



# **RELEASED ITEMS**

**MATHEMATICS  
GRADE 5**

**FALL 2005**

MICHIGAN STATE BOARD OF EDUCATION  
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# PART 1

## DIRECTIONS

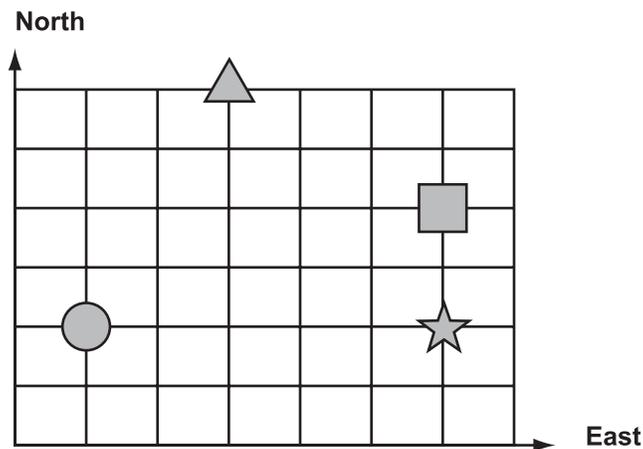
This test has four parts. You may **NOT** use a calculator on the first part. You may use open space in this test booklet for scratch paper. No additional sheets may be used.

**There are two types of items on this test: multiple-choice and open-ended.**

- Multiple-choice items will require you to choose the best answer from among four answer choices. For these items, use only a No. 2 pencil to mark your answer in your **Answer Folder**. If you erase an answer, be sure to erase it completely. If you skip an item, be sure to mark the answer to the next item in the correct place in your **Answer Folder**.
- Two open-ended items will be found in your test booklet and require you to write, explain, or show your work. For this item, show all of your work neatly and clearly in the space provided in your **Answer Folder**.

### Sample Multiple-Choice Item:

Start from the . First go 1 block east, then go 1 block south, then go 4 blocks east, and 1 block north. Where do you end up?



- A 
- B 
- C 
- D 

For this sample item, the correct answer is **A**. Circle **A** is filled in on the sample item in your **Answer Folder**.

**Sample Open-Ended Item:**

The Lopez children went to the movies. They wanted to buy a tub of popcorn that cost \$1.35. They counted their money and had the following:

- Maria had 2 quarters.
- Carlos had 40 cents in dimes.
- Luis had the same number of nickels as Carlos had dimes.
- Ana had 2 dimes and 2 nickels.

Did the Lopez children have enough money to buy the popcorn? Explain how you arrived at your answer. Show all of your work.

$$\begin{array}{r}
 \$ .50 \text{ Maria} \\
 .40 \text{ Carlos} \\
 .20 \text{ Luis} \\
 .20 \text{ Ana} \\
 + .10 \text{ Ana} \\
 \hline
 \$ 1.40
 \end{array}$$

**Yes. They had 5 cents more than they needed.**

For this sample item you would answer yes and explain that the Lopez children had 5 cents more than they needed. Remember to show your work.

You will have at least 30 minutes to finish Part 1 of this test. You will be given additional time if necessary.

1. Once you have reached the word **STOP** in your test booklet, do **NOT** go on to the next page.
2. If you finish early, you may check your work in Part 1 of the test **ONLY**. Do **NOT** look at items in other parts of the test.

If you do not understand any of these directions, please raise your hand.

- 1 If this pattern continues, what is the *greatest* number of apples you can buy for \$2.00?



