Tennessee Comprehensive Assessment Program

TCAP

TNReady — Grade 8 Math Part II

PRACTICE TEST

Student Name

Teacher Name

Tennessee Department of Education

Directions

Subtest 1 of this Practice Test booklet contains sample items for Grade 8 Math. Write your answers in this Practice Test booklet.

You MAY NOT use a calculator in Subtest 1 of this test booklet.

Sample A: Selected-Response

Circle **all** expressions equivalent to 4(9 + 3).

A. 4(12)

B. 36 + 3

C. 36 + 12

D. 4 + (9 + 3)

E. (9 + 3) + (9 + 3) + (9 + 3) + (9 + 3)

Sample B: Table

Select **True** or **False** to indicate whether each comparison is true.

	True	False
$3^2 < \frac{4}{9} + \frac{2}{3}$		
$2(2^3 + 14 \bullet 2) \geq 9 \bullet 8$		
$16.2 \bullet 3 - 24.6 < 72 \div 3 + 2.78$		

Sample Answers

A. A, C, E

B. False, True, True

1. What value of coefficient *b* makes the equation true for any real number *x*?

$$-3(2x - 3) + 5x = bx + 9$$

A. −6

B.* −1

C. −21

D. 7

2. Toby has a spherical beach ball with a diameter of 10 inches. Malcolm has a spherical beach ball with a radius of 7 inches. Which expression represents the difference in the volumes of the two beach balls?

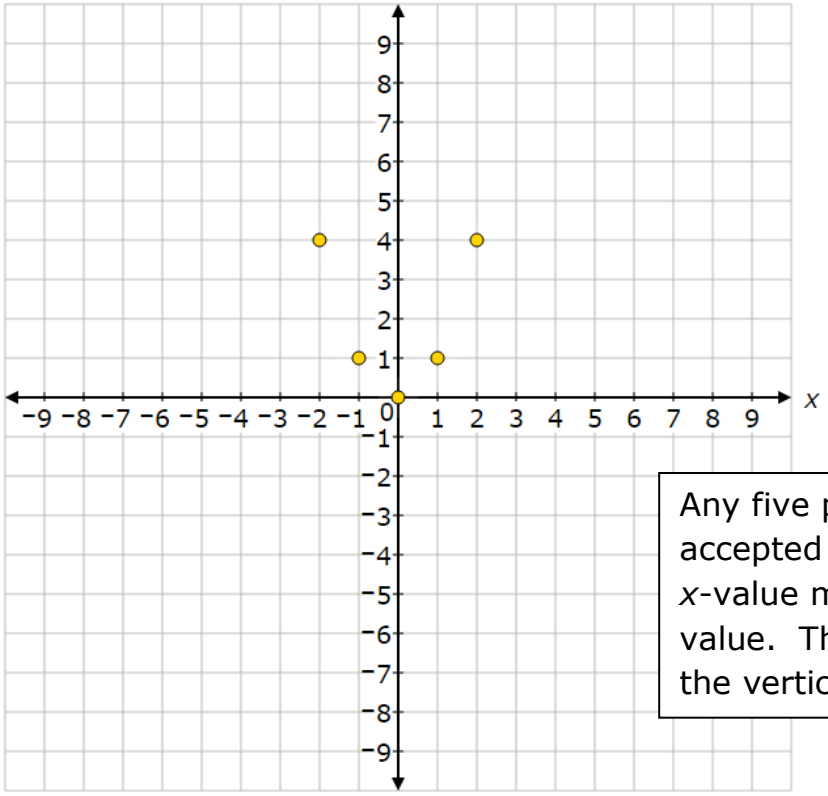
A. $\frac{4}{3}\pi(7^2) - \frac{4}{3}\pi(5^2)$

B. $\frac{4}{3}\pi(10^2) - \frac{4}{3}\pi(7^2)$

C.* $\frac{4}{3}\pi(7^3) - \frac{4}{3}\pi(5^3)$

D. $\frac{4}{3}\pi(10^3) - \frac{4}{3}\pi(7^3)$

3. On the coordinate plane, plot **five** points that represent a function.



Any five points will be accepted as long as only one *x*-value maps to only one *y*-value. The points must pass the vertical line test.

