New York State Testing Program

Mathematics Test
Book 1

Grade **6**

March 6–12, 2008

1 If $8n = 96$, what value of n makes the equation true?

    A   12

    B   88

    C   104

    D   768

2 A 20-gallon container is filled with 6 gallons of gasoline. What fraction of the container is filled with gasoline?

    A $\dfrac{20}{6}$

    B $\dfrac{3}{10}$

    C $\dfrac{6}{10}$

    D $\dfrac{3}{5}$

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Book 1

Page 5

3 What number is equivalent to |−16|?
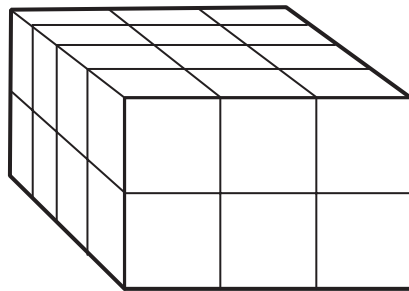
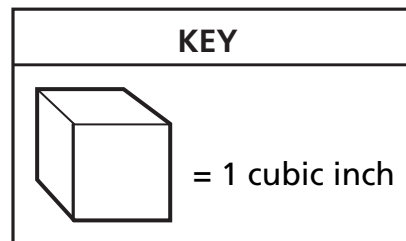A $-\dfrac{1}{16}$

B $\dfrac{1}{16}$

C −16

D 16

4 Brady stacked some blocks to form the rectangular prism below.

KEY

= 1 cubic inch

[not drawn to scale]

What is the volume of the rectangular prism?

A 9 cubic inches

B 18 cubic inches

C 24 cubic inches

D 32 cubic inches

5 Which statement is a proportion?

A $\dfrac{3}{4} = \dfrac{4}{8}$

B $\dfrac{3}{4} = \dfrac{5}{8}$

C $\dfrac{3}{4} = \dfrac{6}{8}$

D $\dfrac{3}{4} = \dfrac{7}{8}$

6 At a school carnival, a group of 47 students played the Fish Pond game. Each student in the group won a prize. A stuffed animal was won by 24 students, a rubber ball was won by 7 students, and the rest of the students won a baseball cap. What fraction of the group won a baseball cap?

A $\dfrac{7}{47}$

B $\dfrac{16}{47}$

C $\dfrac{24}{47}$

D $\dfrac{31}{47}$

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Book 1

Page 7

7 Mr. Simpson has 5 boxes of paintbrushes in his art room. After the first week of school, he buys 3 more paintbrushes. The expression below shows the total number of paintbrushes in Mr. Simpson's art room when p represents the number of brushes in each box.

$$3 + p \times 5$$

If each box contains 8 paintbrushes, how many total paintbrushes are in Mr. Simpson's art room?
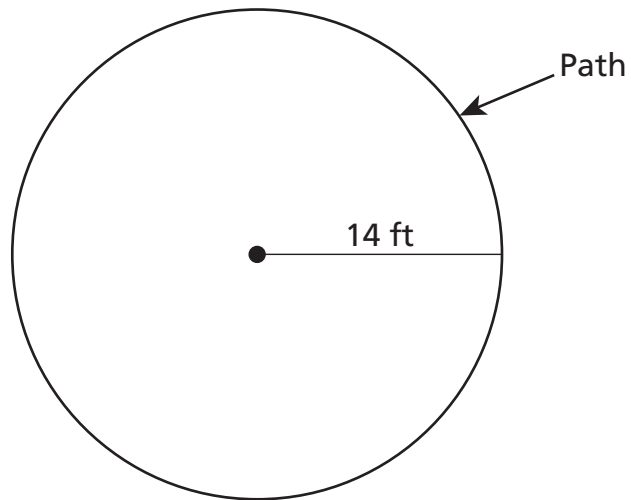
A   18

B   28

C   43

D   55

8 A box contains 4 chocolate chip muffins, 2 blueberry muffins, and 1 corn muffin. A muffin is randomly chosen from the box. What is the probability that a blueberry muffin or a corn muffin is chosen?