*Apples on Sale Today!*

Number of Apples	Cost
1	\$0.25
2	\$0.50
3	\$0.75
4	\$1.00
5	\$1.25

- A 2
- B 5
- C 6
- D 8
- 2 Jerry needs to drive 722 miles. Yesterday, he drove 175 miles. Today he drove 349 miles. What is the total number of miles Jerry still has to drive?
- A 198
- B 298
- C 524
- D 547

- 3 A freezer costs \$39 per month. What else is needed to determine the total cost of the freezer?
- A the size of the freezer
  - B the price that other stores charge
  - C the number of payments to be made
  - D the portion of the buyer's monthly budget
- 4 The number 144 can be represented by a  $12 \times 12$  square grid. Which of the following is also a square number?
- A 39
  - B 50
  - C 70
  - D 81
- 5 Which of these groups can be divided evenly into smaller groups of students?
- A 21 students
  - B 19 students
  - C 17 students
  - D 13 students
- 6 Which of the following is **NOT** equal to 32?
- A  $16 \times 2$
  - B  $8 \times 4$
  - C  $1 \times 32$
  - D  $16 \times 16$

- 7 Which expression is equal to  $83 \times 5$ ?
- A  $8 \times (3 + 5)$
  - B  $5 \times (8 + 3)$
  - C  $5 \times (80 + 3)$
  - D  $80 \times (3 + 5)$
- 8 Which expression is equal to  $3 \times 49$ ?
- A  $3 \times (4 + 9)$
  - B  $3 + (40 \times 9)$
  - C  $3 \times (40 + 9)$
  - D  $(3 \times 4) + (3 \times 9)$
- 9 Which is equal to  $(4 \times 8) + (4 \times 60)$ ?
- A  $4 \times (60 + 8)$
  - B  $8 \times (60 + 4)$
  - C  $12 \times (60 + 4)$
  - D  $16 \times (60 + 8)$
- 10 Which list shows the first five positive multiples of 2?
- A 2, 3, 4, 5, 6
  - B 2, 4, 6, 8, 10
  - C 2, 20, 200, 2,000, 20,000
  - D 2, 22, 222, 2,222, 22,222

11 Which of the following is equal to 24?

- A  $4 \times 2 \times 3$
- B  $2 \times 3 \times 4 \times 6$
- C  $2 \times 3$
- D  $4 \times 3$

12 Which number is a factor of 23?

- A 1
- B 2
- C 3
- D 5

13 Which value of  $y$  makes the number sentence true?

$$y \div 6 = 93$$

- A 87
- B 99
- C 548
- D 558

14 What value of  $a$  makes the number sentence true?

$$100 \div a = 20$$

- A 4
- B 5
- C 80
- D 120

- 15 Which value of  $g$  makes the number sentence true?

$$g \div 8 = 32$$

- A 4
- B 24
- C 40
- D 256

- 16 Al sees this sign at a copy center.

1. Copies cost 10¢ each.
2. Copy machines only take quarters.
3. Copy machines do NOT make change.  
If you make 1 copy, you will NOT get 15¢ back.

What is the *least* number of copies Al can make without losing any money?

- A 5
- B 30
- C 75
- D 150

17 What is the value of this expression?

$$420 \div 4$$

- A 15
- B 100
- C 105
- D 150

18 There are 168 lunches to be shared equally among 3 fourth-grade classes. How many lunches will go to each class?

- A 56
- B 165
- C 171
- D 504

## PART 2

### DIRECTIONS

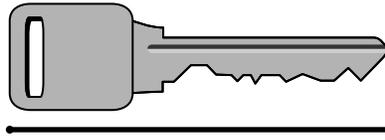
You will now begin Part 2 of this test. You may use a calculator on this part of the test, and you may use open space in this test booklet for scratch paper. No additional sheets may be used.

If you finish early, you may check your work for Part 2 **ONLY**.

Do **NOT** look at items in other parts of this test.

You will have at least 50 minutes to finish Part 2 of this test.

- 19 Use the inch ruler to measure the length of this key.



Which of the following is *closest* to the length of this key?

- A 1 inch
  - B 2 inches
  - C 4 inches
  - D 5 inches
- 20 Which fraction is equal to 0.44?

