



# ***New York State Testing Program***

## **Mathematics Book 1**

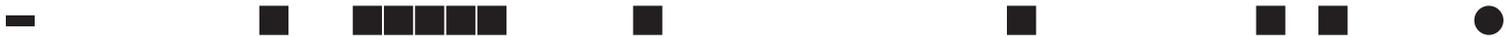
Grade **8**

**March 13–17, 2006**





Developed and published by CTB/McGraw-Hill LLC, a subsidiary of The McGraw-Hill Companies, Inc., 20 Ryan Ranch Road, Monterey, California 93940-5703. Copyright © 2006 by New York State Education Department. All rights reserved. No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of New York State Education Department.



## 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.
- 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.

-

■

■■■■■

■

■

■ ■

●

## 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**

-

■

■■■■■

■

■■

■ ■

●

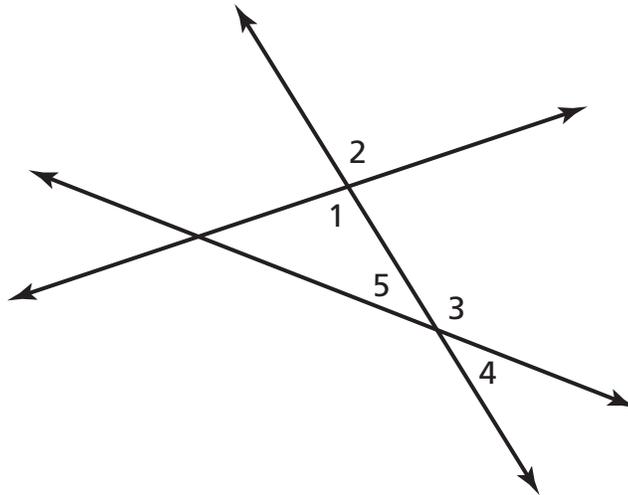
1

What is the greatest common factor of  $48x^2$  and  $72x^3$ ?

- A  $12x^2$
- B  $12x^3$
- C  $24x^2$
- D  $24x^3$

2

In the diagram below, which angle is congruent to  $\angle 5$ ?

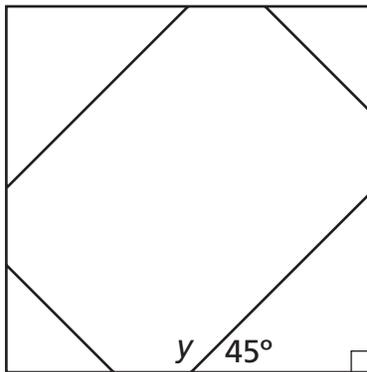


- F  $\angle 1$
- G  $\angle 2$
- H  $\angle 3$
- J  $\angle 4$

**Go On**

3

Luther makes a table in his shop class. A diagram of the top of the table is shown below.



What is the measure of  $\angle y$ ?

- A  $45^\circ$
- B  $55^\circ$
- C  $135^\circ$
- D  $145^\circ$

4

A pair of sandals is on sale for 20% off the original price. If the original price is \$16.00, what is the sale price?

- F \$3.20
- G \$12.00
- H \$12.80
- J \$19.20

- 5** Multiply the expression below.

$$-3x(x - 4)$$

- A**  $-3x^2 - 4$   
**B**  $-3x^2 - 7$   
**C**  $-3x^2 - 12x$   
**D**  $-3x^2 + 12x$

- 6** Simplify the expression below.

$$3x + 9x$$

- F** 12  
**G**  $12x$   
**H**  $12x^2$   
**J**  $12(x + x)$

- 7** Simplify the expression below.

