TEST NAME: **IPS Grade 8 Math Summer Packet 2017-2018**
TEST ID: **192676**
GRADE: **Grade 8**
SUBJECT: **Mathematics**
TEST CATEGORY: **District Benchmark (reports in KPI)**

Student: _____

Class: _____

Date: _____

1. A company has $5 \times 10^4$ square feet of office space. Another company has $8 \times 10^3$ square feet of office space. About how many times greater is the larger company's space than the smaller company's space?

   A. 2

   B. 6

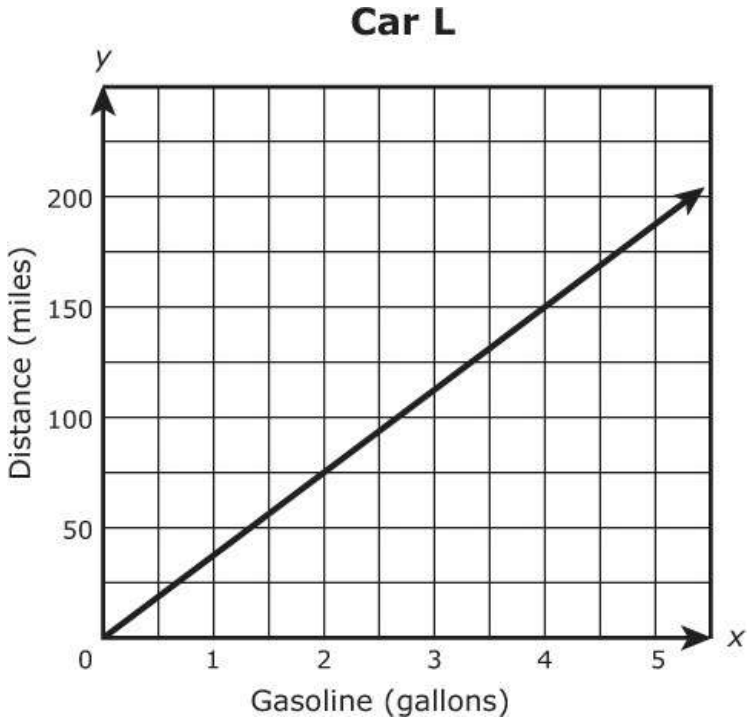
   C. 16

   D. 30

2. A student wants to determine the gasoline usage on the highway of two different cars, Car K and Car L.

**The gasoline usage for Car K is described by the equation $y = 35x$, where *y* is the distance traveled in miles and *x* is the number of gallons of gasoline used.**

The gasoline usage for Car L is represented by the graph.




What is the difference in the rates of gasoline usage for the two cars in miles per gallon?

A. 1.5

B. 2.5

C. 15

D. 37.5

3. What is the equation of a line with a slope of 8 that goes through the point (0, 6)?

A. $y = -8x - 6$

B. $y = -6x - 8$

C. $y = 6x + 8$

D. $y = 8x + 6$

4. Madeline solved $3(x+4) = 9x - 2(3x - 6)$. Her work is shown below.

**Madeline's Work**

| | |
|---|---|
| Step 1 | $3x + 4 = 9x - 2 + 3x - 6$ |
| Step 2 | $3x + 4 = 12x + 12$ |
| Step 3 | $16 = 4x$ |
| Step 4 | $x = 4$ |

Part A Explain all of the errors Madeline made.

Part B Solve $3(x+4) = 9x - 2(3x - 6)$ for the correct solution. Show your work.

