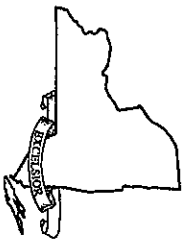


Name: \_\_\_\_\_



# New York State Testing Program

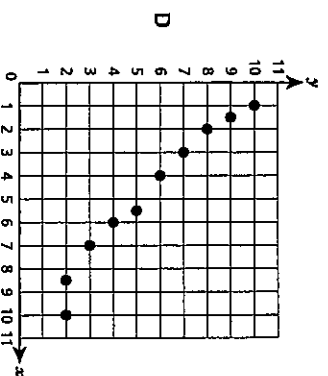
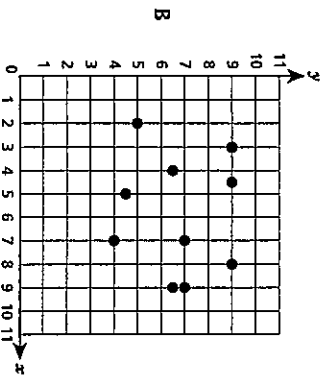
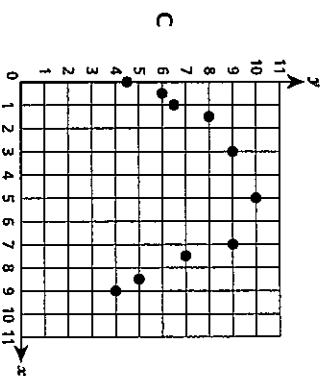
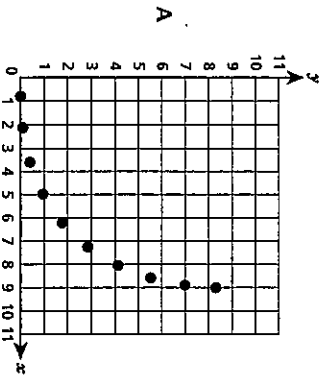
## 2023 Mathematics Test Session 1

# Grade 8

May 2–4, 2023

RELEASED QUESTIONS

**2** Which scatter plot best represents a linear association between  $y$  and  $x$ ?



GO ON

1 Quadrilateral ABCD is graphed on a coordinate plane. Vertex A is located at the point  $(-2, 3)$ . The quadrilateral is dilated by a scale factor of 2, with the center of dilation at the origin, to form quadrilateral A'B'C'D'. Which ordered pair represents the location of vertex A'?

- A  $(-4, 5)$
- B  $(-4, 6)$
- C  $(0, 5)$
- D  $(6, -4)$

2 The equation and the table shown below each represent a different relationship between  $x$  and  $y$ .

FUNCTION A      FUNCTION B

$$y = \frac{5}{4}x$$

$x$	$y$
5	1.5
10	3
15	4.5

Which statement about the functions is true?

- A Function A has a greater rate of change than Function B because  $1.25 > 3.3$ .
- B Function B has a greater rate of change than Function A because  $1.25 < 3.3$ .
- C Function A has a greater rate of change than Function B because  $1.25 > 0.3$ .
- D Function B has a greater rate of change than Function A because  $1.25 < 0.3$ .

3 Two points are plotted on a coordinate plane. Point A is plotted at  $(-11, 8)$  and point B is plotted at  $(-2, -4)$ . What is the distance, in units, from point A to point B?

- A 13
- B 15
- C  $\sqrt{145}$
- D  $\sqrt{185}$

10.5 Which expression has a value of  $\frac{1}{16}$  ?

- A  $(2^{-4})^{-1}$
- B  $(2^4)^{-1}$
- C  $(2^8)^{-2}$
- D  $(2^{-8})^{-2}$

11.6 A cylinder has a radius of 4.8 feet and a height of 8.1 feet. What is the volume, to the nearest tenth of a cubic foot, of the cylinder?

