Richard Montgomery High School

Summer Math Packet for Students Entering Algebra 1

Name: _____

School Last Year: _____

Directions

Hello! This packet will help you get ready for Algebra 1 next year at Richard Montgomery. Solve each problem and be sure to show your work where possible. Some of the problems review basic skills that you've already seen and others require you to think creatively. You may find that you need to look up a formula or refresh your memory on certain skills. There are many algebra-focused websites you can consult, including:

- www.khanacademy.org/math/algebra
- www.math.com
- www.coolmath.com
- www.purplemath.com

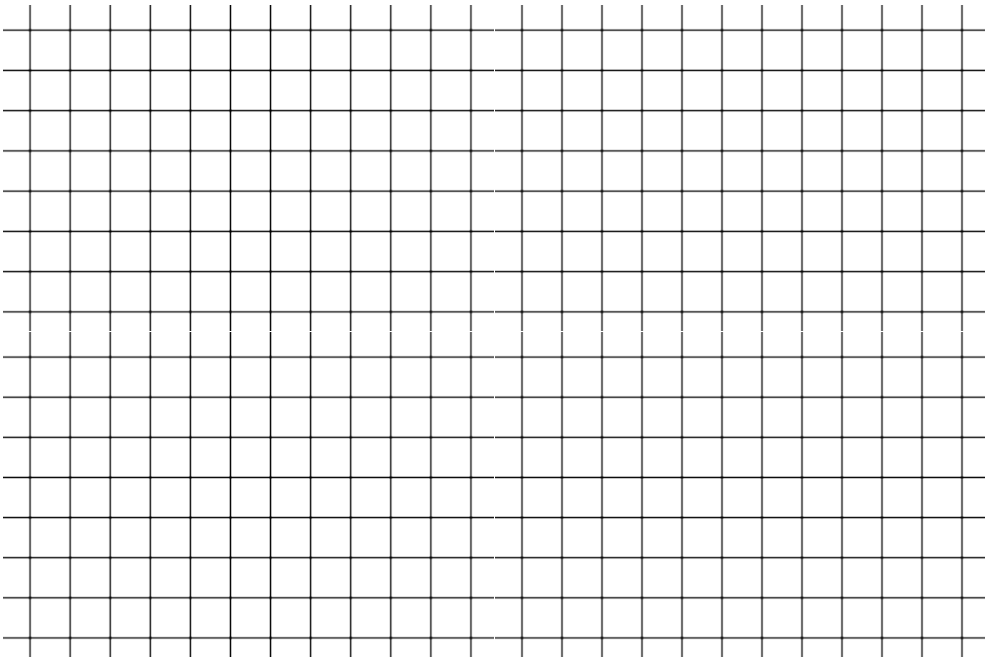
It's recommended that you wait until the middle of summer to start so that the review is still fresh in your mind when you come back to school. By the way, all these problems can be done without the use of a calculator.

This packet will be collected during the first week of school. Please bring it with you and have it ready to turn in.

We can't wait to meet you in August!

- *Your RM Algebra Teachers*

1. On the grid provided, draw a right triangle with whole number side lengths and a hypotenuse of 10 units. The length of each square is one unit.



2. A square, with side length s, has an area of 324 square centimeters. This equation shows the area of the square. What is the side length of the square in centimeters?

$$s^2 = 324$$

3. Six friends are going to buy pizza. Their choices are to buy 2 medium 10-inch diameter pizzas for $7.00 each, or 1 large 14-inch diameter pizza for $15.00. Both include tax and tip.

   The friends agree that they should choose the one that gives them the most pizza for their money. Which is the best choice? Explain your answer.

4. Rachel says the sum of a positive number and a negative number always equals a negative number or zero.
   a. Create an example that that supports Rachel's claim.
   b. Create an example that that shows Rachel's claim is false.

