



New York State Testing Program

Mathematics

Book 1

Grade

8

Sample Test 2005

TIPS FOR TAKING THE SAMPLE TEST

Here are some suggestions to help you do your best:

- Be sure to read carefully all the directions in the test book.
- You may use your tools to help you solve any problem on the test.
- Read each question carefully and think about the answer before choosing your response.



This picture means that you will use your ruler.



This picture means that you will use your protractor.

Directions

Answer sample questions A and B.

Sample A

What is the greatest common factor of 12, 18, and 24?

- A** 2
- B** 3
- C** 6
- D** 12

Sample B

Simplify the expression below.

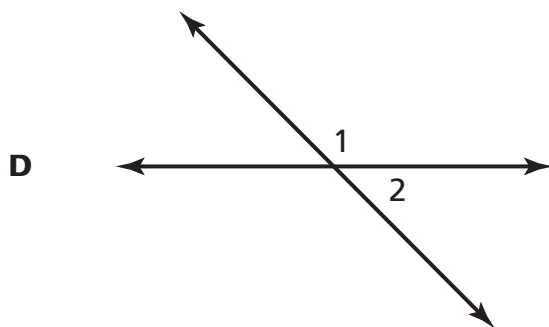
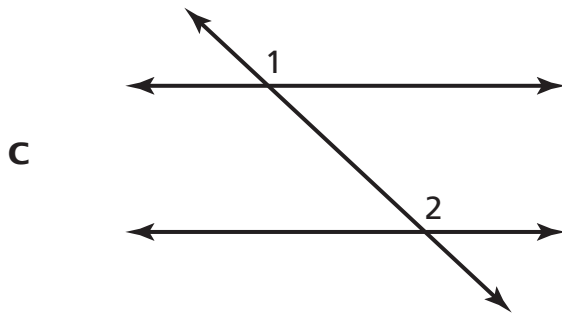
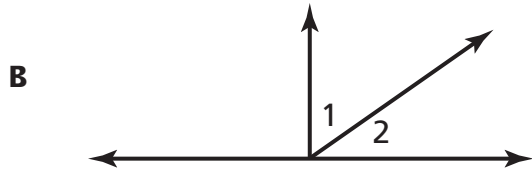
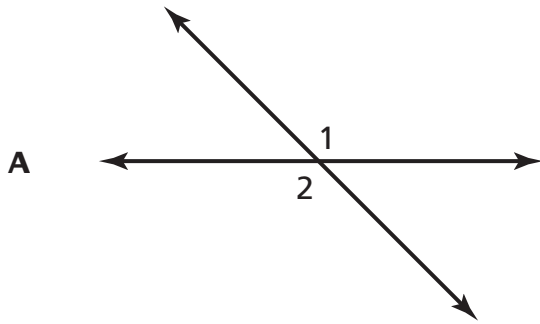
$$7x + 4 - 3x + 3$$

- F** $10x + 1$
- G** $10x + 7$
- H** $4x + 1$
- J** $4x + 7$

STOP

1

In which diagram are $\angle 1$ and $\angle 2$ supplementary?



Go On

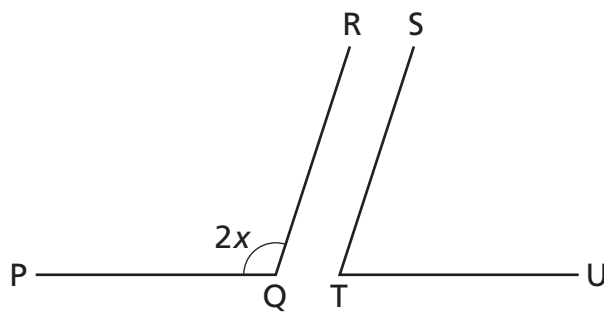
2

Which expression is an equivalent form of $\frac{2x^3 + 4x^2}{2x^2}$?

- F** $x + 2$
- G** $2x(x + 1)$
- H** $2x^2(x + 1)$
- J** $2x^2(x + 3)$

3

The angles shown below are supplementary. The measure of $\angle PQR$ is $2x$.



What expression represents the measure of $\angle STU$?

- A** $90 - 2x$
- B** $90 + 2x$
- C** $180 + 2x$
- D** $180 - 2x$

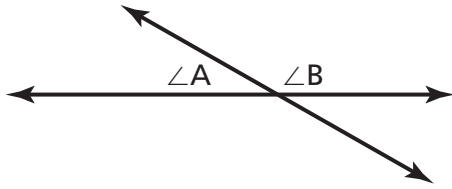
- 4** Simplify the expression below.

$$(3x^2y - 5xy + 12xy^2) - (5xy^2 + 4xy)$$

- F** $10x^2y^2 - 9xy$
G $20x^2y^2 - xy$
H $3x^2y - xy + 17xy^2$
J $3x^2y - 9xy + 7xy^2$

- 5** The Horseshoe Nebula is about 5.0×10^3 light years away from Earth. One light year is equal to approximately 5.9×10^{12} miles. What is the approximate distance, in miles, between Earth and the Horseshoe Nebula?

