RIDE Rhode Island Department of Education

Release of Spring 2025 RICAS Test Items

from the

Grade 6 Mathematics Paper-Based Test

July 2025
Rhode Island Department of Education

This document was prepared by the
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Overview of Grade 6 Mathematics Test

The spring 2025 grade 6 Mathematics test was administered in two formats: a computer-based version and a paper-based version. Most students took the computer-based test. The paper-based test was offered as an accommodation for eligible students who were unable to use a computer. More information can be found on the MCAS Test Administration Resources page at www.doe.mass.edu/mcas/admin.html.

Most of the operational items on the grade 6 Mathematics test were the same, regardless of whether a student took the computer-based version or the paper-based version. In places where a technology-enhanced item was used on the computer-based test, an adapted version of the item was created for use on the paper test. These adapted paper items were multiple-choice, multiple-select, or short-answer items that tested the same Mathematics content and assessed the same standard as the technology-enhanced item.

This document displays released items from the paper-based test. Released items from the computer-based test are available on the RICAS Resource Center website at ricas.onlinehelp.cognia.org/released-items/.

Test Sessions and Content Overview

The grade 6 Mathematics test was made up of two separate test sessions. Each session included selected-response, short-answer, and constructed-response questions. On the paper-based test, the selected-response questions were multiple-choice items and multiple-select items, in which students select the correct answer(s) from among several answer options.

Standards and Reporting Categories

The grade 6 Mathematics test was based on standards in the five domains for grade 6 in the *Massachusetts Curriculum Framework for Mathematics* (2017). The five domains are listed below.

- Ratios and Proportional Relationships
- The Number System
- Expressions and Equations
- Geometry
- Statistics and Probability

The *Massachusetts Curriculum Framework for Mathematics* is available on the Department website at www.doe.mass.edu/frameworks/current.html.

Mathematics test results are reported under five MCAS reporting categories, which are identical to the five framework domains listed above.

The tables at the conclusion of this document provide the following information about each released and unreleased operational item: reporting category, standard(s) covered, item type, and item description. The correct answers for released selected-response and short-answer questions are also displayed in the released item table.

Reference Materials and Tools

Each student taking the grade 6 Mathematics test was provided with a ruler and a grade 6 Mathematics Reference Sheet. A copy of the reference sheet can be found on the next page of this document.

During both Mathematics test sessions, the use of authorized bilingual word-to-word dictionaries and glossaries was allowed for students who are currently or were ever reported as English learners. No calculators, other reference tools, or materials were allowed.

RIDE Rhode Island Department of Education

Rhode Island Comprehensive Assessment System
Grade 6 Mathematics Reference Sheet

CONVERSIONS

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon ≈ 3.785 liters
1 liter ≈ 0.264 gallon
1 liter = 1000 cubic centimeters

1 inch = 2.54 centimeters
1 meter ≈ 39.37 inches
1 mile = 5280 feet
1 mile = 1760 yards
1 mile ≈ 1.609 kilometers
1 kilometer ≈ 0.62 mile

1 pound = 16 ounces
1 pound ≈ 0.454 kilogram
1 kilogram ≈ 2.2 pounds
1 ton = 2000 pounds

AREA (*A*) FORMULAS

square . . . . . $A = s^2$

rectangle . . . . . $A = bh$

OR

$A = lw$

parallelogram . . . . . $A = bh$

triangle . . . . . $A = \frac{1}{2}bh$

(b = length of base; h = height)

VOLUME (*V*) FORMULAS

right rectangular prism . . . . . $V = lwh$

(l = length; w = width; h = height)

OR

$V = Bh$

(B = area of base; h = height)

Grade 6 Mathematics

SESSION 1

This session contains 10 questions.

You may use your reference sheet during this session.
*You may **not** use a calculator during this session.*

Directions

Read each question carefully and then answer it as well as you can. You must record all answers in this Test & Answer Booklet.

