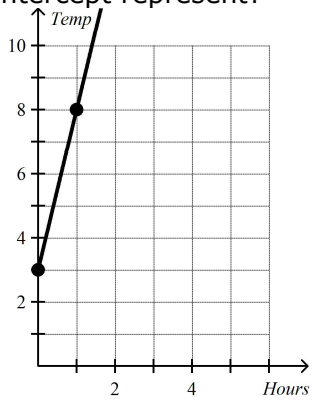
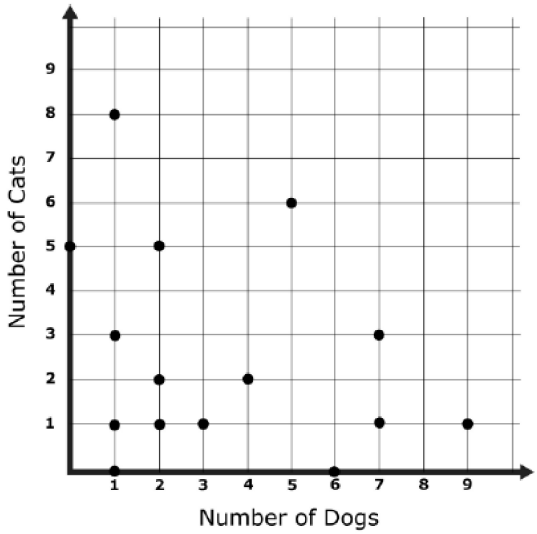
**Name:** _____ **Class:** _____ **Date:** _____

**1st Semester Exam Review Part 2 - Pre-Algebra 2015**

1. The line models the temperature on a winter day in hours from sunrise. What is the y-intercept of the line? What does the y-intercept represent?




2. Tai surveyed his classmates about the number and types of pets they owned. He created the scatterplot shown below.



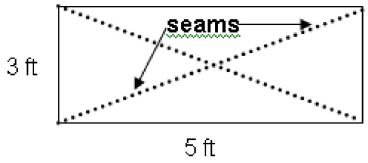

Which statement below accurately describes the graph?

**a.** There is no relationship between the number of cats and dogs a student owns.
**b.** Students with more than five dogs have more than five cats.
**c.** Students have twice as many dogs as cats.
**d.** The more dogs a student has, the more cats they have.

3. Solve the equation $\frac{2}{3}x-4=-10$

4. One square grid is formed of 400 squares. Another square grid is formed of 256 squares. If the two grids join with a third at their vertices to form a right triangle, how many total squares could be in the third grid?

5. Cathy's mom is making a quilt for her friend's baby. The quilt will have silk ribbon hiding the seams pictured below. How much silk ribbon does she need? Round your answer to the nearest whole number.




6. Solve the equation $5-\frac{3}{4}x=5$

7. Given the relation (5, 2), (7, 4), (9, 10), (*x*, 5) which of the following values for *x* will make the relation a function?

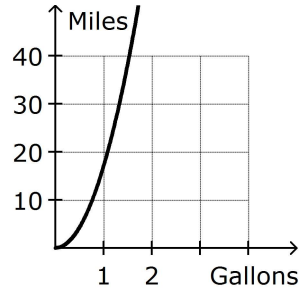
**a.** 9
**b.** 7
**c.** 5
**d.** 1

8. Susie and Karen are each opening a savings account. Susie opens her account with $50 and adds $5 a week. Karen opens her account with $15 and adds $12 a week. Write an inequality that can be used to find after how many weeks Karen will have more money in her account than Susie.

9. Solve the equation $\frac{2}{5}x-4=10$

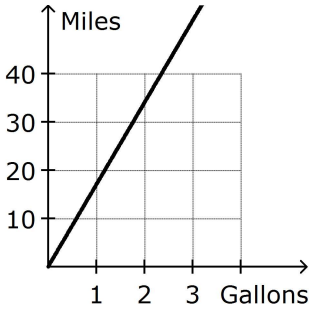
10. A car engine uses fuel at a rate of 68 miles per 4 gallons. There is a proportional relationship between miles driven and gallons used. Find the unit rate and correct graph for this relationship.

