Math
Spring Operational 2015

Grade 8
Performance Based Assessment
Released Items

M21585

1. Which expression is equivalent to $\frac{2^{-3}}{2^{-5}}$?

   - A. 2^2
   - B. $\frac{1}{2^2}$
   - C. 2^8
   - D. $\frac{1}{2^8}$

VF647000

2. $\frac{3}{4}(x+8)=9$

   In the equation shown, what is the value of *x* that makes the equation true?

   Enter your answer in the box.

3. Which of the input-output tables represent a function?

Select **each** correct answer.

A.

Input	Output
1	4
1	6
5	5
8	10

B.

Input	Output
1	4
5	6
5	1
10	8

C.

Input	Output
1	4
8	6
5	1
10	5

D.

Input	Output
1	4
10	6
5	5
8	1

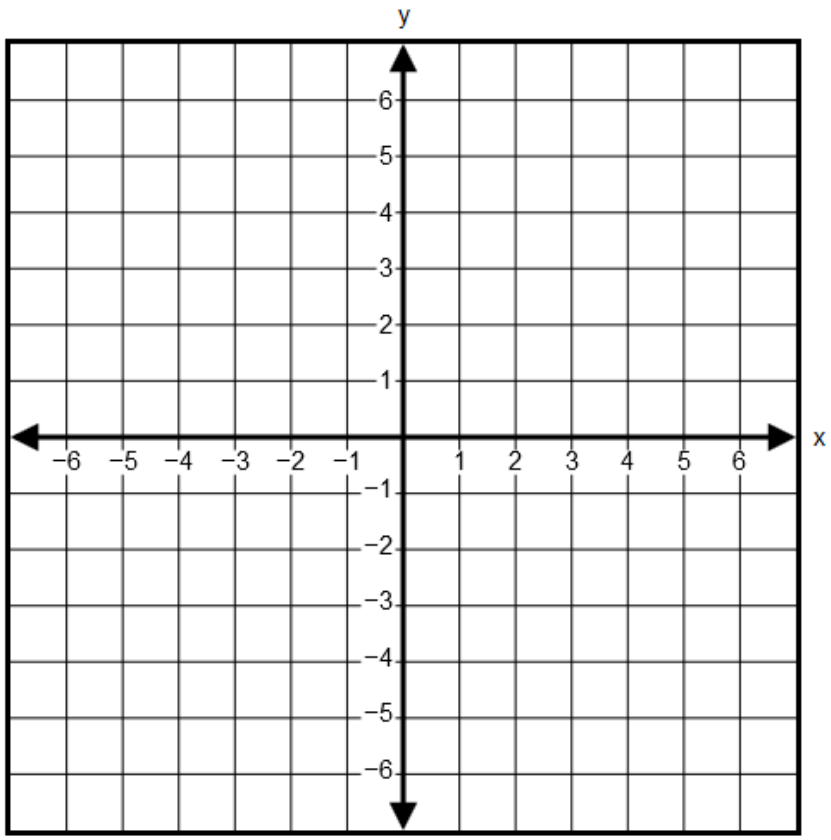
E.

Input	Output
1	4
8	6
5	10
1	5

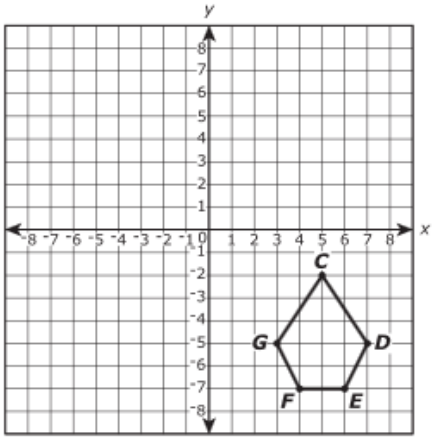
4. A linear function has the properties that:

- y is a function of x,
- each output is half the corresponding input, and
- when the input is -2 , the output is -1 .

To graph a line, select two points on the coordinate plane. A line will be drawn through the points.