- A** 2.95×10^{16}
B 2.95×10^{36}
C 10.9×10^{15}
D 10.9×10^{36}

6 $\angle A = x + 2$ and $\angle B = 2x + 4$.

What is the measurement of $\angle A$?

- F** 30 degrees
- G** 60 degrees
- H** 90 degrees
- J** 120 degrees

7

Multiply the two binomials below.

$$(2x - 3)(2x + 3)$$

- A** $4x^2 + 9$
- B** $4x^2 - 9$
- C** $4x^2 - 6x - 9$
- D** $4x^2 - 12x + 9$

8

Bill and Felicia each bake cookies for a party. Bill bakes 3 times as many cookies as Felicia. Felicia bakes 24 fewer cookies than Bill. Bill bakes b cookies and Felicia bakes f cookies. What pair of equations can be used to determine the number of cookies Bill and Felicia bake?

F $b = 3(f + 24)$

$f = b - 24$

G $b = 3f$

$f = 24 - b$

H $b = 3f$

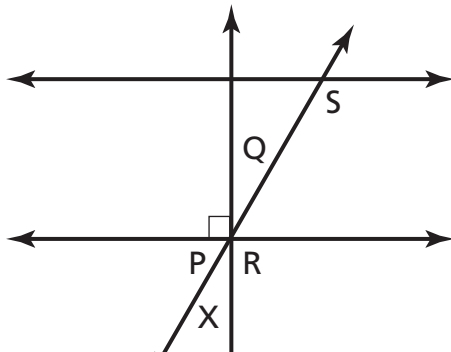
$f = b - 24$

J $f = 3b$

$b = f - 24$

9

Michael drew the diagram below.



Which angle is complementary to $\angle X$?

A $\angle P$

B $\angle Q$

C $\angle R$

D $\angle S$

Go On

- 10** Simplify the expression below.

$$3a^2b + 6a^2b$$

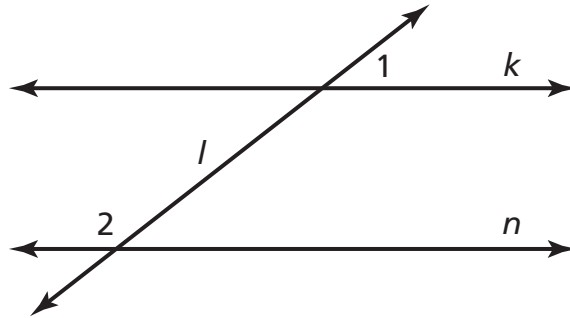
- F** $9a^2b$
- G** $9a^4b^2$
- H** $18a^2b$
- J** $18a^4b^2$

- 11** During the summer, Breanna works at a coffee shop. She saves 75% of her earnings to buy new school clothes. If Breanna earns \$750, what is the **best** estimate for the amount of money she saves to buy clothes?

- A** \$100
- B** \$150
- C** \$300
- D** \$550

12

In the diagram below, line k and line n are parallel. Line l is a transversal.



What is the relationship between $\angle 1$ and $\angle 2$?

- F** complementary
- G** corresponding
- H** supplementary
- J** vertical

13

Hank sells toy cars on a web site. The web site fee is \$30. Hank sells each toy car for \$4. What inequality does Hank use to determine how many toy cars, c , he must sell to make a profit of **at least** \$50?

- A** $34c \leq 50$
- B** $34c \geq 50$
- C** $4c + 30 \leq 50$
- D** $4c - 30 \geq 50$

Go On

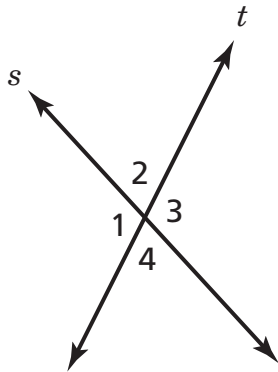
14

Linda must calculate the cost of filling her car's 12-gallon gas tank. She calculates the difference between how much gasoline her gas tank will hold and the number of gallons of gas, g , already in the tank. Then she multiplies the difference by the price, p , of one gallon of gas. What expression does Linda use to calculate the cost to fill her gas tank?

- F $(12 - g)p$
- G $gp - 12$
- H $(g - p)12$
- J $12p - g$

15

Line s and line t intersect, as shown below.



Which angles are vertical?