**a.**



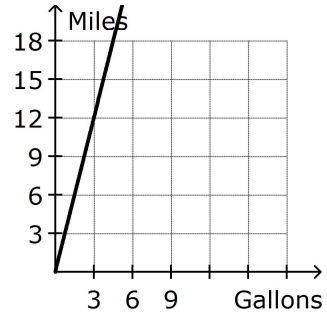

Unit rate is $\frac{1}{17}$ miles per gallon

**c.**



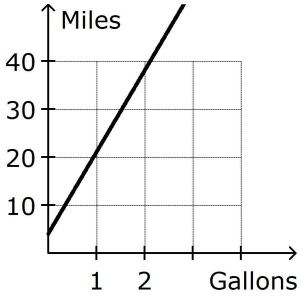

Unit rate is 17 miles per gallon

**b.**



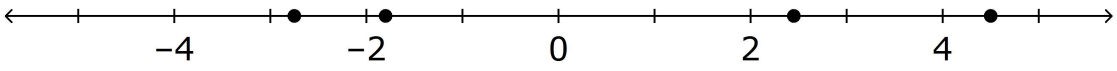

Unit rate is $\frac{1}{17}$ miles per gallon

**d.**




Unit rate is 17 miles per gallon

11. Which of the following lists are plotted on the number line above in order from least to greatest?



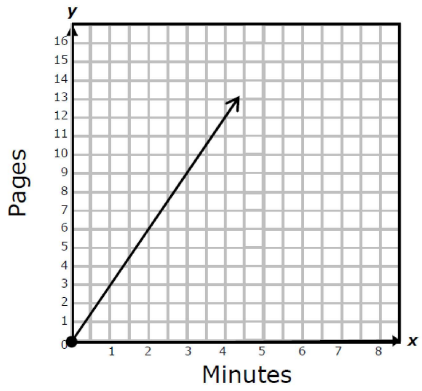

**a.** 4.25, $2\frac{1}{4}$, -1.8, $-2\frac{3}{4}$

**b.** $-2\frac{3}{4}$, -1.8, $\sqrt{6}$, 450%

**c.** -2.4, $-1\frac{4}{5}$, $\sqrt{5}$, 4.25

**d.** 4.5, $\sqrt{6}$, -180%, -2.75

12. The graph below shows the relationship between the number of minutes read and the number of pages read?




Based on the information in the graph, what is the unit rate in pages per minute?

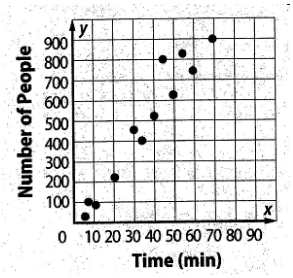
**a.** 4 pages per minute
**b.** 5 pages per minute
**c.** 3 pages per minute
**d.** 2 pages per minute

13. Which domain would make the list of ordered pairs a function?

(__, 4), (__, 5), (__, 6), (__, 12), (-7, 7)

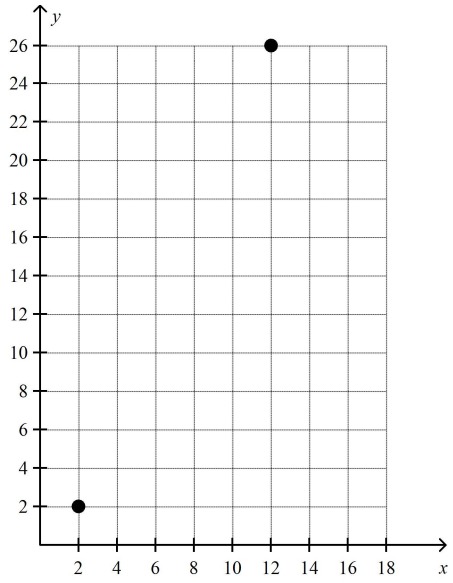
**a.** {-7, -6, -5, -4}
**b.** {-9, -5, 0, 3}
**c.** {-7, -4, 3, 0}
**d.** {5, 8}

14. The graph shows the number of people at an amusement park at different times, where 0 represents 9:00 A.M. If this trend continues, about how many people will be at the park at 12:00 P.M.?




**a.** 2,000
**b.** 4,000
**c.** 5,000
**d.** 3,000

15. What is the distance between the two points on the coordinate plane?




16. What is the perimeter of the square? Round your answer to the nearest whole number.

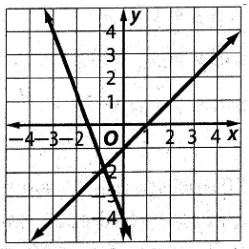
Area = 160 $yd^2$

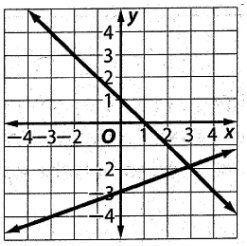
17. Solve the equation.

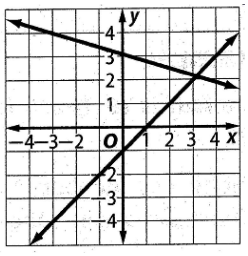
-x + 9 = 1 - 3x + 2

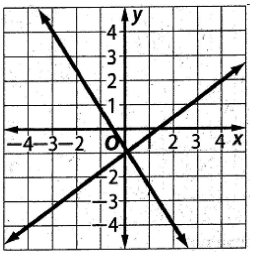
18. The population of a small country is 5,740,000. Write this number in scientific notation.