5. Pentagon $CDEFG$ is shown on the coordinate plane.



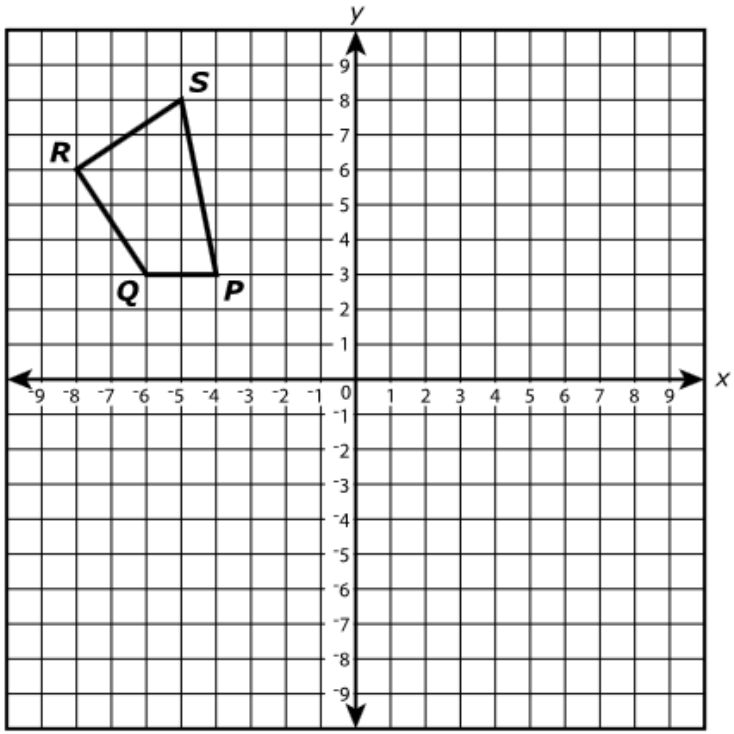
Pentagon $CDEFG$ is translated 7 units up and 5 units left, resulting in pentagon $C'D'E'F'G'$ (not shown).

Select from the drop-down menus to correctly complete each sentence.

The length of $\overline{FG}$ is Choose... to the length of $\overline{F'G'}$.

The perimeter of pentagon $CDEFG$ is Choose... the perimeter of pentagon $C'D'E'F'G'$.

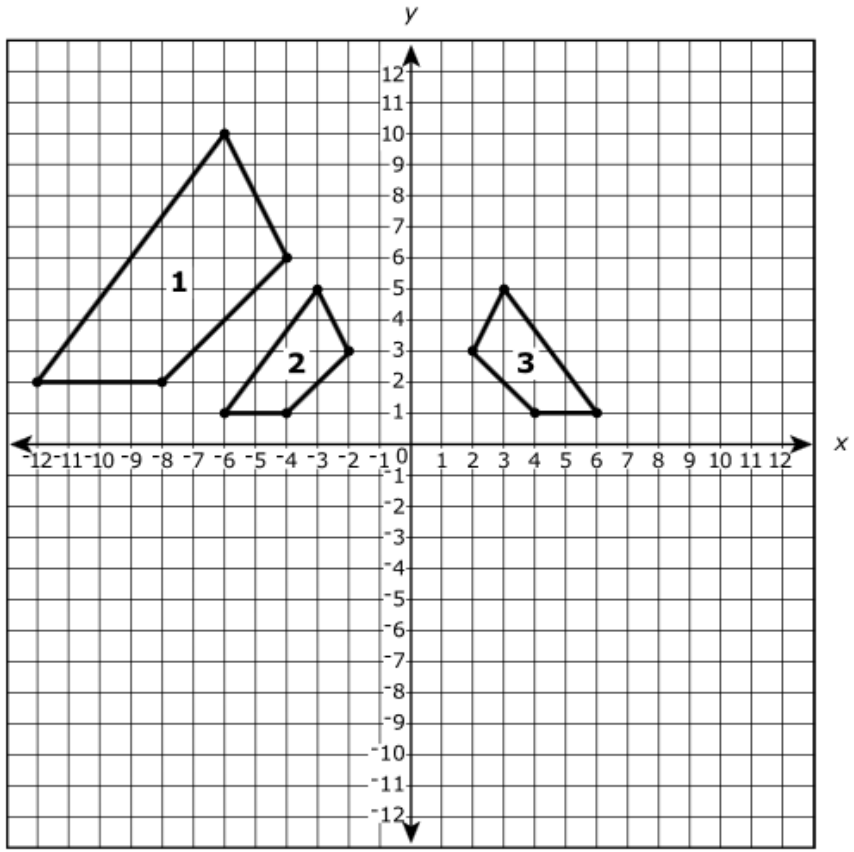
6. Polygon *KLMN* is the image of polygon *PQRS* after a 180° rotation.



Which angle of polygon *KLMN* is congruent to $\angle S$?

- A. $\angle K$
- B. $\angle L$
- C. $\angle M$
- D. $\angle N$

7. On the coordinate plane shown, Figure 1 is transformed into Figure 2, which is transformed into Figure 3. Figure 1 and Figure 3 are similar by a sequence of transformations.



Part A

What type of transformation was used to transform Figure 1 into Figure 2?