4. Given the expression $\frac{(2^{-3})(2^{5})}{(2^{7})}$, select **all** equivalent numerical expressions.

A.* $(2^{-3+5})(2^{-7})$

B. $\frac{2^{5}}{2^{3-7}}$

C.* $\frac{2^{5}}{2^{10}}$

D. $(2^{5})(2^{-4})$

E.* $\frac{1}{32}$

F. 32

5. A baby weighs 7 pounds at birth. The table shows the birth weight after each month of life, up to the sixth month.

Month	Weight (pounds)
0	7
1	8
2	9
3	10
4	11
5	12
6	13

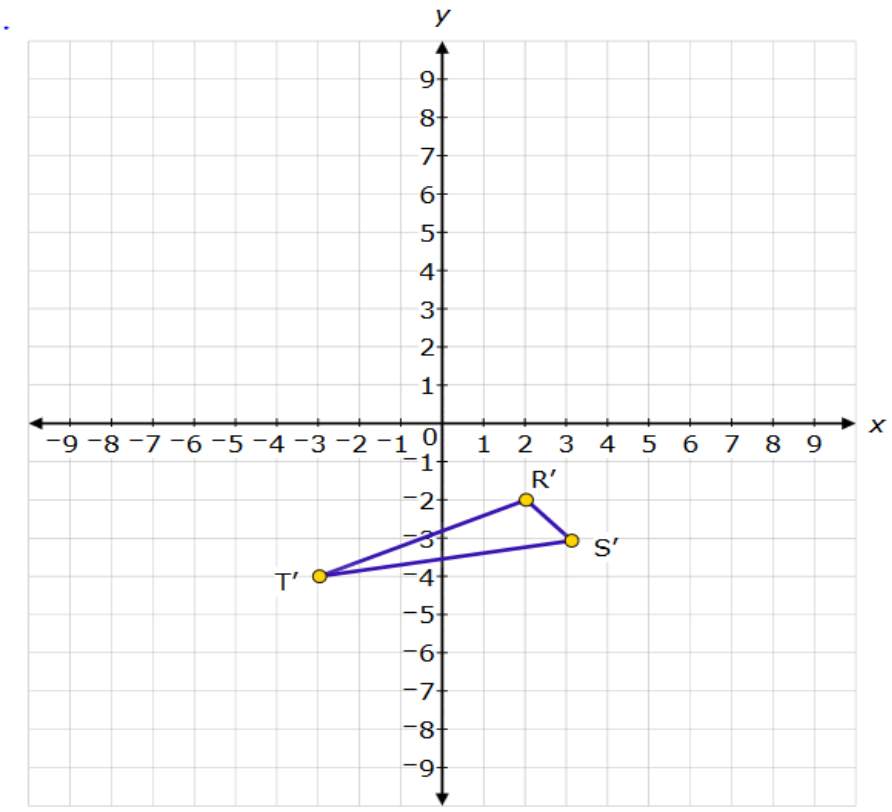
Write an equation in the form of $y = mx + b$ that can be used as a linear model of these data.

Write your answer in the space provided.

$y = x + 7$ or any equivalent equation

6. A triangle has vertices $R(1, 2)$, $S(3, 3)$ and $T(-3, 4)$. The triangle will be reflected over the x-axis.

Create triangle $R'S'T'$, the image of triangle RST. Label each vertex.



7. On the line beside each value, write "Irrational" if the number is an irrational number, and "Rational" if the number is a rational number.

Rational 1.33333...

