New York State Testing Program

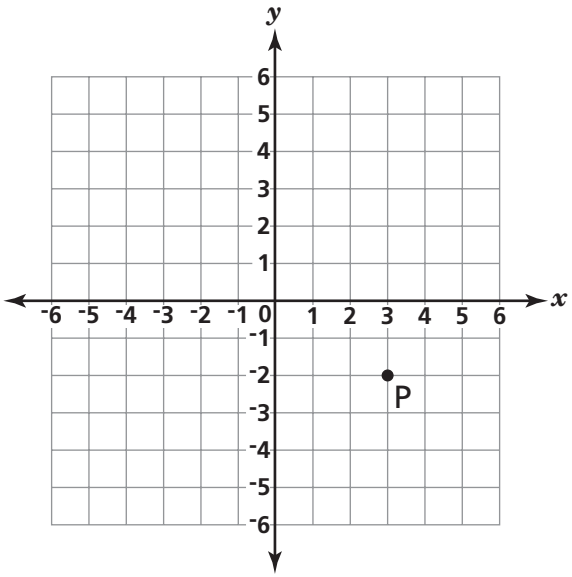
Mathematics Test
Book 1

Grade 7

March 6–12, 2008

20299

1 What are the coordinates of point P?



A (2, 3)

B (3, 2)

C (–2, 3)

D (3, –2)

Go On

2 What is 6,200 milliliters converted to liters?

1 liter = 1,000 milliliters

A 62

B 6.2

C 620

D 0.62

3 What value of x makes the equation below true?

$$6x - 9 = 39$$

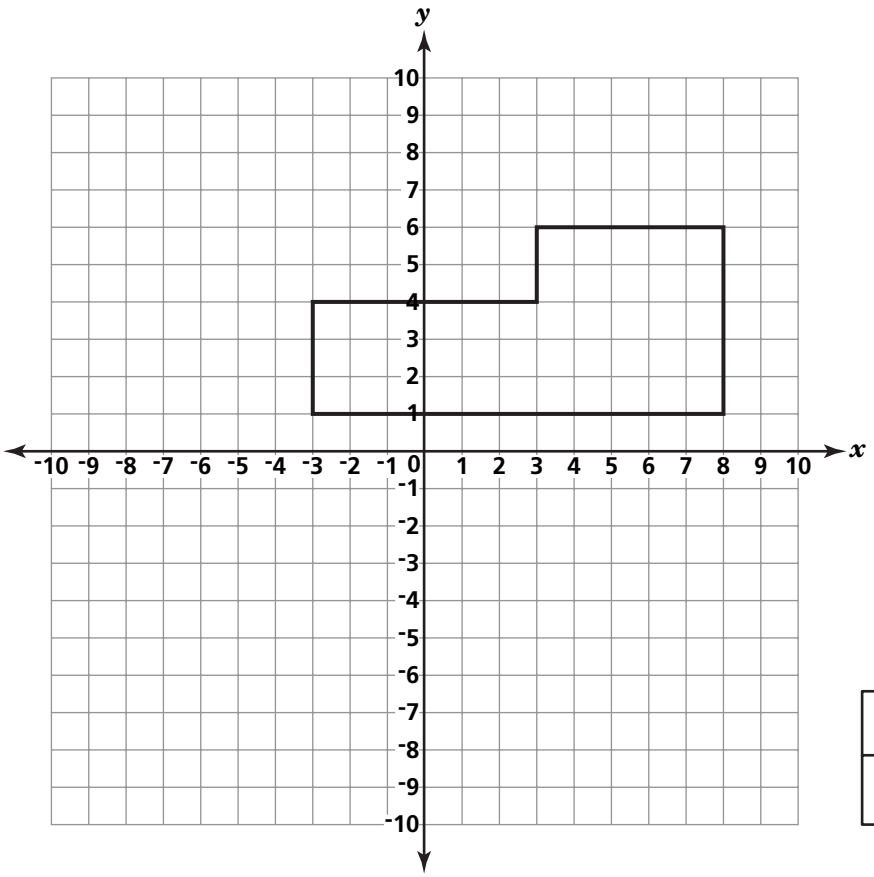
A 5

B 8

C 13

D 24

4 A polygon is plotted on the coordinate plane below.



KEY
= 1 square unit

What is the area, in square units, of the polygon?

