New York State Testing Program

Mathematics Test
Book 1

Grade **8**

March 6–12, 2008

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.

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

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.

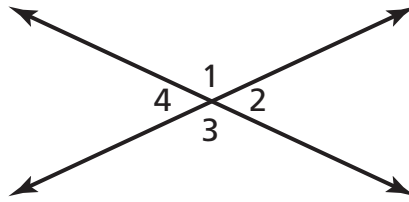What is the area, in square centimeters, of the rectangle shown below?

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 In the diagram below, which pair of angles has the same measure?

[not drawn to scale]

A ∠1 and ∠2

B ∠1 and ∠4

C ∠2 and ∠3

D ∠2 and ∠4

2 Which situation is **best** represented by the expression $4h + 2$?

A Kepa spends 4 hours babysitting and 2 hours traveling.

B Kepa spends 4 hours babysitting and receives $2 in travel expenses.

C Kepa will be paid $4 for babysitting and spends 2 hours traveling.

D Kepa will be paid $4 for every hour of babysitting plus $2 for travel costs.

Go On

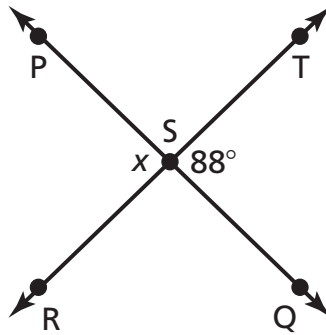**3**   In the diagram below, line *l* and line *m* are parallel.
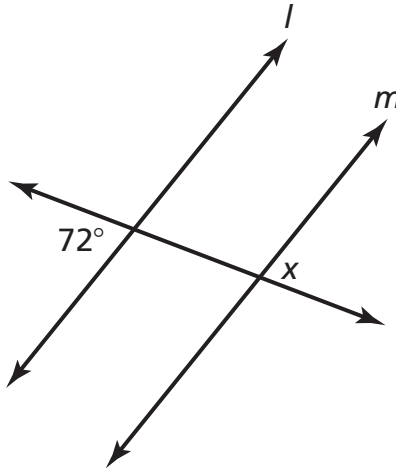
[not drawn to scale]

What is the measure of ∠*x*?

A   18°

B   72°

C   108°

D   162°

4   In the diagram below, $\overleftrightarrow{PQ}$ intersects $\overleftrightarrow{RT}$ at point S, and the measure of $\angle TSQ$ is 88°.

[not drawn to scale]

What is the measure, in degrees, of $\angle x$?

A   88

B   92

C   178

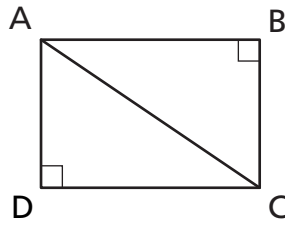**D**   268

5   Simplify the expression below.

$$5x(2x - 5)$$

A $10x - 5$

B $10x^2 - 5$

C $10x - 25x$

D $10x^2 - 25x$

Go On

6   Rectangle ABCD is formed by triangle ABC and triangle ACD, as shown below.

Which side of triangle ABC is the hypotenuse?

A $\overline{AB}$

B $\overline{AC}$

C $\overline{BC}$

D $\overline{CD}$

7   What is the simplified form of the expression below?

$$\frac{8x^6 - 6x^3}{2x^2}$$

A $4x^3 - 3$

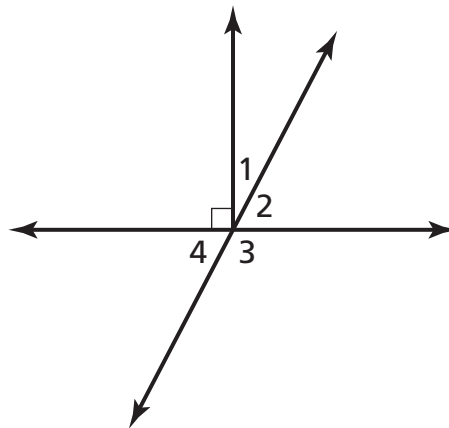**B** $4x^4 - 3$

C $4x^3 - 3x$

D $4x^4 - 3x$

8 Lamar claims that the weight, *w*, of her cat is **at most** 11 pounds. What inequality represents her claim?

A $w \leq 11$

B $w \geq 11$

C $w < 11$

D $w > 11$

9 In the diagram below, which pair of angles is complementary?

[not drawn to scale]

A $\angle 1$ and $\angle 2$

B $\angle 2$ and $\angle 3$

C $\angle 2$ and $\angle 4$

D $\angle 3$ and $\angle 4$

Go On

10 Jessica went shopping for a new watch. She found a watch that was originally priced at $50 on sale for $40. By what percent had the watch been marked down?