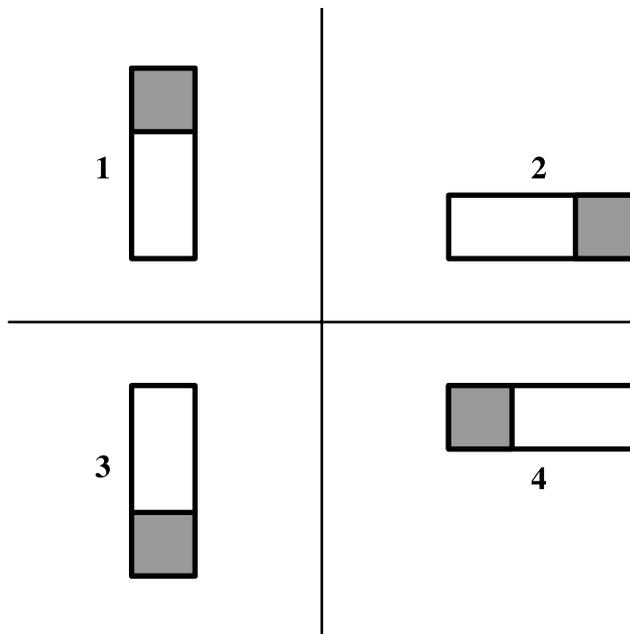
- A  $\frac{4}{10}$
- B  $\frac{44}{10}$
- C  $\frac{4}{100}$
- D  $\frac{44}{100}$

21 What decimal part of one dollar is the sum of these coins?



- A 2.00
- B 0.20
- C 0.02
- D 0.22

22 Which pair of figures shows only a reflection?



- A 1 and 2
- B 1 and 3
- C 2 and 4
- D 3 and 4

- 23 This chart shows the lace lengths needed for shoes with different numbers of eyelets.

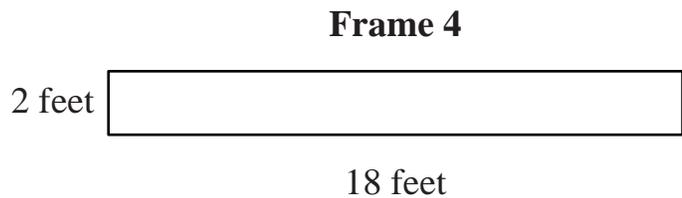
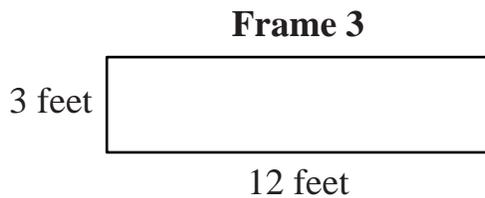
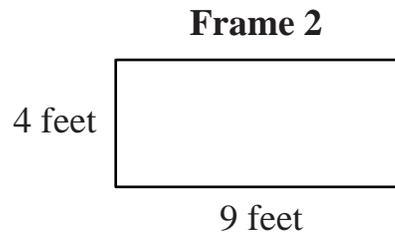
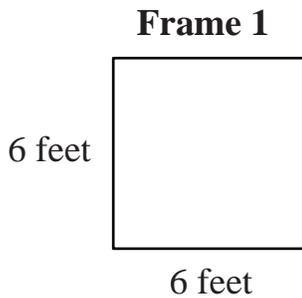
**SHOELACE CHART**

<b>Number of Eyelets</b>	<b>Lace Length</b>
6 pairs of eyelets	45 inches
7 pairs of eyelets	54 inches
8 pairs of eyelets	63 inches
9 pairs of eyelets	?

What number goes in the empty space on the chart?

- A 64 inches
  - B 72 inches
  - C 81 inches
  - D 79 inches
- 24 Which tool can be used to measure the dimensions of a shoe box?
- A 100-gram balance
  - B 12-inch ruler
  - C digital thermometer
  - D 8-ounce measuring cup

- 25 The following pictures show four possible frames for a sandbox with an area of 36 square feet.