- A. dilation
- B. reflection
- C. rotation
- D. translation

Part B

Which statement describes the transformation of Figure 2 into Figure 3?

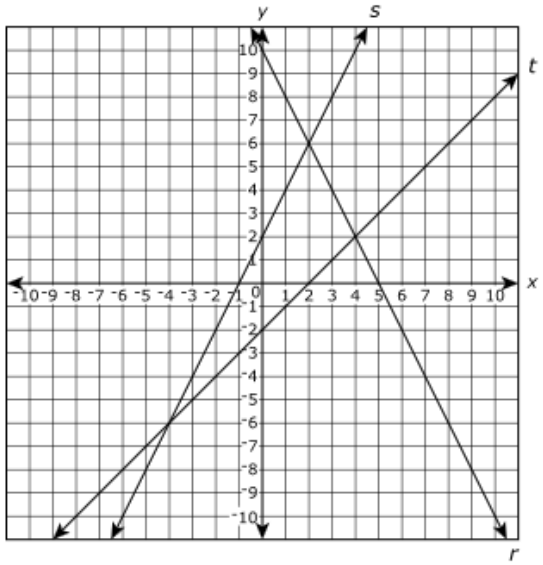
- A. reflection across the *x*-axis
- B. reflection across the *y*-axis
- C. translation 4 units to the right
- D. translation 6 units to the right

8. The distance from Mars to the Sun is 1.416×10^8 miles. The distance from Earth to the Sun is 9.296×10^7 miles.

How many more miles is the distance from Mars to the Sun than the distance from Earth to the Sun?

- A. 4.864×10^1 miles
- B. 7.880×10^1 miles
- C. 4.864×10^7 miles
- D. 7.880×10^7 miles

9. Lines r , s , and t are shown on the coordinate plane. Each pair of lines represents a system of equations.



Complete the table with the ordered pair representing the solution to each system of equations.

Drag and drop the appropriate ordered pair into each box.

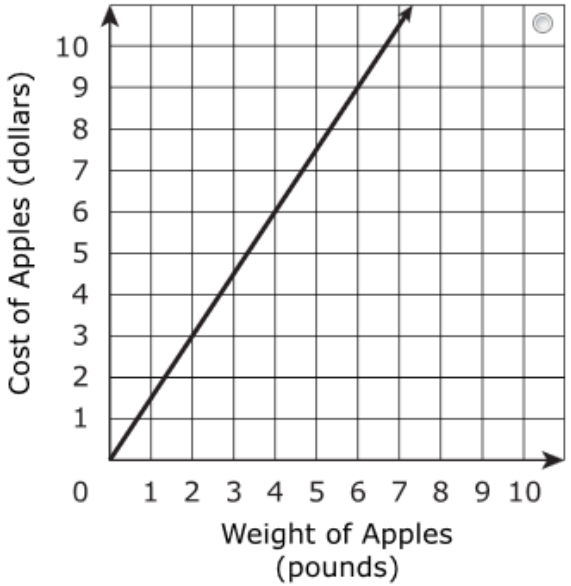
(−6,−4) (−4,−6) (2,4)
(2,6) (4,2) (6,2)

Solutions to System of Equations

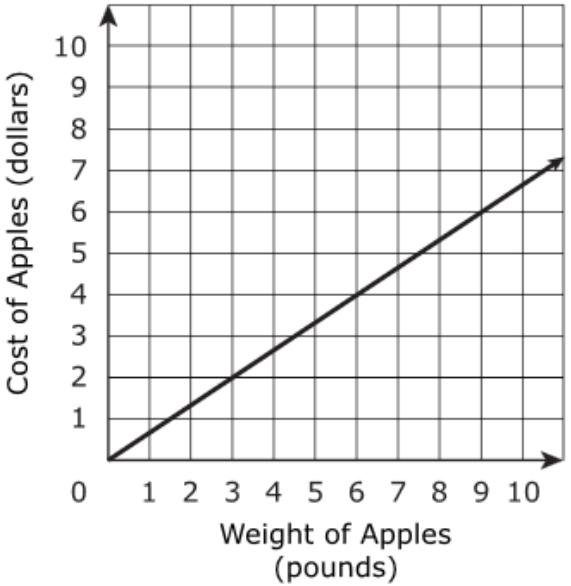
r and *s*	*s* and *t*	*r* and *t*

10. At a local market, the cost of apples is directly proportional to the weight of the apples. Carlos bought 10 pounds of apples for a cost of $15.00. Which graph shows the relationship between the weight of the apples, in pounds, and the cost of the apples, in dollars?

