Georgia Milestones Assessment System

Grade 8 Mathematics Formula Sheet

Below are the formulas you may find useful as you take the test. However, you may find that you do not need to use all of the formulas. You may refer to this formula sheet as often as needed.

Slope Formula

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Linear Equation

$$y = mx + b$$

Pythagorean Theorem

$$a^2 + b^2 = c^2$$

Perimeter

The perimeter of a polygon is equal to the sum of the lengths of its sides.

Volume

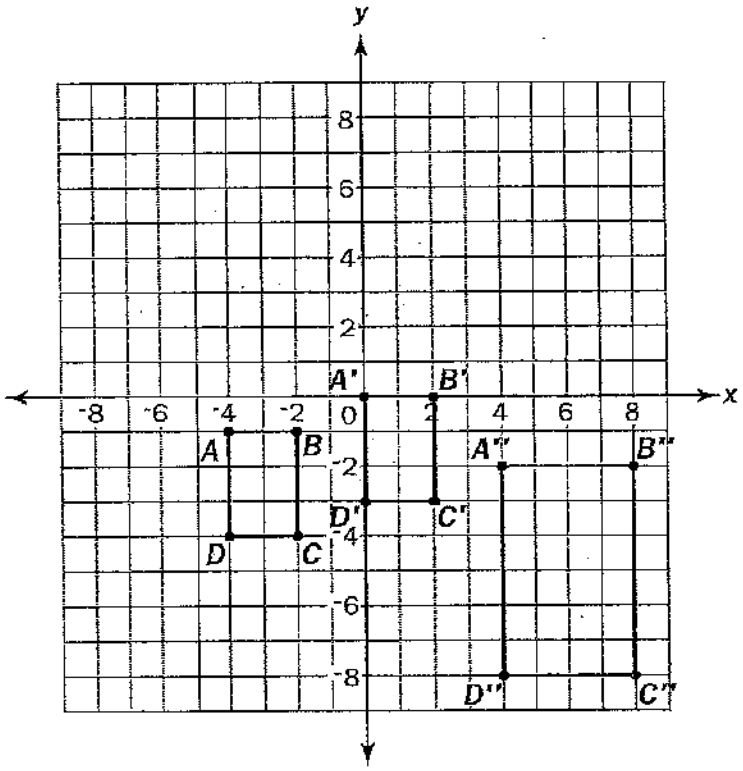
Cylinder	$V = \pi r^2 h$
Cone	$V = \frac{1}{3}\pi r^2 h$
Sphere	$V = \frac{4}{3}\pi r^3$

$\pi \approx 3.14$

Item 2

Extended Constructed-Response

Quadrilaterals *ABCD*, *A'B'C'D'*, and *A''B''C''D''* are shown on the graph.

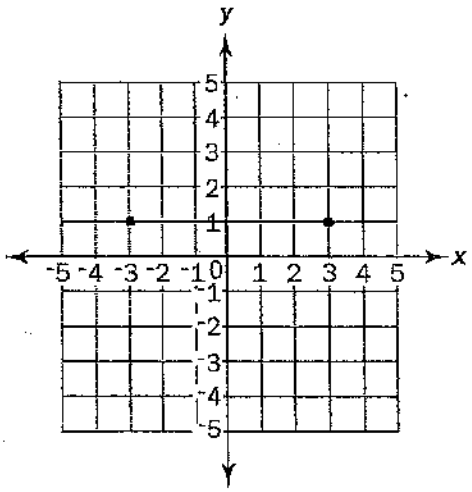


Part A: Describe a transformation or sequence of transformations to quadrilateral *ABCD* that would result in an image quadrilateral with the coordinates *A'*(0, 0), *B'*(2, 0), *C'*(2, –3), and *D'*(0, –3).

Item 3

Selected-Response

A line segment on a graph has endpoints of (–3, 1) and (3, 1). It is translated 5 units down and reflected across the *x*-axis.



What are the endpoints after the series of transformations?

A. (–3, –4) and (3, 4)
B. (–3, –1) and (3, –1)
C. (–3, 4) and (3, 4)
D. (–3, –6) and (3, –6)

Item 6

Constructed-Response

Part A: Write the expression $7^{-3} \cdot 7^{6}$ as a fraction or integer.

Part B: Explain how you found your answer.

Item 8

Selected-Response

For a classroom party, there are 12 bottles of fruit punch. Each bottle is filled with 850 cubic centimeters of punch. The fruit punch will be served in cone-shaped paper cups that are 7 centimeters across and 12 centimeters tall.

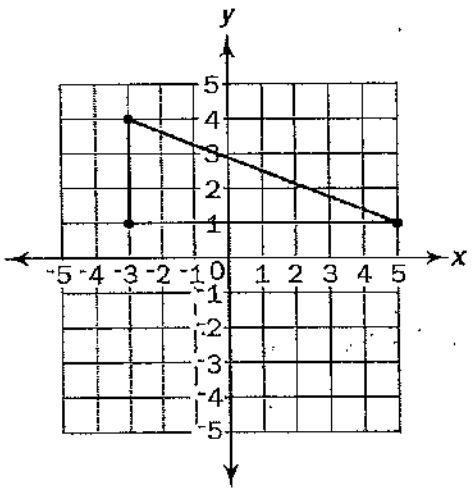
How many completely full cone-shaped cups of the punch can be poured?

