



# **RELEASED ITEMS**

**MATHEMATICS  
GRADE 7**

**FALL 2005**

1 What kind of answer results when a rational number is multiplied by zero?

- A The answer is zero.
- B The answer is the original number.
- C The answer depends on the original number.
- D The answer is the opposite sign of the original number.

2 What is the solution to this number sentence?

$$3 + 12 \div 3 + 8 \times 4 = \square$$

- A 39
- B 52
- C 60
- D 80

3 What value goes in the box to make the equation true?

$$\square = \frac{12}{10} \div \frac{4}{5}$$

- A  $\frac{1}{2}$
- B  $\frac{2}{3}$
- C  $\frac{3}{2}$
- D  $\frac{5}{3}$

- 4 What is the solution to this number sentence?

$$39 - 15 \div 3 - 8 \div 4 = \square$$

- A** 0
- B** 6
- C** 24
- D** 32
- 5 A hamburger patty weighs 5 ounces before it is cooked. How many hamburgers can be made using 10 pounds of meat? (There are 16 ounces in one pound.)
- A** 20
- B** 30
- C** 32
- D** 50
- 6 What number goes in the box to make the equation true?

$$\square = \frac{1}{2} \times \frac{2}{9}$$

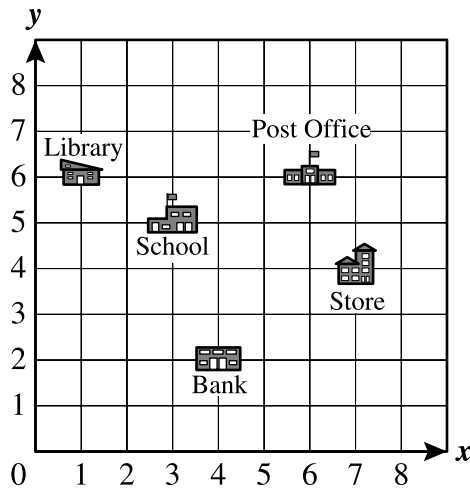
- A**  $\frac{1}{9}$
- B**  $\frac{2}{9}$
- C** 9
- D** 18

- 7** Amy had 6 pairs of shoes. She let Meg borrow  $x$  pairs of shoes, and then she had 4 pairs left. Which equation models this situation?
- A**  $6 - x = 4$
- B**  $6 + x = 4$
- C**  $6x = 4$
- D**  $4x = 6$
- 8** Lucy had 8 plants. She gave  $p$  plants to Tom, and then she had 5 plants left. Which equation could model this situation?
- A**  $8 + p = 5$
- B**  $8 - p = 5$
- C**  $8p = 5$
- D**  $5p = 5$
- 9** Moe had \$10.00. He bought a corn dog for \$2.25, a drink for \$1.50, and a bag of cotton candy for \$2.75. How much money did he have left?
- A** \$2.50
- B** \$3.50
- C** \$5.50
- D** \$6.50
- 10** On a number line, which number is the same distance from 0 as 11?
- A**  $-11$
- B**  $-9$
- C** 0
- D** 9

11 The probability of getting 3 green lights in a row on Smith Street is 1 out of 80. Which of the following fractions represents this probability?

- A  $\frac{1}{81}$
- B  $\frac{1}{80}$
- C  $\frac{3}{80}$
- D  $\frac{80}{1}$

12 The locations of several buildings in town are shown on the coordinate plane below.

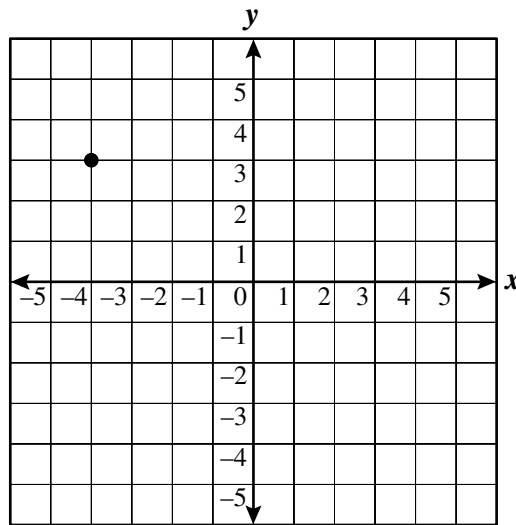


What are the coordinates of the building closest to the library?