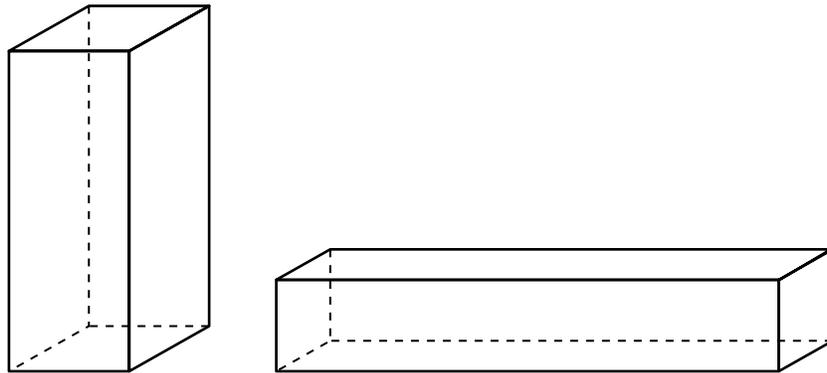


Which frame uses the *least* amount of wood?

- A Frame 1
  - B Frame 2
  - C Frame 3
  - D Frame 4
- 26 What is another way to write 0.7 inches?

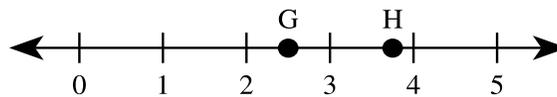
- A  $\frac{7}{10000}$  inches
- B  $\frac{7}{1000}$  inches
- C  $\frac{7}{100}$  inches
- D  $\frac{7}{10}$  inches

27 Which will *always* be true about any two rectangular prisms such as these?



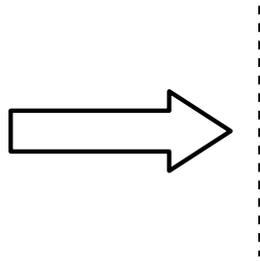
- A They have the same volume.
- B They have the same surface area.
- C Their edges are all the same length.
- D They have the same number of faces.

28 Which of the following fractions would be located between points G and H on this number line?



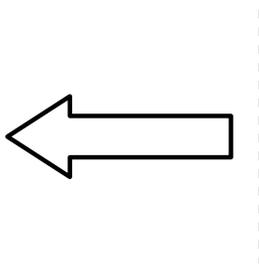
- A  $2\frac{1}{4}$
- B  $3\frac{1}{4}$
- C 4
- D  $4\frac{1}{4}$

29 Look at the arrow and the dotted line segment.

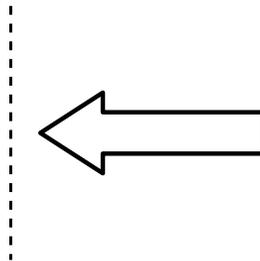


Which of the following shows the arrow and the dotted line segment after the arrow is flipped over the dotted line segment?

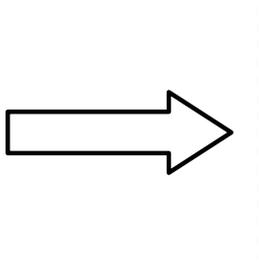
A



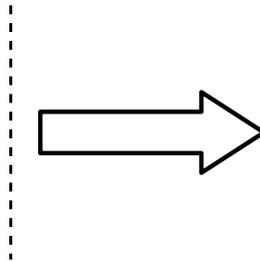
B



C



D



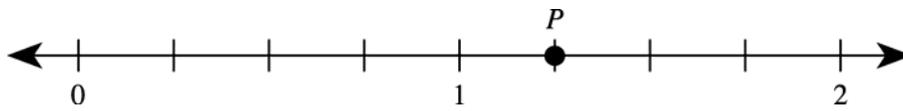
30 The height of Celia’s classroom door is  $6\frac{1}{2}$ . What are the *most likely* units for the height of the door?