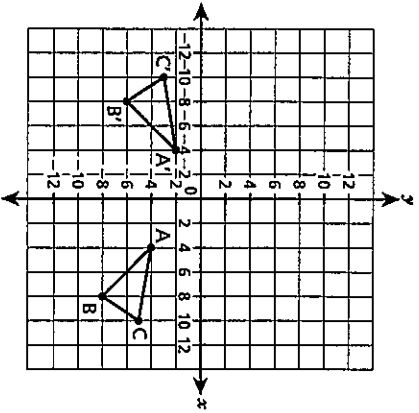
- A 989.4
- B 586.3
- C 244.3
- D 186.6

12 The rule for a function of  $x$  is:  
multiply the input value by 2, then subtract 6

The data set for the input values of the function,  $x$ , is  $\{-1, 1, 3, 5\}$ . Which value is one of the output values,  $y$  ?

- A -2
- B -1
- C 2
- D 4

- 121 Triangle ABC and its congruent image, triangle A'B'C', are graphed on the coordinate plane shown below.



Which sequence of transformations maps triangle ABC onto triangle A'B'C'?

- A a reflection over the  $y$ -axis and then a translation 2 units up
- B a reflection over the  $y$ -axis and then a translation 2 units down
- C a reflection over the  $x$ -axis and then a translation 8 units left
- D a reflection over the  $x$ -axis and then a translation 8 units right

- 220 Which equation represents the graph of a line on a coordinate plane that passes through the  $x$ -intercept at  $(9, 0)$  and the  $y$ -intercept at  $(0, -5)$ ?

- A  $y = -\frac{9}{5}x - 5$
- B  $y = \frac{9}{5}x - 5$
- C  $y = -\frac{5}{9}x - 5$
- D  $y = \frac{5}{9}x - 5$

- 222 Trent draws a triangle with one interior angle measuring  $34^\circ$ . Which angle measures could be the measures of the other two interior angles in Trent's triangle?

- A  $46^\circ$  and  $90^\circ$
- B  $53^\circ$  and  $127^\circ$
- C  $66^\circ$  and  $80^\circ$
- D  $68^\circ$  and  $68^\circ$

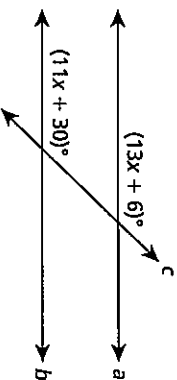
Nathan observes the growth of sunflower plants for a science project. He collects data on the relationship between the height, in centimeters, of each sunflower plant during a thirty-day period and the amount of fertilizer, in grams, used on each plant. The equation for the line of best fit for these data is  $y = 0.35x + 2$ , where  $y$  is the height of the plant in centimeters and  $x$  is the number of grams of fertilizer used. Based on the model, what does the slope of the line represent?

- A the height of the plant
- B the amount of fertilizer used
- C the average growth of the plant per gram of fertilizer used
- D the average amount of fertilizer used per centimeter the plant grew

Line segment  $CD$  is graphed on a coordinate plane. The line segment is reflected over the  $x$ -axis and then rotated  $90^\circ$  clockwise about the origin to create line segment  $EF$ . Which statement is always true about line segment  $EF$ ?

- A Line segment  $EF$  is congruent to line segment  $CD$ .
- B Line segment  $EF$  is perpendicular to line segment  $CD$ .
- C Line segment  $EF$  is twice the length of line segment  $CD$ .
- D Line segment  $EF$  is one-half the length of line segment  $CD$ .

In the figure shown below, lines  $a$  and  $b$  are parallel, and line  $c$  is a transversal.



What is the value of  $x$ ?