- A (1, 6)
- B (3, 5)
- C (4, 2)
- D (6, 1)

- 13** A nursery school teacher is planning a class celebration for the end of the year. She has a dozen doughnuts. She plans to give each student half a doughnut. How many students will she be able to serve?
- A** 6  
**B** 12  
**C** 18  
**D** 24
- 14** Candi is eating lunch in a cafeteria. She ordered 1 item that cost \$3.89, 2 items that cost \$1.27 each, and 4 items that cost \$0.39 each. Which number sentence shows her total?
- A**  $(1 + 2 + 4) \times (3.89 + 1.27 + 0.39) = \$38.85$   
**B**  $(3.89 + 2) \times (1.27 + 4) \times 0.39 = \$12.11$   
**C**  $3.89 + 4 \times 1.27 + 2 \times 0.39 = \$9.75$   
**D**  $3.89 + 2 \times 1.27 + 4 \times 0.39 = \$7.99$
- 15** Stamps cost 37 cents each. Helen has \$2.00 in cash. What is the *greatest* number of stamps she can buy?
- A** 4 stamps  
**B** 5 stamps  
**C** 6 stamps  
**D** 7 stamps

16 What are the coordinates of the point shown on the graph below?



- A (4, 3)
- B (3, -4)
- C (-4, 3)
- D (4, -3)

17 Daniel read  $b$  number of books this summer. Marion read 3 more than twice the number of books Daniel read. How many books did Marion read?

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

**18** Dionne buys a cap that costs \$7.50 and a shirt that costs \$22.50. Sales tax is 6%. What is the total cost including tax?

- A** \$180.00
- B** \$ 31.80
- C** \$ 30.00
- D** \$ 15.50

**19** What is the missing value in the equation below?

$$\frac{22}{7} + \square = 0$$

- A**  $-\frac{22}{7}$
- B**  $-\frac{7}{22}$
- C** 0
- D**  $\frac{22}{7}$

**20** If two figures are congruent, which of the following is true?

- A** They have the same lengths but different angle measures.
- B** They have the same lengths and the same angle measures.
- C** They have the same angle measures but different lengths.
- D** They are the same type of shape, but lengths and angles can be different.



21 Which equation has the same solution as  $y = 6$ ?

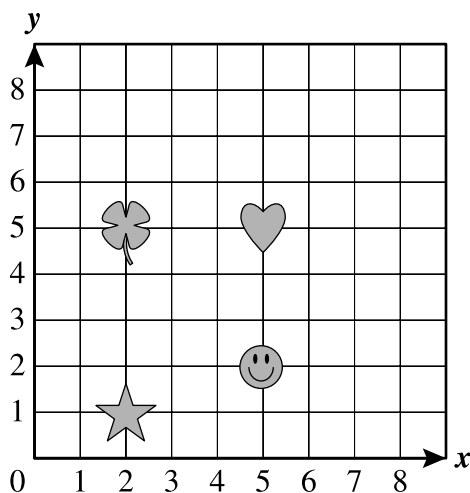
A  $2y = 24$

B  $4y = 24$

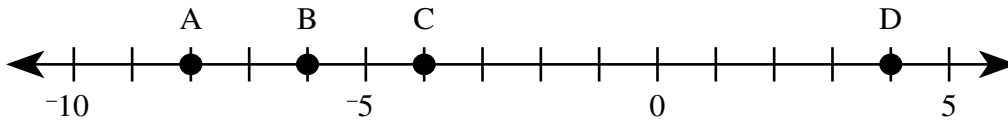
C  $\frac{y}{2} = 24$

D  $\frac{y}{4} = 24$

22 What symbol on the coordinate plane below is located at  $(2, 5)$ ?



23 Which position on the number line represents the number  $-4$ ?



- A A
- B B
- C C
- D D

24 Kathy has  $\frac{3}{4}$  of a cake she wants to divide evenly among 3 friends. Which equation can be used to find the fraction of the whole cake each friend will get?

