



New York State Testing Program

Mathematics Test Book 1

Grade **6**

May 5–7, 2010

1

Which proportion is correct?

A $\frac{4}{10} = \frac{3}{6}$

B $\frac{1}{2} = \frac{7}{8}$

C $\frac{1}{2} = \frac{3}{6}$

D $\frac{4}{10} = \frac{7}{8}$

2

Which pair of expressions is equivalent to each other?

A $2 \times 2 \times 2$ and 3^2

B $6 \times 6 \times 6 \times 6$ and 4^6

C $4 \times 4 \times 4 \times 4 \times 4$ and 4^5

D $8 \times 8 \times 8 \times 8 \times 8 \times 8$ and 8^8

Go On

3

What value of x makes the equation below true?

$$7 + x = 84$$

- A 12
- B 77
- C 83
- D 91

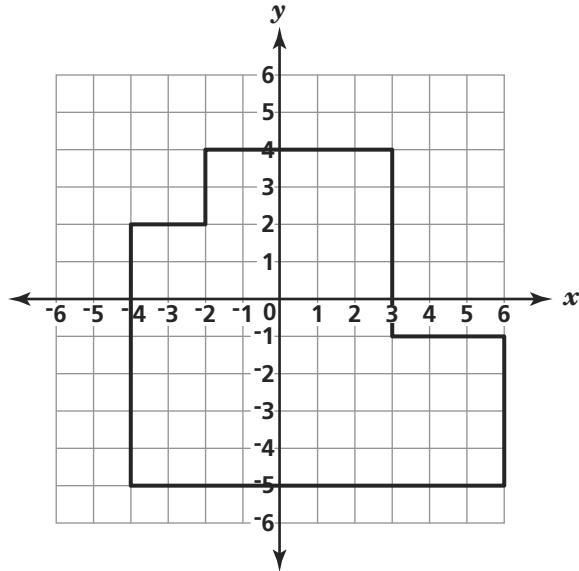
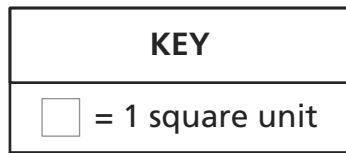
4

What value is equivalent to $|- \frac{1}{4}|$?

- A -4
- B $-\frac{1}{4}$
- C 4
- D $\frac{1}{4}$

5

What is the area of the figure drawn on the coordinate plane below?



- A** 38 square units
- B** 59 square units
- C** 71 square units
- D** 90 square units

6

What property is shown in the equation below?

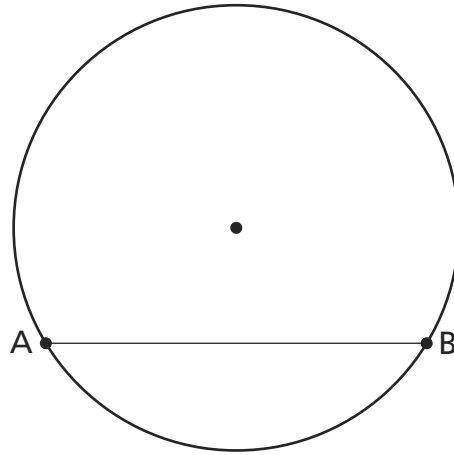
$$6 \times 0 = 0$$

- A** zero property of multiplication
- B** inverse property of multiplication
- C** identity property of multiplication
- D** commutative property of multiplication

Go On

7

What is the name of line segment AB on the circle below?



- A diameter
- B radius
- C chord
- D arc

8

Mary picks 15 flowers from her garden. If 3 out of 5 of these flowers are yellow, how many yellow flowers does Mary pick?

- A 3
- B 9
- C 13
- D 25

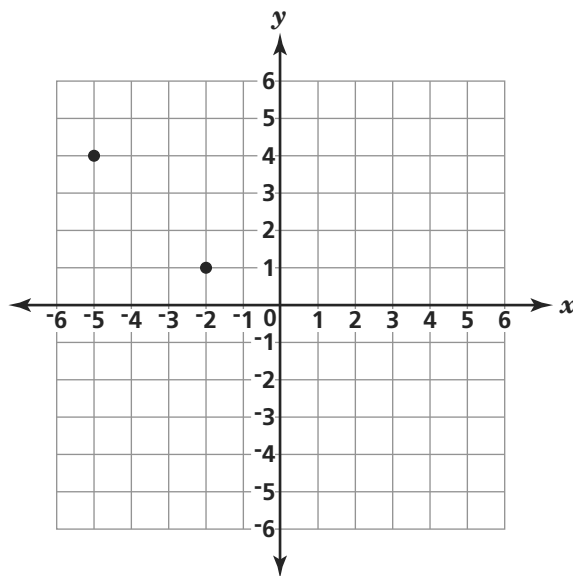
9

Students auditioning for a singing contest are given a list of 7 rock songs and 5 country songs. If each student must pick 1 rock song and 1 country song, how many different song combinations can each student pick?