- A feet
- B yards
- C inches
- D centimeters

31 Which temperature is the *warmest*?

- A 0°F
- B 0°C
- C 32°F
- D 32°C

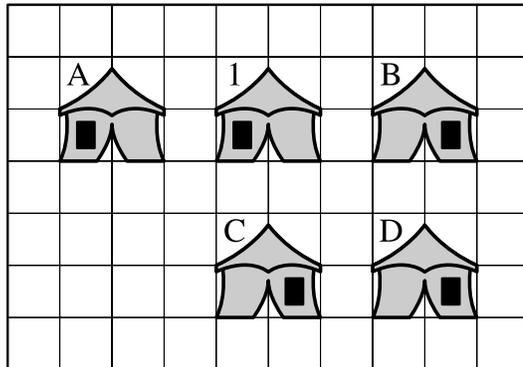
32 Which is *greater than* the value at point *P*?



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

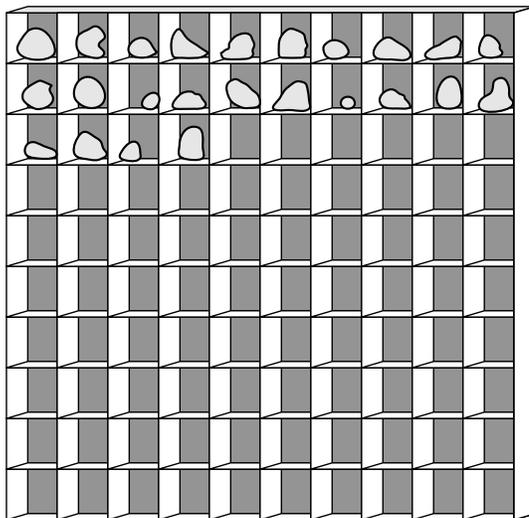
33 Which campsite is only a translation from Campsite 1?

Campsites



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

34 What decimal shows the part of this box that has rocks in the spaces?



- A 0.20
- B 0.24
- C 0.70
- D 0.76

## PART 3

### DIRECTIONS

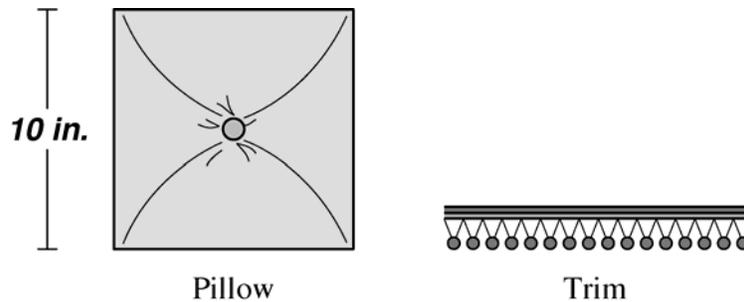
You will now begin Part 3 of this test. You may use a calculator on this part of the test, and you may use open space in this test booklet for scratch paper. No additional sheets may be used.

If you finish early, you may check your work for Part 3 **ONLY**.

Do **NOT** look at items in other parts of this test.

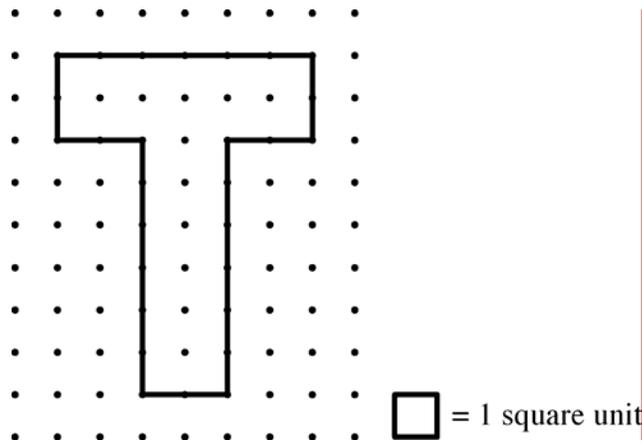
You will have at least 50 minutes to finish Part 3 of this test.

- 35 This pillow measures 10 inches on each side. What is the least amount of trim needed to put trim around all four sides of the pillow?