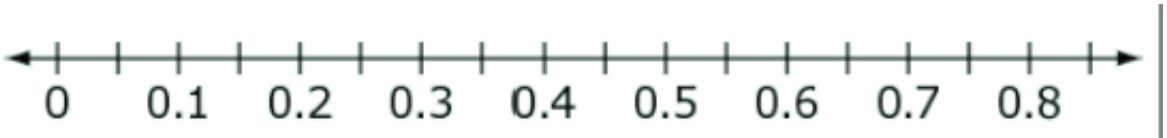
A. Supports Rachel's Claim

$\square + \square = \square$

B. Shows Rachel's Claim is False

$\square + \square = \square$

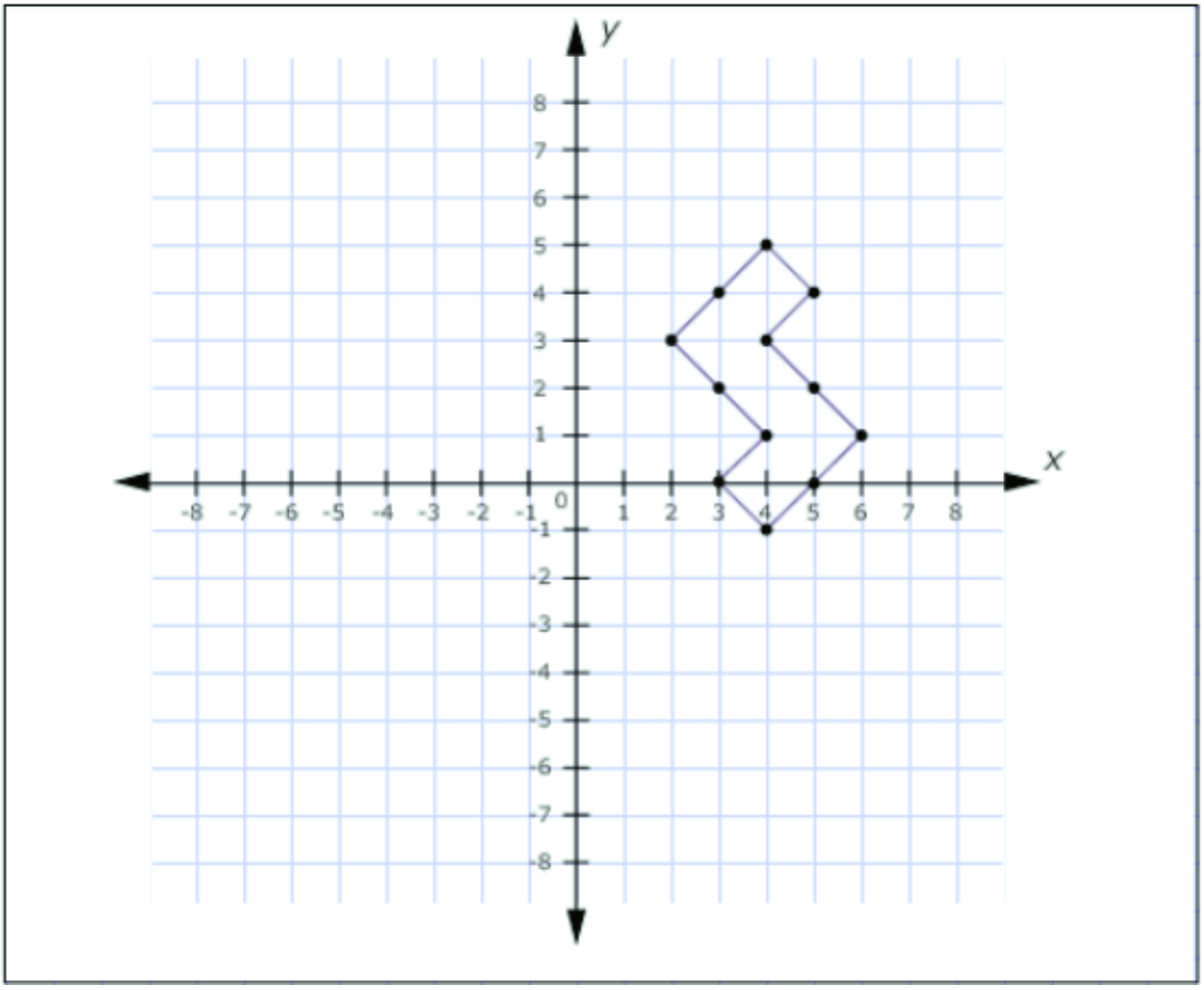
5. Graph each value appropriately in the correct position on the number line.



$\frac{\sqrt{4}}{5}$ $\frac{\pi}{5}$ $\frac{3}{10}$

6. Draw the image of the figure after the following translations.

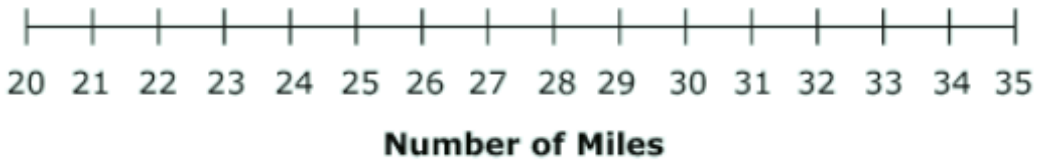
   a. A reflection over the x-axis.
   b. A horizontal translation 7 units to the left.



7. Justin's car can travel $77\frac{1}{2}$ miles with $3\frac{1}{10}$ gallons of gas.

Kim's car can travel $99\frac{1}{5}$ miles with $3\frac{1}{5}$ gallons of gas.

At these rates, how far can each car travel with one gallon of gas? Graph the number of miles for each car on the number line.