For some questions, you will mark your answers by filling in the circles in your Test & Answer Booklet. Make sure you darken the circles completely. Do not make any marks outside of the circles. If you need to change an answer, be sure to erase your first answer completely.

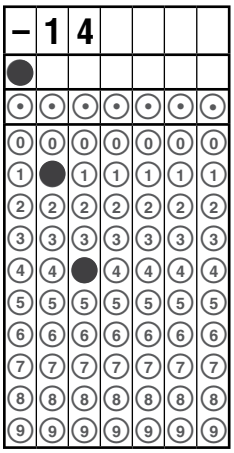
For other questions, you will need to fill in an answer grid. Directions for completing questions with answer grids are provided on the next page.

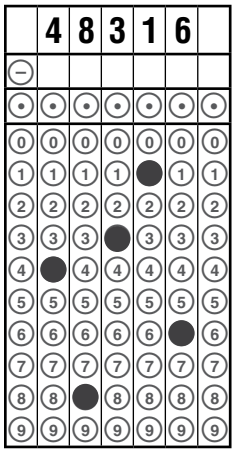
If a question asks you to show or explain your work, you must do so to receive full credit. Write your response in the space provided. Only responses written within the provided space will be scored.

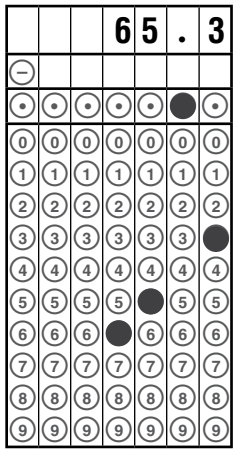
Directions for Completing Questions with Answer Grids

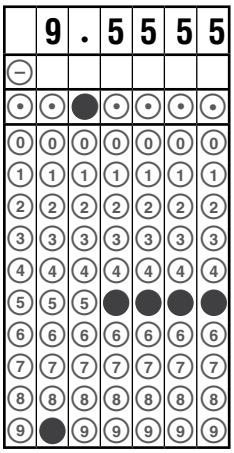
1. Work the question and find an answer.
2. Enter your answer in the answer boxes at the top of the answer grid.
3. Print only one number or symbol in each box. Do not leave a blank box in the middle of an answer.
4. Under each answer box, fill in the circle that matches the number or symbol you wrote above. Make a solid mark that completely fills the circle.
5. Do not fill in a circle under an unused answer box.
6. Fractions cannot be entered into an answer grid and will not be scored. Enter fractions as decimals.
7. If you need to change an answer, be sure to erase your first answer completely.
8. See below for examples of how to correctly complete an answer grid.

Examples









1 What is the greatest common factor of 48 and 60?

Ⓐ 2

Ⓑ 6

Ⓒ 12

Ⓓ 24

2 Which of the following expressions has a value of 243?

Ⓐ 3^3

Ⓑ 3^4

Ⓒ 3^5

Ⓓ 3^6

3 A student has 8 marbles.

- 3 of the marbles are green.
- All the other marbles are yellow.

The relationships between the different colors of marbles can be represented as ratios. Which of the following sentences about the ratios are true?

Select the **three** correct answers.

Ⓐ The ratio of green marbles to yellow marbles is 8:3.

Ⓑ The ratio of green marbles to yellow marbles is 3:5.

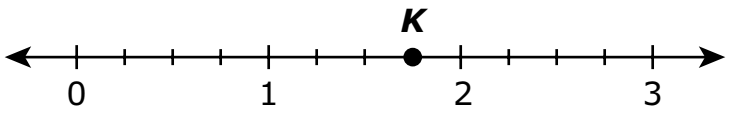
Ⓒ The ratio of yellow marbles to all marbles is 3:5.

Ⓓ The ratio of yellow marbles to all marbles is 5:8.

Ⓔ The ratio of all marbles to green marbles is 8:3.

Ⓕ The ratio of all marbles to green marbles is 5:8.