- A 2
- B 12
- C 35
- D 75

10

Two vertices of a right triangle are shown on the coordinate plane below.



Which point could represent the third vertex of the right triangle?

- A (5, -1)
- B (1, -5)
- C (-1, 5)
- D (-5, 1)

Go On

- 11** The list below shows the heights, in meters, of five different buildings.

180, 170, 120, 180, 160

What is the **median** height, in meters, of the buildings?

- A** 162
- B** 165
- C** 170
- D** 180

- 12** What algebraic equation represents “three times the difference of a number, x , and nine equals fifteen”?

- A** $9x - 3 = 15$
- B** $3(9) - x = 15$
- C** $9 - 3x = 15$
- D** $3(x - 9) = 15$

- 13** Roberto has a container with 4,200 milliliters of water. How many liters of water are in Roberto’s container?

1 liter = 1,000 milliliters

- A** 0.042
- B** 0.42
- C** 4.2
- D** 42

- 14** A circle has a radius of 18 inches. What is the circumference of the circle in terms of π ?

$$C = 2\pi r$$

- A** 36π
- B** 20π
- C** 18π
- D** 9π

- 15** Simplify the expression below.

$$7^2 - 9 + 1^3$$

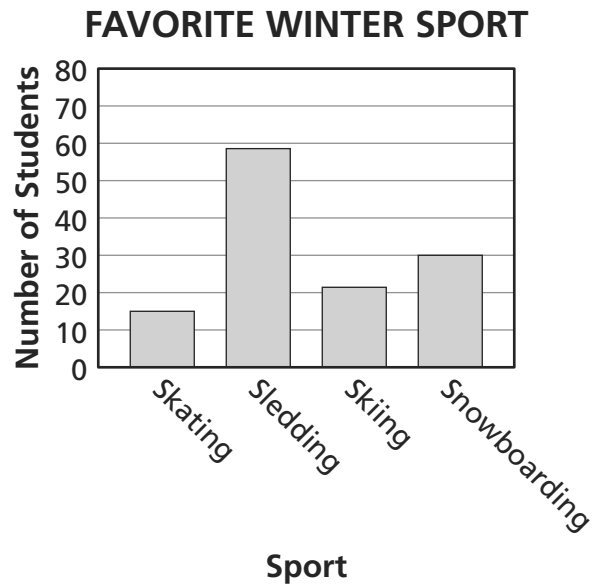
- A** 37
- B** 39
- C** 41
- D** 43

- 16** Mica and Denise are reading the same novel. Mica has read $\frac{1}{2}$ of the novel, and Denise has read $\frac{1}{3}$ of the novel. How much more of the novel has Mica read than Denise?

- A** $\frac{1}{6}$
- B** $\frac{2}{5}$
- C** $\frac{3}{5}$
- D** $\frac{5}{6}$

Go On

Mr. Bern asked the sixth-grade students in his school to choose their favorite winter sport. His data are shown in the bar graph below.



According to the data in the graph, which statement is true?

- A** Approximately 35 students chose skiing.
- B** All of the sports were chosen by more than 20 students.
- C** The number of students who chose snowboarding is approximately twice as many as the number who chose skating.
- D** The total number of students who chose skating and skiing is equal to the number of students who chose sledding.

- 18** Marion fills a bucket with water. The capacity of the bucket is 2 quarts. What is the capacity of Marion's bucket in gallons?

$1 \text{ gallon} = 4 \text{ quarts}$

- A $\frac{1}{4}$
- B $\frac{1}{2}$
- C 1
- D 2

- 19** Simplify the expression below.

$$4^3 \div 2^2$$

- A 2
- B 3
- C 16
- D 32

- 20** Rona drove 56 miles to visit a friend. She drove 42 miles before stopping for gas. What percent of the drive did Rona complete before stopping for gas?

- A 75%
- B 25%
- C 42%
- D 14%

Go On

21

Ernie has 4 yellow straws, 3 green straws, and 1 blue straw in a kitchen drawer. Each straw is the same size and shape. Ernie pulls out one straw from the drawer without looking. What is the probability of Ernie pulling out a green straw?

A $\frac{1}{8}$

B $\frac{3}{8}$

C $\frac{5}{8}$

D $\frac{7}{8}$

22

Gunther drew a circle. The radius of the circle is 20 inches. He uses the formula below to determine the area of his circle.

$$A = \pi r^2$$

What is the area, in square inches, of Gunther's circle?

Leave your answer in terms of π .