- A  $n = \frac{3}{4} \cdot \frac{3}{4}$
- B  $n = \frac{3}{4} \div \frac{1}{3}$
- C  $n = \frac{3}{4} \div 3$
- D  $n = \frac{4}{3} \cdot 3$

25 The Newtown Fire Department was testing their new fire engine. At full power, the engine pumped enough water to empty its 520 gallon tank in 6.5 minutes. How many gallons per minute can the new engine pump?

- A 80 gallons per minute
- B 87 gallons per minute
- C 104 gallons per minute
- D 3,380 gallons per minute

- 26** Tom weighs  $n$  pounds. Paul's weight is  $\frac{1}{3}$  of Tom's. Which of the following expressions represents Paul's weight?
- A**  $\frac{1}{3}n$  pounds
  - B**  $\frac{3}{n}$  pounds
  - C**  $3n$  pounds
  - D**  $n - 3$  pounds
- 27** Jay closes his eyes and chooses a book from his bookshelf. The shelf holds only books with red covers. Which *best* describes the chance that Jay will choose a book with a red cover?
- A** certain
  - B** probable
  - C** likely
  - D** possible
- 28** Pamela is on a road trip. She travels at an average rate of 50 miles per hour. How far does she travel in  $2\frac{1}{2}$  hours?
- A** 50 miles
  - B** 100 miles
  - C** 125 miles
  - D** 150 miles

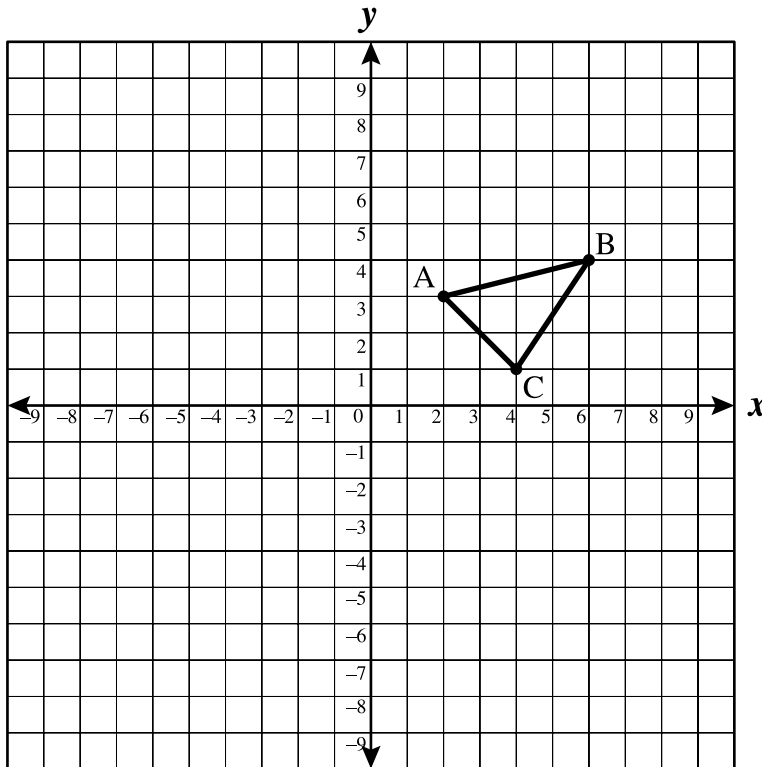
- 29** Last year Rhonda had  $r$  rabbits in her garden. This year, the number of rabbits in her garden doubled to 10. Which equation models this situation?
- A**  $r+2=10$
- B**  $r-2=10$
- C**  $2r=10$
- D**  $\frac{r}{2}=10$   $\frac{r}{2}=10$
- 30** Ross can run  $r$  miles per hour. Mel can run twice as fast as Ross. How fast can Mel run?
- A**  $\frac{r}{2}$  mph
- B**  $2r$  mph
- C**  $r+2$  mph
- D**  $r-2$  mph
- 31** How many quarts are equivalent to 8 gallons?
- A** 4
- B** 8
- C** 32
- D** 64