- A 10 inches
  - B 20 inches
  - C 40 inches
  - D 100 inches
- 36 Which temperature is the *coldest*?
- A  $-3^{\circ}\text{F}$
  - B  $0^{\circ}\text{F}$
  - C  $5^{\circ}\text{F}$
  - D  $32^{\circ}\text{F}$
- 37 Which is the *most* reasonable description of a desirable room temperature for a plant?
- A between  $75^{\circ}\text{F}$  and  $76^{\circ}\text{F}$
  - B between  $32^{\circ}\text{F}$  and  $100^{\circ}\text{F}$
  - C between  $0.0^{\circ}\text{F}$  and  $100.9^{\circ}\text{F}$
  - D between  $55^{\circ}\text{F}$  and  $58^{\circ}\text{F}$

38 What is the area of this block letter *T*?



- A 10 square units
- B 12 square units
- C 24 square units
- D 26 square units

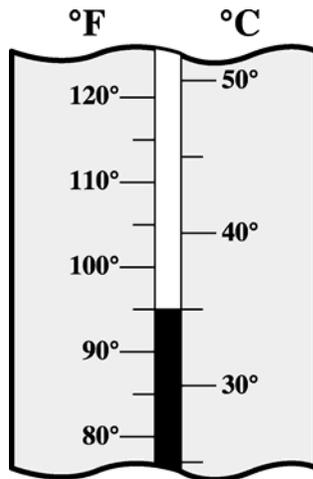
39 Karen has four suitcases. Each suitcase has a different combination lock. She set the combination for suitcase #1 to the year she was born. Then she followed a rule to set the combinations for suitcase #2 and suitcase #3.

Suitcase	#1	#2	#3	#4
Combination	1995	1950	1905	?

Which rule does this pattern follow?

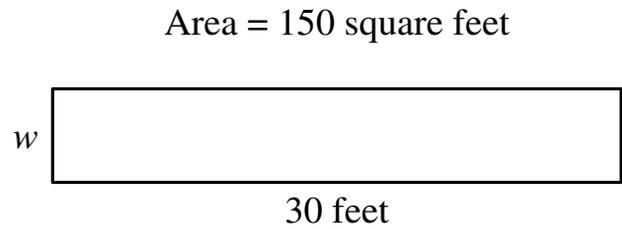
- A Add 55 to the previous combination.
- B Add 45 to the previous combination 3.
- C Subtract 55 from the previous combination.
- D Subtract 45 from the previous combination.

40 What temperature does the thermometer show?



- A 35°C
- B 77°F
- C 95°C
- D 122°F

41 The rectangle below has a length of 30 feet and an area of 150 square feet. What is the width of the rectangle?

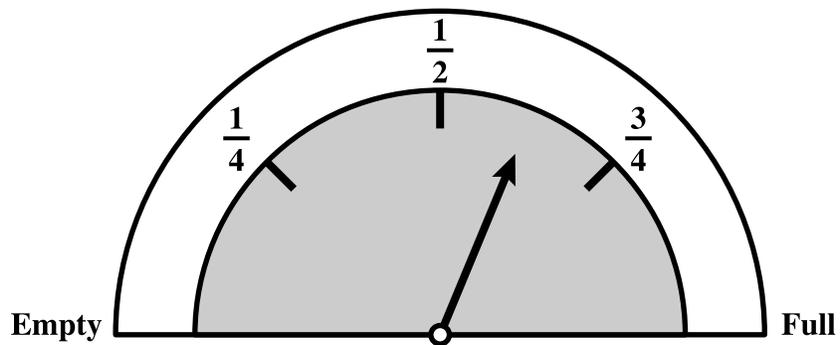


- A 5 feet
- B 45 feet
- C 50 feet
- D 120 feet

42 Which of the following solids has 2 circular, parallel bases?

- A cylinder
- B prism
- C pyramid
- D sphere

43 When the gasoline tank in Wiley’s car is full, it holds 12 gallons of gasoline. Which is *closest* to the amount of gasoline in the tank?