4 Which of the following **best** represents the location of point *K* on this number line?



Ⓐ $\frac{7}{8}$

Ⓑ $\frac{7}{4}$

Ⓒ $\frac{3}{4}$

Ⓓ $\frac{4}{3}$

5 Which of the following division equations are true?

Select the **two** correct answers.

Ⓐ 87 ÷ 3 = 27

Ⓑ 96 ÷ 4 = 23

Ⓒ 600 ÷ 5 = 12

Ⓓ 924 ÷ 6 = 154

Ⓔ 870 ÷ 15 = 58

This question has four parts. Be sure to label each part of your response.

6 A bakery sells boxes of cupcakes. Each box of cupcakes costs $5.00.

A. What is the total cost, in dollars, of 8 boxes of cupcakes? Show or explain how you got your answer.

B. Write an expression that represents the total cost, in dollars, of *c* boxes of cupcakes.

C. A coupon for the bakery offers $2.50 off any purchase of cupcakes. The coupon may be used only once.

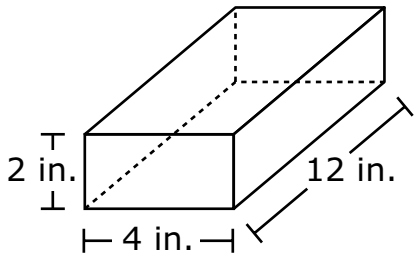
Write an expression that represents the total cost, in dollars, of *c* boxes of cupcakes if the coupon is used.

D. A teacher plans to spend $47.50 purchasing cupcakes for her class.

If she uses the coupon for $2.50 off her purchase at the bakery, what is the total number of boxes of cupcakes that she can purchase? Show or explain how you got your answer.

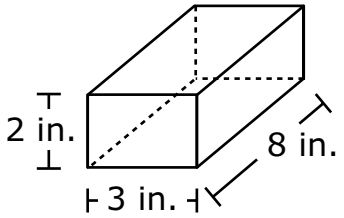
6

7 A carpenter has a block of wood in the shape of a rectangular prism, as shown. The block of wood has a mass of 4 kilograms.

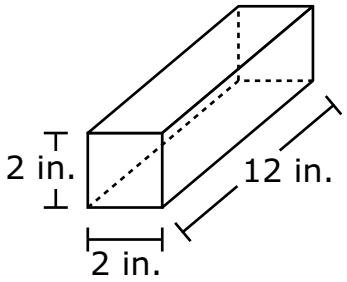


The carpenter cut the block of wood to make another shape. The new shape has a mass of 2 kilograms. Which of the following shapes could **not** be the shape the carpenter cut from the block of wood?

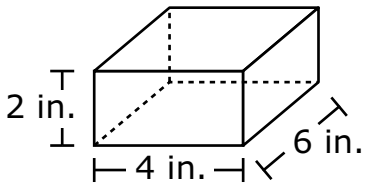
Ⓐ



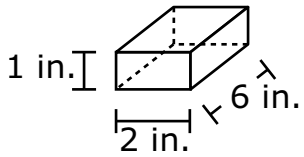
Ⓑ



Ⓒ



Ⓓ



8 A teacher asks the students in her class four questions about the school play they attended.

Which of the teacher's questions is a statistical question?

Ⓐ Who was your favorite actor in the play?

Ⓑ How many actors were in the play?

Ⓒ At what time did the play begin?

Ⓓ What was the title of the play?

9 Consider this expression.

$$15n - 9$$

Which of the following word expressions is equivalent to the expression?

