Grade 8

FAST Mathematics

Sample Test Materials

The purpose of these sample test materials is to orient teachers and students to the types of paper-based FAST Mathematics questions. By using these materials, students will become familiar with the types of items and response formats they may see on a paper-based test. The sample items and answers are not intended to demonstrate the length of the actual test, nor should student responses be used as an indicator of student performance on the actual test. The sample test materials are not intended to guide classroom instruction.

All trademarks and trade names found in this publication are the property of their respective owners and are not associated with the publishers of this publication.

Use the space in this Test and Response Book to do your work. Then, completely fill in the bubble beside the answer you choose. For some items, filling in more than one bubble may be required, so read each item carefully. If you change your answer, be sure to erase completely.

Some items will ask you to write a response in a shaded box or boxes. See the sample item below.

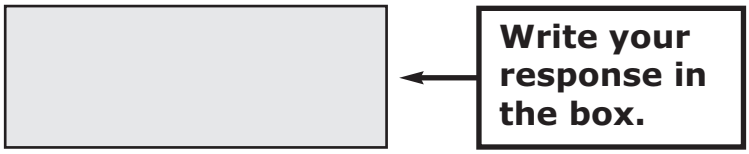
Sample Item:

An expression is shown.

$$(22.4)(2.65)$$

What is the value of the expression?

Write your response in the shaded box below.



Some items may have more than one box, so read each item carefully. Your answers for the items with response boxes may contain whole numbers, fractions, decimals, or negative numbers.

BLANK PAGE

Grade 8 FAST Mathematics Reference Sheet

Conversions within a System of Measure

Customary Conversions

1 foot = 12 inches
1 yard = 3 feet
1 mile = 5,280 feet
1 mile = 1,760 yards

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts

1 pound = 16 ounces
1 ton = 2,000 pounds

Metric Conversions

1 meter = 100 centimeters
1 meter = 1000 millimeters
1 kilometer = 1000 meters

1 liter = 1000 milliliters

1 gram = 1000 milligrams
1 kilogram = 1000 grams

Time Conversions

1 minute = 60 seconds
1 hour = 60 minutes
1 day = 24 hours
1 week = 7 days
1 year = 365 days
1 year = 52 weeks

DO NOT REMOVE THIS SHEET

Conversions between Systems of Measure

Customary to Metric Conversion Approximations

1 inch = 2.54 centimeters
1 foot = 0.305 meters
1 mile = 1.61 kilometers

1 cup = 0.24 liters
1 gallon = 3.785 liters
1 ounce = 28.35 grams
1 pound = 0.454 kilograms

Metric to Customary Conversion Approximations

1 centimeter = 0.39 inches
1 meter = 3.28 feet
1 kilometer = 0.62 miles

1 liter = 4.23 cups
1 liter = 0.264 gallons
1 gram = 0.0352 ounces
1 kilogram = 2.204 pounds

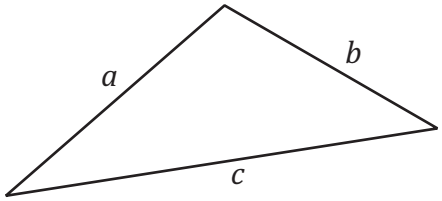
Formula

Slope Formula
$m = \frac{y_2 - y_1}{x_2 - x_1}$
where m = slope

Grade 8 FAST Mathematics Reference Sheet

Theorems

Triangle Inequality Theorem

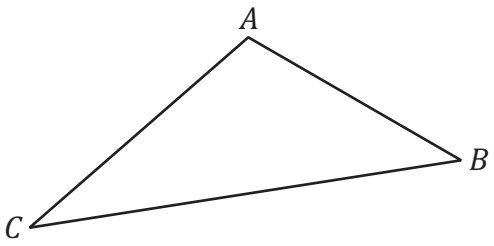


$a + b > c$

$a + c > b$

$b + c > a$

Triangle Sum Theorem



$m\angle A + m\angle B + m\angle C = 180°$

DO NOT REMOVE THIS SHEET

BLANK PAGE

1. Four numbers are shown.

π	$\sqrt{8}$	$0.\overline{23}$	$\sqrt{49}$

Complete the statement explaining which two numbers are rational. For each box, fill in the bubble before the pair of numbers or word that is correct.

The two rational numbers are

- Ⓐ π and $\sqrt{8}$
- Ⓑ π and $0.\overline{23}$
- Ⓒ $\sqrt{8}$ and $\sqrt{49}$
- Ⓓ $0.\overline{23}$ and $\sqrt{49}$

because they

- Ⓐ can
- Ⓑ cannot

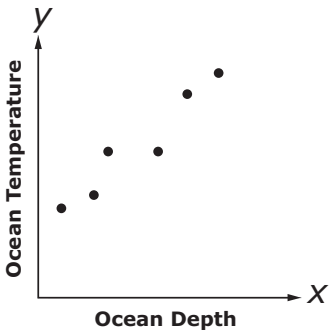
be expressed as a ratio of two integers.