- 32** A taxi cab charges \$1.25 for the first  $\frac{1}{2}$  mile and 50 cents each  $\frac{1}{2}$  mile after the first. Maria took a ride in the cab for a distance of  $3\frac{1}{2}$  miles. How much did the ride cost?
- A** \$2.25
- B** \$3.50
- C** \$4.25
- D** \$4.75
- 33** The ratio of boys to girls in Mark's class is 3:4. Which of the following ratios is equivalent to 3:4?
- A** 1:2
- B** 6:9
- C** 16:18
- D** 18:24
- 34** Jennifer wants to run 3 miles. The track she runs on is  $\frac{1}{4}$  of a mile in length. How many times does Jennifer have to run the length of the track to run a total of 3 miles?
- A**  $\frac{3}{4}$
- B**  $3\frac{1}{4}$
- C** 7
- D** 12

35 Mary is on the basketball team. She has scored an average 19.72 points per game during the 11 games this season. Which is *closest* to the number of points she scored this season?

- A 195
- B 200
- C 220
- D 225

36 Paul was given the following graph in math class and was asked to reflect  $\triangle ABC$  over the  $y$ -axis.



Which property remained the same?

- A Only the area remained the same.
- B Only the perimeter remained the same.
- C Only the measures of the angles remained the same.
- D The area, perimeter, and measures of the angles all remained the same.

37 Which of the following pairs of equations have the same solution?

A  $x - 2 = 1$  and  $x - 2 = 2$

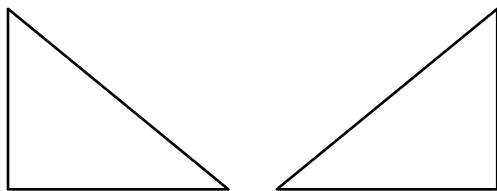
B  $x + 3 = 3$  and  $x + 6 = 5$

C  $x + 1 = 4$  and  $x + 2 = 5$

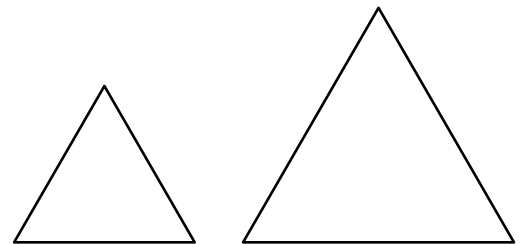
D  $x + 2 = 3$  and  $x + 3 = 5$

38 Which pair of triangles appears to be congruent?

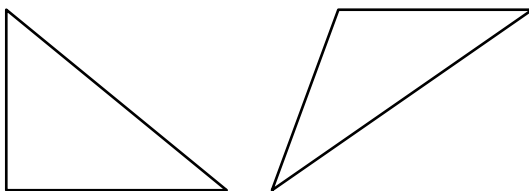
A



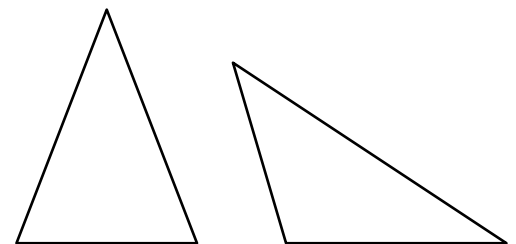
B



C



D



39 Ben took  $\frac{1}{6}$  of a whole pie and divided that slice into 4 equal pieces. Which equation can be used to determine the fraction of the whole pie represented by each of the 4 new slices?

