New York State Testing Program

Mathematics Test
Book 1

Grade **8**

March 9–13, 2009

TIPS FOR TAKING THE TEST

Here are some suggestions to help you do your best:

- Be sure to read carefully all the directions in the test book.
- Read each question carefully and think about the answer before choosing your response.

This picture means that you will use your ruler.

Book 1

Page 1

Sample A

What is the shape of each base of a cylinder?
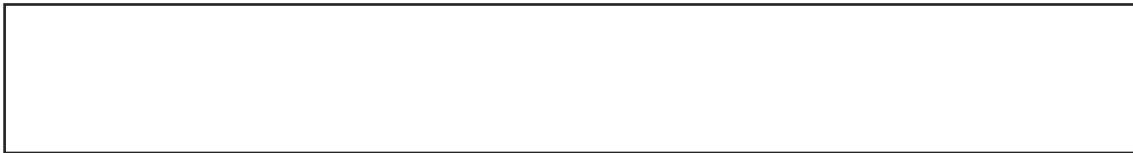
A   circle

B   rectangle

C   triangle

D   square

Sample B

Use your ruler to help you solve this problem.

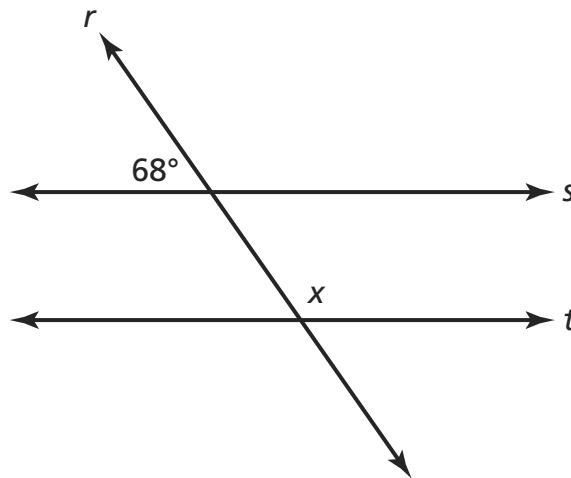What is the area, in square centimeters, of the rectangle shown below?

A   15

B   17

C   30

D   34

STOP

■ SECURE MATERIAL ■
Do not reproduce. Do not discuss contents
until end of designated makeup schedule.

Book 1

Page 3

1 Which expression is equivalent to $14a - 4a + 5a - 3a$?

   A $2a$

   B $8a$

   C $12a$

   D $20a$

2 In the diagram below, line s is parallel to line t, and line r is a transversal.

[not drawn to scale]

What is the measure of $\angle x$?

   A $158°$

   B $112°$

   C $68°$

   D $22°$

Go On

■ SECURE MATERIAL ■
Do not reproduce. Do not discuss contents
until end of designated makeup schedule.

Book 1

Page 5

3   Which line segment represents the hypotenuse on right triangle ABC?
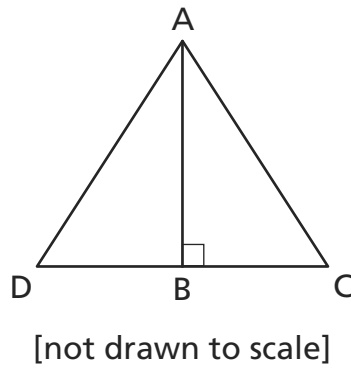
[not drawn to scale]