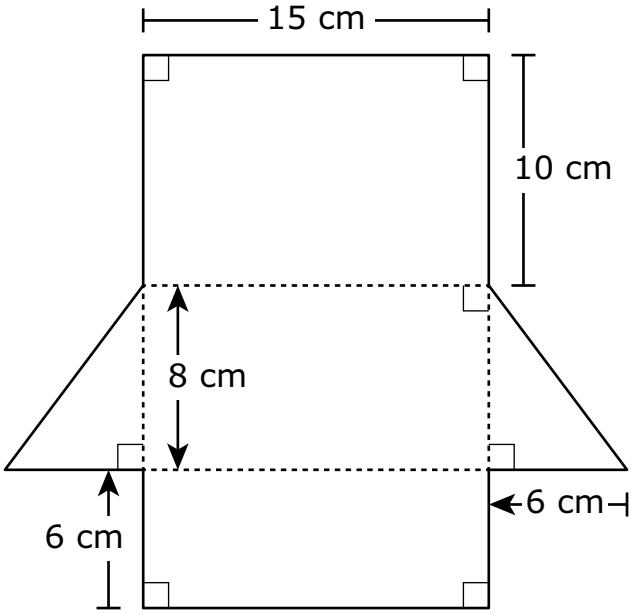
Ⓐ nine less than the sum of fifteen and n

Ⓑ nine less than the product of fifteen and n

Ⓒ nine less than the quotient of fifteen and n

Ⓓ nine less than the difference of fifteen and n

10 A net of a triangular prism and some of its dimensions are shown.



What is the total surface area, in square centimeters, of the triangular prism?

Ⓐ 198 square centimeters

Ⓑ 360 square centimeters

Ⓒ 408 square centimeters

Ⓓ 456 square centimeters

Grade 6 Mathematics

SESSION 2

This session contains 10 questions.

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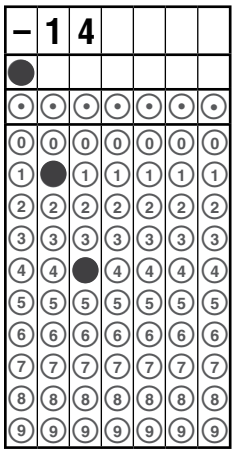
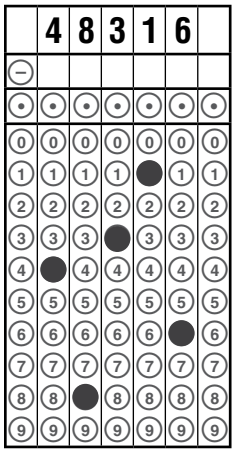
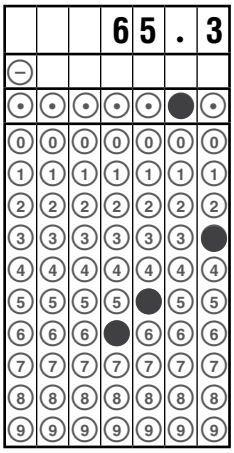
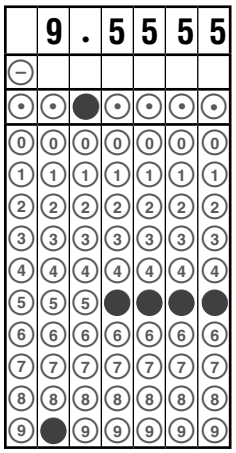
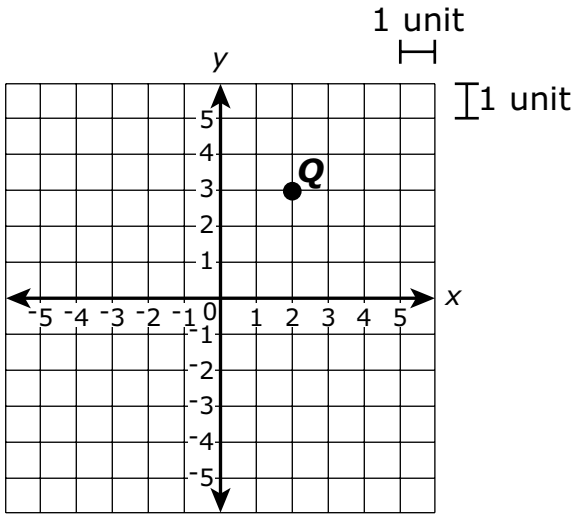








11 Point *Q* is shown on this coordinate plane.



Which of the following ordered pairs represents a point that is a distance of exactly 4 units from point *Q*?