Go On

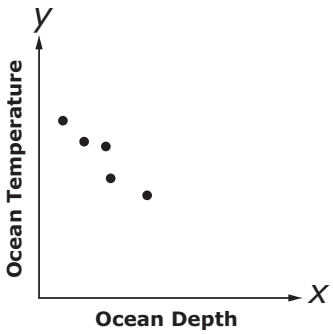
2. Gia records the temperature of ocean water at different depths and finds that the relationship between temperature and depth have a negative association.

Select all the scatter plots that could represent Gia's data.

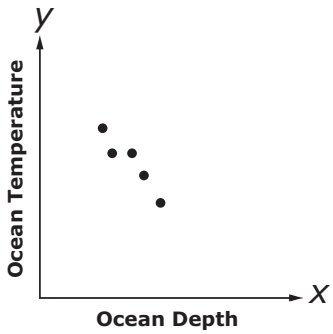
Ⓐ



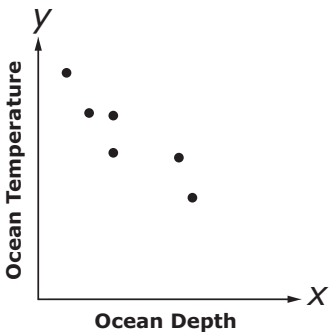
Ⓒ



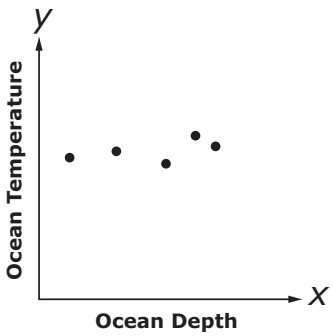
Ⓔ



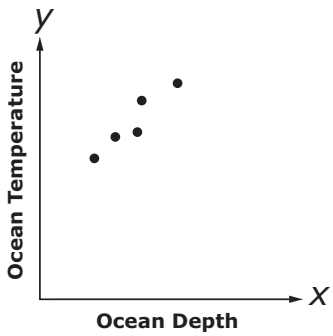
Ⓑ



Ⓓ



Ⓕ



Go On

3. An expression is shown.

$$\left(\frac{-1}{2}\right)^3 + \sqrt{8^2 - 15}$$

What is the value of the expression?

Ⓐ $6\frac{7}{8}$

Ⓑ $7\frac{1}{8}$

Ⓒ $48\frac{7}{8}$

Ⓓ $49\frac{1}{8}$

Go On

4. An expression is shown.

$$(2.3 \times 10^4) \times (4.1 \times 10^2)$$

Write your response in the shaded box below and fill in the bubble before the correct power of 10 to show the value of the expression in scientific notation.

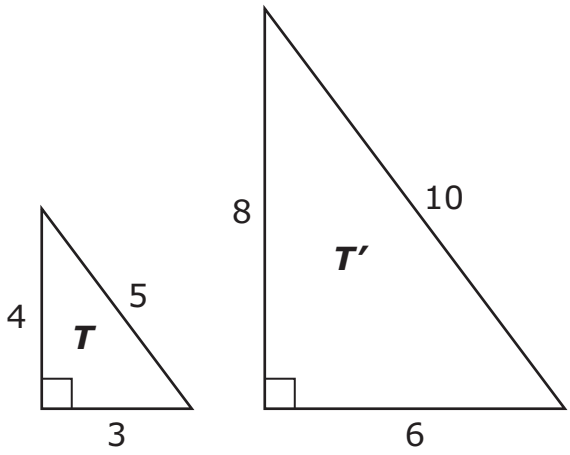
Go On

5. Fill in bubbles to identify the number of solutions to each equation.

	No Solutions	One Solution	Infinitely Many Solutions
$3x - 5 = 3(x - 2) + 1$	Ⓐ	Ⓑ	Ⓒ
$3x - 5 = -9x + 15$	Ⓓ	Ⓔ	Ⓕ
$3x - 5 = 3x + 10$	Ⓖ	Ⓗ	Ⓘ

Go On

6. The transformation of triangle *T* to triangle *T′* is shown.



Select a word and a value to complete the description of the transformation. For each blank, fill in the bubble **before** the word or value that is correct.

Triangle *T* is _____ [Ⓐ congruent Ⓑ similar] to triangle *T′*.

Triangle *T* can be transformed to triangle *T′* using a dilation with a scale factor of _____ [Ⓐ $\frac{1}{2}$ Ⓑ 2 Ⓒ 4].