    A 10%

    B 20%

    C 25%

    D 40%

11 Multiply $(a + 2)(3a - 1)$.
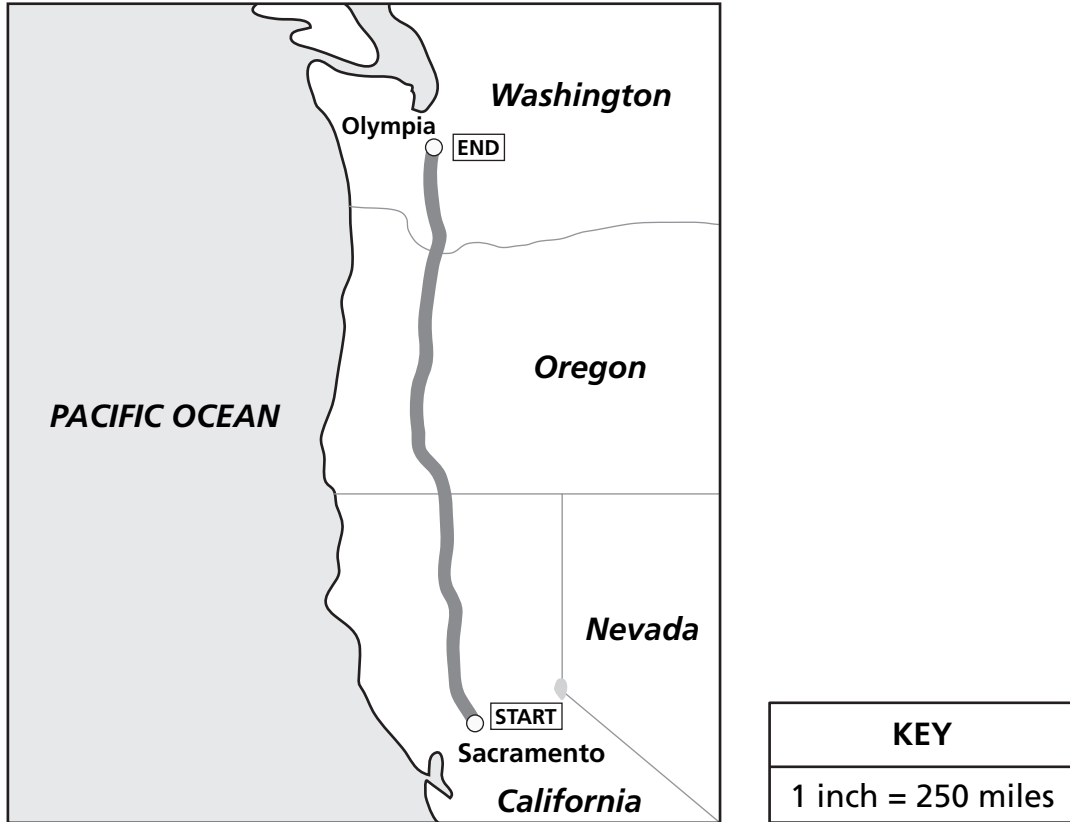
    A $3a^2 - 2$

    B $3a^2 + 5a$

    C $3a^2 + 4a - 2$

    D $3a^2 + 5a - 2$

12   Use your ruler to help you solve this problem.

Diane is taking a trip from Sacramento, California, to Olympia, Washington. Her route is shown on the map below.

Washington

Olympia
END

Oregon

PACIFIC OCEAN

Nevada

START
Sacramento
California

KEY
1 inch = 250 miles

According to the map, what is the **approximate** distance from Sacramento, California, to Olympia, Washington?

A   625 miles

B   750 miles

C   875 miles

D   1,000 miles

Go On

13 In the diagram below, what is the measure of angle *x*?

37°   *x*
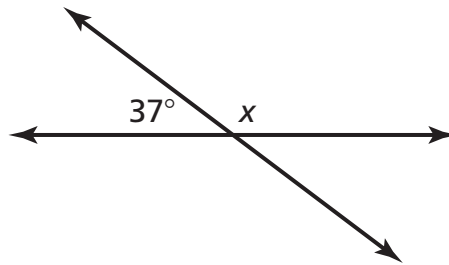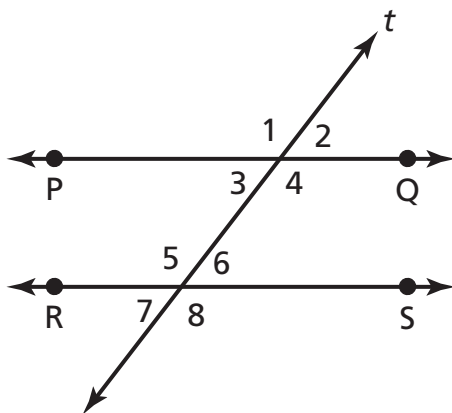
[not drawn to scale]

A   37°

B   53°

C   127°

D   143°

14 The cost of Cynthia's dinner is $15.20. She pays an additional tip that is 20% of the cost of the dinner. What is the **best** estimate for the amount of the tip?