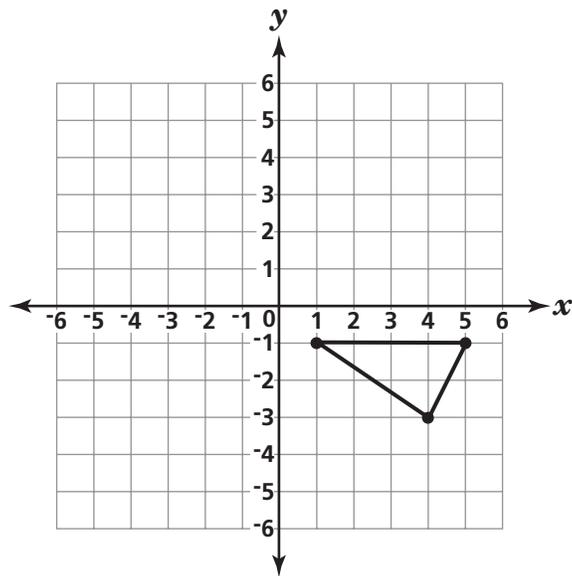
$$\frac{24x^2y}{6xy^3}$$

- A**  $18x^3y^4$   
**B**  $4xy^2$   
**C**  $\frac{4x}{y^2}$   
**D**  $\frac{18x^2}{y^2}$

***Go On***

**8**

Gary drew a triangle on the coordinate grid shown below.



If Gary reflects the triangle in the  $y$ -axis, what will be the new coordinates of the vertices of the triangle?

- F**  $(-1, -1), (4, -3), (-5, 1)$
- G**  $(-1, -1), (-4, -3), (-5, -1)$
- H**  $(-1, 1), (-4, 3), (5, -1)$
- J**  $(1, 1), (4, 3), (5, 1)$

**9**

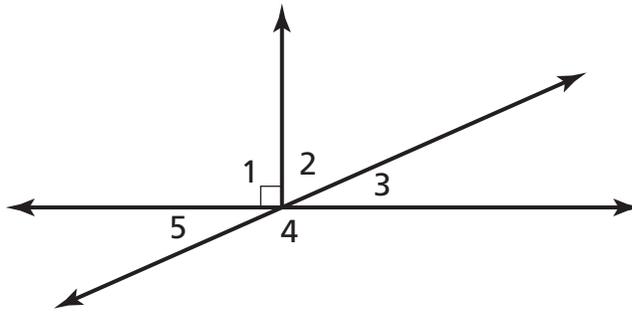
Simplify the expression below.

$$(3x^2 - 2x - 1) + (-2x^2 + 4)$$

- A**  $x^2 + 3$
- B**  $5x^2 + 3$
- C**  $x^2 - 2x + 3$
- D**  $5x^2 - 2x + 3$

**10**

In the diagram below, which angles are complementary?



- F  $\angle 3$  and  $\angle 1$
- G  $\angle 3$  and  $\angle 2$
- H  $\angle 3$  and  $\angle 4$
- J  $\angle 3$  and  $\angle 5$

**11**

Reneé must solve the equation  $4x + 12 = 6x$ . If she subtracts  $4x$  from the left side of the equation, what should Reneé write on the right side of the equation?

- A 2
- B  $2x$
- C 10
- D  $10x$

**Go On**

**12**

Mark's cats eat 72 ounces of food in one week. How many pounds of food do Mark's cats eat in one week?

1 pound = 16 ounces
---------------------

F  $\frac{1}{4}$

G  $3\frac{1}{2}$

H  $4\frac{1}{2}$

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

**13**

Jordan has \$608 in his savings account. He withdraws 15% of the money to pay for school clothes. Which is the **best** estimate for the amount of money Jordan withdraws?

A \$40

B \$90

C \$400

D \$510

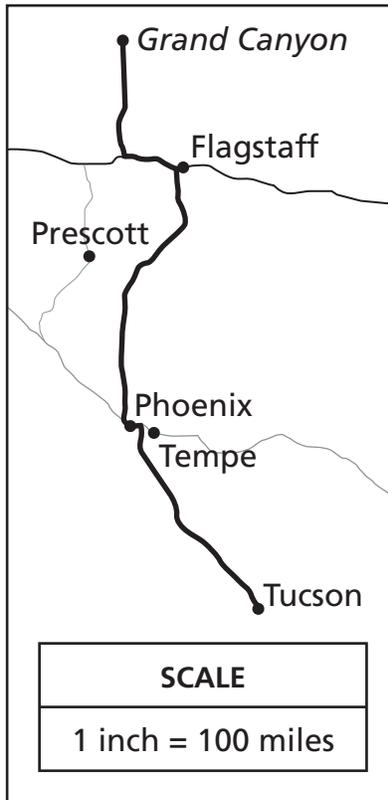
14



Use your ruler to help you solve this problem.