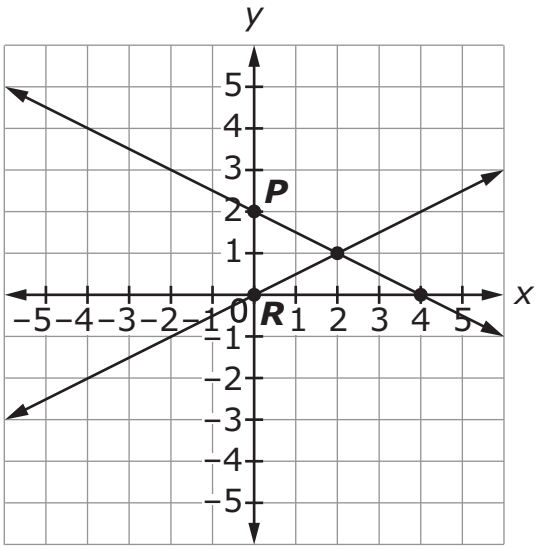
Go On

7. A system of equations is shown.

$$y = \frac{1}{2}x$$

$$y = -\frac{1}{2}x + 2$$

Kayla graphs the system to solve it. She marks her solutions with *P* and *R*.



Go On

This question has **two** parts.

Part A

Which statement describes Kayla's solutions?

Ⓐ Her solutions are correct.

Ⓑ She marked the *y*-intercepts instead of the *x*-intercepts.

Ⓒ She marked the *y*-intercepts instead of the intersection point of the two lines.

Ⓓ She marked only the *y*-intercepts instead of the *x*- and *y*-intercepts.

Part B

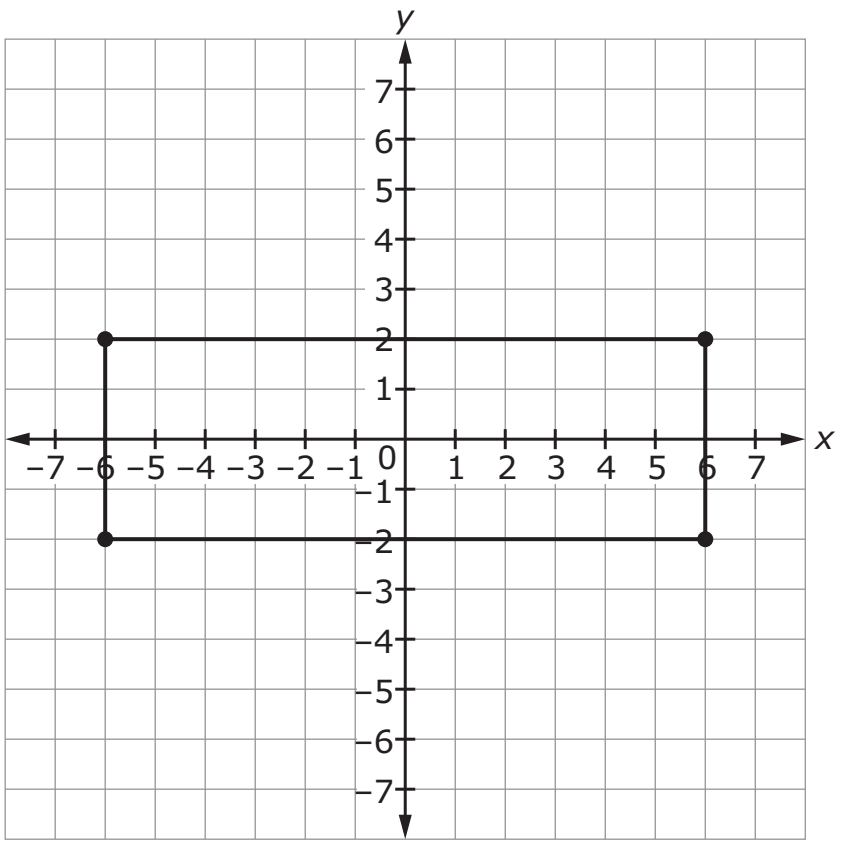
What is a solution to the system of equations?

Write your responses in the shaded boxes below.

(,)

Go On

8. A figure on a coordinate plane is shown.



Select all the transformations that will map the figure onto itself.

Ⓐ translation up 4 units

Ⓑ reflection across the *y*-axis

Ⓒ dilation by a factor of 3 about the origin

Ⓓ rotation 90 degrees clockwise about the origin

Ⓔ rotation 180 degrees counterclockwise about the origin

Go On

9. An expression is shown.

$$(1.3x)(2.6x + 4)$$

Write your responses in the shaded boxes below to complete the product of the expression.

$\square x^2 + \square x$

Office of Assessment
Florida Department of Education, Tallahassee, Florida
Copyright © 2023 State of Florida, Department of State