A $2.00

B $3.00

C $4.00

D $5.00

15 In the diagram below, $\overleftrightarrow{PQ} \parallel \overleftrightarrow{RS}$, and transversal t intersects both lines.

[not drawn to scale]

Which angle is the same size as $\angle 7$?

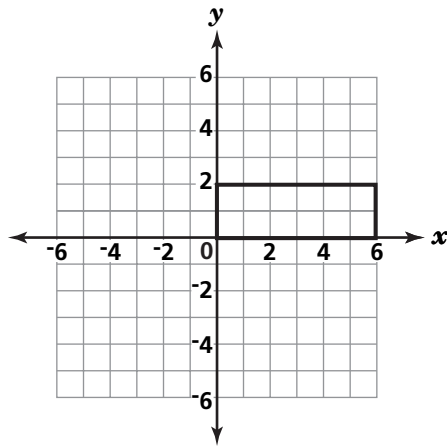**A** $\angle 1$

B $\angle 3$

C $\angle 4$

D $\angle 5$

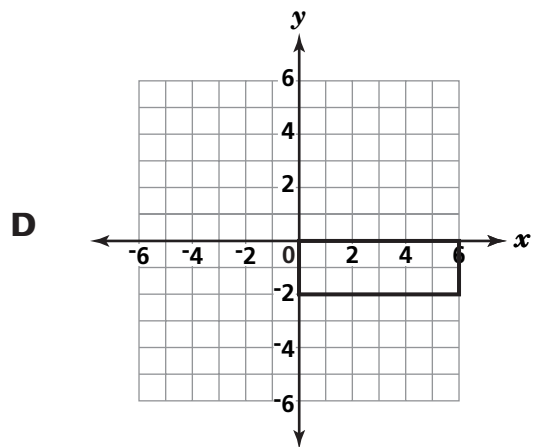**16** Find the value of x in the equation below.

$$3(x + 2) = x$$

A −3

B −1

C 2

D 3

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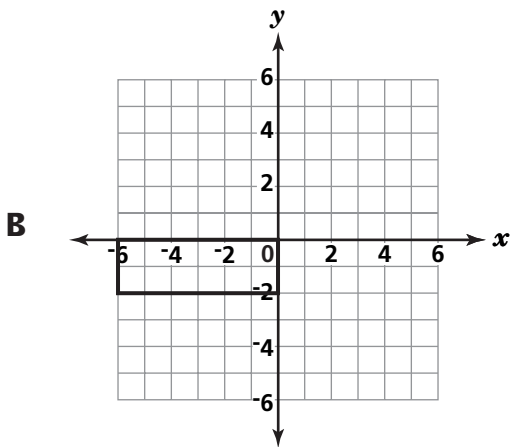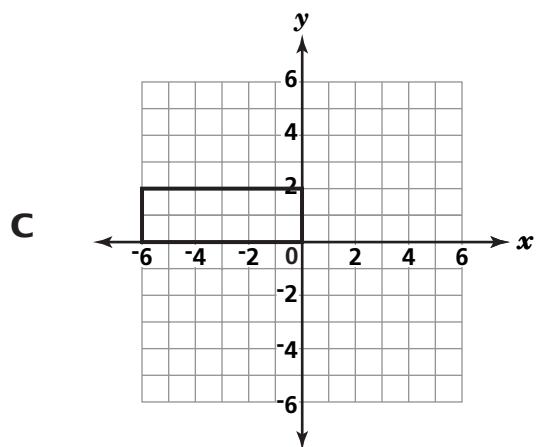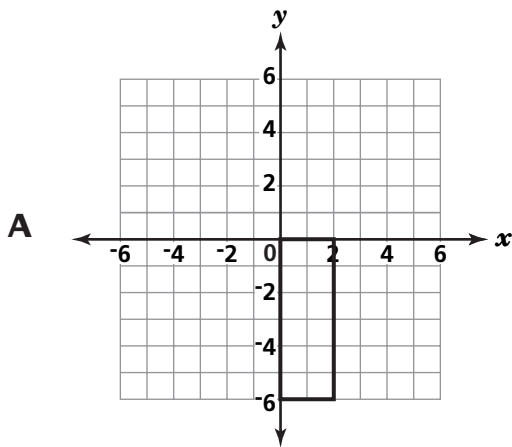until end of designated makeup schedule.