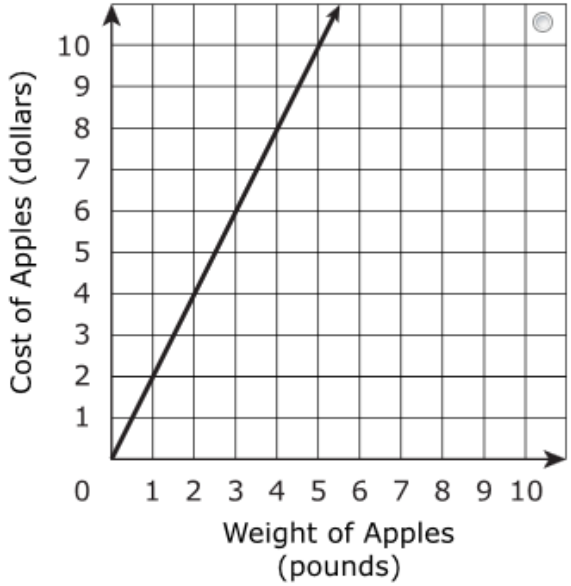
A.



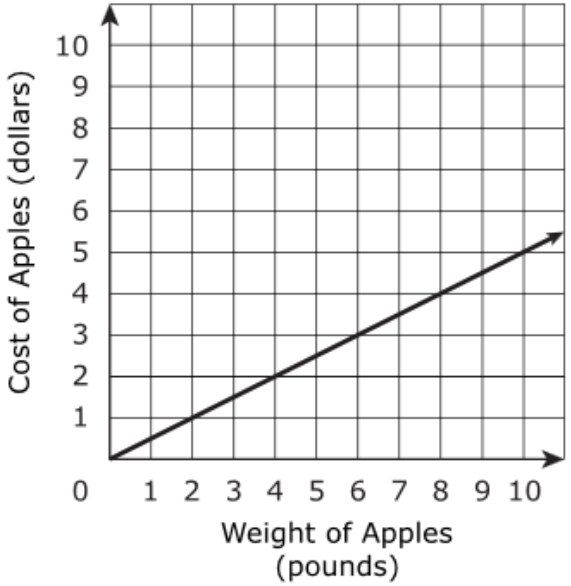
B.



C.



D.



VH026218

11. Peter determined the area, in square miles, of a piece of land using his calculator. The result of his calculation is displayed on his calculator in scientific notation as $7.4\mathrm{E}-4$.

Which statement is true of the area of the piece of land?

- A. It is between 0.07 and 0.7 square mile.
- B. It is between 0.007 and 0.07 square mile.
- C. It is between 0.0007 and 0.007 square mile.
- D. It is between 0.00007 and 0.0007 square mile.

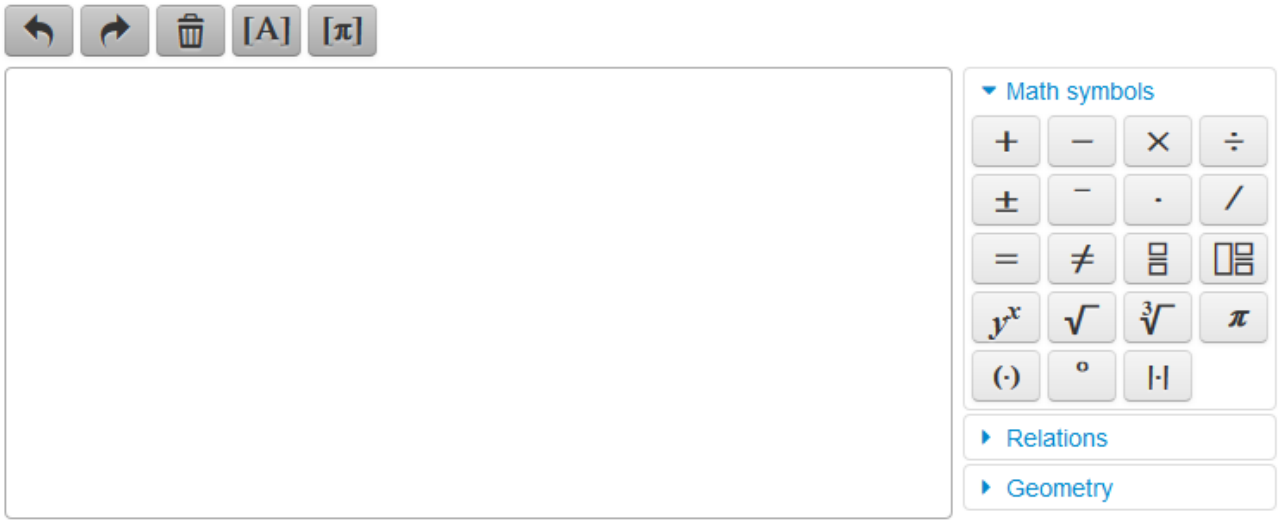
VF525935

12. Determine whether the equation has no solution, one solution, or infinitely many solutions.

$-2(11-12x)=-4(1-6x)$

Show each step of your work. Explain your conclusion.

