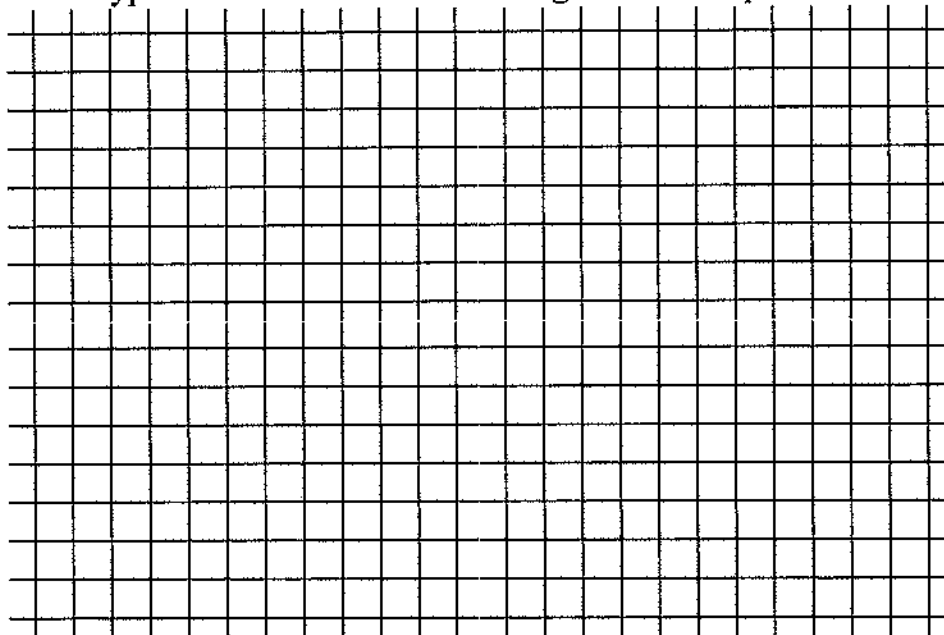# Sligo Middle School

Summer Math Packet
Incoming Algebra

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 their best choice is 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.
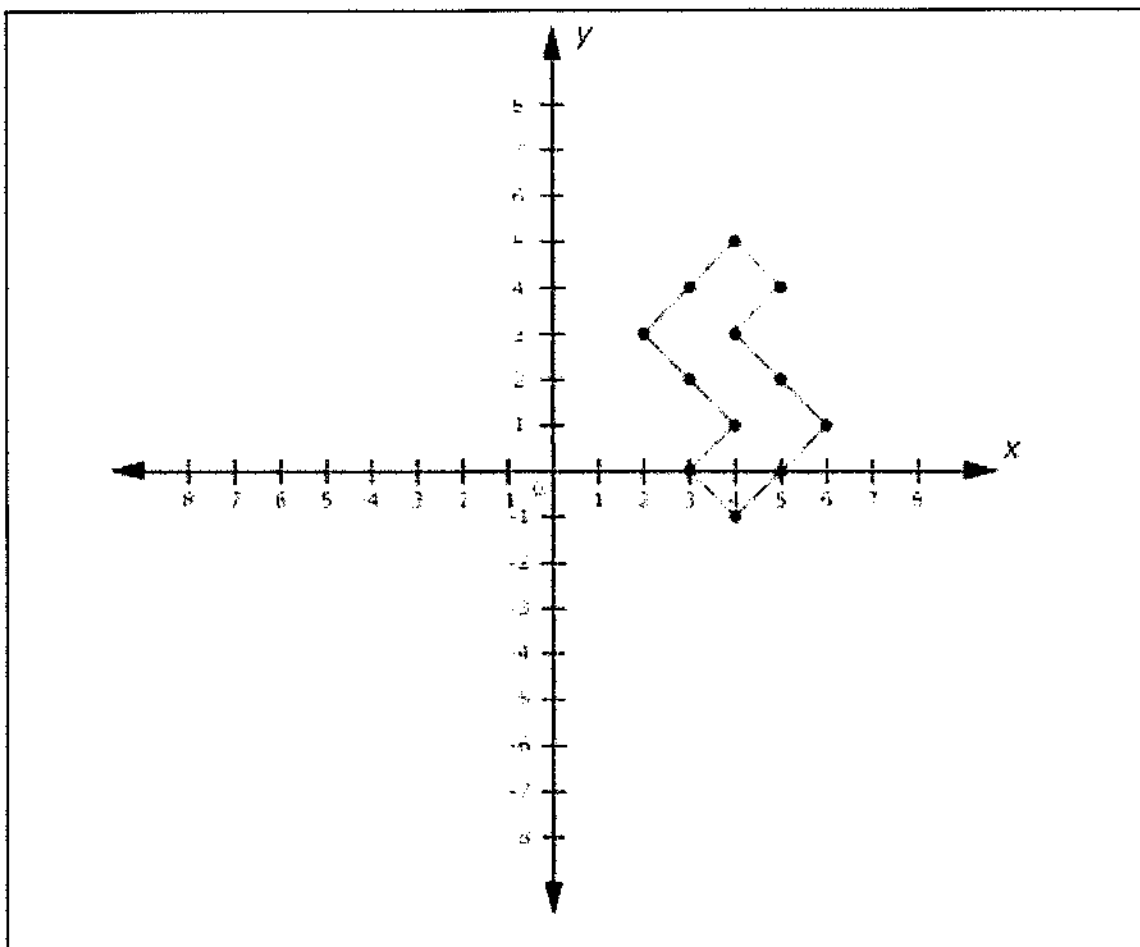
A. Supports Rachel's Claim