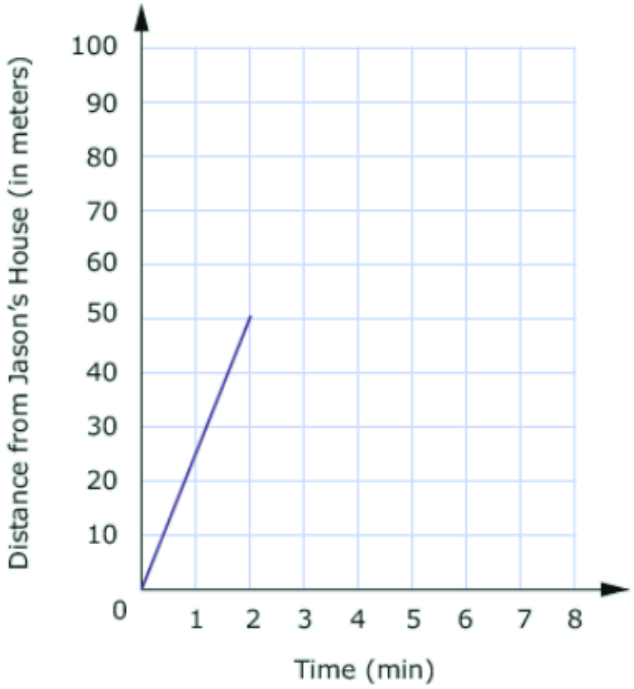


8.

The school is 100 meters from Jason's house. The following describes his most recent trip:

- He walked 50 meters toward school in 2 minutes. He realized that he left a book at home.
- He turned around and walked home at the same speed.
- He spent 1 minute looking for his book.
- He walked all the way to school at twice his original speed.

Finish the graph so that is accurately represents Jason's trip.



9. Kayla asked 10 students in her class whether they owned a dog or a cat or both.

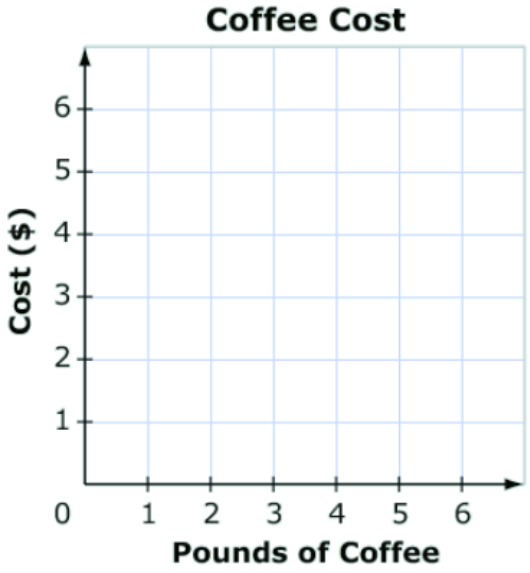
Write any number 0-9 to complete the table, given this information:

- 40% of the students own a dog.
- 30% of the students own a cat.
- 10% of the students own both a cat and dog.

	Dog	No Dog	Total
Cat			
No Cat			
Total			10

10. Coffee costs $2.00 per pound at a coffee shop.

Graph a line that shows the proportional relationship between the number of pounds of coffee purchased and the total cost.



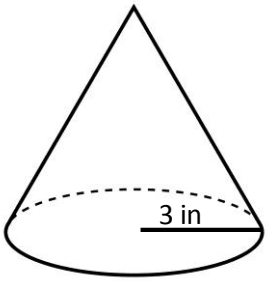
11. Look at these numbers.

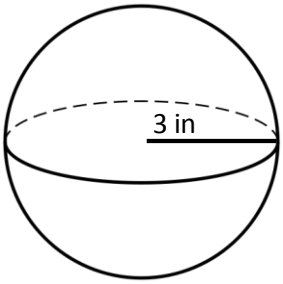
$\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, $\sqrt{7}$

Classify the numbers by ALL that apply.

a. Integer
b. Rational
c. Irrational
d. Real

12. A sphere and a cone have the same volume. Each figure has a radius of 3 inches. What is the height of the cone?





13. Kyle was given a problem to solve. The problem and his work are shown.
    a. What part of Kyle's work contains the mistake?
    b. What part of the problem should Kyle read again to fix his mistake?

A company sells baseball gloves and bats. The gloves regularly cost $30 and the bats regularly cost $90. The gloves are on sale for $4 off, and the bats are on sale for 10% off. The goal is to sell $1200 worth of bats and gloves each week. Last week, the store sold 14 gloves and 9 bats.

Did the store meet its goal?

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1. $30 − $4 = $26

   $26 × 14 = $364

2. $90 ÷ 0.9 = $100

   $100 × 9 = $900

3. $900 + $364 = $1264

14. Solve all problems and show all work.

a. $-4t-6=22$

b. $\frac{m}{-5}+6=-4$

c. $-4r+5=-25$

d. $\frac{x}{-3}+(-7)=6$

e. $5g+(-3)=-12$

f. $\frac{y}{-2}+(-4)=8$

15. Solve all problems and show work:

a. $4x+8-6=2(9-2)$

b. $\frac{t}{5}-7+31=8(6-4)$

c. $9-5(4-3)=-16+\frac{x}{3}$

d. $6t-9-3t=8(7-4)$

e. $4r-7=8r+13$

f. $6y+5=4y+5$

g. $3(4+4x)=12x+12$

h. $7(1-y)=-3(y-2)$