Rational 5

Rational $\sqrt{4}$

Irrational $\sqrt{7}$

Rational 2.5

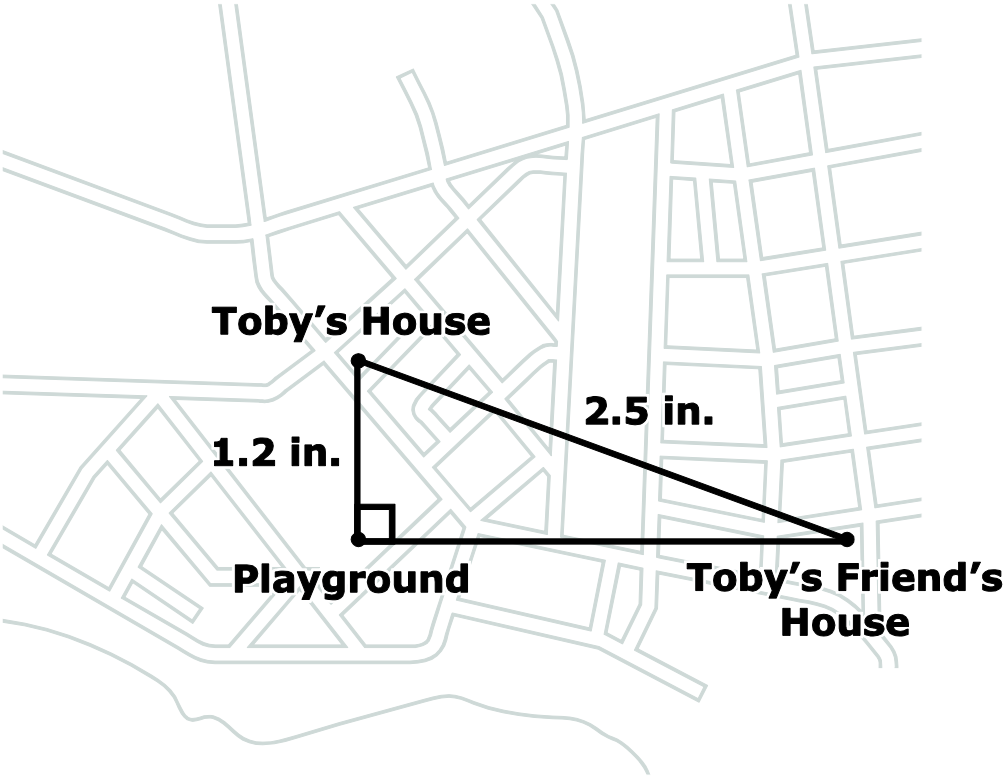
Irrational π

8. On the line beside each irrational expression, write the **closest** approximate value from the "Values" box.

Irrational Expression	Approximate Value
$\frac{2}{3}\sqrt{26}$	3.40
$3\sqrt{5}$	6.71
1.75π	5.50
$\frac{\sqrt{111}}{2}$	5.27

Values
6.71
3.40
5.27
5.50

9. Toby has created a map of his neighborhood. When he drew the map he noticed his house, his friend's house, and the playground formed a right triangle.



Which expression represents the distance, in inches, between Toby's friend's house and the playground?

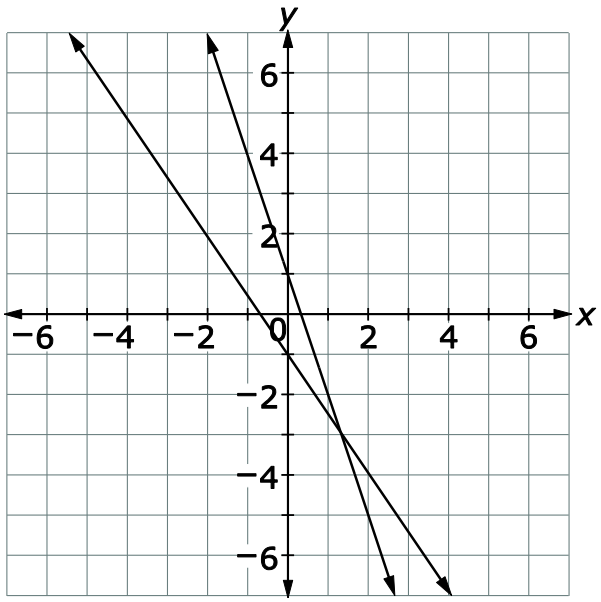
A. $\sqrt{2.5 - 1.2}$

B.* $\sqrt{2.5^2 - 1.2^2}$

C. $\sqrt{2.5 + 1.2}$

D. $\sqrt{2.5^2 + 1.2^2}$

10. The system of linear equations shown is graphed on the coordinate plane.



What is the approximate solution for the system of linear equations?