- A 6
- B 9
- C 12
- D 18

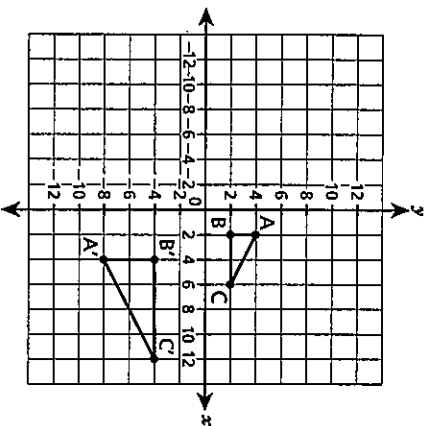
Two functions are described below.

- Function A: A taxi driver charges customers a base amount of \$3,00 and also an amount of \$2.00 per mile,  $x$ , for a total charge,  $y$ , to a customer.
- Function B: The equation  $y = 3x + 2$  represents the relationship between the number of miles,  $x$ , a taxi travels and the total charge,  $y$ , to a customer.

Which statement correctly compares the relationship between Function A and Function B?

- A Function A has both a greater rate of change and a greater initial value.
- B Function B has both a greater rate of change and a greater initial value.
- C Function A has a greater rate of change than Function B, but the initial value for Function A is less than the initial value for Function B.
- D Function B has a greater rate of change than Function A, but the initial value for Function B is less than the initial value for Function A.

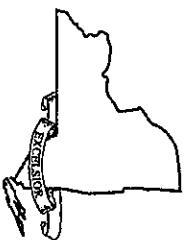
On a coordinate plane,  $\triangle ABC$  undergoes a sequence of transformations to create  $\triangle A'B'C'$ .



- Which sequence of transformations could have been used to take  $\triangle ABC$  to  $\triangle A'B'C'$ ?
- A a dilation by a scale factor of 2 centered at the origin and then a reflection over the  $x$ -axis
  - B a dilation by a scale factor of 2 centered at the origin and then a reflection over the  $y$ -axis
  - C a dilation by a scale factor of  $\frac{1}{2}$  centered at the origin and then a reflection over the  $x$ -axis
  - D a dilation by a scale factor of  $\frac{1}{2}$  centered at the origin and then a reflection over the  $y$ -axis

GO ON

Name: \_\_\_\_\_



**New York State  
Testing Program**

**2023  
Mathematics Test**

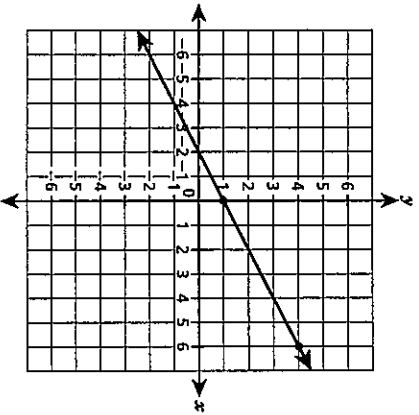
**Session 2**

**Grade 8**

**May 2–4, 2023**

**RELEASED QUESTIONS**

The graph of a line is shown on the coordinate plane below.



Which equation represents the graph of the line?

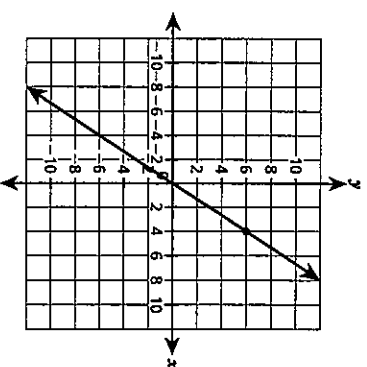
- A  $y = \frac{1}{2}x + 1$
- B  $y = \frac{1}{2}x - 2$
- C  $y = 2x + 1$
- D  $y = 2x - 2$

Function A and Function B are represented by the table and graph shown below.