A 25

B 32

C 43

D 55

Go On

5 Michael enters a 120-mile bicycle race. He bikes 24 miles an hour. What is Michael's finishing time, in hours, for the race?

$d = rt$

A 2

B 5

C 0.2

D 0.5

6 Which of these is an irrational number?

A –2

B $\sqrt{56}$

C $\sqrt{64}$

D 3.14

7 What is the least common multiple (LCM) of 8, 12, and 18?

A 24

B 36

C 48

D 72

8 The number of fish sold at a fish market during a certain week is shown in the pictograph below.

FISH SOLD

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

KEY
 = 5 fish

What is the total number of fish sold on Tuesday and Wednesday?

A 10

B 25

C 45

D 50

9 What is the value of the expression $r^2 + s^3$ when $r = 5$ and $s = 3$?

A 19

B 34

C 52

D 85

Go On

10 Veronica has a box that contains 24 pictures of her family, 6 pictures of her dog, and 12 pictures of her friends. Veronica randomly chooses one picture from the box. Which statement **best** describes what will likely occur?

A She will definitely pick a picture of her family.

B She will most likely pick a picture of her family.

C She is equally likely to pick a picture of her family or of her dog.

D She is equally likely to pick a picture of her family, of her dog, or of her friends.

11 Simplify the expression below.

$$5 + 3 \bullet 2 - 4^2 \bullet |-2|$$

A 43

B 48

C –16

D –21

12 If the circumference of a circle is 16π, what is the radius?

$C = 2\pi r$

A 4

B 8

C 16

D 32

13 A butterfly weighs only about 5.0×10^{-5} of a kilogram. What is this number written in standard form?

A 0.00005

B 0.000005

C 50,000

D 500,000

14 Every day at 7 A.M., Tamara recorded the outside temperature in degrees Fahrenheit (°F). She placed the data for one week in the table below.

Day	Temperature (°F)
Monday	58
Tuesday	48
Wednesday	49
Thursday	61
Friday	58
Saturday	51
Sunday	39

What is the **range** for the temperatures given in the table?

A 19°F

B 22°F

C 38°F

D 61°F

15 Hector spent $17 for a tube of paint and 5 brushes. The tube of paint cost $8. Which equation can be used to find b, the cost of each brush?

A $17 = 5b + 8$

B $17 = 8b + 5$

C $17b = 5 + 8$

D $17 = b + 5 + 8$

16 A number cube is a cube with each side labeled with a number 1 through 6. Debbie rolled a number cube 60 times. The tally table below shows the number of times each number, 1 through 6, appeared.

ROLLING A NUMBER CUBE

Number on the Cube	Number of Rolls
1	𝍸 |
2	𝍸 𝍸 𝍸
3	𝍸 𝍸 𝍸 |||
4	𝍸 𝍸 |
5	|||
6	𝍸 ||

Before her experiment, Debbie expected each number on the cube to appear an equal number of times. Which statement **best** compares the results of Debbie's rolls with her expectations?

A Debbie rolled more 5s than expected.

B Debbie rolled fewer 4s than expected.

C Debbie rolled more 3s than expected.

D Debbie rolled fewer 2s than expected.

17 Between which two integers does $\sqrt{29}$ lie?

A 4 and 5

B 5 and 6

C 13 and 14

D 14 and 15

Go On

18 Kasim's Video Store has received a shipment of DVDs. The table below shows the number of each type of DVD in the shipment.

DVD SHIPMENT

Type	Number of DVDs
Action	12
Science Fiction	3
Comedy	6
Western	9

Kasim selects a DVD at random from the shipment. What is the probability that he chooses a western?