$$\square + \square = \square$$

B. Shows Rachel's Claim is False

$$\square + \square = \square$$

5. 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.

6. 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.


Number of Miles
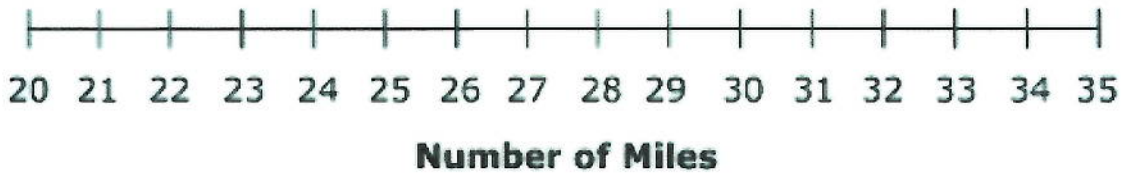
7.

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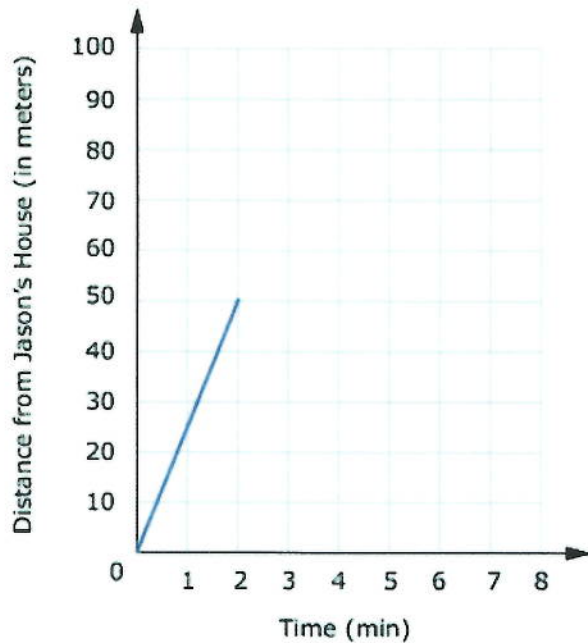
Finish the graph so that is accurately represents Jason's trip.

8. Graph each value appropriately in the correct position on the number line.
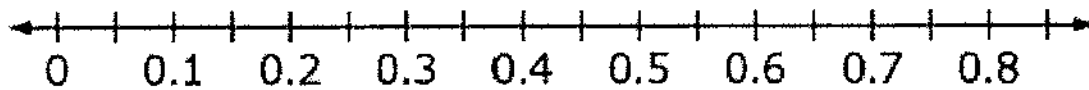
$$\frac{\sqrt{4}}{5} \qquad \frac{\pi}{5} \qquad \frac{3}{10}$$

9. Two sides of a right triangle have lengths of $\sqrt{10}$ and $\sqrt{6}$ units. There are two possible lengths for the third side.

    a. What is the shortest possible side length, in units?

    b. What is the longest possible side length, in units?