Roberta and her family drove from Tucson to the Grand Canyon. The scale map below shows the route they took and distance they drove.

**About** how many miles did Roberta and her family drive from Tucson to Phoenix?



- F 75
- G 100
- H 125
- J 150

**Go On**

**15**

The cost of one burrito,  $b$ , and one taco,  $a$ , is less than the cost of two burritos. Which inequality represents this relationship?

- A  $b + a < 2b$
- B  $b + a < b^2$
- C  $2b < b + a$
- D  $b^2 < b + a$

**16**

Mr. Patel filled a swimming pool with water. When he started, the pool already contained 1,500 gallons of water. The table below shows the number of gallons of water in the pool after filling it for  $h$  hours.

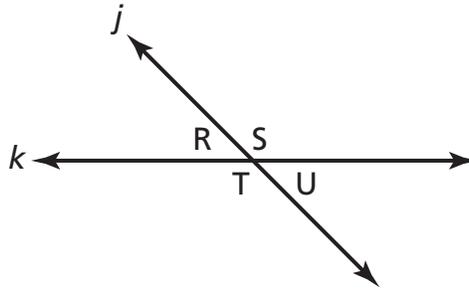
### FILLING THE POOL

Gallons of Water in Pool ( $g$ )	Number of Hours ( $h$ )
1,500	0
2,100	1
2,700	2
3,300	3
3,900	4

Which equation can be used to determine the number of gallons,  $g$ , of water in the pool after  $h$  hours?

- F  $g = 600h$
- G  $g = 1,500h$
- H  $g = 1,500 + 600h$
- J  $g = 1,500h + 600$

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



Which pairs of angles are congruent?

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

- 18** Omar wants to solve the equation  $3x - 2 = 10$ . Which steps could Omar follow to find the solution?

- F** Add 2 to both sides. Then divide both sides by 3.
- G** Divide both sides by 3. Then add 2 to both sides.
- H** Subtract 2 from both sides. Then divide both sides by 3.
- J** Multiply both sides by 3. Then subtract 2 from both sides.

**Go On**

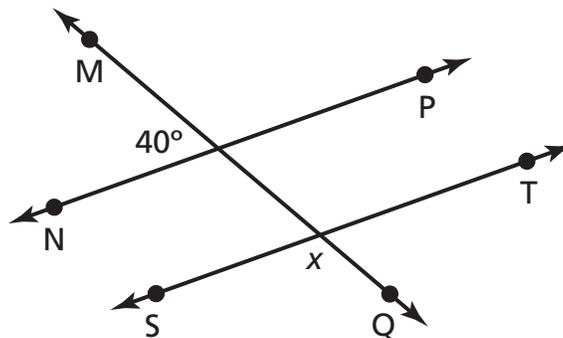
**19**

Janine's dog weighs three pounds less than twice the weight of Wanda's dog,  $d$ . Which expression represents the weight of Janine's dog?

- A  $2 + d - 3$
- B  $3 + d - 2$
- C  $2d - 3$
- D  $3 - 2d$

**20**

In the diagram below,  $\overleftrightarrow{NP}$  and  $\overleftrightarrow{ST}$  are parallel, and  $\overleftrightarrow{MQ}$  intersects both lines.