A $\overline{AB}$

B $\overline{AC}$

C $\overline{AD}$

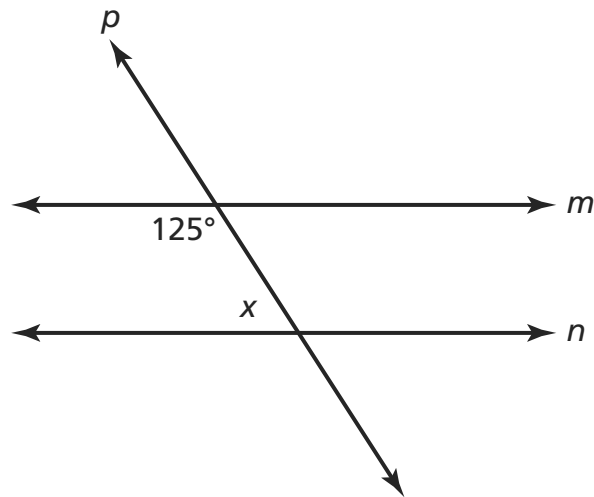**D** $\overline{BC}$

---

4   Simplify the expression below.

$$10^3 \times 10^{-7}$$

A 10^4

B 10^{10}

C 10^{-4}

D 10^{-21}

5   In the diagram below, line *m* and line *n* are parallel, and line *p* is a transversal.

[not drawn to scale]

What is the measure of ∠*x*?

A   35°

B   55°

C   125°

D   215°

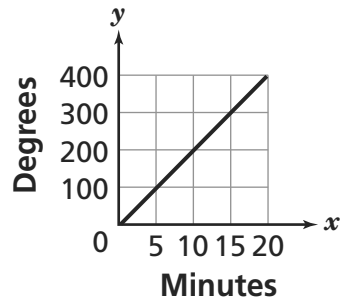**6**   Solve the equation below for *x*.

$$2(6 + 2x) = 8x$$

A $x = 1$

B $x = 2$

C $x = 3$

D $x = 6$

Go On

7 John drew the graph below to represent a situation.

Which statement could describe the situation John graphed?

A The temperature of a frozen pizza cooking in an oven increases 5 degrees every minute.

B The temperature of a frozen pizza cooking in an oven increases 10 degrees every minute.

C The temperature of a frozen pizza cooking in an oven increases 15 degrees every minute.

D The temperature of a frozen pizza cooking in an oven increases 20 degrees every minute.

8 In triangle ABC below, ∠ACB is a right angle. If the length of $\overline{AC}$ is 8 centimeters and the length of $\overline{AB}$ is 10 centimeters, what is the length, in centimeters, of $\overline{BC}$?
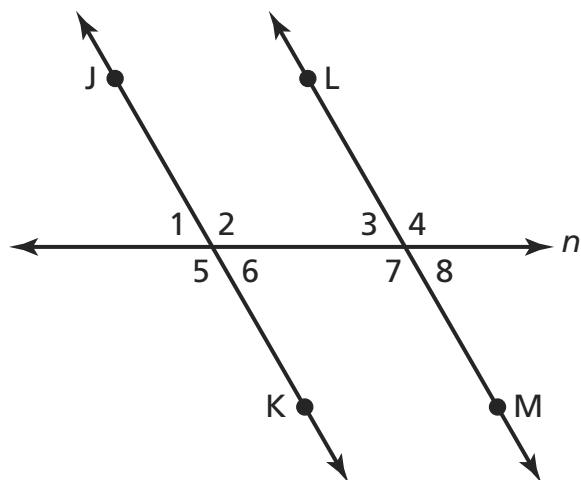
A

C   B
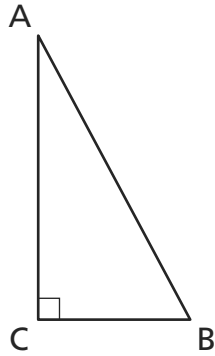
[not drawn to scale]

$$c^2 = a^2 + b^2$$

A   2

B   4

C   5

D   6

Go On

■ SECURE MATERIAL ■
Do not reproduce. Do not discuss contents
until end of designated makeup schedule.

Book 1

Page 9

9 In the diagram below, $\overleftrightarrow{JK}$ is parallel to $\overleftrightarrow{LM}$, and line *n* is a transversal.

[not drawn to scale]

Which two angles must be congruent to ∠4 in the diagram?