Book 1

Page 13

17 A rectangle is plotted on the coordinate plane below.

Which image shows a 90° clockwise rotation about the origin?

A

B

C

D

Book 1

18 What verbal expression is the same as the algebraic expression below?

$$8 - 3x$$

A three times a number minus eight

B three minus eight times a number

C eight times a number minus three

D eight minus three times a number

19 Simplify the expression below.

$$\frac{12x^2y^3}{3xy}$$

A $4xy^2$

B $4x^2y^2$

C $\dfrac{4}{xy^2}$

D $\dfrac{4x}{y^2}$

Go On

20 Simplify the expression below.

$$10y^2 - 15y^2$$

A −5

B 5

C −5y^2

D −5y^4

21 Use your ruler to help you solve this problem.

Each morning, a bird flies from his tree in Montgomery to his favorite feeder in Newburgh, as shown in the scale drawing below.
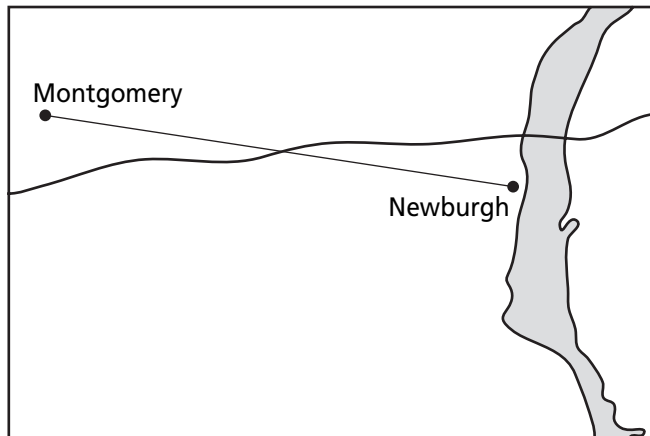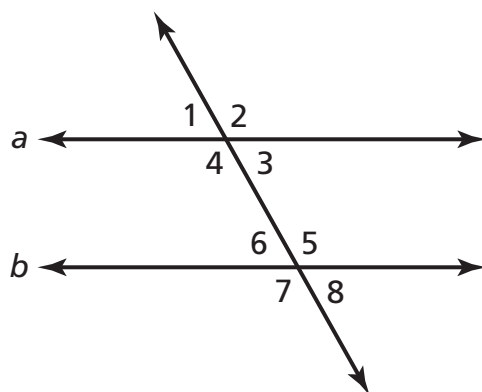

SCALE
1 inch = 5 miles

Approximately how many miles does the bird fly from the tree to the feeder each morning?

A 2

B 6

C 13

D 18

22 In the diagram below, lines *a* and *b* are parallel.

[not drawn to scale]

Which angle is supplementary to $\angle 2$?

A $\angle 3$

B $\angle 4$

C $\angle 5$

D $\angle 7$

**23** Factor the expression below using the greatest common factor (GCF).

$$12n^5 + 8n^3 + 6n$$

A $2n(6n^4 + 4n^2 + 3)$

B $2n(6n^5 + 4n^3 + 3n)$

C $2n(12n^5 + 4n^2 + 6)$

D $2n(6n^4 + 8n^3 + 6n)$

Go On

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

Book 1

Page 17

24 Which of these phrases **best** describes a polynomial?

    A   a decimal that is non-terminating or non-repeating

    B   an algebraic expression containing one or more terms

    C   a close-planed figure formed by three or more line segments

    D   a number greater than one that has exactly two different factors

25 Triangle RST is shown below.
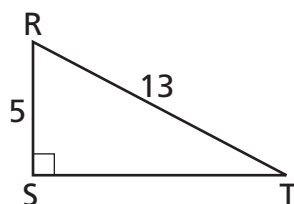
[not drawn to scale]

Pythagorean theorem:
$$c^2 = a^2 + b^2$$

What is the length of $\overline{ST}$?

    A   5

    B   8

    C   12

    D   18

26 The area of triangle RST is 36 square inches. Under which transformation could the area of the image, triangle R'S'T', be greater than 36 square inches?

A dilation

B reflection

C rotation

D translation

27 Simplify the expression below.

$$4k^2 + 5k - 3 + 5k^2 + 2$$

A $4k^2 + 10k - 1$

B $9k^2 + 5k - 1$

C $9k^2 + 7k - 3$

D $14k^2 + 5k - 1$

STOP

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

Book 1

Page 19

Grade 8

Mathematics Test
Book 1
March 6–12, 2008