5. Which equation has an irrational solution?

A. $x^2 = 2$

B. $x^2 = 81$

C. $x^3 = 27$

D. $x^3 = 64$

6. Which set contains all irrational numbers?

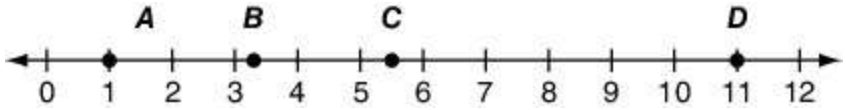
A. $\sqrt{3}, \pi, 4\sqrt{5}$

B. $\frac{5}{9}, \sqrt{3}, 0.\overline{3}$

C. $0, \frac{3}{4}, 1.914$

D. $\sqrt{\frac{1}{2}}, 2\sqrt{5}, \sqrt{25}$

7. Which point on the number line **best** represents the value of $\sqrt{11}$?



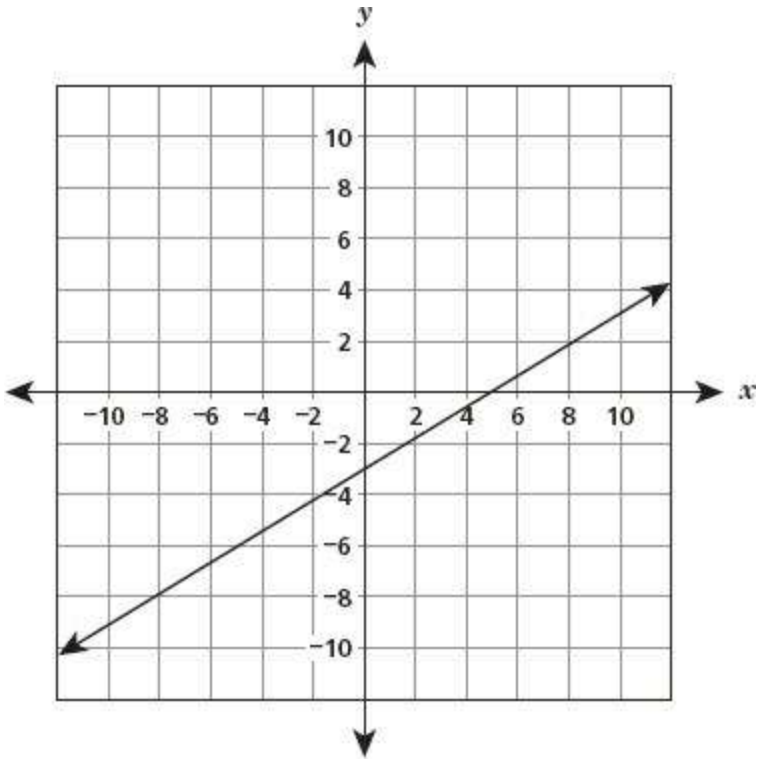

A. Point *A*

B. Point *B*

C. Point *C*

D. Point *D*

8. Function 1 is defined by the equation $y = \frac{3}{4}x + 1$, and function 2 is represented by the graph below.




Which statement about the functions is true?

A. Function 1 has the greater rate of change and the greater *y*-intercept.

B. Function 2 has the greater rate of change and the greater *y*-intercept.

C. Function 1 has the greater rate of change, and function 2 has the greater *y*-intercept.

D. Function 2 has the greater rate of change, and function 1 has the greater *y*-intercept.

9. Which functions are **not** linear?

Select **three** such functions.

A. $y = \frac{x}{5}$

B. $y = 5 - x^2$

C. $-3x + 2y = 4$

D. $y = 3x^2 + 1$

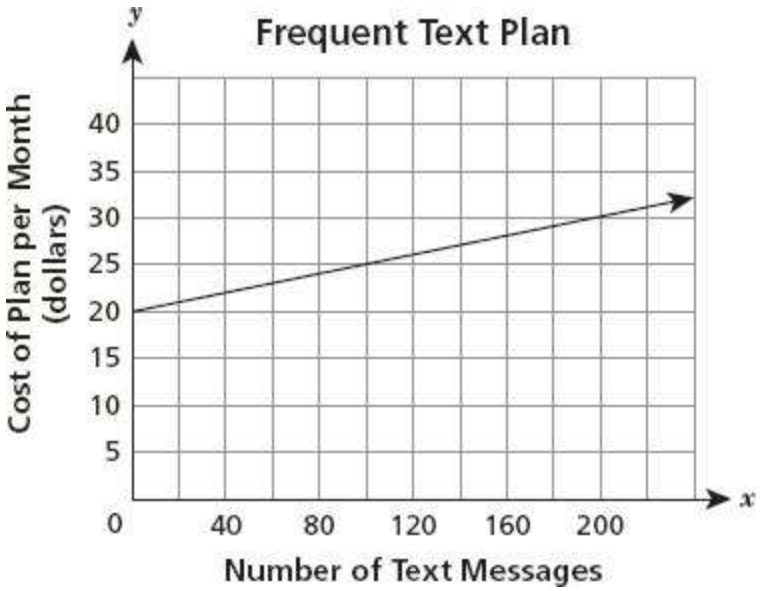
E. $y = -5x - 2$

F. $y = x^3$

10. A customer is comparing two different text message plans at Cellular Bargains. He wants to find out which plan allows the most text messages for the same cost.

The Pay Per Text Plan charges $10 per month and $0.10 for each text message. Write a function that models this plan, stating what your variables represent.

The Frequent Text Plan is modeled by the graph shown below.