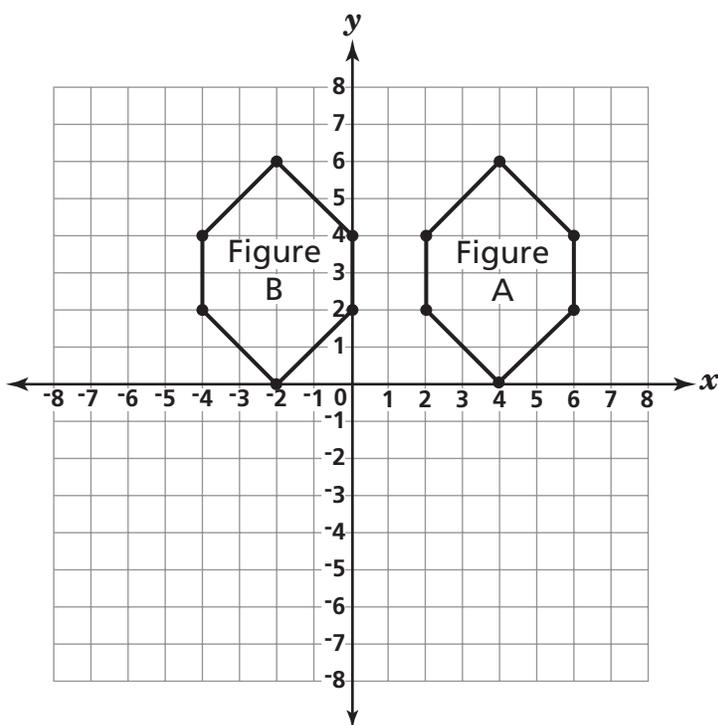
[not drawn to scale]

What is the measure of  $\angle x$ ?

- F  $40^\circ$
- G  $90^\circ$
- H  $140^\circ$
- J  $180^\circ$

21

Ana drew two figures on the coordinate grid shown below.



Which transformation did Ana apply to Figure A to get Figure B?

- A rotated  $90^\circ$
- B dilated by 6
- C reflected in the  $y$ -axis
- D translated 6 units to the left

22

The sum of a number and its square is less than or equal to negative three. Which inequality represents this relationship?

- F  $n(n^2) < -3$
- G  $n(n^2) \leq -3$
- H  $n + n^2 < -3$
- J  $n + n^2 \leq -3$

**Go On**

**23**

The table below shows a relationship between  $x$  and  $y$ .

$x$	2	5	6	9
$y$	6	9	10	13

Which equation shows the relationship between  $x$  and  $y$ ?

- A**  $y = 3x$
- B**  $x = 3y$
- C**  $y = x + 4$
- D**  $x = y + 4$

**24**

Katie converts the outside temperature from degrees Fahrenheit,  $F$ , to degrees Celsius,  $C$ . She uses the formula below to convert the temperature.

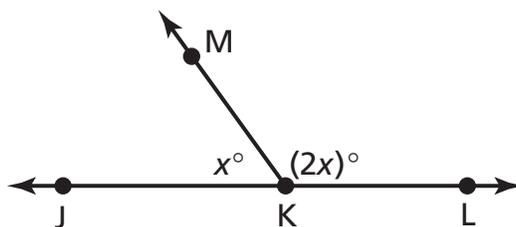
$$(F - 32)\frac{5}{9} = C$$

If the outside temperature is 50 degrees Fahrenheit, what is the outside temperature in degrees Celsius?

- F** 2
- G** 5
- H** 9
- J** 10

25

In the diagram below,  $\overleftrightarrow{JL}$  intersects  $\overleftrightarrow{KM}$  at point K.



[not drawn to scale]

What is the measure of  $\angle JKM$ ?

- A  $30^\circ$
- B  $60^\circ$
- C  $120^\circ$
- D  $180^\circ$

26

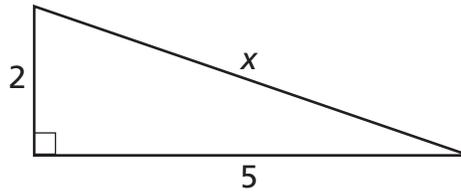
Carol wants to earn at least \$150.00 for her charity while running a race. She will earn \$20.00 for participating plus \$7.00 for each mile she runs. If  $m$  represents the number of miles she runs, which inequality represents the money Carol wants to earn?

- F  $7m + 20 \leq 150$
- G  $7m + 20 \geq 150$
- H  $20m + 7 \leq 150$
- J  $20m + 7 \geq 150$

**Go On**

27

What is the length of side  $x$  in the triangle below?



[not drawn to scale]

Pythagorean theorem:

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

- A 7
- B  $\sqrt{7}$
- C 29
- D  $\sqrt{29}$

**STOP**



-

■

■■■■■

■

■ ■■

■ ■

●





**Grade 8**  
**Mathematics**  
**Book 1**  
**March 13–17, 2006**

*The McGraw-Hill Companies*