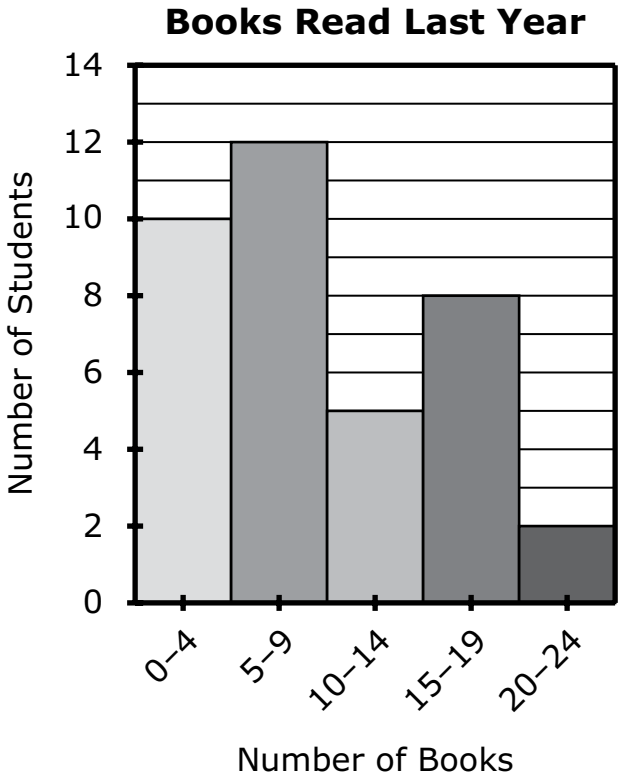
Ⓐ (–2, –1)

Ⓑ (–2, 7)

Ⓒ (2, 7)

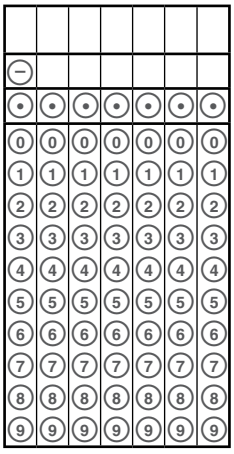
Ⓓ (6, 7)

12 A group of students were asked how many books they each read last year. This histogram shows the results.



Based on the histogram, what is the total number of students who were asked how many books they read last year?

Enter your answer in the answer boxes at the top of the answer grid **and** completely fill the matching circles.



This question has four parts. Be sure to label each part of your response.

13 Aaron visited 30% of the 50 states in the United States.

A. What **fraction** of the states did Aaron visit?

B. What is the total number of states that Aaron visited? Show or explain how you got your answer.

C. Aaron will visit an additional 5 states this year. What will be the total percent of states Aaron will have visited by the end of this year? Show or explain how you got your answer.

D. Based on your answer to Part C, how many additional states must Aaron visit in order to have visited exactly 76% of the 50 states? Show or explain how you got your answer.