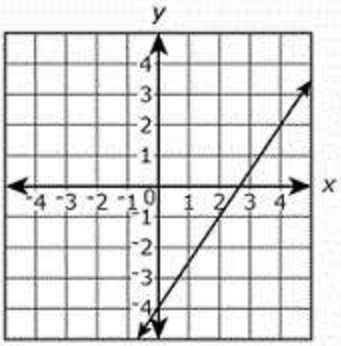



How many text messages would result in the same cost per month for the two plans?

***Show your work.***

***Answer*** _____ text messages

11. The graph, real-world situation, set of ordered pairs, and table each represent a function. Which 2 functions have the same rate of change? Click on the functions you want to select.



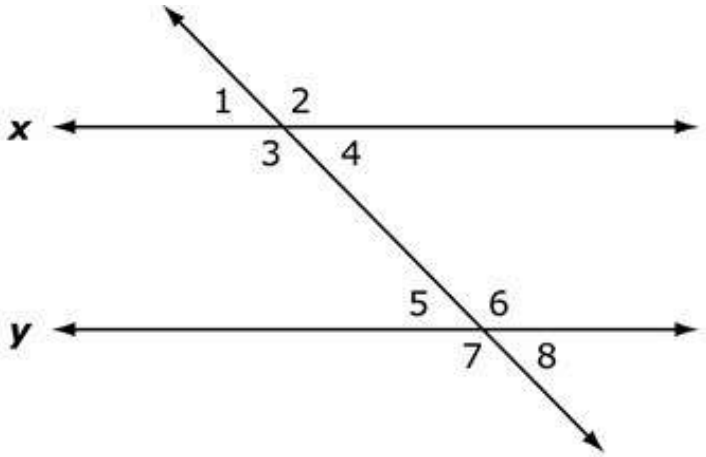

Let $y$ represent the total cost in dollars of $x$ oranges. The cost of 6 oranges is $4.

(4, −8) and (−5, −2)

| x | y |
|---|---|
| 3 | 5 |
| 6 | 7 |
| 9 | 9 |

12.

Lines *x* and *y* are parallel.




Which angles are congruent to angle 1? ***Select <u>all</u> that apply.***

A. ∠2

B. ∠3

C. ∠4

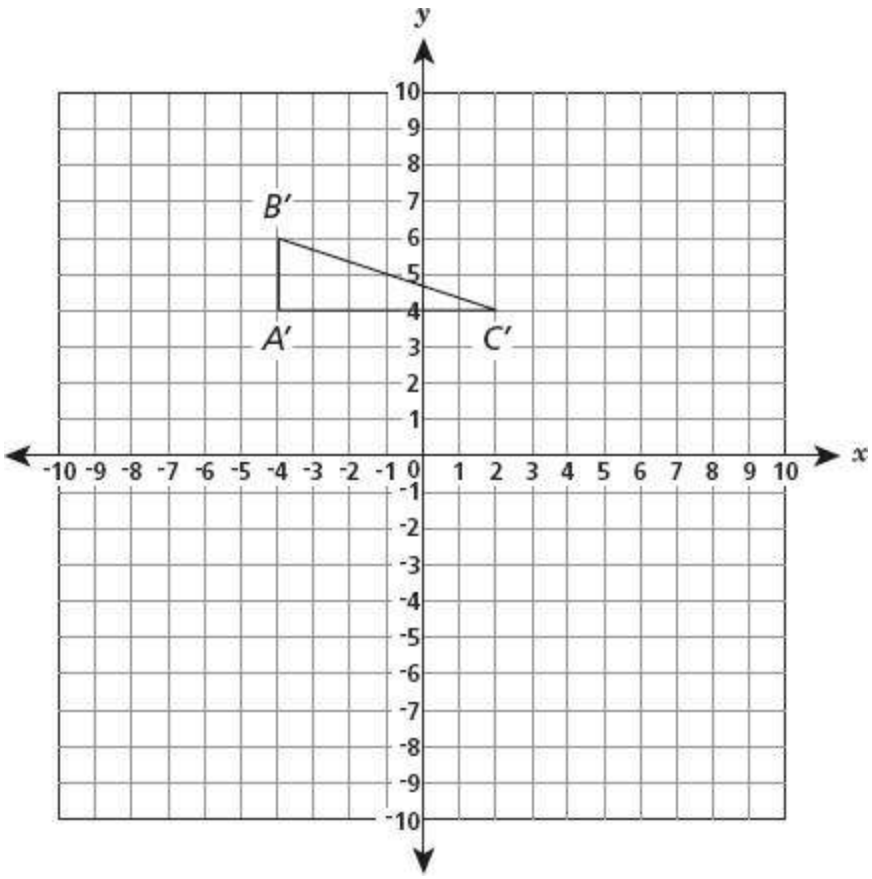
D. ∠5

E. ∠6

F. ∠7

G. ∠8

13. When $\Delta ABC$ was dilated by a scale factor of 2, centered at the origin, the result was its image $\Delta A'B'C'$ shown on the coordinate plane below. The vertices of $\Delta A'B'C'$ are $A'(-4, 4)$, $B'(-4, 6)$, and $C'(2, 4)$.



