hours Brandon will spend practicing this week.

Part B

Graph the solution to your inequality from Part A on the number line below.



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7 Which expression is equivalent to $45x - 15x$? Choose all that apply.

A 30

B $30x$

C $60x$

D $x(45 - 15)$

E $x(45 - 15x)$

If each equation below is solved for x, for which equation is $x = 6$ the solution? Choose all that apply.

A $7x = 42$

B $8x = 14$

C $9x = 54$

D $29 - x = 35$

E $x - 11 = -5$

Evaluate: $(7 - 2)^2 + 3 \div \frac{1}{6}$.

Jen accidentally knocks a framed poster off the wall, breaking the protective glass piece. The glass piece has side length x and she needs to buy a new piece of glass to replace it.

Part A

Write a variable expression for the area of the glass piece Jen needs to replace.

Part B

If the protective glass piece is 25 in. wide, what is the area of the glass piece Jen needs to replace?

Part C

If Jen has a budget of $150, what is the most she can pay per square inch of glass to replace the glass piece described in Part B? Explain.