FUNCTION A

x	y
-6	-12
-2	-4
0	0
2	4

FUNCTION B



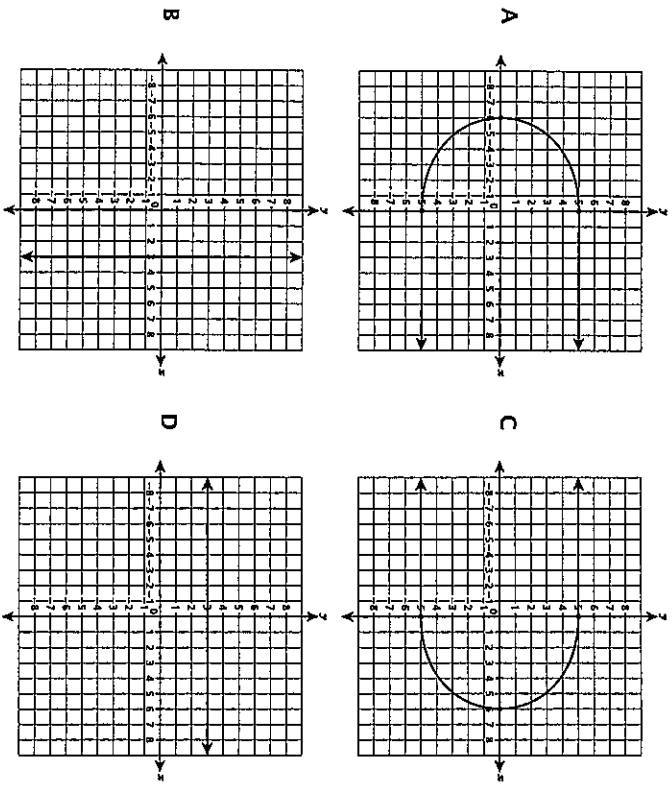
Which statement about Function A and Function B is true?

- A The rate of change for Function A is less than the rate of change for Function B.
- B The rate of change for Function A is greater than the rate of change for Function B.
- C The rate of change for Function A is equal to the rate of change for Function B because the graph of the line for each function is linear.
- D The rate of change for Function A is equal to the rate of change for Function B because the graph of the line for each function passes through the origin.

Which statement about the value of  $\sqrt{50}$  is true?

- A It is irrational because the decimal equivalent eventually repeats.
- B It is rational because the decimal equivalent eventually terminates.
- C It is rational because the value as a decimal is equivalent to a fraction.
- D It is irrational because the decimal equivalent is non-repeating and does not terminate.

Which graph represents  $y$  as a function of  $x$ ?



- A  $1,232\pi$   
 B  $3,388\pi$   
 C  $6,776\pi$   
 D  $27,104\pi$

A cylindrical container has a height of 56 centimeters and a diameter of 22 centimeters. What is the volume, in cubic centimeters, of the container in terms of  $\pi$ ?

Quadrilateral ABCD is graphed on a coordinate plane, with point C plotted at  $(-4, 3)$ . Quadrilateral ABCD is then reflected over the  $y$ -axis to create its image  $A'B'C'D'$ . After the reflection, what are the coordinates of point  $C'$ ?

- A  $(4, 3)$   
 B  $(4, -3)$   
 C  $(-4, 3)$   
 D  $(-4, -3)$





This question is worth 1 credit.

What is the solution for  $x$  in the equation  $x^3 = 125$  ?

Answer \_\_\_\_\_

**GO ON**



This question is worth 1 credit.

Triangle  $DEF$  is a right triangle with a right angle at vertex  $F$ . Side  $\overline{DF}$  has a length of 9 inches and side  $\overline{FE}$  has a length of 12 inches. What is the length, in inches, of side  $\overline{DE}$  ?

Answer \_\_\_\_\_ inches

**GO ON**



This question is worth 1 credit.  
An equation is shown below.