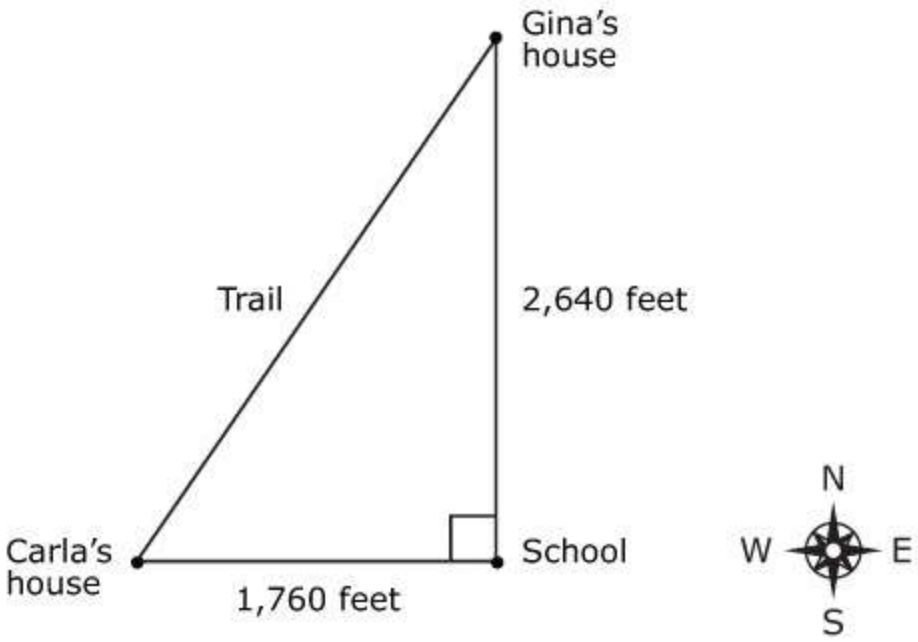

What are the coordinates of the vertices of $\Delta ABC$

***Vertices*** $A$ (_____ , _____) $B$ (_____ , _____) $C$ (_____ , _____)

Explain how you determined the coordinates of the vertices of $\Delta ABC$.

Are $\Delta ABC$ and $\Delta A'B'C'$ congruent to each other, similar to each other, or neither? Explain how you determined your answer.

14. Gina lives 2,640 feet directly north of the school and Carla lives 1,760 feet directly west of the school. There is a trail between the two houses, as shown on the diagram.




Which distance is the closest approximation for the length of the trail?