A $\dfrac{1}{3}$

B $\dfrac{1}{4}$

C $\dfrac{3}{7}$

D $\dfrac{4}{7}$

9 The workers at Johnson Farm are creating a circular path that will be used to give pony rides. A diagram of the path is shown below.

Path

14 ft

[not drawn to scale]

$$C = 2\pi r$$

What is the circumference of the path?

Leave π in your answer.

A 7π feet

B 14π feet

C 28π feet

D 56π feet

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Book 1

Page 9

10 Otto is measuring water for an experiment. He fills two different containers: a 2-liter container and a half-liter container. He uses each container only once. How many milliliters of water does Otto measure for his experiment?
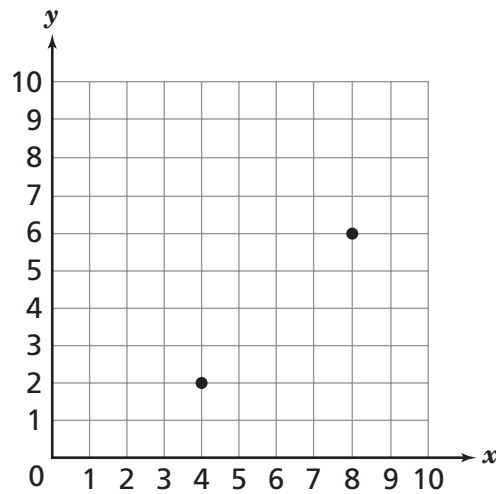
1 liter = 1,000 milliliters

A 25

B 2.5

C 250

D 2,500

11 Nan lives $13\frac{1}{2}$ miles from the airport. Felipe lives $6\frac{1}{4}$ miles from the airport. How many more miles does Nan live from the airport than Felipe?

A $7\frac{1}{8}$

B $7\frac{1}{6}$

C $7\frac{1}{4}$

D $7\frac{1}{2}$

12 Carlos plots two points on the grid below.

He wants to plot two more points and then connect all four points to form a square. Which two points should Carlos plot to form a square?

A   (4, 2) and (8, 6)

B   (4, 6) and (6, 6)

C   (4, 2) and (6, 2)

D   (4, 6) and (8, 2)

13 Mr. Cohen wrote the expression below for his 3 cousins to use to find his age.

$$n^2 \times 7 - 3$$

If *n* represents the number of cousins, what is Mr. Cohen's age?

A   12

B   18

C   36

D   60

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Book 1

Page 11

14 Paulie multiplies two numbers whose product is 1. If one of the numbers is 2, what is the other number?

A $\frac{2}{1}$

B $\frac{1}{2}$

C 1

D 0

15 The list below shows the number of large bags of popcorn sold each day at a movie theater over five days.

18   19   22   18   23

What is the mean (average) number of large bags of popcorn sold over the five days?

A 18

B 19

C 20

D 22

16 There are 283 students in Wally's school and 59 of them are in the sixth grade. What is the **approximate** percent of students at Wally's school who are in the sixth grade?

A 80%

B 60%

C 40%

D 20%

17 Andi walks at a rate, *r*, of 4 miles per hour. What is the distance, *d*, that she walks in the time, *t*, of 3 hours?