19. Which graph shows the solution to the equations y = $\frac{1}{3}x - 3$ and y = -x + 1

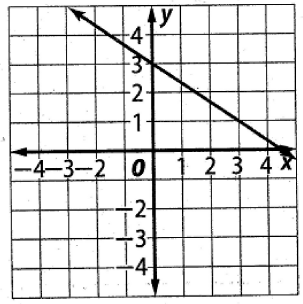
**a.** 

**c.** 

**b.** 

**d.** 

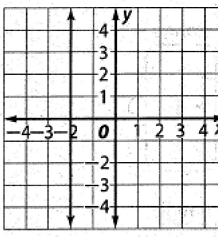
20. Write an equation of the graph?

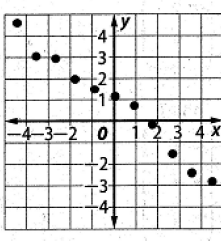


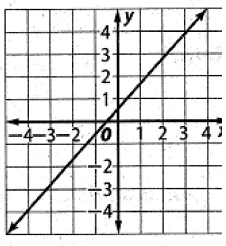
21. Does the equation y = $\frac{7}{3}$x + 3 represent a proportional relationship? Why or why not?

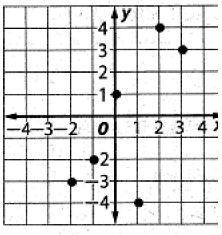
22. Write an equation of the line that passes through the point (0, -7) and has a slope of $\frac{2}{3}$.

23. Which relation shown in the graph is NOT a function?

**a.** 

**b.** 

**c.** 

**d.** 

24. Write the number in standard notation: $4.45 \times 10^5$

25. Lane has a square garden that he would like to put wood beams around. If the area of the garden is 169 $ft^2$, How many feet of wood will he need?

26. Which of the following situations can be modeled by the equation:

$$30+5x=8x$$

**a.** Brenda has already knit 30 inches of a scarf and can knit 5 inches per day. Gabe starts a new scarf and can knit 8 inches per day. When will Gabe's scarf be the same length as Brenda's?

**b.** Ava has $30. She saves $8 per week. Tim has no money to start with, but saves $5 per week more than Ava. When will they both have the same amount of money?

**c.** Thirty people give $5 to Charity A, and eight people give money to Charity B. How much money does Charity B receive?

**d.** Emi races her little brother Sam. She give him a 30-foot head start. She runs at 5 feet per second. Sam runs at 8 feet per second. When will Emi catch Sam?

27. Where does $-\sqrt{2}$ go in the real number system?

28. Approximate the value of $\sqrt{61}$ to the nearest hundredth

29. Which is NOT a true statement about $\sqrt{40}$?

**a.** It is greater than 6 but less than 7.
**b.** It is between $\sqrt{36}$ and $\sqrt{49}$.
**c.** It is greater than 7 but less than 8.
**d.** It is approximately 6.3.

30. Find the length of the leg of a right triangle that has a hypotenuse of 15 inches and a leg of 9 inches.

31. Which statement is NOT true?

**a.** Irrational numbers can be ordered and compared with rational numbers.
**b.** All irrational and rational numbers can be ordered.
**c.** Rational numbers can be compared to other rational numbers.
**d.** Irrational numbers can only be compared to other irrational numbers.

32. Which statement is false?
**a.** No real numbers are irrational numbers.
**b.** All whole numbers are rational numbers
**c.** All whole numbers are integers.
**d.** All integers greater than 0 are whole numbers

33. A scatterplot shows the relationship between the value of a rare comic book, in dollars, and the number of years since it was purchased. What would you expect the scatterplot to look like?

**a.** The data points are clustered tightly around a straight line with a positive slope.

**b.** The data points are spread evenly over the graph.

**c.** The data points are clustered tightly around a straight, flat line.
**d.** The data points are clustered tightly around a straight line with a negative slope.

34. Which value of x makes the data in the table a function?

| **Number of Employees, *x*** | 12 | 9 | *x* | 3 |
|---|---|---|---|---|
| **Number of Customers, *y*** | 2 | 10 | 3 | 11 |

**a.** 6
**b.** 9
**c.** 12
**d.** 3

35. The table below shows the relationship between x and y.
    1. Find the slope
    2. Find the y-intercept.
    3. Write an equation to represent this relationship.

| x | y |
|---|---|
| 2 | 4 |
| 3 | 6 |
| 5 | 10 |
| 6 | 12 |

36. The window of a burning building is 24m above the ground. The base of the ladder is placed 10m from the building. How long must the ladder be to reach the window?

