VIRGINIA STANDARDS OF LEARNING

Spring 2008 Released Test

# GRADE 8 MATHEMATICS

Form M0118, CORE 1

# This released test contains 3 fewer test items (#1– 47 only) than an original SOL Grade 8 Mathematics test.

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**1** According to the order of operations, which operation should be performed first to evaluate the expression?

```
2 + 3 \cdot 20 + 8 \div 4 - 1
```

- **A** 4-1
- **B** 8÷4
- **C** 20+8
- **D** 3.20

2 Apple juice concentrate is mixed with water to make apple juice. Which final mixture has the highest percentage of apple juice concentrate?

- F 400 mL apple juice concentrate mixed with 600 mL water
- G 400 mL apple juice concentrate mixed with 400 mL water
- H 300 mL apple juice concentrate mixed with 600 mL water
- J 300 mL apple juice concentrate mixed with 400 mL water

- 3 What is 901,000 written in scientific notation?
  - **A**  $9.01 \times 10^{-5}$
  - **B**  $9.01 \times 10^{-3}$
  - **C** 9.01 × 10<sup>3</sup>
  - **D** 9.01  $\times$  10<sup>5</sup>

4 According to the order of operations, which operation should be performed first to simplify the following?

- $\mathbf{F} = \mathbf{7} + \mathbf{3}$
- **G** 3<sup>2</sup>-4
- **H** 2-1
- **J** 3<sup>2</sup>

### 5 Which set of numbers contains $\sqrt{5}$ ?

- A Natural numbers
- **B** Irrational numbers
- **C** Integers
- **D** Rational numbers

GO ON

### 6 Which list is ordered from *least* to *greatest*?

- **F**  $\frac{1}{3}$ ,  $\frac{3}{5}$ , 30% **G**  $\frac{3}{5}$ ,  $\frac{1}{3}$ , 30%
- **H** 30%,  $\frac{1}{3}$ ,  $\frac{3}{5}$
- **J**  $\frac{1}{3}$ , 30%,  $\frac{3}{5}$

- 7 Which expression has a value of 27 when *n* equals 2 ?
  - **A**  $n + (4^3 \div 8)$
  - **B**  $n + (4 \div 8)^3$
  - **C**  $(n+4)^3 \div 8$
  - **D**  $(n+4^3) \div 8$

- 8 Which has a value between 2 and 3?
  - **F**  $\sqrt{12}$
  - **G**  $\sqrt{8}$
  - **H**  $\sqrt{3}$
  - J  $\sqrt{2}$

- 9 The area (A) of a trapezoid can be found using the formula  $A = \frac{1}{2}h(b_1 + b_2)$ . What is the area of a trapezoid if  $b_1 = 8$  centimeters,  $b_2 = 12$  centimeters, and h = 6 centimeters?
  - **A** 32 cm<sup>2</sup>
  - **B** 48 cm<sup>2</sup>
  - **C** 54 cm<sup>2</sup>
  - **D** 60 cm<sup>2</sup>

10

### Wren Family Monthly Budget

Category	Percent of Monthly Income
House payment	30%
Utilities	5%
Car payment	15%
Car insurance	5%
Food	20%
Entertainment	10%
Savings	5%
Miscellaneous	10%

If the family's monthly income is \$3,286, what is the amount the Wren family budgets for entertainment each month?

- **F** \$657.20
- **G** \$328.60
- **H** \$164.30
- **J** \$32.86

- **11** Which number is a perfect square?
  - **A** 2
  - **B** 5
  - **C** 25
  - **D** 52

**12** What is the value of the following when b = 2?

3<sup>b</sup> + 3

- **F** 9
- **G** 12
- **H** 27
- **J** 36

- 13 A computer game was originally priced at \$59.99. It was marked down 15%. Then it was moved to a clearance rack marked "Take an additional 50% off the lowest marked price." What was the final price of the computer game?
  - **A** \$25.50
  - **B** \$30.00
  - **C** \$50.99
  - **D** \$59.99

### 14 Which is closest to the volume of a cylinder with measurements as shown?



- **F** 63 cubic units
- **G** 88 cubic units
- H 226 cubic units
- **J** 251 cubic units

**15** Which is closest to the measure of  $\angle WXY$  ?



- **A** 45°
- **B** 55°
- **C** 135°
- **D** 145°

GO ON



### Which names one of the legs of the triangle pictured?

- **F**  $\angle LJQ$
- **G**  $\overline{LJ}$
- **H**  $\angle QLJ$
- J  $\overline{QL}$

### 17 What is the surface area of a cube with the measurements shown?



- **A** 81 m<sup>2</sup>
- **B** 54 m<sup>2</sup>
- **C** 27 m<sup>2</sup>
- **D** 9 m<sup>2</sup>

— **10** —

**18** Les rotated the figure 90° clockwise about the origin.



Which is *most* likely the new image Les made?