- A 5 gallons
- B 6 gallons
- C 7 gallons
- D 10 gallons

44 Which figure does **NOT** have at least one base?

- A cone
- B cube
- C sphere
- D cylinder

- 45 The chart shows the relationship between the time on the clock and the number of shirts Gary had finished ironing.

**GARY'S IRONING**

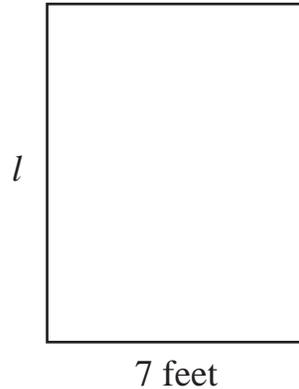
Time	Total Number of Shirts Ironed
8:15	0
8:31	2
8:47	4
9:03	6

According to the data in the chart, how many minutes did it take Gary to iron each shirt?

- A 2 minutes
  - B 6 minutes
  - C 8 minutes
  - D 48 minutes
- 46 Which of the following is true of equilateral triangles?
- A One of the angles measures 90 degrees.
  - B All of the angles measure 60 degrees.
  - C Two of the angles measure less than 60 degrees.
  - D Two of the angles measure greater than 60 degrees.

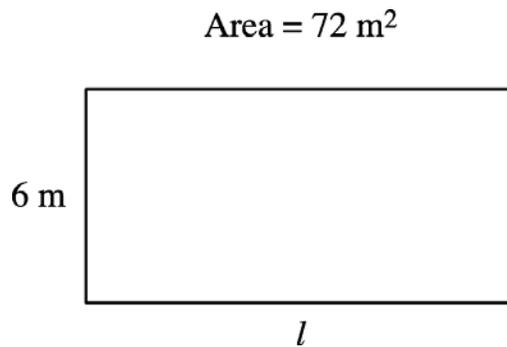
- 47 The rectangle below has a width of 7 feet and a perimeter of 32 feet. What is the length of the rectangle shown here?

Perimeter = 32 feet



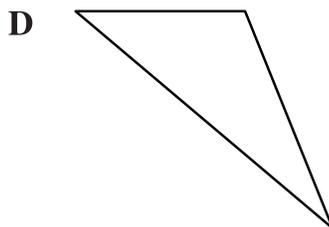
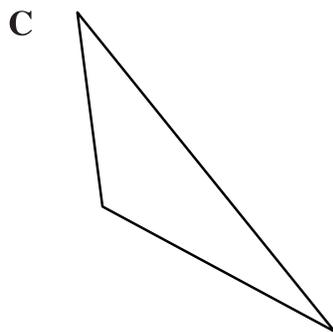
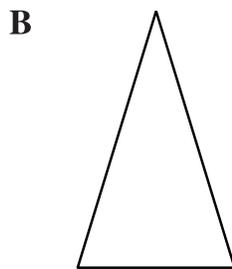
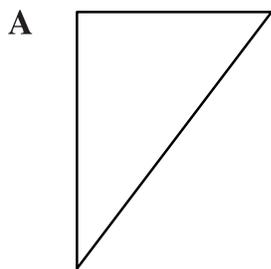
- A 9 feet  
B 18 feet  
C 25 feet  
D 39 feet
- 48 A science experiment requires 100 mL of water, plus or minus 0.5 mL. What is the *least* amount of water that can be used in the experiment?
- A 95 mL  
B 99.5 mL  
C 100.5 mL  
D 105 mL

- 49 The rectangle below has a width of 6 meters and an area of 72 square meters. What is the length of the rectangle?



- A 2 meters
- B 12 meters
- C 30 meters
- D 432 meters

- 50 Which figure below appears to be a right triangle?