A $\frac{1}{4}$

B $\frac{1}{9}$

C $\frac{9}{21}$

D $\frac{9}{30}$

19 The flower box in front of the main city library weighs 124 ounces. What does the flower box weigh in pounds?

1 pound = 16 ounces

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

B $7\frac{3}{4}$

C 868

D 1984

20 What is the greatest common factor (GCF) of 108 and 420?

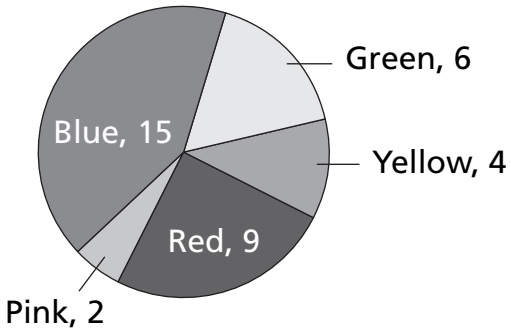
A 6

B 9

C 12

D 18

21 Alison is doing the laundry for her family and decides to count all the T-shirts. She creates the graph below to show how many T-shirts of each color her family has placed in the laundry.



[not drawn to scale]

What percent of the total number of T-shirts is red?

A 20%

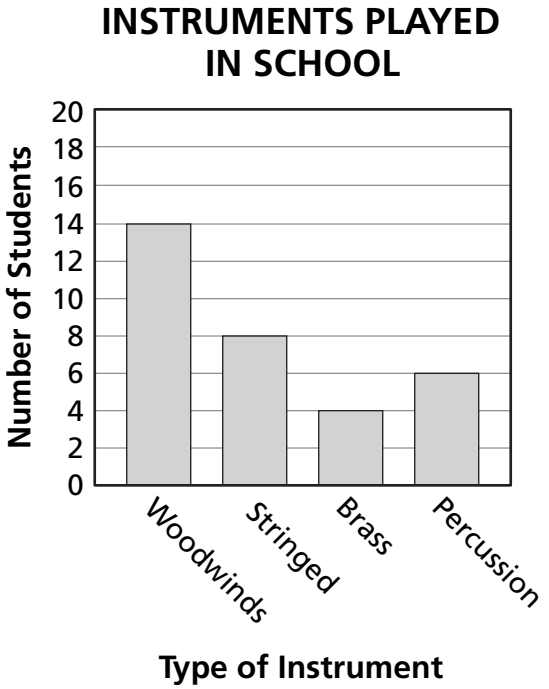
B 25%

C 36%

D 90%

Go On

22 The graph below shows the type of instruments played by students in the school.



Janelle is chosen to perform a solo. What is the probability that she plays a stringed instrument?

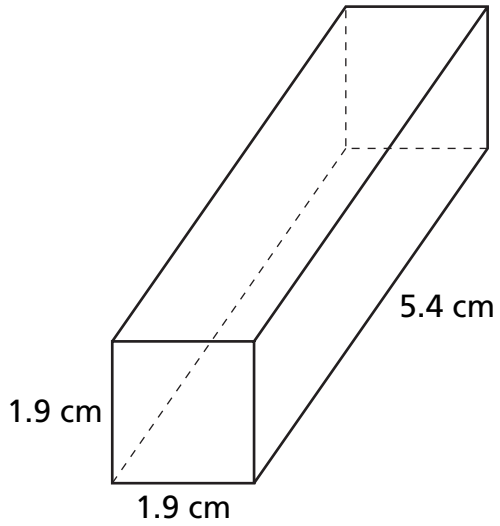
A $\frac{6}{24}$

B $\frac{8}{24}$

C $\frac{6}{32}$

D $\frac{8}{32}$

23 What is the best **estimation**, in square centimeters, for the surface area of the rectangular prism shown below?



[not drawn to scale]

Surface area $= 2wl + 2lh + 2wh$

A 14

B 20

C 32

D 48

Go On

24 A box contains 3 pens, 2 markers, and 1 highlighter. Tara selects one item at random and does not return it to the box. She then selects a second item at random. What is the probability that Tara selects 1 pen and then 1 marker?