A ∠1 and ∠2

B ∠1 and ∠6
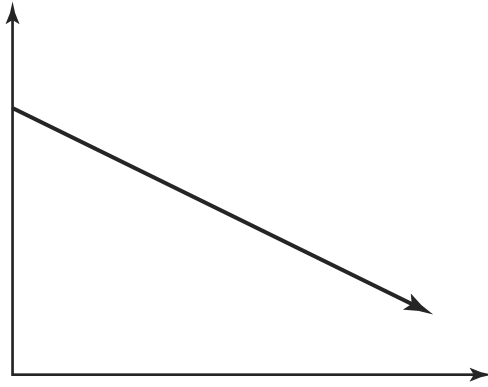
C ∠2 and ∠7

D ∠6 and ∠7

10 Simplify the expression below.

$$3xy(9xy + 14x)$$

A $27xy + 42x$

B $9xy + 42x^2y$

C $27x^2y^2 + 14x$

D $27x^2y^2 + 42x^2y$

11 Which situation is best represented by the graph below?

A   the height of a child from age ten to fifteen

B   the volume of a balloon as it is being filled with air

C   the amount of gasoline in a car's tank during a five-hour trip

**D**   the volume of water in a swimming pool as it is being filled

12 The cost of Cynthia's dinner is $15.20. She leaves a tip that is 15% of the cost of the dinner. What is the **best** estimate for the amount of the tip?

A $1.00

B $2.00

C $3.00

D $4.00

Go On

■ SECURE MATERIAL ■
Do not reproduce. Do not discuss contents
until end of designated makeup schedule.

Book 1

Page 11

13 In the diagram below, line *a* is parallel to line *b*, and line *r* is a transversal. Which pair of angles must have the same measure?
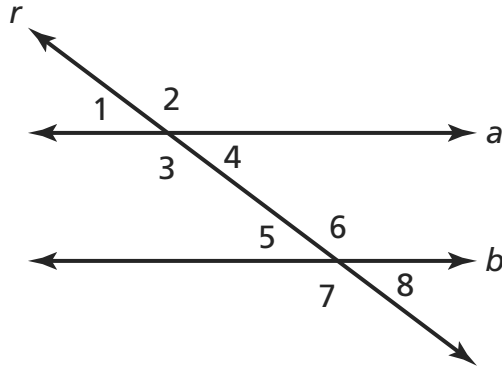
[not drawn to scale]

A ∠1 and ∠6

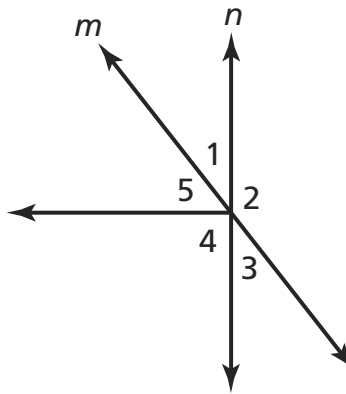**B** ∠1 and ∠7

C ∠2 and ∠7

D ∠3 and ∠5

14 Which verbal expression is the same as $\frac{n}{2} + 6$?

A two more than half of six

B six more than half of a number

C the sum of a number and two plus six

D six more than the product of a number and two

15 In the diagram below, line *m* intersects line *n*. Which pair of angles must be congruent?

[not drawn to scale]

A $\angle 1$ and $\angle 3$

B $\angle 1$ and $\angle 5$

C $\angle 2$ and $\angle 3$

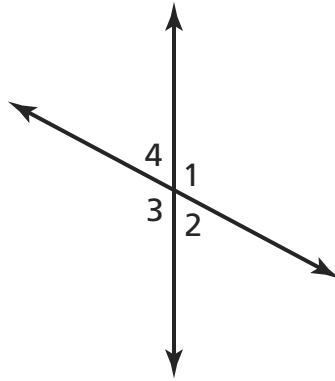**D** $\angle 3$ and $\angle 5$

16 What is $3m^3 + 6m^2$ divided by $3m$?

A $m^2 + 6m^2$

B $m^2 + 2m$

C $3m^2 + 6m$

D $m^3 + 2m^2$

Go On

17 The measure of ∠1 in the diagram below is 113°.

[not drawn to scale]

What is the measure of ∠4?