13

14 Which of the following is equivalent to this expression?

$$\frac{3}{4} \div \frac{2}{3}$$

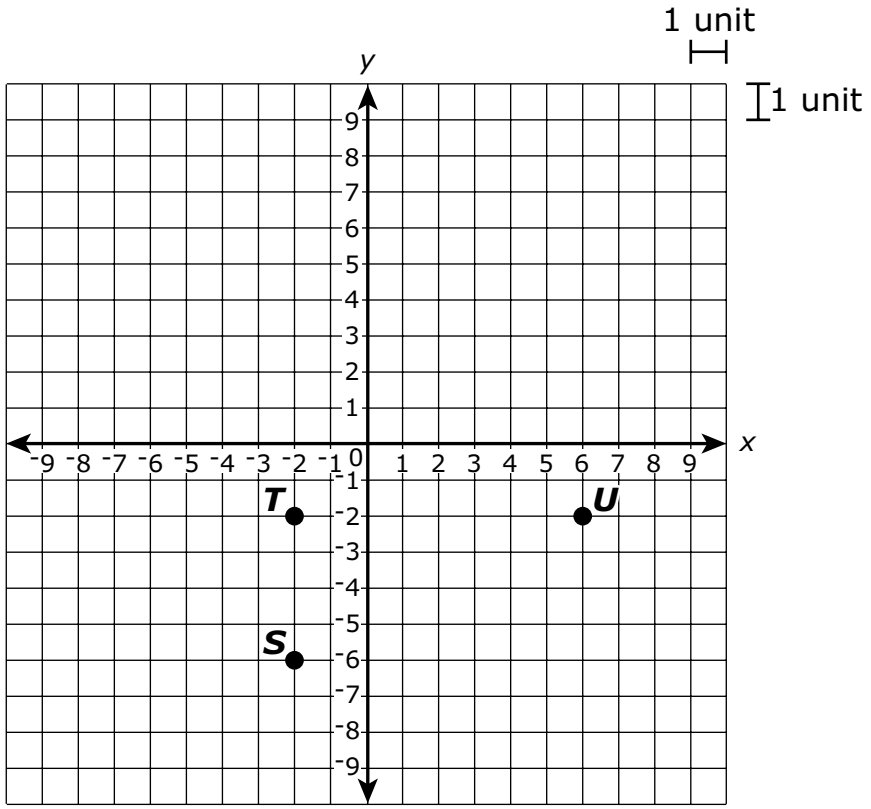
Ⓐ $\frac{1}{2}$

Ⓑ $\frac{8}{9}$

Ⓒ $1\frac{1}{8}$

Ⓓ 2

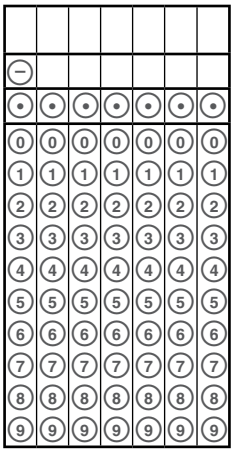
15 Hakeem plotted points *S*, *T*, and *U* on this coordinate plane.



Hakeem will plot point *V* on the coordinate plane so that, when connected to points *S*, *T*, and *U*, rectangle *STUV* is formed.

What will be the length, in units, of side *UV* in rectangle *STUV*?

Enter your answer in the answer boxes at the top of the answer grid **and** completely fill the matching circles.

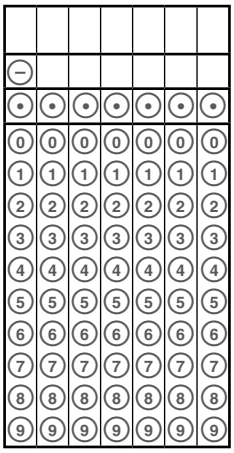


16 In these inequalities, n represents a rational number.

- $n > -4$
- $n < 0$

What is **one** possible value of n?

Enter your answer in the answer boxes at the top of the answer grid **and** completely fill the matching circles.



This question has two parts.

17 **Part A**

A cyclist was training for a road race. She used this equation to represent y, the number of miles she could ride in x hours.

$$y = 12x$$

Based on the equation, which of the following statements is true?

Ⓐ The cyclist could ride 12 miles in 1 hour and 30 miles in 2.5 hours.

Ⓑ The cyclist could ride 12 miles in 1 hour and 24.5 miles in 2.5 hours.

Ⓒ The cyclist could ride 8 miles in 1 hour and 16 miles in 2.5 hours.

Ⓓ The cyclist could ride 8 miles in 1 hour and 30 miles in 2.5 hours.

Part B

After training for a few months, the cyclist was able to ride at a rate of 14.5 miles per hour.

Which of the following equations can be used to represent y, the number of miles the cyclist could ride in x hours after training for a few months?

Ⓐ $y(14.5) = x(14.5)$

Ⓑ $y(x) = 14.5$

Ⓒ $x = 14.5y$

Ⓓ $y = 14.5x$

18 Jared played a game ten times. He recorded the number of points he earned at the end of each game. This list shows the data he recorded.