A  $n = 6 \div 4$

B  $n = 6 \bullet 4$

C  $n = \frac{1}{6} \div \frac{1}{4}$

D  $n = \frac{1}{6} \div 4$

- 40** In the pattern 1, 4, 9, 16,  $x^2$ , . . . , what does  $x$  represent?
- A** the fifth term in the pattern
  - B** the final term in the pattern
  - C** the sum of the terms in the pattern
  - D** the square root of the next value in the pattern
- 41** Mark reads 14 pages per hour and Jesse reads 8 pages in half an hour. Which of the following statements compares these rates?
- A** Mark reads 6 pages per hour faster than Jesse.
  - B** Mark reads 2 pages per hour faster than Jesse.
  - C** Jesse reads 6 pages per hour faster than Mark.
  - D** Jesse reads 2 pages per hour faster than Mark.
- 42** What is the area of a 1800-square-centimeter rug in square meters?
- A** 0.18 square meters
  - B** 180 square meters
  - C** 180,000 square meters
  - D** 18,000,000 square meters
- 43** The ratio of books to magazines in the library is 36:18. Which of the following ratios is equivalent to 36:18?
- A** 2:1
  - B** 3:1
  - C** 26:8
  - D** 24:6



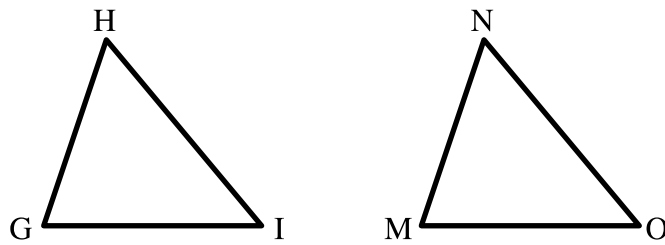
- 44 The owner of the Lucky Fish Restaurant is using his computer to create business cards. The logo he has chosen is shown below.



Which transformation should he use on the left fish to produce the right fish?

- A** translation
- B** rotation of  $90^\circ$
- C** reflection
- D** rotation of  $180^\circ$
- 45 Harold has 8 pounds of rice. One cup of rice weighs about  $\frac{1}{2}$  pound. How many cups of rice does Harold have?
- A** 4
- B**  $7\frac{1}{2}$
- C** 12
- D** 16
- 46 A breakfast cereal company has put 25% more cereal in each box. The original box contained 28 ounces of cereal. How much does the new box contain?
- A** 7 ounces
- B** 25 ounces
- C** 35 ounces
- D** 53 ounces

- 47 Triangle GHI is congruent to triangle MNO. Which of the following does **NOT** have to be true?

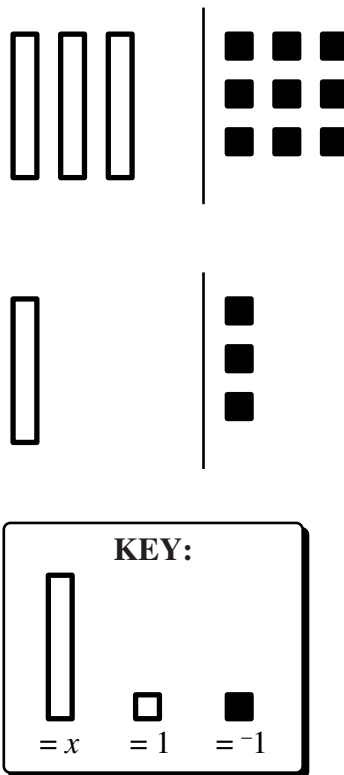


- A  $m\angle M = m\angle G$
- B  $m\angle I = m\angle O$
- C  $\overline{GH} \cong \overline{MN}$
- D  $\overline{HI} \cong \overline{MO}$
- 48 Raymond has a \$5.00 off coupon for a restaurant but wants to calculate his tip based on the original bill. If his bill, after the coupon, was \$15.00, how much should he leave for a 15% tip?
- A \$1.00
- B \$1.50
- C \$2.25
- D \$3.00

49 Mr. Garcia bought 5 red apples and 2 green apples. His shopping bag ripped and 1 apple fell out. What are the chances that the apple that fell out was green?