A 67°

B 77°

C 113°

D 203°

18   Use your ruler to help you solve this problem.

What is the **best estimation** of the most direct route between Red Bank and Randaville?

SCALE
1 cm = 10 km

ROADS BETWEEN RED BANK AND RANDAVILLE

Red Bank

Randaville
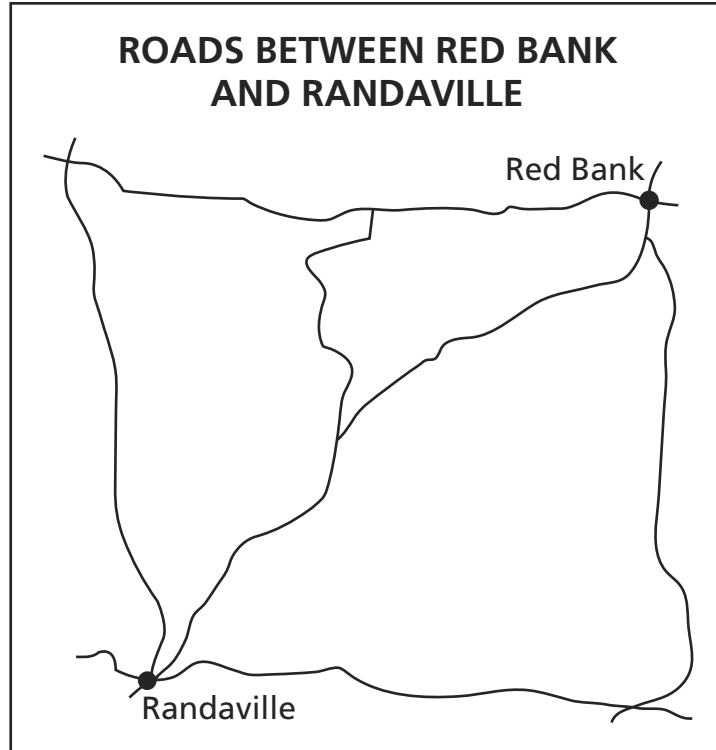
A   7 kilometers

B   9 kilometers

C   70 kilometers

D   90 kilometers

Go On

■ **SECURE MATERIAL** ■
Do not reproduce. Do not discuss contents
until end of designated makeup schedule.

Book 1

Page 15

19 Alisa pays $0.50 per hour to park her car at the museum. Which graph correctly shows the relationship between the hours, *x*, Alisa's car is parked and the total parking cost in dollars, *y*?

A

PARKING COSTS

Cost (in dollars)

12 11 10 9 8 7 6 5 4 3 2 1

0 1 2 3 4 5 6 7 8 9 10 11 12

Hour

C

PARKING COSTS

Cost (in dollars)

12 11 10 9 8 7 6 5 4 3 2 1

0 1 2 3 4 5 6 7 8 9 10 11 12

Hour

B

PARKING COSTS

Cost (in dollars)

12 11 10 9 8 7 6 5 4 3 2 1

0 1 2 3 4 5 6 7 8 9 10 11 12

Hour

D

PARKING COSTS

Cost (in dollars)

12 11 10 9 8 7 6 5 4 3 2 1

0 1 2 3 4 5 6 7 8 9 10 11 12

Hour

20 In the diagram below, $\overleftrightarrow{RS}$ intersects $\overleftrightarrow{TU}$ at point V, and the measure of $\angle RVU$ is 110°.
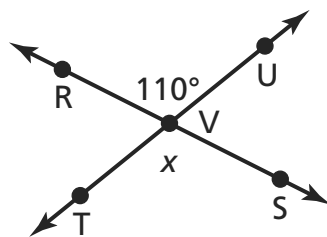

[not drawn to scale]

What is the measure of $\angle x$?