A $\frac{5}{36}$

B $\frac{27}{30}$

C $\frac{6}{30}$

D $\frac{6}{36}$

25 A school store's expenses and sales for a three-month period are shown in the table below.

Month	Expense	Sales
September	$125.00	$47.00
October	$0.00	$65.00
November	$57.00	$28.00

Based on the data in the table, what is the loss or profit for the store for the three-month period?

A $182.00 loss

B $42.00 loss

C $15.00 profit

D $140.00 profit

26 Which expression has the **greatest** value?

A 1.045×10^2

B 1.45×10^2

C 8.4×10^{-2}

D -8.4×10^2

27 Which tool is **most** appropriate for measuring the mass of a serving of cheese?

A ruler

B thermometer

C measuring cup

D weighing scale

28 There are 500 students in Andrew's school. Andrew wants to survey a sample of students to determine the most popular school subject. Which sampling method is the **best** to use to predict the most popular school subject?

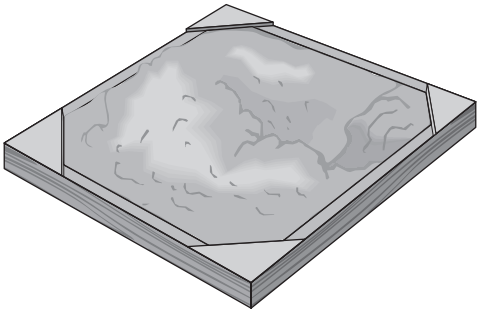
A randomly select 50 students from the student list of 500

B randomly select 10 students having lunch in the cafeteria

C select the first 50 girls entering the auditorium for an assembly

D select the first 25 students leaving the building after school

29 Carlos used 4 cubic yards of sand to fill his sandbox.



How many cubic feet of sand are in 4 cubic yards?

1 cubic yard = 27 cubic feet

A 9

B 12

C 64

D 108

30 Which shape could be the base of a cone?

A circle

B square

C triangle

D octagon

STOP

31 The chart below displays the daytime high and the nighttime low temperatures for one Friday in Anchorage, Alaska.

Friday Daytime High	–7°F
Friday Nighttime Low	–16°F

Part A

How many degrees did the temperature drop from the daytime high to the nighttime low?

Answer _____ degrees

Part B

The warmest recorded temperature in Anchorage is 96 degrees higher than the Friday nighttime low temperature. What is the highest recorded temperature for Anchorage, Alaska?

Show your work.

Answer _____ °F

Go On

32 The science teacher at Angela's school is planning a field trip for all her classes. The number of accompanying adults must be proportional to the number of students. For example, if 30 students go on the field trip, there must be 5 adults.

Use the proportion below to determine the number of adults, *a*, that need to accompany 84 students on the field trip.

$$\frac{30}{5} = \frac{84}{a}$$

Show your work.

Answer _____ adults

33 Write "five less than four times a number" as an algebraic expression.

Expression _____

Evaluate the expression above when the value of the unknown number is 3.

Show your work.

Answer _____

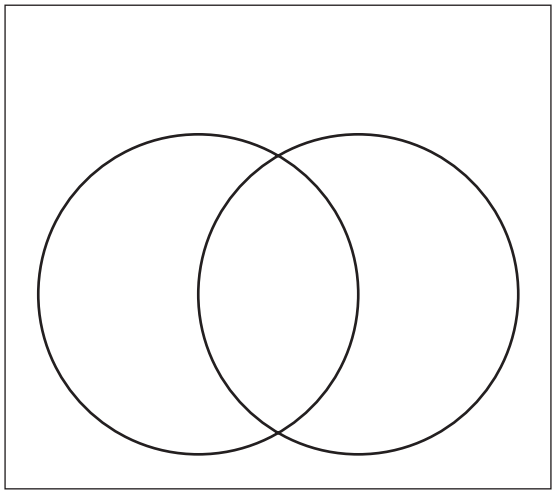
Go On

34 Carlotta asks 30 campers which outdoor activity they enjoy. Of these campers, 13 enjoy swimming, 17 enjoy baseball, and 8 enjoy both swimming and baseball.

Complete the Venn diagram using the information above.