$$d = rt$$

A   1 mile

B   7 miles

C   12 miles

D   43 miles

18 Which exponential expression is equivalent to $8 \times 8 \times 8 \times 8$?

A 4^4

B 4^8

C 8^4

D 8^8
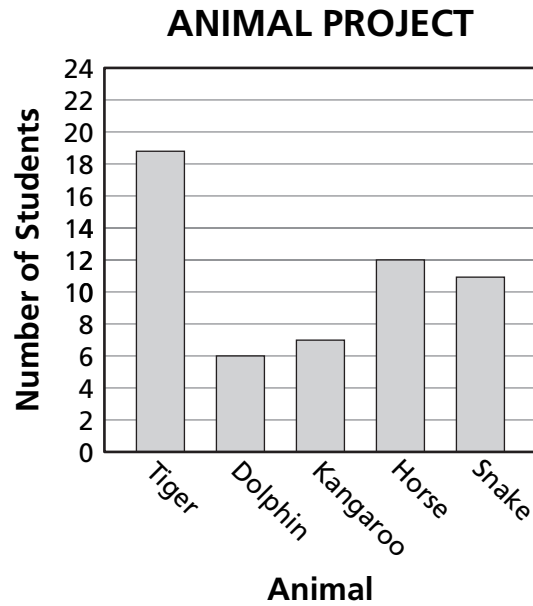
19 How many pints are equivalent to 10 gallons?

1 gallon = 4 quarts
1 quart = 2 pints

A   10

B   20

C   40

D   80

Go On

20 The bar graph below shows the number of students who chose to write about different animals for an animal project.

ANIMAL PROJECT

The combined total for what two animals is the same as the total for the tiger?

A kangaroo and horse

B dolphin and snake

C horse and dolphin
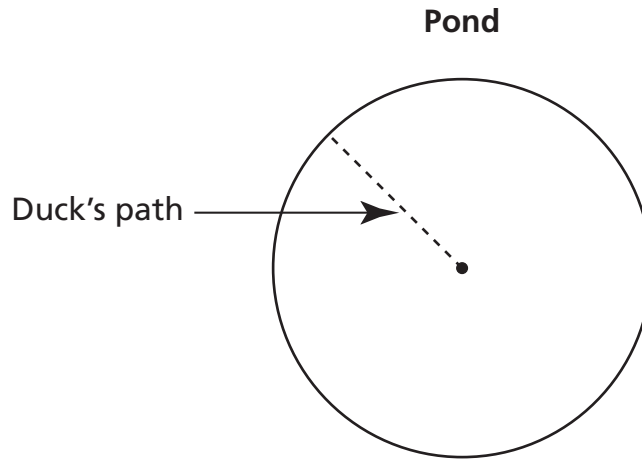
D dolphin and kangaroo

21 Simplify the expression below.

$$4^2 + 5^2$$

A 13

B 18

C 23

D 41

22 A duck swims from the edge of a circular pond to a fountain in the center of the pond. Its path is represented by the dotted line in the diagram below.

Pond

Duck's path

What term describes the duck's path?

A chord

B radius

C diameter

D central angle

23 Ms. Brown asked her students to simplify the expression below.

$$\frac{2}{3} + \frac{1}{4}$$

What is the simplified version of Ms. Brown's expression?

A $\frac{2}{7}$

B $\frac{3}{7}$

C $\frac{3}{12}$

D $\frac{11}{12}$

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Book 1

Page **15**

24 What is the value of x in the equation below?

$$\frac{3}{5} = \frac{x}{30}$$

A   6

B   9

C   10

D   18

25 Dory, Gwen, and Tia ran a race. Dory finished in second place. Which set of names shows the possible outcomes for the finish of the race?

A   Set #1: Gwen, Dory, Tia
      Set #2: Tia, Dory, Gwen

B   Set #1: Dory, Tia, Gwen
      Set #2: Tia, Gwen, Dory

C   Set #1: Tia, Dory, Gwen
      Set #2: Gwen, Tia, Dory

D   Set #1: Tia, Gwen, Dory
      Set #2: Gwen, Dory, Tia

STOP

New York State Testing Program

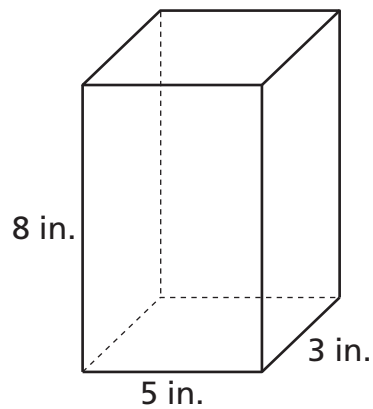# Mathematics Test
Book 2

Grade **6**

March 6–12, 2008

Name _____

26   What is the volume, in cubic inches, of the rectangular prism below?

8 in.