Enter your answer, your work, and your explanation in the space provided.



13. The average price per gallon of gasoline in the state of California is given for 4 different dates.

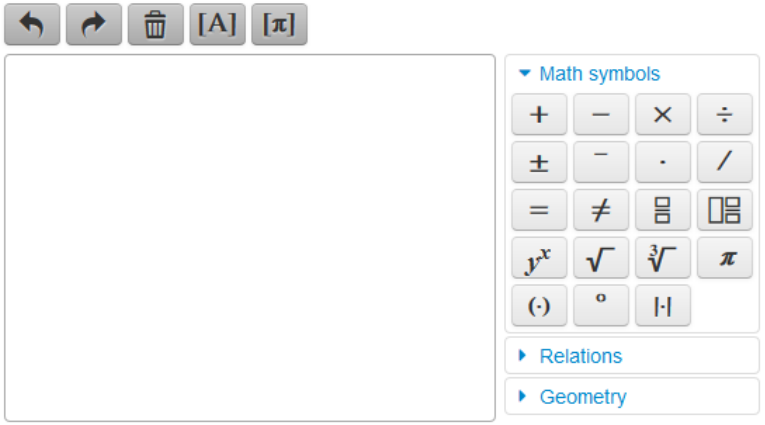
Gasoline Price Data

Date	Average Price per Gallon (dollars)
January 1998	1.291
January 2000	1.354
March 2011	3.874
March 2013	4.069

Part A

A student claims that the percent increase in the average price per gallon for the two-year period from 2011 to 2013 was about the same as the percent increase for the two-year period from 1998 to 2000. Provide work or an explanation to justify whether or not the student's claim is correct.

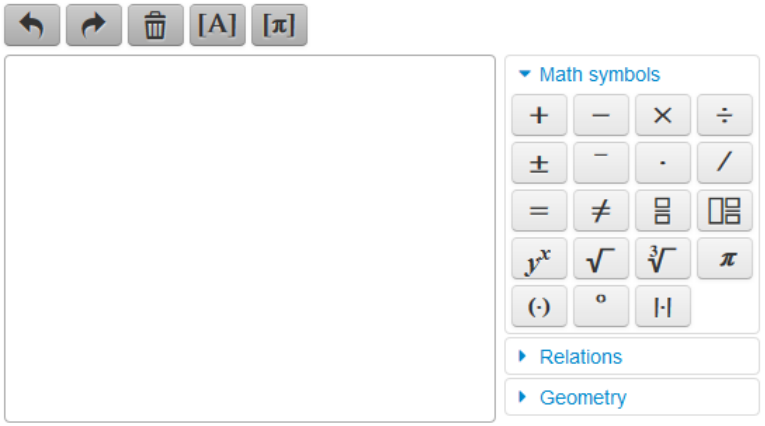
Enter your answer and your work or explanation in the space provided.



Part B

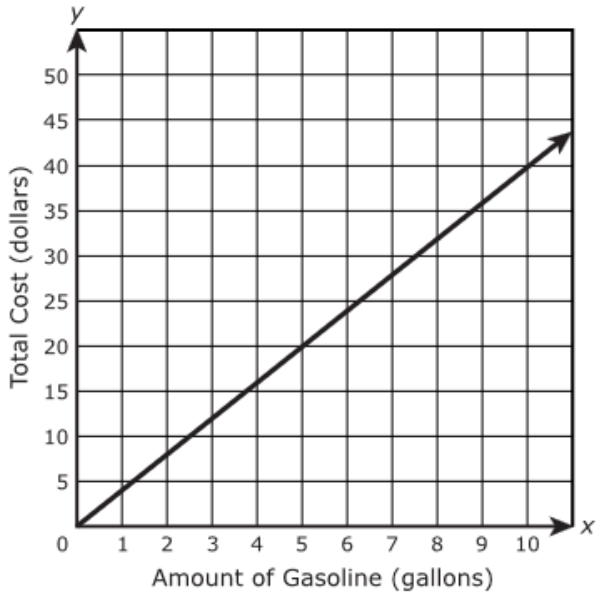
In March 2011, a California newspaper predicted that the price of gasoline in two years would be $4.10. The newspaper claimed that the prediction would be within 2% of the actual price of gasoline in March 2013. Given the data in the table, determine the percent error of the prediction. Was the newspaper's claim correct or incorrect? Provide work or an explanation to justify your answer.