A 10π

B 40π

C 100

D 400π

- 23** The diameter of Lexa’s hula hoop is 36 inches. What is the **radius**, in inches, of Lexa’s hula hoop?
- A** 6
 - B** 9
 - C** 18
 - D** 72

- 24** The number of restaurants on Boland Street is 3 less than 4 times the number of restaurants, r , on Macaw Street. Which expression can be used to determine the number of restaurants on Boland Street?
- A** $7r$
 - B** $12r$
 - C** $3 - 4r$
 - D** $4r - 3$

- 25** There are 4 pints of milk in James’s refrigerator. How many cups of milk are in James’s refrigerator?

1 pint = 2 cups

- A** 2
- B** 8
- C** 16
- D** 32

STOP



New York State Testing Program

Mathematics Test Book 2

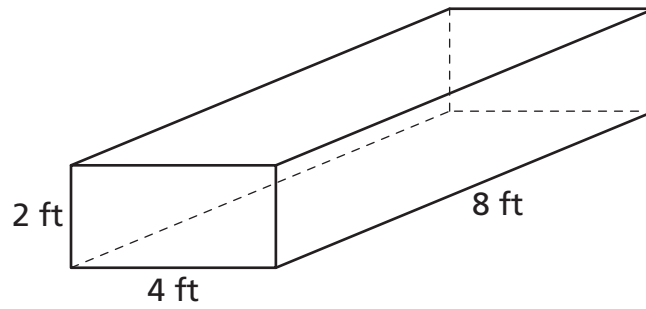
Grade **6**

May 5–7, 2010

Name _____

27

The diagram below shows a box in a warehouse. The box is in the shape of a rectangular prism.



[not drawn to scale]

What is the **volume**, in cubic feet, of the box?

$$V = lwh$$

Show your work.

Answer _____ cubic feet

28

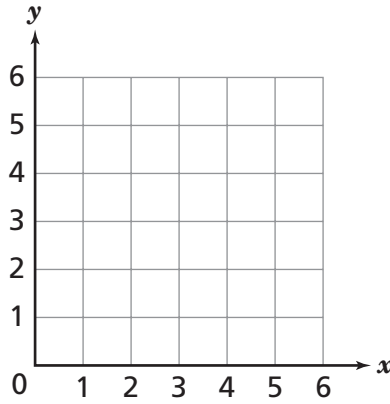
The ratio of the number of bananas to the number of apples at a fruit stand is 3:5. Moe says that the ratio is equivalent to 12:25. In the space below, use words, numbers, or symbols to show why Moe's statement is incorrect.

Be sure to provide a ratio equivalent to 3:5 in your answer.

Go On

29

Matthew plans to plot point A at (2, 3).



Plot **and** label point A on the coordinate plane using Matthew's coordinates.

On the lines below, explain how you determined where to plot the coordinates.

30

Patty has 123 CDs in her music collection. Of the 123 CDs, 27 are country music.

Estimate the percent of Patty's CDs that are country music CDs.

Estimation _____ %

On the lines below, explain how you determined your estimation.

Go On

31

At a bakery, there are 16 packages of hamburger buns for sale. The baker placed 8 hamburger buns in each package. He uses the equation below to calculate the total number of hamburger buns, b , for sale.

$$\frac{b}{8} = 16$$

What is the total number of hamburger buns for sale at the bakery?

Show your work.

Answer _____ hamburger buns

32

The temperature in Buffalo, New York, one Saturday was 68°F. The temperature the following Monday was 80°F. Write an equation that shows the change in temperature when x represents the number of degrees the temperature increased.

Equation _____

How many degrees did the temperature increase?

Show your work.

Answer _____ degrees

Go On

33

What fraction can be used to create a proportion with $\frac{4}{12}$?

Answer $\frac{4}{12} =$ _____

On the lines below, explain how you determined your answer.

The table below shows the prices of different sandwiches.

SANDWICH MENU

Item	Price
Small Tuna Sandwich	\$6.00
Small Chicken Sandwich	\$6.50
Large Tuna Sandwich	\$7.00
Large Chicken Sandwich	\$8.00

Leota orders 3 small tuna sandwiches and 3 large chicken sandwiches. What is the total amount Leota will pay for the sandwiches she orders?


Answer \$ _____






In the space below, show how Leota can use the **distributive** property to calculate the total amount.

Go On

The pictograph below shows the number of trees for sale at five different nurseries.

TREES FOR SALE

KEY	
	= 4 trees

Nursery	Number of Trees
Wilson	
Bryant	
Klein	
Randolph	
Smiley	

How many trees are for sale at the Wilson nursery?

Answer _____ trees

What is the total number of trees for sale at the Bryant nursery, the Klein nursery, and the Smiley nursery?

Show your work.