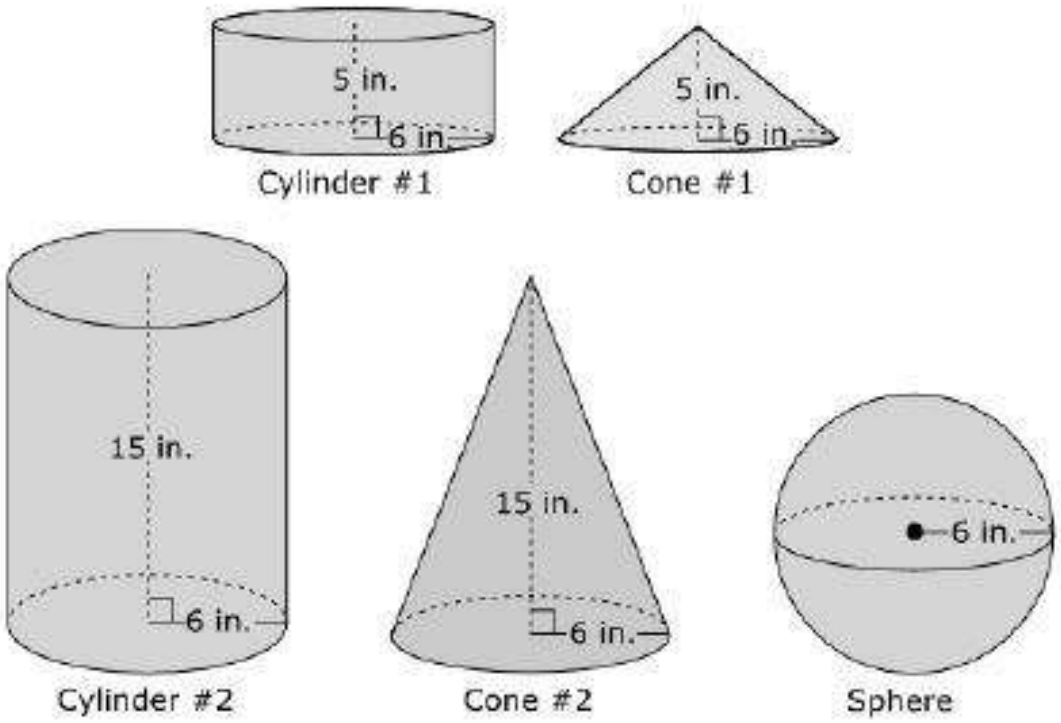
A. 4,400 ft

B. 3,173 ft

C. 1,968 ft

D. 880 ft

15. Consider the figures shown.




**Complete each of the following 2 activities (A - B) for Question 15.**

15A. Which figures have a volume greater than 600 cubic inches?

A. Cylinder #1

B. Cone #1

C. Cylinder #2

D. Cone #2

E. Sphere

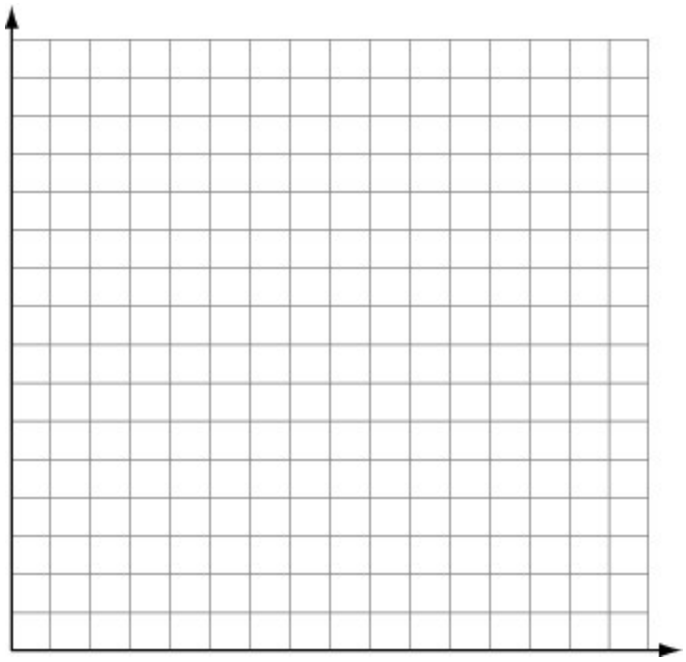
15B. How many times greater is the volume of the Sphere than the volume of Cone #1? Round your answer to the nearest tenth.

Enter your answer in the box.

16. Jennie surveyed several students in her eighth grade class to determine whether there was a correlation between the number of minutes spent studying for math and the number of minutes spent studying for science the night before a test. The table below shows the number of minutes ten students in Jennie's class spent studying the night before their last math and science tests.

| Time Studying for Math Test (in minutes) | Time Studying for Science Test (in minutes) |
|---|---|
| 40 | 42 |
| 46 | 44 |
| 52 | 54 |
| 60 | 50 |
| 38 | 70 |
| 36 | 38 |
| 58 | 55 |
| 26 | 33 |
| 48 | 46 |
| 65 | 60 |

**Part A.** Create a scatter plot to represent the data from Jennie's class. Make sure to label the axes and include a title for the graph.



**Part B.** Is there a correlation between the time students spent studying for their math test and the time students spent studying for their science test? Describe any patterns in the data and identify any outliers.

Use words, numbers, and/or pictures to show your work.

17. The linear model $y = 0.6x + 45$ represents the number of pairs of sandals sold, y, for a given outdoor temperature of x degrees at a certain shoe store. How many pairs of sandals should the company expect to sell if the outside temperature is 90 degrees?

A. 45 pairs

B. 54 pairs

C. 90 pairs

D. 99 pairs

18. Maya surveyed the students at her school about whether they were in the school band. She created the table below to summarize the data.

| | In the Band | Not in the Band |
|---|---|---|
| **Boys** | 8 | 21 |
| **Girls** | 9 | 30 |

About what percentage of the students in the band are girls?

A. 23%

B. 28%

C. 47%

D. 53%