- A $\angle 2$ and $\angle 3$
- B $\angle 2$ and $\angle 1$
- C $\angle 3$ and $\angle 4$
- D $\angle 3$ and $\angle 1$

- 16** Multiply the expression below.

$$(3x - 5)(2x - 8)$$

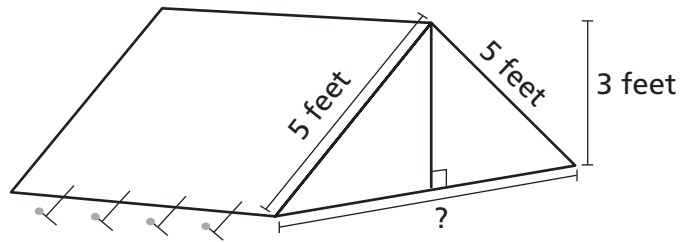
- F** $5x^2 + 3$
- G** $6x^2 - 40$
- H** $6x^2 + 34x + 40$
- J** $6x^2 - 34x + 40$

- 17** Tomás earns a 5% commission for each cellular phone he sells. On Tuesday, he sells a cellular phone for \$180. How much commission does Tomás earn on this sale?

- A** \$9
- B** \$36
- C** \$90
- D** \$189

18

The diagram below shows the tent that Sebastian bought to go on a camping trip.



[not drawn to scale]

Pythagorean theorem:

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

How wide is the entire opening along the bottom of the tent?

- F** 4 feet
- G** 5 feet
- H** 6 feet
- J** 8 feet

19

What word phrase is equivalent to the equation $y = 2x - 3$?

- A** The soccer coach is 3 years more than twice the age of his youngest team member.
- B** The soccer coach is 3 years less than twice the age of his youngest team member.
- C** The soccer coach is 2 years more than three times the age of his youngest team member.
- D** The soccer coach is 2 years less than three times the age of his youngest team member.

20

A number, n , divided by 2 is less than or equal to the product of n and 3. What inequality represents this relationship?

F $\frac{n}{2} \geq 3n$

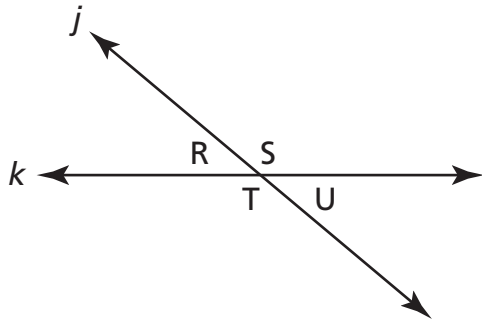
G $\frac{n}{2} \leq 3n$

H $\frac{n}{2} \geq n + 3$

J $\frac{n}{2} \leq n + 3$

Go On

- 21** Line j and line k intersect, as shown below.



Which two pairs are congruent angles?

- A** $\angle R$ and $\angle S$; $\angle T$ and $\angle U$
- B** $\angle R$ and $\angle T$; $\angle U$ and $\angle S$
- C** $\angle T$ and $\angle S$; $\angle U$ and $\angle R$
- D** $\angle T$ and $\angle U$; $\angle T$ and $\angle S$

- 22** Simplify the expression below.

$$(3x^2 - 6x - 4) - (x^2 + 4x - 2)$$

- F** $2x^2 - 10x - 2$
- G** $2x^2 - 2x - 6$
- H** $3x^2 - 10x - 6$
- J** $3x^2 + 10x + 2$

23

The table below shows the number of students who attended Walters Middle School each year during a five-year period.

Walters Middle School

Year	Number of Students
2000	511
2001	548
2002	587
2003	664
2004	705

What is the **approximate** percent increase in the number of students from 2000 to 2004?

- A** 50%
- B** 40%
- C** 30%
- D** 20%

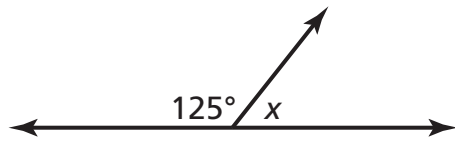
24

The square of a number, n , is equal to the sum of that number and 5. Which equation represents this relationship?

- F** $2n = n + 5$
- G** $n^2 = n + 5$
- H** $2n = n - 5$
- J** $(n + 5)^2 = n + 5$

Go On

- 25** What is the measure of $\angle X$ in the diagram below?



[not drawn to scale]

- A** 45°
B 55°
C 125°
D 180°
- 26** Simplify the expression below.

$$4^3$$

- F** 7
G 12
H 43
J 64
- 27** Factor $y^2 + 3y - 18$ into two binomials.

- A** $(y + 9)(y - 2)$
B $(y - 9)(y + 2)$
C $(y + 6)(y - 3)$
D $(y - 6)(y + 3)$

STOP



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The McGraw-Hill Companies