37. Which numbers are irrational? (There may be more than one answer)

I. $\sqrt{81}$ II. $\sqrt{144}$ III. $\sqrt{20}$ IV. $\sqrt{46}$

38. A robot in a factory makes parts. The robot makes the same number of parts every 5 minutes. What is the rate of change of this linear function and what does it represent?

| Making Parts | | | | | |
|---|---|---|---|---|---|
| Time (minutes) | 0 | 5 | 10 | 15 | 20 |
| Number of Parts | 0 | 60 | 120 | 180 | 240 |

**a.** Rate of Change: 60
Represents: Number of parts made per minute

**b.** Rate of Change: 12
Represents: Number of minutes per part made

**c.** Rate of Change: 12
Represents:Number of parts made per minute

**d.** Rate of Change: 60
Represents: Number of minutes per part made

39. Solve the equation

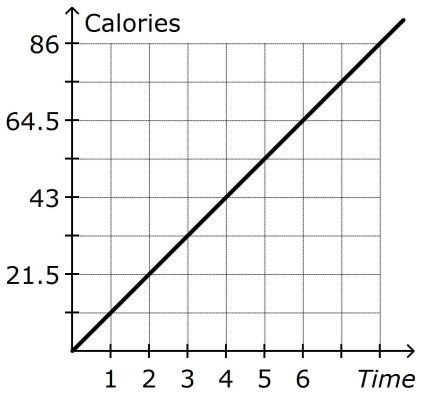
$4k + 2 + k = 10 + 4k$

40. The table below show a non-proportional, linear relationship. What number belongs in the empty box?

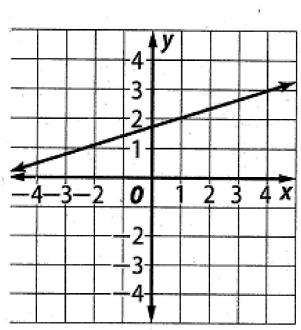
| *x* | -2 | 0 | 2 | 4 |
|---|---|---|---|---|
| *y* | | 4 | 7 | 10 |

41. Suppose y varies directly as x, y =15 when x = 5. Find y when x = 1. Then write the equation.

42. The graph shows the number of calories burned running. How many calories do you burn per minute?



43. Determine whether the function graphed models a proportional relationship? Explain




44. Which of the following is **not** true?

**a.** $3\pi > 9$
**b.** $\sqrt{27}+2 < \sqrt{9}+4$
**c.** $\sqrt{24}+3 < \sqrt{10}+6$
**d.** $8-\sqrt{36} < \sqrt{9}+3$

45. Determine if the table below has a constant rate of change and if so, what is it. Does the equation represent a proportional relationship?

| Input | Output |
|---|---|
| 1 | 12 |
| 2 | 15 |
| 3 | 18 |
| 4 | 21 |
| 5 | 24 |

46. The distance from Earth to the sun is about $9.3 \times 10^7$ miles. The distance from Mars to the sun is about $1.4 \times 10^8$ miles. How much farther is Mars from the sun than Earth?

47. What is the equation of a line going through the points (-2, -2) and (0, -3)?

48. Dan's school is planning a field trip to a museum. Bus Company A charges a $40 rental fee plus $4 for each student. Bus Company B charges $100 plus $2 per student. How many students would have to go for the cost to be the same? Write an equation to represent this situation and then solve.

49. Which ordered pair below will make this relation NOT a function?
(-1, 2), (2, 51), (1,3), (8, 22), (9, 51), (*x, y*)

**a.** (2, 10)
**b.** (5, 22)
**c.** (6, -1)
**d.** (1, 3)

50. Which given situation best represents the equation shown?

$5(x+20) = 500 - 5x$

**a.** Five people gave $20 more than requested to a charity. The amount given by the 5 people totaled $500. What amount was requested?

**b.** Trains A and B leave a station at the same time, going in opposite directions. Train A travels 20 miles per hour faster than Train B. At the end of 5 hours, the trains are 500 miles apart. What is the speed of Train B?

**c.** Jaime opened two accounts, each earning 5% simple interest per year. In one account, he deposited $20 more than in the other. At the end of one year, the two accounts earned $500 in interest. How much did he deposit into each account?

**d.** Autos A and B are 500 miles apart, traveling toward each other. The speed of Auto A is 20 miles per hour faster than Auto B. Auto B travels at 40 miles per hour. How many hours will it take the autos to pass each other?