A. 16
B. 66
C. 232
D. 265

Item 9

Selected-Response

Look at the right triangle on the coordinate grid.



What is the length of the hypotenuse?

A. $\sqrt{11}$ units
B. $\sqrt{24}$ units
C. $\sqrt{55}$ units
D. $\sqrt{73}$ units

Sample Items 11–13

Item 11

Selected-Response

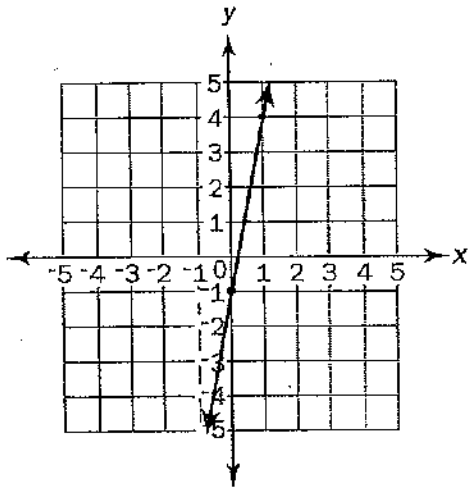
Which of these functions has a greater rate of change than the function $y = 5.6x + 7$?

A.

x	y
−1	−10
0	−4
1	2
2	8

B. $y = \frac{7}{3}x - 2$

C.



D. $y = -4x + 10$

Item 13

Constructed-Response

Consider the table of values and the equation, which both represent a function.

x	y
2	8
3	11
4	14

$y = 5x - 2$

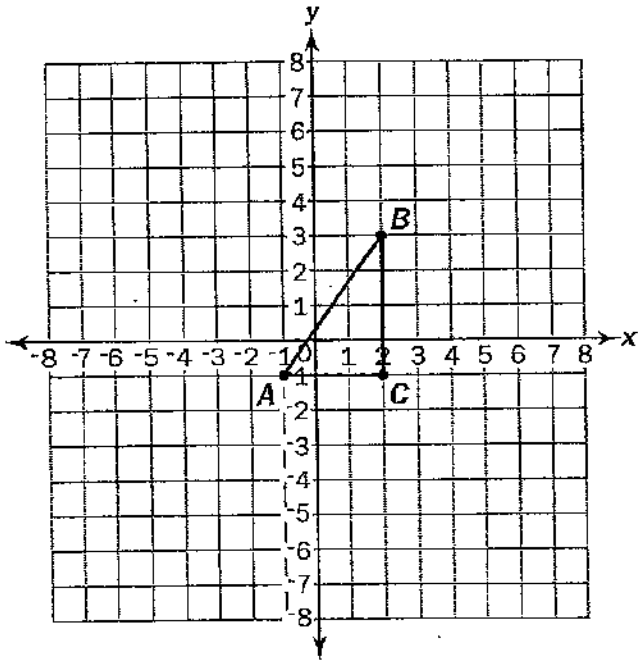
Part A: Which function has the greater rate of change?

Part B: Explain how you found your answer.

Item 15

Constructed-Response

Look at $\triangle ABC$ with coordinates $A(-1, -1)$, $B(2, 3)$, and $C(2, -1)$.



Part A: The ordered pair $(5, y)$ defines the location of point F, which is on line AB. What is the value of y for this ordered pair?

Part B: If you move 3 units to the right from point F, how many units up or down do you need to move in order to stay on line AB?

A **two-way table** can be used to represent bivariate data, including the **frequencies** of data occurring. Use the two-way table to identify **positive** or **negative association** between variables. (SP.4)

Important Tips

- A pattern in the data set can be used to predict the outcomes of other variables.
- The relationship between values can be represented using tables, graphs, and equations using the slope and *y*-intercept.

Sample Items 18–21

Item 18

Constructed-Response

This table of values represents a linear function.

x	y
0	80
4	60
8	40
12	20

Part A: Is the rate of change of this function –5? Explain how you know.

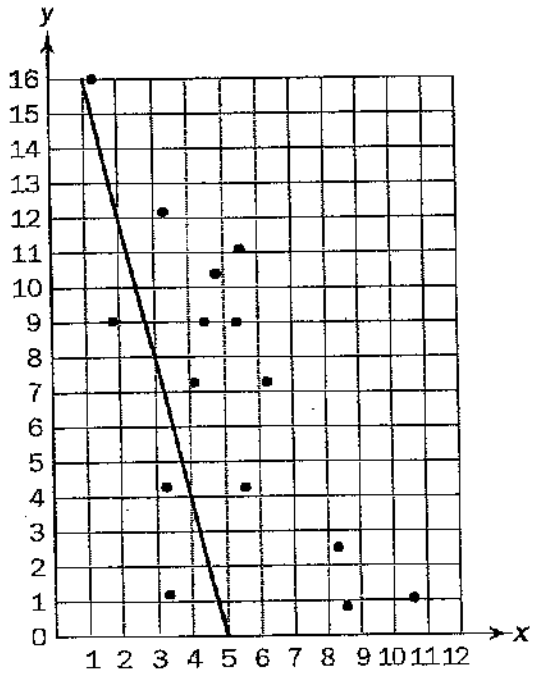
Part B: What is the initial value of this function?