A   20°

B   70°

C   110°

D   200°

21 Simplify the expression below.

$$\frac{3x^6 + 9x^4 - 6x^2}{3x^2}$$

A $x^4 + 3x^2 - 2$

B $x^4 + 6x^2 + 3$

C $x^3 + 3x^2 - 3x$

D $x^3 + 6x^2 + 3x$

*Go On*

■ SECURE MATERIAL ■
Do not reproduce. Do not discuss contents
until end of designated makeup schedule.

Book 1

Page 17

22 The scale on a road map is shown below.

SCALE
1 cm = 75 mi

Sam measures the distance on the map between Rockland and Newbury as 5 centimeters. What is the actual distance, in miles, between Rockland and Newbury?

A   15

B   80

C   375

D   575

23 In the diagram below, line *e* and line *f* are parallel, and line *r* is a transversal.
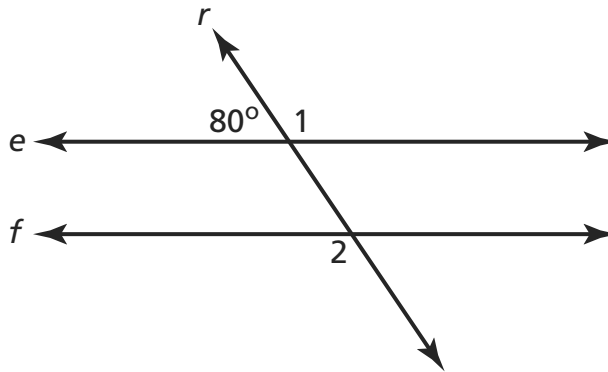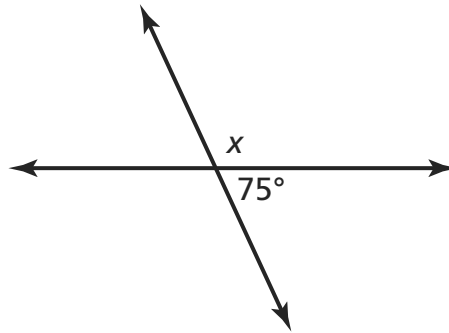

[not drawn to scale]

What is the sum of the measures of ∠1 and ∠2?

A   100°

B   160°

C   180°

D   200°

24 In the diagram below, what is the measure of ∠x?

[not drawn to scale]

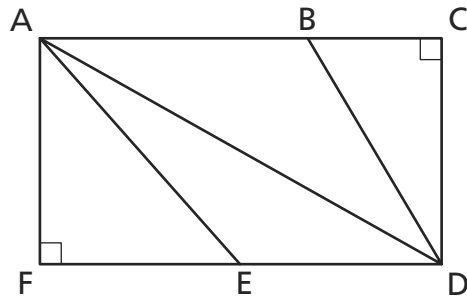A   15°

B   75°

C   105°

D   165°

25 The scale on a map of Audrey's home state indicates that 1 centimeter is equivalent to 30 miles. On this map, the distance between Davenport and Vansburg is 12 centimeters. What is the actual distance between Davenport and Vansburg?

A   90 miles

B   180 miles

C   360 miles

D   720 miles

Go On

■ SECURE MATERIAL ■
Do not reproduce. Do not discuss contents
until end of designated makeup schedule.

Book 1

Page **19**

26 In the rectangle below, which angle is the **right angle** of a right triangle?

[not drawn to scale]

A   ∠BCD

B   ∠AED

C   ∠CDA

D   ∠FAD

27 What is the length of side *x* in the triangle below?

15 in.   17 in.

x
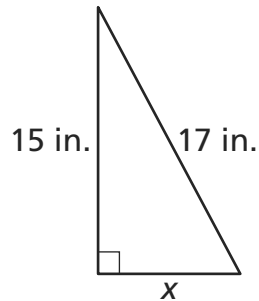
[not drawn to scale]

A   2 inches

B   8 inches

C   23 inches

D   32 inches

STOP

Book 1

Grade 8

Mathematics Test
Book 1
March 9–13, 2009