Enter your answers and your work or explanation in the space provided.



14. The graph and table show the amount of gasoline in gallons, x, and total cost in dollars, y, of gasoline at two gas stations.

Gas Station P

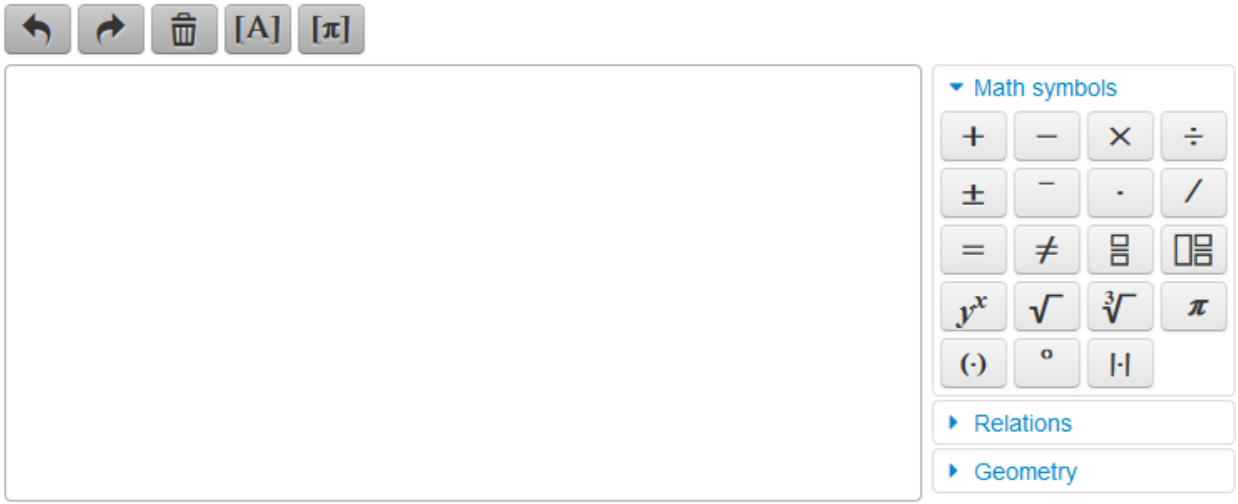


Gas Station M

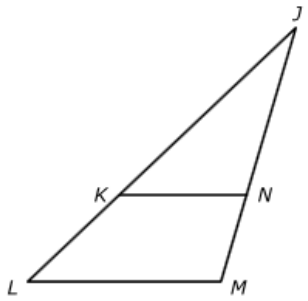
x	y
5	19.00
10	38.00
15	57.00

Use the unit price of gasoline at both gas stations to determine which gas station charges more for gasoline (gallons). Be sure to include the unit prices in your answer. Show or explain your work.

Enter your answer and your work or explanation in the space provided.



15. In the figure shown, $\overline{KN}$ is parallel to $\overline{LM}$.



Part A

When comparing $\triangle KJN$ and $\triangle LJM$, Tara states that $\angle KJN$ and $\angle LJM$ are congruent. Explain why Tara's statement is correct.

Enter your explanation in the space provided.

[A] [π]

Math symbols

Relations

Geometry

Part B

Tara wants to prove that a second pair of corresponding angles from $\triangle KJN$ and $\triangle LJM$ are congruent. Determine a second pair of corresponding angles from $\triangle KJN$ and $\triangle LJM$ that are congruent. Then explain how you know that the two angles are congruent.

Enter your answer and your explanation in the space provided.

[A] [π]