Be sure to

- title the diagram
- label each circle
- place a number in each section of the diagram



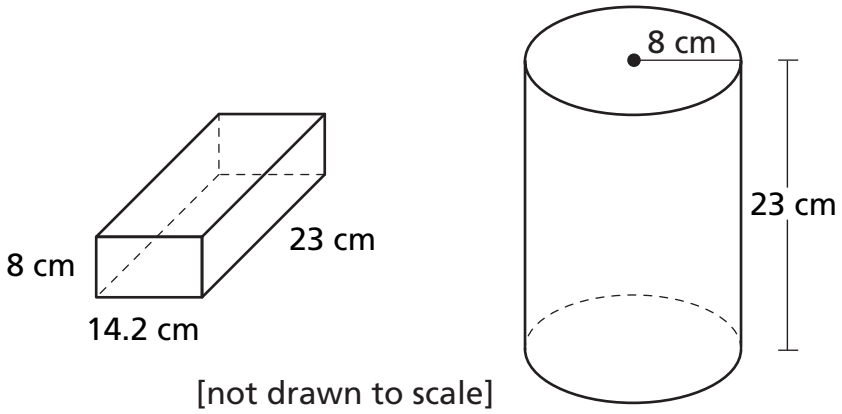
How many campers did **not** select any outdoor activity?

Answer _____ campers

On the lines below, explain how you determined the number of campers who did not select any outdoor activity.

Go On

35 Tricia is choosing a container for her jewelry beads. The containers are shown below.



[not drawn to scale]

Find the volume of the prism. Round your answer to the nearest whole number.

Show your work.

Volume of prism _____ cubic centimeters

Find the volume of the cylinder. Round your answer to the nearest whole number.

Show your work.

Volume of cylinder _____ cubic centimeters

What is the difference in volume between the prism and the cylinder? Round your answer to the nearest whole number.

Answer _____ cubic centimeters

36 Write the prime factorization of 84 in exponential form.

Show your work.

Answer _____

Go On

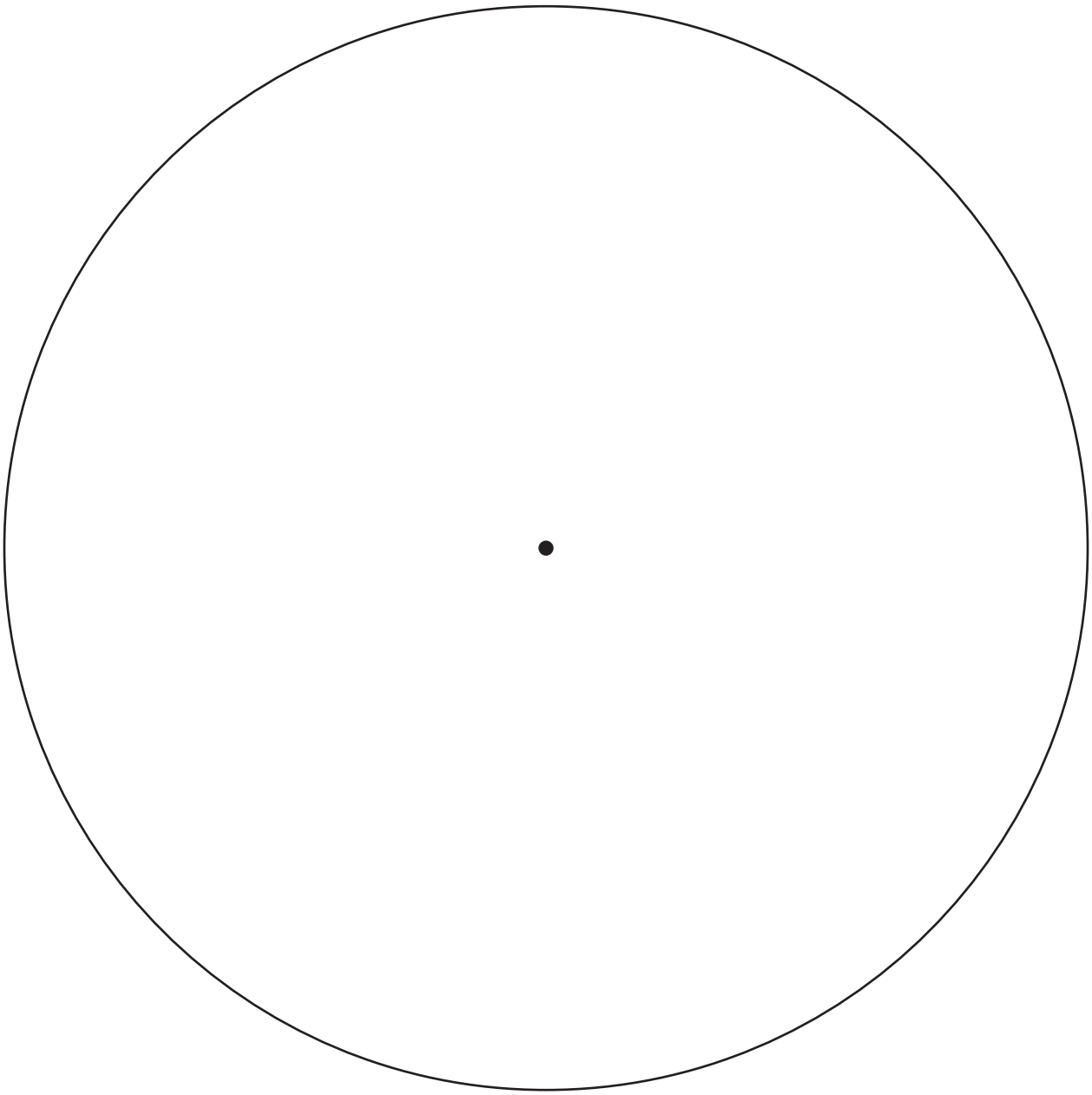
37  Use your protractor to help you solve this problem.