Answer _____ trees

STOP

2010 Mathematics Test Standard and Performance Indicator Map with Answer Key Grade 6

Question	Type	Points	Strand	Content Performance Indicator	Answer Key
Book 1					
1	Multiple Choice	1	Number Sense and Operations	6.N07 Express equivalent ratios as a proportion	C
2	Multiple Choice	1	Number Sense and Operations	6.N23 Represent repeated multiplication in exponential form	C
3	Multiple Choice	1	Algebra	5.A04 Solve simple one-step equations using basic whole-number facts	B
4	Multiple Choice	1	Number Sense and Operations	6.N13 Define absolute value and determine the absolute value of rational numbers (including positive and negative)	D
5	Multiple Choice	1	Geometry	6.G11 Calculate the area of basic polygons drawn on a coordinate plane (rectangles and shapes composed of rectangles having sides with integer lengths)	C
6	Multiple Choice	1	Number Sense and Operations	6.N05 Define and identify the zero property of multiplication	A
7	Multiple Choice	1	Geometry	6.G05 Identify radius, diameter, chords, and central angles of a circle	C
8	Multiple Choice	1	Algebra	6.A05 Solve simple proportions within context	B
9	Multiple Choice	1	Statistics and Probability	6.S11 Determine the number of possible outcomes for a compound event by using the fundamental counting principle and use this to determine the probabilities of events when the outcomes have equal probability	C
10	Multiple Choice	1	Geometry	6.G10 Identify and plot points in all four quadrants	D
11	Multiple Choice	1	Statistics and Probability	6.S05 Determine the mean, mode, and median for a given set of data	C
12	Multiple Choice	1	Algebra	6.A03 Translate two-step verbal sentences into algebraic equations	D
13	Multiple Choice	1	Measurement	6.M05 Identify equivalent metric units of capacity (milliliter to liter and liter to milliliter)	C
14	Multiple Choice	1	Algebra	6.A06 Evaluate formulas for given input values (circumference, area, volume, distance, temperature, interest, etc.)	A
15	Multiple Choice	1	Number Sense and Operations	6.N22 Evaluate numerical expressions using order of operations (may include exponents of two and three)	C

**2010 Mathematics Test Standard and Performance Indicator Map with Answer Key
Grade 6 (continued)**

Question	Type	Points	Strand	Content Performance Indicator	Answer Key
Book 1 (continued)					
16	Multiple Choice	1	Number Sense and Operations	6.N16 Add and subtract fractions with unlike denominators	A
17	Multiple Choice	1	Statistics and Probability	6.S07 Read and interpret graphs	C
18	Multiple Choice	1	Measurement	6.M03 Identify equivalent customary units of capacity (cups to pints, pints to quarts, and quarts to gallons)	B
19	Multiple Choice	1	Number Sense and Operations	6.N25 Evaluate expressions having exponents where the power is an exponent of one, two, or three	C
20	Multiple Choice	1	Number Sense and Operations	6.N12 Solve percent problems involving percent, rate, and base	A
21	Multiple Choice	1	Statistics and Probability	5.S06 Record experiment results using fractions/ratios	B
22	Multiple Choice	1	Geometry	6.G07 Determine the area and circumference of a circle, using the appropriate formula	D
23	Multiple Choice	1	Geometry	6.G06 Understand the relationship between the diameter and radius of a circle	C
24	Multiple Choice	1	Algebra	6.A01 Translate two-step verbal expressions into algebraic expressions	D
25	Multiple Choice	1	Measurement	6.M03 Identify equivalent customary units of capacity (cups to pints, pints to quarts, and quarts to gallons)	B
Book 2					
26	Short Response	2	Algebra	5.A05 Solve and explain simple one-step equations using inverse operations involving whole numbers	n/a
27	Short Response	2	Measurement	6.M01 Measure capacity and calculate volume of a rectangular prism	n/a
28	Short Response	2	Number Sense and Operations	6.N10 Verify the proportionality using the product of the means equals the product of the extremes	n/a
29	Short Response	2	Geometry	5.G12 Identify and plot points in the first quadrant	n/a
30	Short Response	2	Number Sense and Operations	6.N26 Estimate a percent of quantity (0% to 100%)	n/a
31	Short Response	2	Algebra	5.A05 Solve and explain simple one-step equations using inverse operations involving whole numbers	n/a
32	Extended Response	3	Algebra	5.A05 Solve and explain simple one-step equations using inverse operations involving whole numbers	n/a
33	Extended Response	3	Number Sense and Operations	6.N09 Solve proportions using equivalent fractions	n/a
34	Extended Response	3	Number Sense and Operations	6.N03 Define and identify the distributive property of multiplication over addition	n/a
35	Extended Response	3	Statistics and Probability	6.S07 Read and interpret graphs	n/a