3 in.

5 in.

[not drawn to scale]

$$V = lwh$$

Show your work.

Answer _____ cubic inches

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Book 2

Page 3

27 A sixth-grade class is having a book sale. The students earn $6 for each book they sell. To determine how many books they need to sell to reach their goal of $144, they use the equation below where b represents a certain number of books.

$$6b = 144$$

Part A

What is the value of b in the equation?

Show your work.

Answer _____

Part B

The classroom teacher wrote the equation shown below for his students to solve to find the number of kickballs, k, they could buy with the $144, if each kickball cost $9.

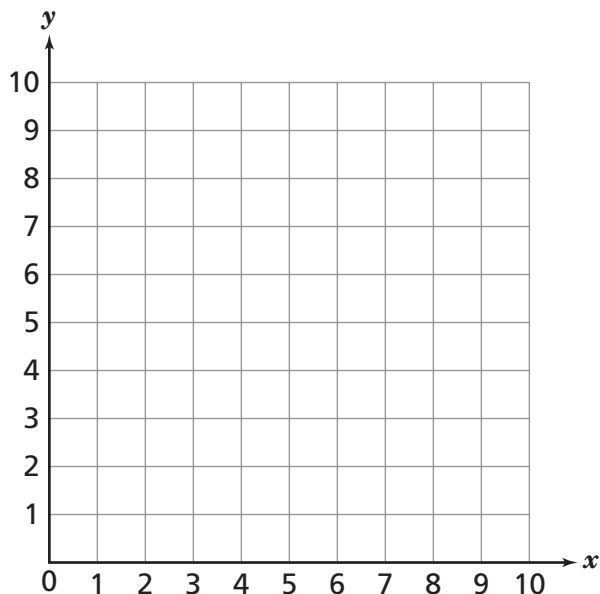$$\frac{144}{k} = 9$$

What is the value of k in the equation?

Answer _____

28 On the grid below

- plot and label the points: A (1, 5), B (3, 2), C (6, 2), D (8, 5)
- connect the points in order, starting with point A, to draw a quadrilateral

What type of quadrilateral is formed by connecting points A, B, C, and D?

Answer _____

On the lines below, explain how you determined the type of quadrilateral plotted on the grid.

_____

_____

_____

_____

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Book 2

Page 5

29 A science class rolled a model car down a hill and measured the distance the car traveled. The class rolled the car 30 times and recorded the results in the table below.

MODEL CAR DISTANCES

Distance Traveled	Number of Times
8.0 feet to 8.9 feet	6
9.0 feet to 9.9 feet	11
10.0 feet to 10.9 feet	3
11.0 feet to 11.9 feet	6
12.0 feet to 12.9 feet	4

The class rolls the car one more time. Based on the data in the table, what is the probability that the car will travel 10 feet or more?

Probability _____

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

_____

_____

_____

_____

_____

30   A theater club sold 300 tickets for a school play.

Part A

On the first day, 60% of the 300 tickets were sold. How many tickets were sold the first day?

Answer _____ tickets

Part B

Of the 300 tickets, 240 were sold to sixth-grade students. What percent of the total number of tickets sold were sold to sixth-grade students?

Show your work.

Answer _____ %

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Book 2

Page 7

31   Kori is driving to the mountains. The table below shows the total number of miles that Kori expects to complete by the end of each hour of his trip.

TRAVEL TIME

Hour	Number of Miles
1	65
2	130
3	195
4	260
5	325

If the pattern in the table continues, predict how many hours it will take Kori to drive a total of 455 miles.