A. (1, –3)

B. (–3, 1.3)

C.* (1.3, –3)

D. (–3, 1)

11. The value of an irrational number expression is estimated to be between 18 and 19. Which could be the expression?

A. $\left(\sqrt{2}\right)^9$

B. $\left(\sqrt{3}\right)^5$

C. $\left(\sqrt{6}\right)^3$

D.* $\left(\sqrt{7}\right)^3$

Directions

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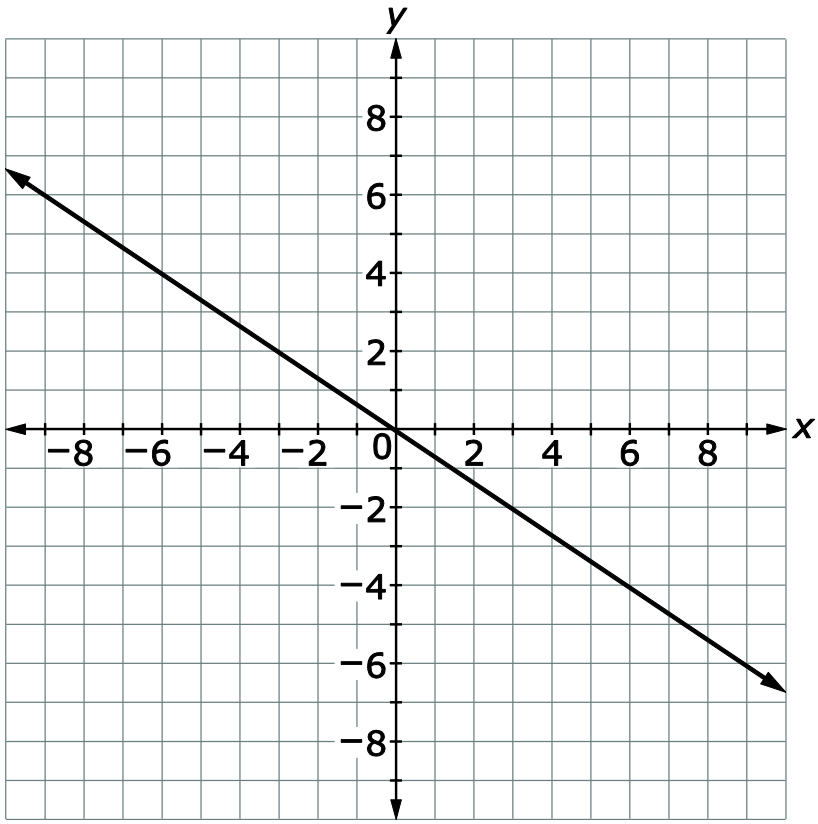
You MAY use a calculator in Subtest 2 of this test booklet.

12. The graph displays a linear function.



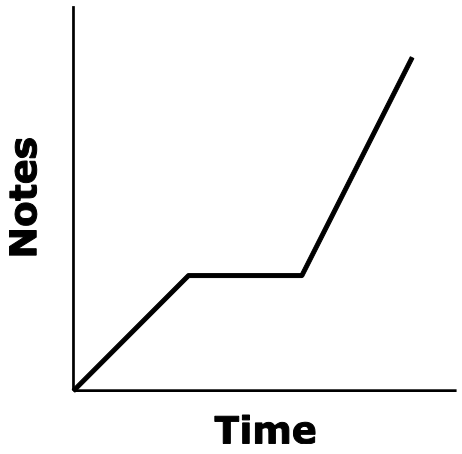
Write the equation of the linear function in the form $y = mx + b$.

Write your answer in the space provided.

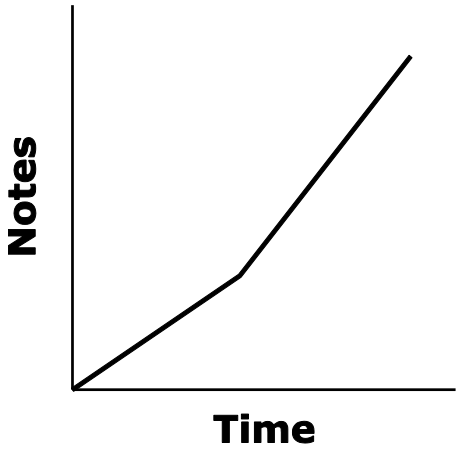
$$y = -\frac{2}{3}x$$

13. Kari plays a certain number of notes in a set amount of time on the piano. She rests for an equal amount of time, then plays fewer notes in the same amount of time it took her to play the first set of notes. Which graph can be used to represent the situation?