2, 3, 4, 5, 7, 7, 9, 9, 9, 10

Based on the data, which of the following statements is true?

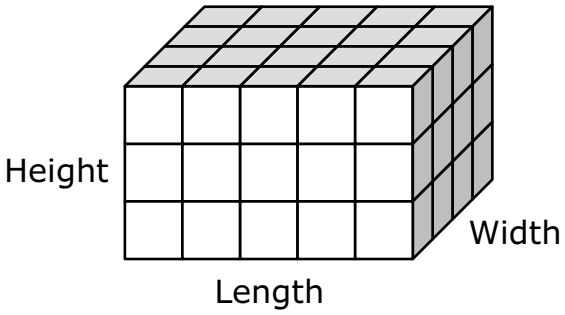
Ⓐ The mode of the data is equal to 7 and the mean of the data is equal to 8.

Ⓑ The median of the data is equal to 7 and the range of the data is equal to 8.

Ⓒ The mean of the data is equal to 7 and the median of the data is equal to 8.

Ⓓ The range of the data is equal to 7 and the mode of the data is equal to 8.

19 This right rectangular prism was built using cubes that each have an edge length of $\frac{1}{3}$ inch.



Based on the diagram, which of the following statements are true?

Select the **two** correct answers.

Ⓐ The volume of each cube is $\frac{1}{6}$ cubic inch.

Ⓑ The length of the rectangular prism is $\frac{1}{3}$ inch.

Ⓒ The width of the rectangular prism is $\frac{4}{3}$ inches.

Ⓓ The height of the rectangular prism is 1 inch.

Ⓔ The volume of the rectangular prism is $\frac{20}{3}$ cubic inches.

20 A student made a list of questions to gather data about a local movie theater. She will ask a sample of her classmates to answer the questions. Which of the following are statistical questions?

Select the **three** statistical questions.

Ⓐ What is the address of the theater?

Ⓑ How many action movies did you watch last month?

Ⓒ At what time did the first movie begin last Saturday?

Ⓓ What is the total number of movies you saw at the theater last year?

Ⓔ What kind of snack did you buy the last time you went to the theater?

Grade 6 Mathematics
Spring 2025 Released Operational Items

PBT Item No.	Page No.	Reporting Category	Standard	Item Type*	Item Description	Correct Answer (SR)**
1	5	*The Number System*	6.NS.B.4	SR	Determine the greatest common factor of two given numbers.	C
2	5	*Expressions and Equations*	6.EE.A.1	SR	Represent the value of a given number as an expression with a whole-number exponent.	C
3	5	*Ratios and Proportional Relationships*	6.RP.A.1	SR	Given relationships described in words, identify the ratio that represents each relationship.	B,D,E
4	6	*The Number System*	6.NS.C.6	SR	Determine the value of a given point on a number line.	B
5	6	*The Number System*	6.NS.B.2	SR	Determine whether given division equations are true or false.	D,E
6	7–8	*Expressions and Equations*	6.EE.B.6	CR	Create and evaluate expressions based on a real-world situation.	
7	9	*Ratios and Proportional Relationships*	6.RP.A.3	SR	Determine the volume of a solid by using rate and ratio reasoning within a real-world context.	D
8	10	*Statistics and Probability*	6.SP.A.1	SR	Distinguish statistical questions from non-statistical questions.	A
9	10	*Expressions and Equations*	6.EE.A.2	SR	Identify a word expression that represents a mathematical expression.	B
10	11	*Geometry*	6.G.A.4	SR	Use the net of a triangular prism to find its surface area.	C
11	14	*The Number System*	6.NS.C.8	SR	Determine the location of a point on a coordinate plane based on its distance from a given point.	C
12	15	*Statistics and Probability*	6.SP.B.5	SA	Identify the number of observations on a histogram.	37
13	16–17	*Ratios and Proportional Relationships*	6.RP.A.3	CR	Use reasoning about percentages and unit rates to solve a multi-step, real-world problem.	
14	18	*The Number System*	6.NS.A.1	SR	Solve a problem involving the division of two fractions.	C
15	19	*Geometry*	6.G.A.3	SA	Find the length of the side of a polygon by finding the distance between points on a coordinate plane.	4
16	20	*The Number System*	6.NS.C.7	SA	Identify a rational number that is within a range of other rational numbers.	$-4<n<0$
17	21	*Expressions and Equations*	6.EE.C.9	SR	Interpret the relationship between two variables and identify an equation that represents the relationship.	A;D
18	22	*Statistics and Probability*	6.SP.A.2	SR	Given a set of data, determine which statement describing the mean, median, mode, or range of the data is correct.	B
19	22	*Geometry*	6.G.A.2	SR	Determine the dimensions and the volume of a right rectangular prism by using a cube with a fractional edge length.	C,D
20	23	*Statistics and Probability*	6.SP.A.1	SR	Identify multiple statistical questions.	B,D,E