Math symbols

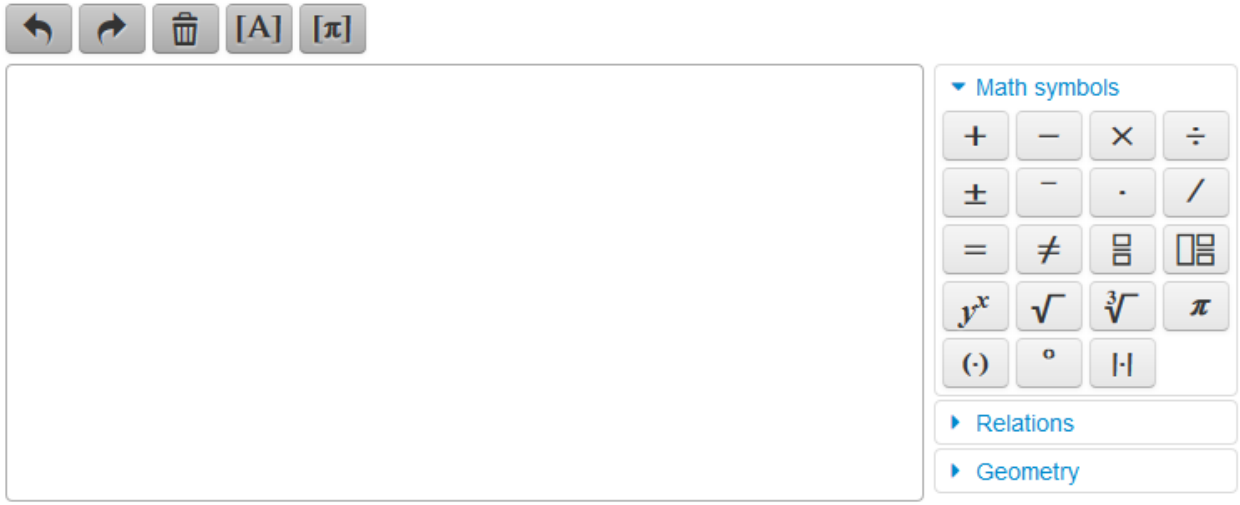
Relations

Geometry

16. **Part A**

Cary claimed that the expression $-5 + m$ is negative. Determine whether Cary's claim is always true, sometimes true, or never true. Provide evidence to support your conclusion.

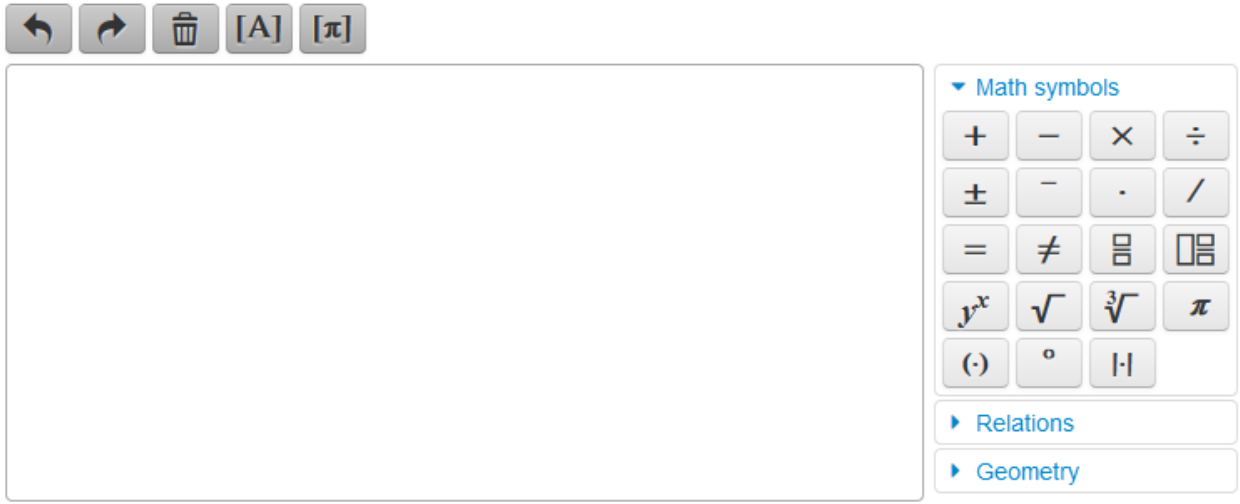
Enter your answer and your explanation in the space provided.



Part B

Phillip claimed that the expression $-p + 5 + p$ is positive for any value of p. Determine whether Phillip's statement is always true, sometimes true, or never true. Provide evidence to support your conclusion.

Enter your answer and your explanation in the space provided.



17. A bakery uses a muffin recipe that uses $\frac{1}{2}$ cup of milk for every batch of 12 muffins.

Part A

Based on the recipe, which statement is true?

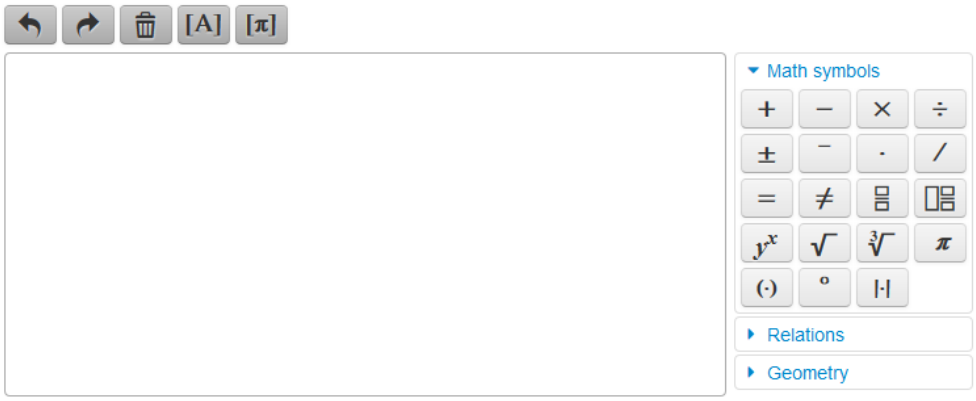
Select **each** correct answer.