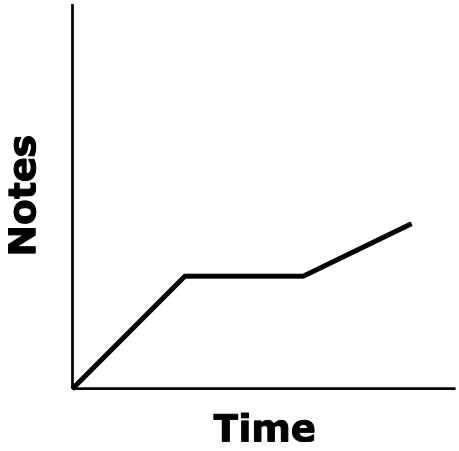
A.



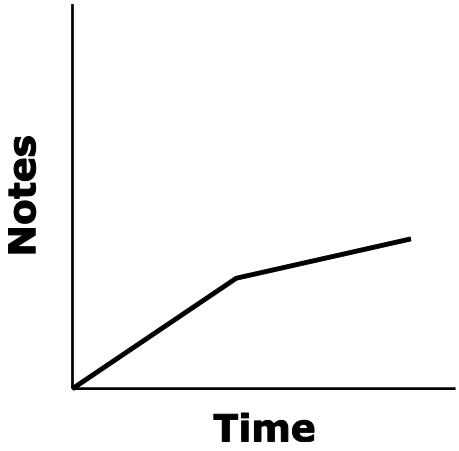
C.



B.*



D.



14.
- Three towns, *A*, *B*, and *C*, can be considered as the vertices of a triangle.
- The distance from town *A* to town *B* is 224 miles.
- The distance from town *B* to town *C* is 260 miles.
- The distance from town *A* to town *C* is 132 miles.

Circle **one** choice from the box below **each** sentence to correctly complete the sentence.

If the three towns are the vertices of a right triangle, then the length of the hypotenuse is [**A**] miles.

Box A
132
224
***260**

If the three towns are the vertices of a right triangle, then [**B**].

Box B
***$132^2 + 224^2 = 260^2$**
$224^2 - 132^2 = 260^2$
$132^2 + 260^2 = 224^2$

Therefore, the three towns [**C**] the vertices of a right triangle.

Box C
***are**
are not

15. A car dealership polled customers on their preferred type of vehicle, car or truck, and recorded the results based on the gender of the customer.

		Type of Preferred Vehicle		
		Car	Truck	Total
Gender	Male	45	40	85
	Female	35	30	65

Is there an association between type of preferred vehicle and gender?

A. No; 53% of all customers preferred cars and 47% preferred trucks, so the percentages are roughly the same.

B.* No; 53% of men preferred cars and 47% preferred trucks. The percentages for women are roughly the same.

C. Yes; 30% of all customers were men who preferred cars, while 23% were women who preferred cars.

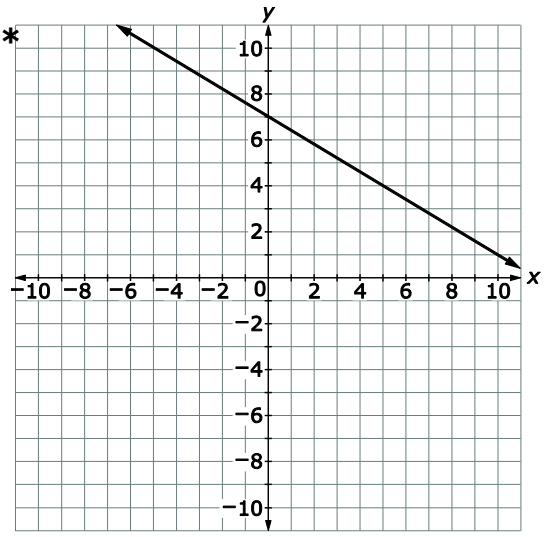
D. Yes; 57% of the customers were men, which is a higher percentage than the 43% of the customers who were women.