10. 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

11. Segment *FG* begins at point *F*(-2, 4) and ends at point *G*(-2, -3). The segment is translated by <x − 3, y + 2> and then reflected across the y-axis to form segment *F'G'*.

How long is segment *F'G'*.

12. 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.

Coffee Cost
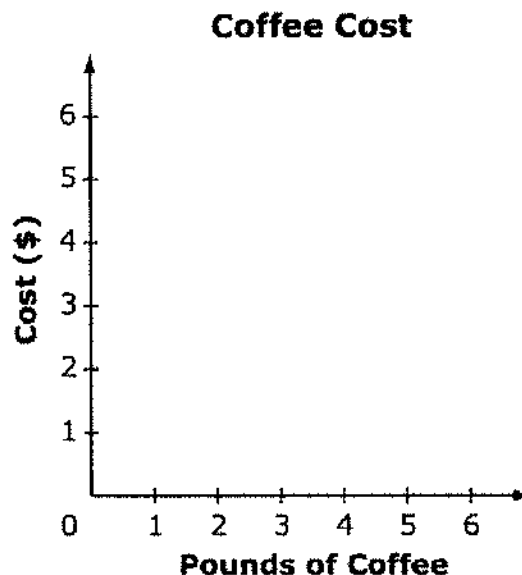
13. A sphere and a cone have the same volume. Each figure has a radius of 3 inches. What is the height of the cone?
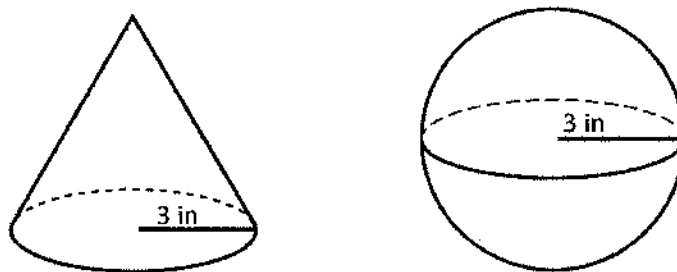
14. Joe solved this linear system correctly.

$6x + 3y = 6$

$y = -2x + 2$

These are the last two steps of his work.

$6x - 6x + 6 = 6$

$6 = 6$

Which statement about this linear system must be true?

a. x must equal 6

b. y must equal 6

c. There is no solution to this system.

d. There are infinitely many solutions to this system.

15. Using digits 0-9, write numbers in each of the boxes to complete each equation given the number of solutions.

A. Equation with no solutions
$8x - 3x + 2 - x = \boxed{}\,x + \boxed{}$
B. Equation with one solution
$8x - 3x + 2 - x = \boxed{}\,x + \boxed{}$
C. Equation with infinitely many solutions
$8x - 3x + 2 - x = \boxed{}\,x + \boxed{}$

16. 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?

1. $30
   − $4
   ────
    $26

    $26
   × 14
   ────
   $364

2. $90
   ÷ 0.9
   ────
   $100

   $100
   × 9
   ────
   $900

3. $900
   + $364
   ─────
   $1264

17. A game that uses a spinner and two number cubes is played at a game night. To win the game, a player must have two results:

- The spinner's arrow stops in a red section.
- The number cubes both land with an even number facing up.
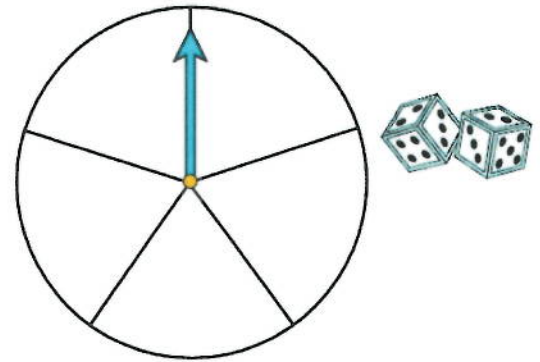
The person in charge of the night wants 10% of the players to win.

Label the spinner with the colors red, green, and blue to design one that reaches the goal.

18. Look at these numbers.

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

Classify the numbers by ALL that apply.

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

19. Solve all problems and show all work.

a. $-4t - 6 = 22$

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

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

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

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

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

20. Solve all problems and show all work.

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

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

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

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

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

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

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

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