Item 20

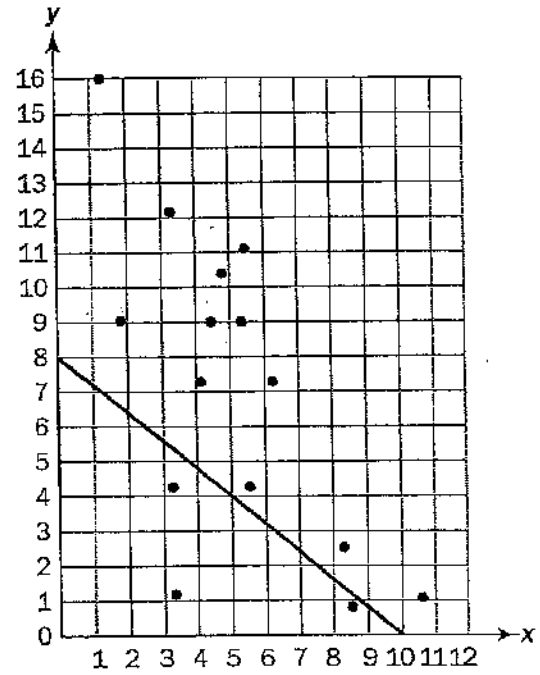
Selected-Response

Which straight line BEST fits the data for the scatter plot?

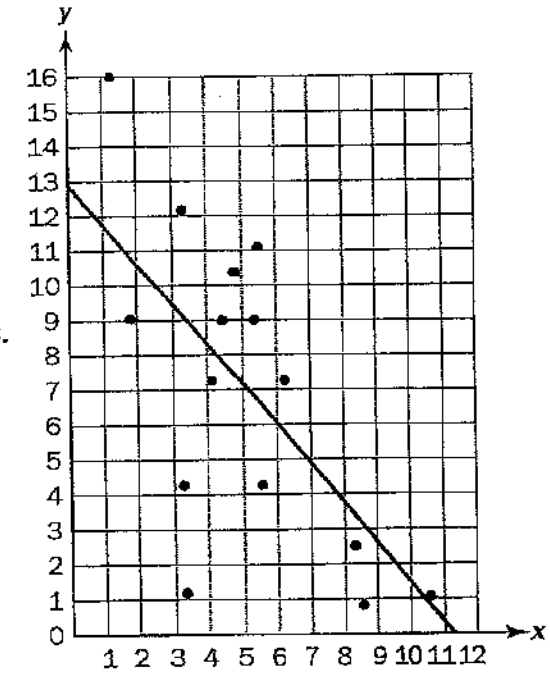
A.



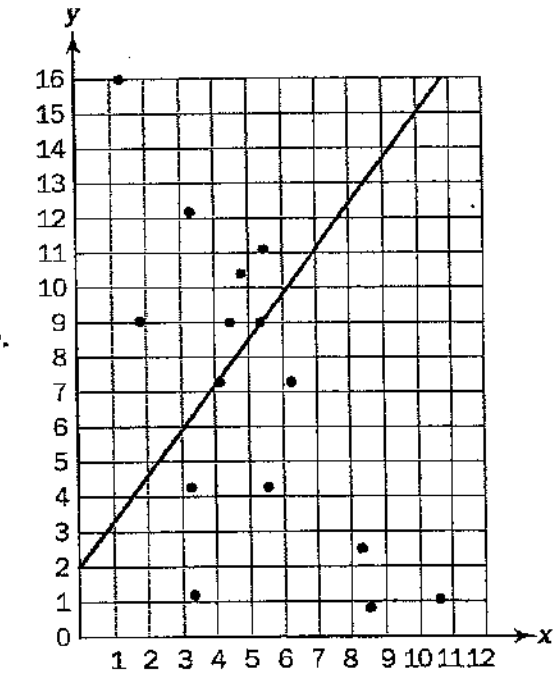
B.



C.



D.



Sample Items 22–24

Item 22

Selected-Response

Consider this system of equations.

$$-7x + 8y = 1$$
$$4x - 8y = 20$$

What is the *y*-coordinate of the solution for this system?

A. –1
B. –6
C. 1
D. 6

Item 24

Selected-Response

Which system of equations has exactly one solution?

A. $5x - y = -3$
$5x - y = -2$

B. $8x - 3y = -12$
$x - 3y = 9$

C. $3x - y = 4$
$9x - 3y = 12$

D. $2x - y = 3$
$2x - y = -4$