- A  $\frac{1}{7}$
- B  $\frac{1}{5}$
- C  $\frac{2}{7}$
- D  $\frac{2}{5}$

50 What equation-solving process is modeled in the following diagram?



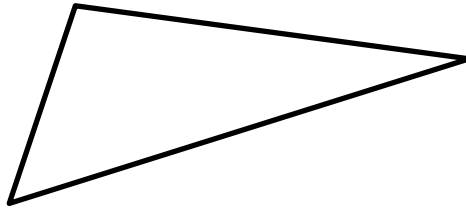
- A dividing both sides by 3
- B multiplying both sides by 3
- C subtracting 2 from both sides
- D subtracting 6 from both sides

- 51** Jake starts his baseball card collection with 15 cards and buys more each week. The number of cards he owns can be modeled using the expression  $15 + 10x$ , where  $x$  is the number of weeks Jake has been buying baseball cards. What happens to the number of cards in Jake's collection?
- A** His collection increases by 25 cards each week.
  - B** His collection increases by 15 cards each week.
  - C** His collection increases by 10 cards each week.
  - D** His collection increases by 10 times the previous week's total.
- 52** Tom has  $\frac{2}{3}$  of a pizza that is uncut. He wants to divide it into slices that are each  $\frac{1}{6}$  of the original pizza. How many slices will he get?
- A** 3
  - B** 4
  - C** 6
  - D** 9
- 53** Rebecca and her three friends went to a cook-out. The four girls went to a booth selling pies and each ate  $\frac{1}{3}$  of a pie. Rounding to the nearest  $\frac{1}{2}$ , about how many pies did the girls eat in all?
- A** 1
  - B**  $1\frac{1}{4}$
  - C**  $1\frac{1}{2}$
  - D**  $1\frac{3}{4}$

- 54** Which of the following pairs of equations have the same solution?
- A**  $6x = 3$  and  $3x = 1.5$
- B**  $8x = 3$  and  $4x = 1$
- C**  $10x = 9$  and  $5x = 18$
- D**  $12x = 6$  and  $6x = 6$
- 55** Robert cut  $\frac{3}{4}$  of a loaf of bread in half. Which equation can be used to determine the fraction of the whole loaf represented by each piece?
- A**  $n = \frac{3}{4} \cdot \frac{3}{4}$
- B**  $n = \frac{3}{4} \cdot 2$
- C**  $n = \frac{3}{4} \div 2$
- D**  $n = \frac{4}{3} \div \frac{1}{2}$
- 56** Which equation has the same solution as  $2x+3=13$ ?
- A**  $2x+3=16$
- B**  $2x=10$
- C**  $2x=13$
- D**  $x+3=13$

- 57** Which equation has the same solution as  $6w - 9 = 3$ ?
- A**  $6 - 9w = 3$
- B**  $6w = 3$
- C**  $6w + 9 = 3$
- D**  $6w = 12$
- 58** The surface area of a table top is  $60,000 \text{ cm}^2$ . What is this area in square meters?
- A**  $600 \text{ m}^2$
- B**  $100 \text{ m}^2$
- C**  $6 \text{ m}^2$
- D**  $1 \text{ m}^2$
- 59** Tucker is allowed to eat 20% of a 20-ounce bag of candy each day. Which of the following statements describes the amount of candy in ounces he is allowed to eat each day?
- A**  $20 \times 20 = 400$
- B**  $20 \times 0.20 = 4$
- C**  $\frac{20}{20} = 1$
- D**  $20 - 20 = 0$

60 What would happen to this figure after a translation?



- A It would be smaller.
- B It would be larger.
- C It would be at a different angle on the page.
- D It would be in a different location on the page.