Dan's classmates use different-color notebooks for different projects. Dan is creating a circle graph representing the number of different-color notebooks. Dan's table shows the angle measure of each sector of his graph.

Color	Angle Measure (in degrees)	Percent of Notebooks
Blue	180°	50%
Yellow	90°	
Red	54°	
Green	36°	

Complete Dan's table by using the given angle measures.

Using information from the table, create Dan's circle graph. Be sure to label the sectors.



Go On

38 On the calendar below, Mindy recorded the daily high temperature in degrees Fahrenheit (°F) for the first fifteen days in May.

MAY

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 77°F	2 80°F	3 65°F	4 61°F	5 65°F	6 71°F	7 82°F
8 87°F	9 70°F	10 71°F	11 86°F	12 86°F	13 86°F	14 70°F
15 87°F	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Part A

Use information from the calendar to complete the temperature frequency table shown below.

DAILY HIGH TEMPERATURES
MAY 1–15

Temperature (°F)	Tally
61–65	
66–70	
71–75	
76–80	
81–85	
86–90	

Part B

Which temperature range occurs most frequently?

Answer _____ °F

Part C

Which temperature range occurs least frequently?

Answer _____ °F

STOP

2008 Mathematics Tests Standard and Performance Indicator Map with Answer Key
Grade 7

Question	Type	Points	Strand	Content Performance Indicator	Answer Key
Book 1					
1	Multiple Choice	1	Geometry	6.G10 Identify and plot points in all four quadrants	D
2	Multiple Choice	1	Measurement	7.M02 Convert capacities and volumes within a given system	B
3	Multiple Choice	1	Algebra	6.A04 Solve and explain two-step equations involving whole numbers using inverse operations	B
4	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
5	Multiple Choice	1	Algebra	7.A06 Evaluate formulas for given input values (surface area, rate, and density problems)	B
6	Multiple Choice	1	Number Sense and Operations	7.N02 Recognize the difference between rational and irrational numbers (i.e., explore different approximations of π)	B
7	Multiple Choice	1	Number Sense and Operations	7.N09 Determine multiples and least common multiple of two or more numbers	D
8	Multiple Choice	1	Statistics and Probability	7.S06 Read and interpret data represented graphically (pictograph, bar graph, histogram, line graph, double line/bar graphs, or circle graph)	D
9	Multiple Choice	1	Algebra	6.A02 Use substitution to evaluate algebraic expressions (may include exponents of one, two, and three)	C
10	Multiple Choice	1	Statistics and Probability	7.S10 Predict the outcome of an experiment	B
11	Multiple Choice	1	Number Sense and Operations	7.N11 Simplify expressions using order of operations Note: Expressions may include absolute value and/or integral exponents greater than 0	D
12	Multiple Choice	1	Geometry	7.G01 Calculate the radius or diameter, given the circumference or area of a circle	B
13	Multiple Choice	1	Number Sense and Operations	7.N06 Translate numbers from scientific notation into standard form	A
14	Multiple Choice	1	Statistics and Probability	7.S04 Calculate the range for a given set of data	B
15	Multiple Choice	1	Algebra	6.A03 Translate two-step verbal equations into algebraic equations	A