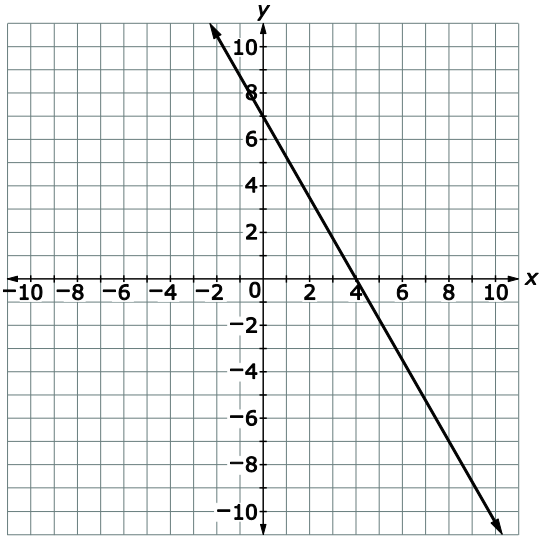
16. Presley fills a cup in the shape of a cone with water. The cup has a diameter of 3.6 inches and a height of 6 inches. What is the volume, in cubic inches, of water Presley will use to completely fill the cup?

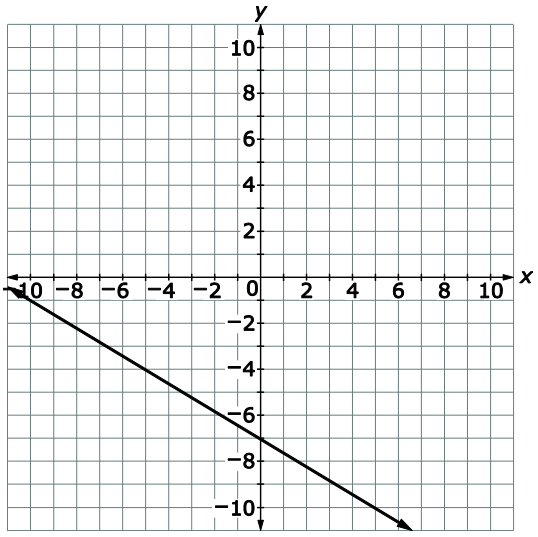
Write your answer in the space provided.

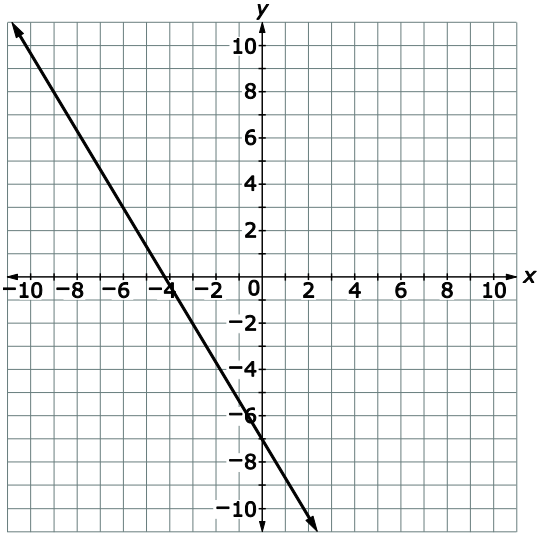
Accept answers in the range 20.34 - 20.4

17. What is the graph of the linear function $y = -\frac{3}{5}x + 7$?

A.* 

C. 

B. 

D. 

18. Determine if each of the following equations has one rational solution or two rational solutions.

Solve each equation. On the line beside each value, write "One" if the equation has one rational solution, and "Two" if the equation has two rational solutions.

Number of Rational Solutions	Equation
Two	$x^2 = 1$
One	$x^3 = 8$
One	$x^2 = 0$
Two	$x^2 = 16$
One	$x^3 = \frac{1}{27}$

19. What is the volume of a sphere with an 18-inch diameter?

Write your answer in the space provided.

Accept answers in the range 3052 – 3055

20. For $1200, a business can post an advertisement for 30 days. For $1500, the advertisement will be posted for 60 days. The relationship comparing cost to days is linear. Which function can be used to model the relationship between cost, y, and the number of days, x, that an advertisement will be posted?