This shows 3 different views of a three-dimensional figure constructed from cubes. Which could be this figure?









20 Which is a dilation of the figure in the following coordinate grid?





GOON

**21** Lines *l* and *m* intersect so that the measure of  $\angle 1$  is 50°.



What is the measure of  $\angle 2$ ?

- **A** 40°
- **B** 50°
- **C** 100°
- **D** 130°

22 A water slide is one side of a right triangle as shown.



What is *x*, the length of the water slide?

- **F** 14 ft
- **G** 21 ft
- **H** 26 ft
- **J** 34 ft

23 The figure shows a triangle on a coordinate plane.



Which of the following shows the triangle translated 3 units to the right and 1 unit down?



GO ON

Which three-dimensional figure in the position shown most likely has the top view shown above?



GOON



What is the measure of  $\overline{AX}$  ?

- **A** 3 in.
- **B** 9 in.
- **C** 19 in.
- **D** 27 in.

GOON

- 26 Sandra has a bag of same-sized cookies. The number of cookies and the different animal pictures on the cookies are listed below.
  - 9 lion
  - 5 elephant
  - 3 tiger
  - 9 bear

Sandra will choose one cookie at random. What is the probability that the first cookie Sandra chooses will have a picture of a tiger?



27

0	1	0]
1	0	2
0	2	2
2	0	0

### How many rows does this matrix have?

- **A** 3
- **B** 4
- **C** 7
- **D** 12

**28** A spinner consists of six equal regions as shown.



If Harrold spins the spinner once, what is the probability that the arrow will land on a region numbered less than or equal to 2 ?



29 The line graph shows the heights of water in a container that Manny recorded over a 5-hour period for a science project.



### **Manny's Science Project**

If the height of the water continues to decrease as shown, which is closest to its height at 6:00 p.m.?

- **A** 3.00 cm
- **B** 2.75 cm
- **C** 1.50 cm
- **D** 0.25 cm

**30** The bar graph shows the number of absences for several students in Mr. Hide's class.



### What is the mode number of absences for this group of students?

- **F** 13
- **G** 10
- **H** 4
- **J** 3

**31** A store manager displayed the number of bottles of suntan lotion sold during several months in this bar graph.



**Suntan Lotion Sales** 

# What percent of the total number of bottles of suntan lotion sold in June, July, and August was sold in July?

- **A** 30%
- **B** 32%
- **C** 40%
- **D** 48%

- 32 A bag contains 12 marbles: 5 are orange, 3 are blue, and the rest are red. If one marble is selected at random from the bag, what is the probability that it will be red or blue?
  - **F**  $\frac{1}{4}$  **G**  $\frac{1}{3}$  **H**  $\frac{5}{12}$ **J**  $\frac{7}{12}$

- **33** A towing company charges a flat fee of \$50 in addition to \$2 a mile to tow vehicles. Which equation shows the relation between *y*, the total cost, and *x*, the number of miles a vehicle is towed?
  - **A** y = 2x + 50
  - **B** y = 2x 50
  - **C**  $y = \frac{x}{2} + 50$
  - **D**  $y = \frac{x}{2} 50$

GO ON

# 34 Which graph best represents the following?



y = x - 3

**35** Which is one value of the set of *x* that makes the following true?

7*x* + 3 > 17

- **A** 0
- **B** 1
- **C** 2
- **D** 3

**36** Which ordered pair (x, y) is a solution to the following?

$$y = 3x + 10$$

- **F** (2,13)
- **G** (<sup>-</sup>2,16)
- **H** (-3,1)
- **J** (1,11)

- 37 Steven read that the actual distance between Memphis and Chicago is about 525 miles. On a map, the distance between the two cities is about  $10\frac{1}{2}$  inches. Which is *most likely* the scale used to make the map?
  - A 1 inch represents 50 miles
  - **B** 1 inch represents 25 miles
  - C 1 inch represents 30 miles
  - **D** 1 inch represents 40 miles