* Mathematics item types are: selected-response (SR), short-answer (SA), and constructed-response (CR).

** Answers are provided here for selected-response and short-answer items only. Sample responses and scoring guidelines for any constructed-response items will be posted to the Department's website later this year.

Grade 6 Mathematics
Spring 2025 Unreleased Operational Items

PBT Item No.	Reporting Category	Standard	Item Type*	Item Description
21	*Statistics and Probability*	6.SP.A.2	SR	Analyze a dot plot using median, mode, and range.
22	*The Number System*	6.NS.C.8	SR	Use absolute value to determine the distance between two points on a coordinate plane given a mathematical context.
23	*Geometry*	6.G.A.3	CR	Solve problems on a coordinate plane by plotting points, finding the distance between points, and calculating the areas of figures graphed on the coordinate plane.
24	*Expressions and Equations*	6.EE.B.8	SR	Identify an inequality that represents a condition in a real-world problem.
25	*Ratios and Proportional Relationships*	6.RP.A.3	SR	Use rate reasoning to solve a real-world problem involving fractions.
26	*Expressions and Equations*	6.EE.A.3	SR	Use the distributive property to identify an equivalent expression within a real-world context.
27	*Expressions and Equations*	6.EE.B.7	SA	Determine the value of the dependent variable, given the value of the independent variable in a real-world context.
28	*Statistics and Probability*	6.SP.B.4	SR	Identify the box plot that matches a set of data and identify a line plot that represents the data.
29	*Expressions and Equations*	6.EE.A.4	SR	Determine which expression is equivalent to a given expression.
30	*Ratios and Proportional Relationships*	6.RP.A.2	SR	Identify three unit rates in a real-world context.
31	*Ratios and Proportional Relationships*	6.RP.A.3	SR	Use a given rate to determine an equivalent rate in a real-world context.
32	*Expressions and Equations*	6.EE.C.9	SR	Analyze the relationship between the variables in an equation that represents a given real-world context.
33	*Geometry*	6.G.A.1	SR	Find the area of a figure by decomposing it into rectangles and triangles.
34	*The Number System*	6.NS.B.3	CR	Solve a real-world problem by adding, subtracting, multiplying, and dividing decimals.
35	*Ratios and Proportional Relationships*	6.RP.A.1	SR	Determine which statement describes a given ratio relationship in a real-world context.
36	*Expressions and Equations*	6.EE.A.3	SR	Use properties of operations to simplify and find an equivalent expression.
37	*Ratios and Proportional Relationships*	6.RP.A.2	SR	Determine which ratios are equivalent to a given unit rate.
38	*Expressions and Equations*	6.EE.A.2	SR	Identify a mathematical expression that models a given real-world situation.
39	*Expressions and Equations*	6.EE.A.4	SR	Determine which expressions are equivalent to a given expression.
40	*Statistics and Probability*	6.SP.B.5	SR	Determine which statements correctly describe data represented in a dot plot.

* Mathematics item types are: selected-response (SR), short-answer (SA), and constructed-response (CR).