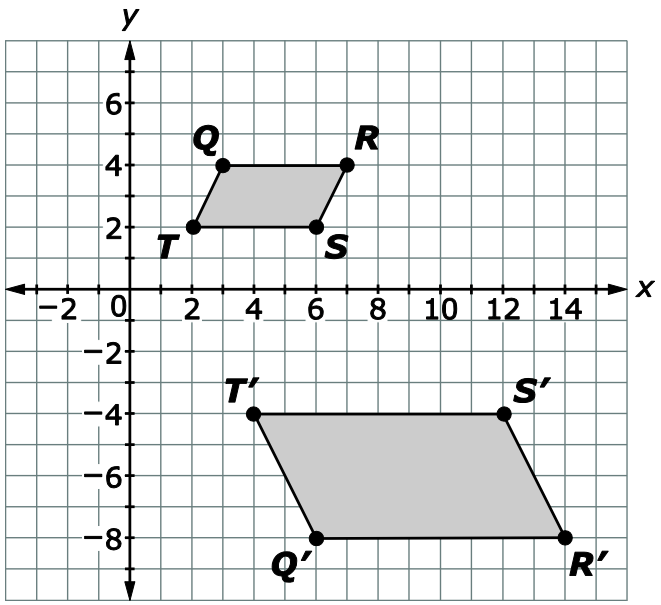
A. $y = 300x + 1200$

B. $y = 1200x + 300$

C.* $\boldsymbol{y = 10x + 900}$

D. $y = 900x + 10$

21. Quadrilateral *QRST* and its image, *Q′R′S′T′*, are shown.



What is the sequence of transformations that results in quadrilateral *QRST* being mapped onto quadrilateral *Q′R′S′T′*?

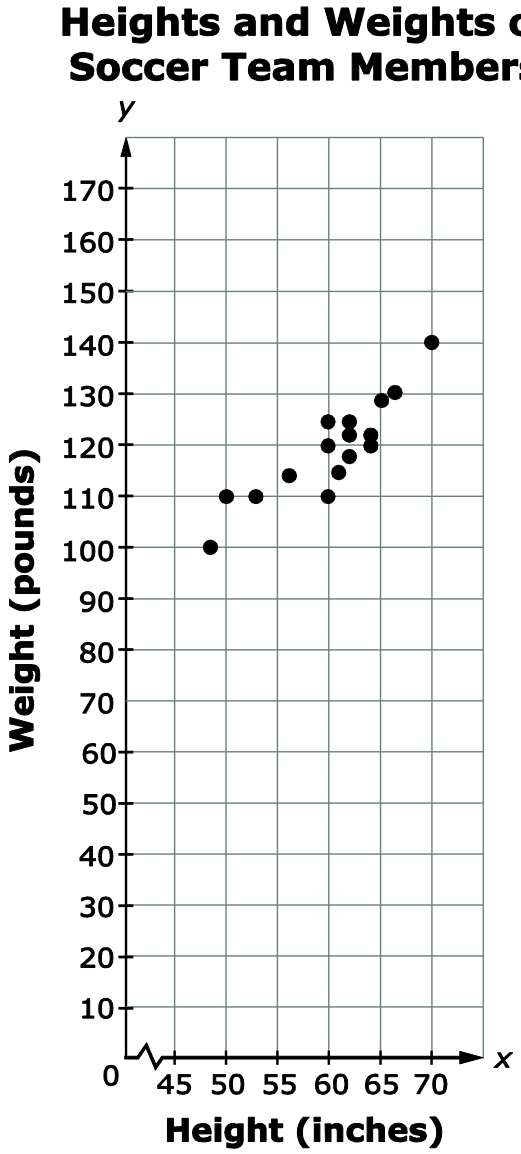
A. * reflection over the *x*-axis, followed by a dilation about the origin by a scale factor of 2

B. 90° clockwise rotation about the origin, followed by a dilation about the origin by a scale factor of 2

C. dilation about the origin by a scale factor of 2, followed by a translation 2 units right and then 2 units down

D. 270° counterclockwise rotation about the origin, followed by a dilation about the origin by a scale factor of 2

22. Raul recorded the height, in inches, and weight, in pounds, of each of his soccer team members. Then he graphed the data in the scatter plot shown.



Select **all** true statements about the scatter plot of the data.

A.* The data have a linear association.

B. The data have a negative association.

C.* There are no obvious outliers.

D. The data are clustered about the height of 55 inches.

E.* As height increases, so does weight.

23. Which equation represents a linear function?

A. $y = x(2 - 3x)$

B.* $y = \frac{1}{2}(x - 3) - 2x$

C. $y = \frac{1}{2}x^2 + 3x - 1$

D. $y = \frac{1}{2}x(2x - 1) + 3$