16	Multiple Choice	1	Statistics and Probability	7.S12 Compare actual results to predicted results	C

2008 Mathematics Tests Standard and Performance Indicator Map with Answer Key
Grade 7 (continued)

Question	Type	Points	Strand	Content Performance Indicator	Answer Key
Book 1 (continued)					
17	Multiple Choice	1	Number Sense and Operations	7.N18 Identify the two consecutive whole numbers between which the square root of a non-perfect square whole number less than 225 lies (with and without the use of a number line)	B
18	Multiple Choice	1	Statistics and Probability	7.S10 Predict the outcome of an experiment	D
19	Multiple Choice	1	Measurement	7.M04 Convert mass within a given system	B
20	Multiple Choice	1	Number Sense and Operations	7.N08 Find the common factors and greatest common factor of two or more numbers	C
21	Multiple Choice	1	Statistics and Probability	7.S06 Read and interpret data represented graphically (pictograph, bar graph, histogram, line graph, double line/bar graphs, or circle graph)	B
22	Multiple Choice	1	Statistics and Probability	7.S08 Interpret data to provide the basis for predictions and to establish experimental probabilities	D
23	Multiple Choice	1	Measurement	7.M11 Estimate surface area	D
24	Multiple Choice	1	Statistics and Probability	6.S10 Determine the probability of dependent events	C
25	Multiple Choice	1	Number Sense and Operations	7.N12 Add, subtract, multiply, and divide integers	B
26	Multiple Choice	1	Number Sense and Operations	7.N07 Compare numbers written in scientific notation	B
27	Multiple Choice	1	Measurement	7.M09 Determine the tool and technique to measure with an appropriate level of precision: mass	D
28	Multiple Choice	1	Statistics and Probability	7.S09 Determine the validity of sampling methods to predict outcomes	A
29	Multiple Choice	1	Measurement	7.M02 Convert capacities and volumes within a given system	D
30	Multiple Choice	1	Geometry	7.G03 Identify the two-dimensional shapes that make up the faces and bases of three-dimensional shapes (prisms, cylinders, cones, and pyramids)	A

2008 Mathematics Tests Standard and Performance Indicator Map with Answer Key
Grade 7 (continued)

Question	Type	Points	Strand	Content Performance Indicator	Answer Key
Book 2					
31	Extended Response	3	Number Sense and Operations	7.N13 Add and subtract two integers (with and without the use of a number line)	n/a
32	Short Response	2	Algebra	6.A05 Solve simple proportions within context	n/a
33	Short Response	2	Algebra	7.A01 Translate two-step verbal expressions into algebraic expressions	n/a
34	Extended Response	3	Statistics and Probability	6.S03 Construct Venn diagrams to sort data	n/a
35	Extended Response	3	Geometry	7.G02 Calculate the volume of prisms and cylinders, using a given formula and calculator	n/a
36	Short Response	2	Number Sense and Operations	7.N10 Determine the prime factorization of a given number and write in exponential form	n/a
37	Short Response	2	Measurement	7.M08 Draw central angles in a given circle using a protractor (circle graphs)	n/a
38	Extended Response	3	Statistics and Probability	6.S02 Record data in a frequency table	n/a