Answer _____ hours

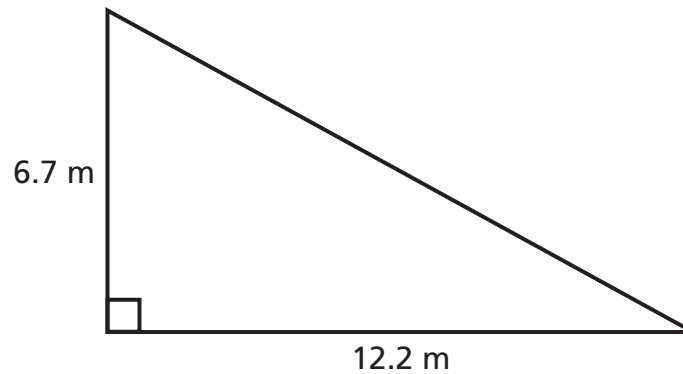On the lines below, explain how you made your prediction.

_____

_____

_____

_____

_____

32 Roberto drew a diagram of his triangular garden, as shown below.

6.7 m

12.2 m

[not drawn to scale]

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

Estimate the area, in square meters, of Roberto's garden.

Estimation _____ square meters

On the lines below, explain how you estimated the area.

_____

_____

_____

_____

_____

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Book 2
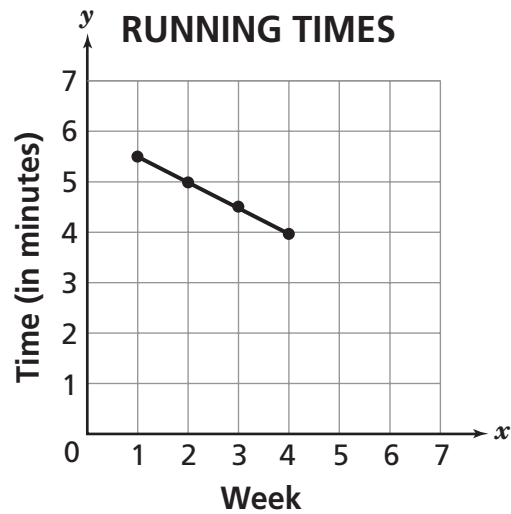
Page 9

33 Once a week, Ana runs along a path around City Park. For 4 weeks, she recorded
her running times. Ana plotted the data on the graph below.

RUNNING TIMES

Part A

How many minutes did it take Ana to run around the park in Week 3?

Answer _____ minutes

Part B

If the pattern in the graph continues, predict how many minutes it will take Ana
to run around the park in Week 7.

Answer _____ minutes

Part C

On the lines below, explain how you made your prediction.

_____

_____

_____

_____

_____

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Book 2

Page 11

34 Sonya, Darren, and Abby were on different sports teams last season. The number of wins for each team is listed below.

- Sonya's soccer team won 4 out of 5 games.
- Darren's basketball team won 12 out of 20 games.
- Abby's baseball team won 20 out of 25 games.

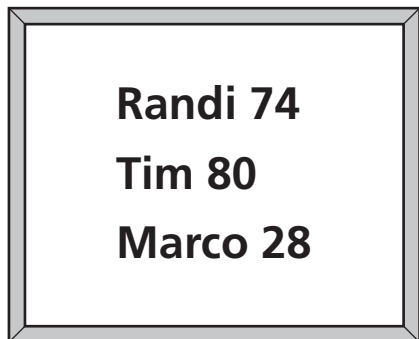Which teams won the same proportion of their games?

Show your work.

Answer _____ and _____

35 Mr. Ward asked his students to evaluate the expression $4^3 + 2y$ when $y = 8$. Three of Mr. Ward's students wrote their answers on the board.

Randi 74

Tim 80

Marco 28

Which student evaluated the expression correctly?

Show your work.