### **38** The following is a graph of a function of *x*.



### Which set best represents the domain of the function?

- **F** { -7, -5, -2, 0, 3, 5, 8 }
- **G** { 0, 2, 3, 5, 6, 8, 9 }
- **H** { -7, -5, -2, 0, 2, 3, 5, 6, 8, 9 }
- **J**  $\{0, 3, 5, 8\}$

# **39** Which ordered pair makes the equation *false*?

$$x = \frac{1}{2}y - 1$$

- **A** (-1,0)
- **B** (0,2)
- **C** (2, 3)
- **D** (1, 4)

GOON

# 40 Which graph most likely contains all the ordered pairs in the table?

x	у
-2	0
-1	1
2	2
7	3



41 What value for *n* makes the following sentence true?

**A** n = 4 **B** n = 2 **C**  $n = \frac{8}{3}$ **D**  $n = \frac{8}{5}$ 

GO ON

# 42 Which of the following graphs contains all the ordered pairs in the table?

x	у
-4	-4
-2	-3
0	-2
2	-1



43 In which table do all of the ordered pairs make the equation true?

y = 2x + 4

A	x	у
	-2	0
	-1	2
	0	4
	1	6



x	у
-2	0
-1	2
0	4
1	2

x	у
-2	0
-1	6
0	5
1	6

В

С



- 44 Mrs. Garcia used 5 cups of flour to make 3 loaves of bread. How many loaves of bread can she make with 30 cups of flour?
  - **F** 10
  - **G** 18
  - **H** 28
  - **J** 50

### 45 Which ordered pair makes the equation true?

$$2x = 18 - y$$

- **A** (0,9)
- **B** (1, 4)
- **C** (4,1)
- **D** (9,0)

### **46** What value for *w* makes the equation true?

$$4w - 8 = 16$$

**F** <sup>-</sup>6

- **G** <sup>-</sup>2
- **H** 2
- **J** 6

47 Fran drove m miles in a car she rented. To find R, the total cost of renting the car, she used the following formula.

### What is the dependent variable in the formula?

- **A** R
- **B** 0.50
- **C** m
- **D** 35

Test Sequence		Reporting	
Number	Correct Answer	Category	Reporting Category Description
1	D	001	Number and Number Sense
2	G	001	Number and Number Sense
3	D	001	Number and Number Sense
4	J	001	Number and Number Sense
5	В	001	Number and Number Sense
6	Н	001	Number and Number Sense
7	С	002	Computation and Estimation
8	G	002	Computation and Estimation
9	D	002	Computation and Estimation
10	G	002	Computation and Estimation
11	С	002	Computation and Estimation
12	G	002	Computation and Estimation
13	A	002	Computation and Estimation
14	J	003	Measurement and Geometry
15	С	003	Measurement and Geometry
16	J	003	Measurement and Geometry
17	В	003	Measurement and Geometry
18	J	003	Measurement and Geometry
19	В	003	Measurement and Geometry
20	Н	003	Measurement and Geometry
21	В	003	Measurement and Geometry
22	Н	003	Measurement and Geometry
23	С	003	Measurement and Geometry
24	G	003	Measurement and Geometry
25	В	003	Measurement and Geometry
26	F	004	Probability and Statistics
27	В	004	Probability and Statistics
28	G	004	Probability and Statistics
29	С	004	Probability and Statistics
30	J	004	Probability and Statistics
31	С	004	Probability and Statistics
32	J	004	Probability and Statistics
33	A	005	Patterns, Functions, and Algebra
34	G	005	Patterns, Functions, and Algebra
35	D	005	Patterns, Functions, and Algebra
36	Н	005	Patterns, Functions, and Algebra
37	A	005	Patterns, Functions, and Algebra
38	F	005	Patterns, Functions, and Algebra
39	С	005	Patterns, Functions, and Algebra
40	F	005	Patterns, Functions, and Algebra
41	A	005	Patterns, Functions, and Algebra
42	J	005	Patterns, Functions, and Algebra
43	A	005	Patterns, Functions, and Algebra
44	G	005	Patterns, Functions, and Algebra
45	D	005	Patterns, Functions, and Algebra
46	J	005	Patterns, Functions, and Algebra
47	А	005	Patterns, Functions, and Algebra

### Answer Key-8075-M0118