61 Which correctly completes the number sentence?

$$7.050 > \square$$

- A 7.015
- B 7.055
- C 7.100
- D 7.500

62 What is 50% of 12?

- A 4.2
- B 6
- C 24
- D 62

63 Which number has the same absolute value as  $\frac{3}{8}$ ?

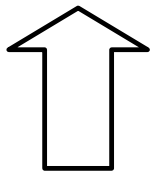
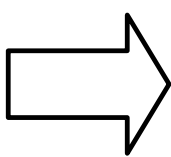
- A  $\frac{8}{3}$
- B 38
- C  $-0.38$
- D  $-\frac{3}{8}$

64 Which of the following is an equation?

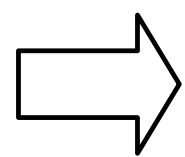
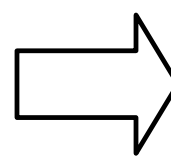
- A  $3+10-1$
- B  $3x+1=10$
- C  $3x+1-10$
- D  $\frac{3x+1}{10}$

65 Which pair of figures shows a reflection over the line segment?

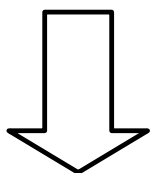
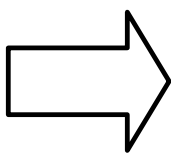
A



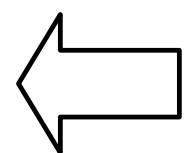
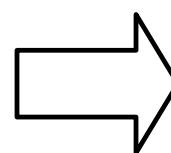
B



C



D





**66** Jennifer's class has 3 boys and 12 girls. Each student writes his or her name on a piece of paper. They give the pieces of paper to their teacher. The teacher chooses one name without looking. Which *best* describes the chance that the teacher chooses a boy's name?

- A** equally likely
- B** least likely
- C** most likely
- D** not possible

**67** What is the value of  $n$  in the equation below?

$$\frac{3}{4} \div 3 = n$$

- A** 3
- B**  $\frac{9}{4}$
- C**  $\frac{1}{3}$
- D**  $\frac{1}{4}$

**68** Which expression is equal to the fraction  $\frac{14}{5}$ ?

- A**  $14 \times 5$
- B**  $^{-}14 \times 5$
- C**  $14 \div 5$
- D**  $^{-}14 \div 5$

- 69** A bug climbs 3 inches up a tree each day and then slides back down the tree 1 inch at night. After 6 days and nights, how many inches has the bug moved above its starting point?
- A** 6 inches  
**B** 12 inches  
**C** 18 inches  
**D** 24 inches
- 70** Each Friday, Jill earns \$10 babysitting. Each week, she spends \$4 and saves the rest. How much has she saved after 8 weeks?
- A** \$48  
**B** \$76  
**C** \$80  
**D** \$84
- 71** What is the value of  $3^2 \times 5$ ?
- A** 25  
**B** 30  
**C** 45  
**D** 225
- 72** Which expression represents "2 times  $x$ , divided by 3"?
- A**  $\frac{2x}{3}$   
**B**  $\frac{2}{3+x}$   
**C**  $-\frac{2}{3}$   
**D**  $2 \times 3$

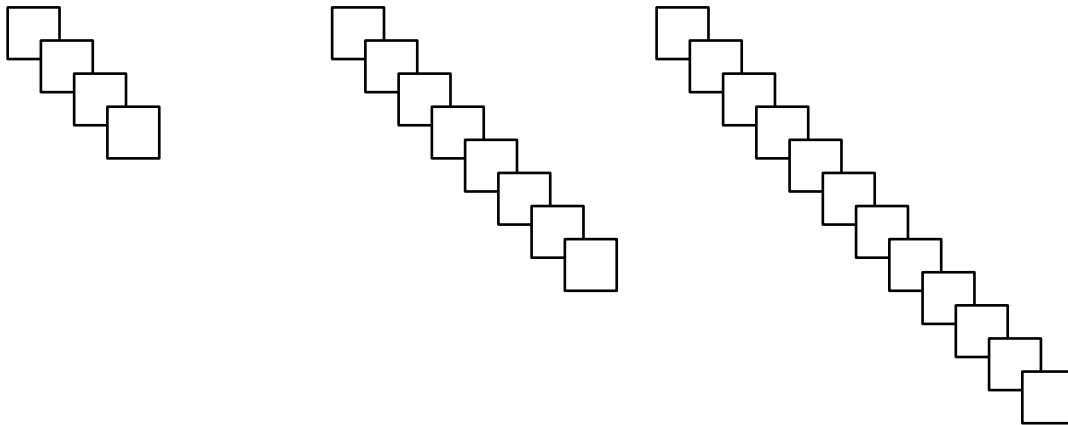
73 Which is equivalent to  $3h + 2r$ ?