Answer _____

STOP

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Book 2

Page 13

2008 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	Algebra	5.A04 Solve simple one-step equations using basic whole-number facts	A
2	Multiple Choice	1	Number Sense and Operations	6.N21 Find multiple representations of rational numbers (fractions, decimals, and percents 0 to 100)	B
3	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
4	Multiple Choice	1	Geometry	6.G04 Determine the volume of rectangular prisms by counting cubes and develop the formula	C
5	Multiple Choice	1	Number Sense and Operations	6.N07 Express equivalent ratios as a proportion	C
6	Multiple Choice	1	Statistics and Probability	5.S06 Record experiment results using fractions/ratios	B
7	Multiple Choice	1	Algebra	5.A03 Substitute assigned values into variable expressions and evaluate using order of operations	C
8	Multiple Choice	1	Statistics and Probability	5.S07 Create a sample space and determine the probability of a single event, given a simple experiment (e.g., rolling a number cube)	C
9	Multiple Choice	1	Geometry	6.G07 Determine the area and circumference of a circle, using the appropriate formula	C
10	Multiple Choice	1	Measurement	6.M05 Identify equivalent metric units of capacity (milliliter to liter and liter to milliliter)	D
11	Multiple Choice	1	Number Sense and Operations	6.N18 Add, subtract, multiply and divide mixed numbers with unlike denominators	C
12	Multiple Choice	1	Geometry	5.G13 Plot points to form basic geometric shapes (identify and classify)	D
13	Multiple Choice	1	Algebra	6.A02 Use substitution to evaluate algebraic expressions (may include exponents of one, two, and three)	D
14	Multiple Choice	1	Number Sense and Operations	6.N19 Identify the multiplicative inverse (reciprocal) of a number	B
15	Multiple Choice	1	Statistics and Probability	6.S05 Determine the mean, mode and median for a given set of data	C
16	Multiple Choice	1	Number Sense and Operations	6.N26 Estimate a percent of quantity (0% to 100%)	D
17	Multiple Choice	1	Algebra	6.A06 Evaluate formulas for given input values (circumference, area, volume, distance, temperature, interest, etc.)	C
18	Multiple Choice	1	Number Sense and Operations	6.N23 Represent repeated multiplication in exponential form	C

Question	Type	Points	Strand	Content Performance Indicator	Answer Key
Book 1 (continued)					
19	Multiple Choice	1	Measurement	6.M03 Identify equivalent customary units of capacity (cups to pints, pints to quarts, and quarts to gallons)	D
20	Multiple Choice	1	Statistics and Probability	6.S07 Read and interpret graphs	A
21	Multiple Choice	1	Number Sense and Operations	6.N25 Evaluate expressions having exponents where the power is an exponent of one, two, or three	D
22	Multiple Choice	1	Geometry	6.G05 Identify radius, diameter, chords, and central angles of a circle	B
23	Multiple Choice	1	Number Sense and Operations	6.N16 Add and subtract fractions with unlike denominators	D
24	Multiple Choice	1	Number Sense and Operations	6.N09 Solve proportions using equivalent fractions	D
25	Multiple Choice	1	Statistics and Probability	5.S05 List the possible outcomes for a single-event experiment	A
Book 2					
26	Short Response	2	Measurement	6.M01 Measure capacity and calculate volume of a rectangular prism	n/a
27	Extended Response	3	Algebra	5.A04 Solve simple one-step equations using basic whole-number facts	n/a
28	Extended Response	3	Geometry	5.G13 Plot points to form basic geometric shapes (identify and classify)	n/a
29	Short Response	2	Statistics and Probability	5.S06 Record experiment results using fractions/ratios	n/a
30	Extended Response	3	Number Sense and Operations	6.N12 Solve percent problems involving percent, rate, and base	n/a
31	Short Response	2	Statistics and Probability	6.S08 Justify predictions made from data	n/a
32	Short Response	2	Measurement	6.M07 Estimate volume, area, and circumference (see figures identified in geometry strand)	n/a
33	Extended Response	3	Statistics and Probability	6.S08 Justify predictions made from data	n/a
34	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
35	Short Response	2	Algebra	6.A02 Use substitution to evaluate algebraic expressions (may include exponents of one, two, and three)	n/a