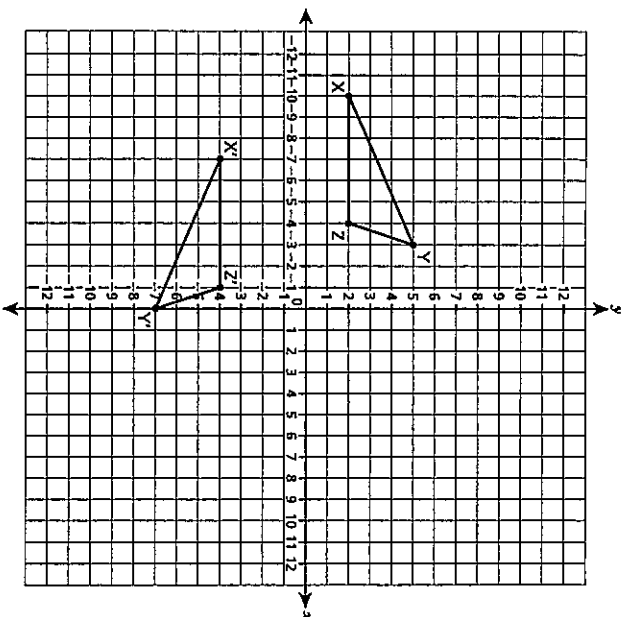
$$-8 - 5x = 20$$

What is the value of  $x$  ?

Answer \_\_\_\_\_



This question is worth 2 credits.  
Triangle XYZ and its congruent image triangle X'Y'Z' are shown on the coordinate plane below.



Describe a sequence of transformations that maps triangle XYZ onto triangle X'Y'Z'.  
*Explain your answer.*

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This question is worth 2 credits.

What value of  $x$  makes the equation shown below true?

$$24x + 33 = 3(5x + 21) - 9$$

Show your work.

Answer:  $x =$  \_\_\_\_\_

**GO ON**



This question is worth 2 credits.

Triangle  $RST$  has side lengths of 8 centimeters, 10 centimeters, and 13 centimeters. Is triangle  $RST$  a right triangle? Be sure to include what you know about the Pythagorean theorem in your answer.

Explain how you determined your answer.

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**GO ON**



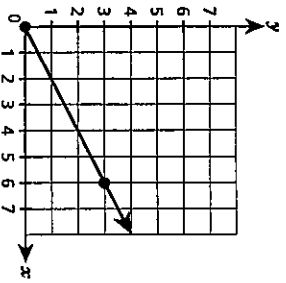
This question is worth 2 credits.

Function A and Function B are shown below.

**FUNCTION A**

$x$	$y$
-5	-30
-3	-18
2	12
4	24

**FUNCTION B**



Which function has a greater rate of change? Be sure to include the rate of change for each function in your answer.

*Explain how you determined your answer.*

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This question is worth 2 credits.

The top surface of a trampoline is in the shape of a circle with a diameter of 12 feet. What is the area, in square feet, of the top circular surface of the trampoline?

Round your answer to the nearest whole number.

*Show your work.*

Answer \_\_\_\_\_ square feet

This question is worth 2 credits.

A student claims the expressions  $\frac{5^7}{5^3}$  and  $5^6 \times 5^{-2}$  are equivalent. Is the student correct?

Be sure to include what you know about properties of exponents and the value of each expression in simplest form in your answer.

*Explain how you determined your answer.*

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This question is worth 3 credits.

Three different functions are represented by the equation, table, and graph shown below.

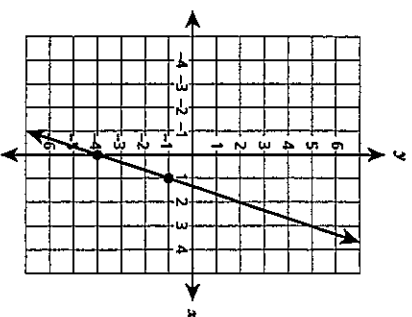
FUNCTION A

FUNCTION B

FUNCTION C

$$y = 2x + 3$$

x	y
-1	1
0	0
1	1
2	4



Determine whether each function is linear or nonlinear. Be sure to include what you know about the properties of all three functions in your answer.

*Explain your answer.*

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