- A  $2h + 3r$
- B  $2r + 3h$
- C  $5hr$
- D  $6hr$

74 At West Elementary School, there are exactly 3 boys for each girl in every class. If  $b$  is the number of boys and  $g$  is the number of girls, the equation  $b = 3g$  can be used to show this relationship. According to this equation, how many boys are in a class that has 6 girls?

- A 6
- B 16
- C 18
- D 72

75 What is the rule for the pattern in the following diagram?

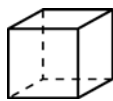


- A double the number of boxes each time
- B triple the number of boxes each time
- C square the number of boxes each time
- D add 4 boxes each time

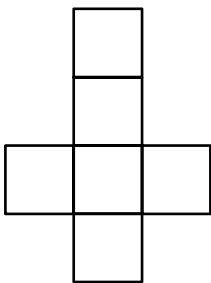
**76** Carl collects baseball cards. He has 35 cards for the current baseball season. He is allowed to buy 15 new cards each week. What is the *fewest* number of weeks from now when he will have more than 100 cards?

- A** 4 weeks
- B** 5 weeks
- C** 6 weeks
- D** 7 weeks

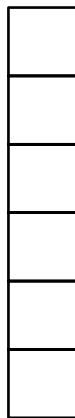
**77** Which net, when folded, will cover all of the faces of the cube?



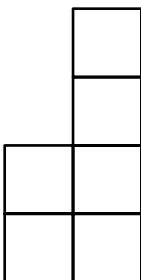
**A**



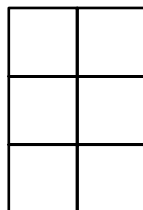
**B**



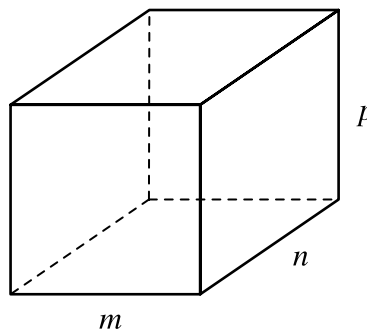
**C**



**D**



- 78 Kiera needs to paint only the walls of a rectangular room. She needs to know the area of the space to be painted in order to buy the right amount of paint. Which formula can be used to calculate the area of the walls?



- A  $2mp + 2np$
- B  $2mn + 2mp + 2np$
- C  $6mp$
- D  $mnp$
- 79 How many pairs of congruent angles must be formed when two lines intersect?
- A 0 pairs
- B 1 pair
- C 2 pairs
- D 4 pairs

## Scoring Key

## Part 1:

Item #	Answer Key
1	A
2	A
3	C
4	D
5	C
6	A

## Part 2:

Item #	Answer Key
7	A
8	B
9	B
10	A
11	B
12	B
13	D
14	D
15	B
16	C
17	D
18	B
19	A
20	B
21	B
22	D
23	C
24	C
25	A

Continues on the next page.

**Part 3:**

Item #	Answer Key
26	A
27	A
28	C
29	C
30	B
31	C
32	C
33	D
34	D
35	C
36	D
37	C
38	A
39	D
40	D
41	D
42	A
43	A

**Part 4:**

Item #	Answer Key
44	C
45	D
46	C
47	D
48	D
49	C
50	A
51	C
52	B
53	C
54	A
55	C
56	B
57	D
58	C
59	B
60	D
61	A
62	B
63	D
64	B
65	D
66	B
67	D
68	C
69	B
70	A
71	C
72	A
73	B
74	C
75	D
76	B
77	A
78	A
79	C