- ☐ A. $\frac{1}{24}$ cup of milk is used to make each muffin.
- ☐ B. $\frac{1}{12}$ cup of milk is used to make each muffin.
- ☐ C. $\frac{1}{6}$ cup of milk is used to make each muffin.
- ☐ D. 1 cup of milk is used to make every 6 muffins.
- ☐ E. 1 cup of milk is used to make every 12 muffins.
- ☐ F. 1 cup of milk is used to make every 24 muffins.

Part B

How many batches of 12 muffins can be made using one **gallon** of milk? Show your work or explain how you found your answer.

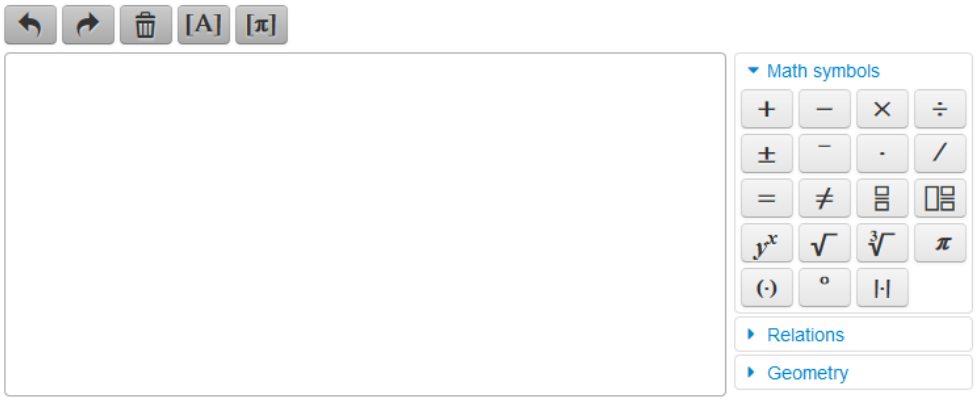
Enter your answer and your work or explanation in the space provided.



Part C

The bakery makes 96 muffins every day. How many total gallons of milk are needed to make 96 muffins every day for 30 days? Show your work or explain how you found your answer.

Enter your answer and your work or explanation in the space provided.

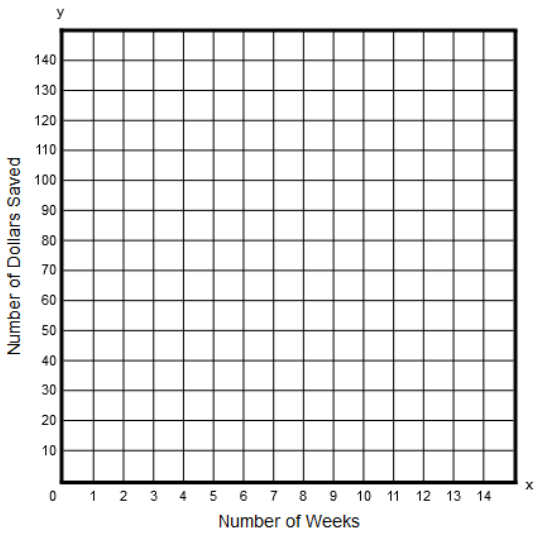


18. Mindy is saving money. She started with $0. After 6 weeks, she had $90 saved. Mindy is not sure exactly how much money she saved each week. She assumes that she saved money at a constant rate from when she started saving money through week 6.

Part A

Create a graph that can be used to model the number of dollars, *y*, Mindy saves in *x* weeks.

To graph a line, select two points on the coordinate plane. A line will be drawn through the points.



Part B

Explain what the slope of the line you drew represents.

Enter your explanation in the space provided.

[A] [π]

Math symbols

Relations

Geometry

Part C

Explain how the line you drew can be used to predict the number of weeks it will take Mindy to save $150. Include in your explanation any assumptions that must be made in order to make the prediction.

Enter your explanation in the space provided.

[A] [π]

Math symbols

Relations

Geometry