## PART 4

### DIRECTIONS

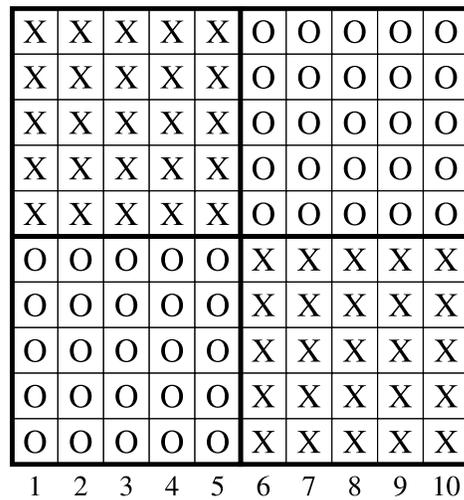
You will now begin Part 4 of this test. You may use a calculator on this part of the test, and you may use open space in this test booklet for scratch paper. No additional sheets may be used.

If you finish early, you may check your work for Part 4 **ONLY**.

Do **NOT** look at items in other parts of this test.

You will have at least 50 minutes to finish Part 4 of this test.

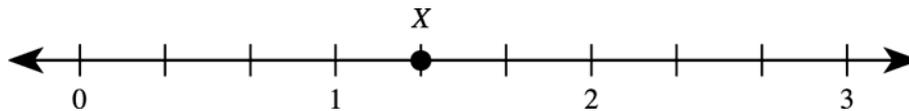
- 51 The picture below shows the different parts of a blanket that will be made with red fabric and yellow fabric.



**KEY:**  
 O = yellow  
 X = red

What decimal represents the part of the blanket that will be red?

- A 0.50
  - B 0.050
  - C 5.0
  - D 50.0
- 52 Which best represents the location of X on the number line?



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

53 The table shows the number of pets owned by each of 7 students.

**Fourth Grade Pets**

Name	Number of Pets
Tim	1 dog
Jason	2 cats
Ed	3 birds
Trish	3 dogs
Laura	2 dogs
Raul	1 hamster
Gigi	1 cat

What is the median number of pets owned?

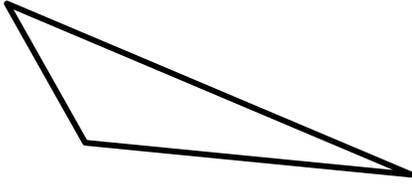
- A 2
- B 3
- C 7
- D 13

54 How is eighteen hundredths written in standard form?

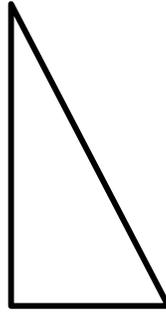
- A 0.018
- B 0.18
- C 18.00
- D 1800

55 Which triangle below appears to be an isosceles triangle?

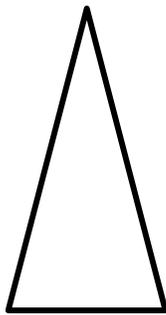
A



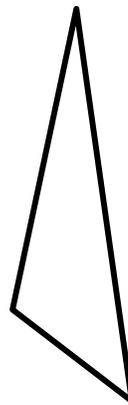
B



C



D



56 The table shows the number of students in five fifth-grade classes.

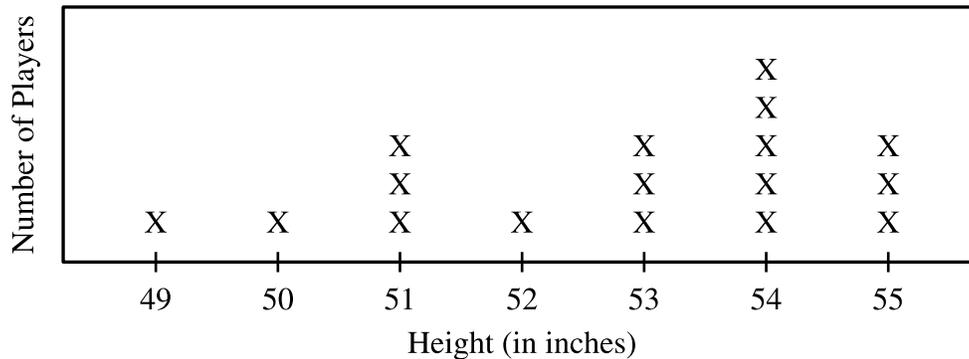
Teacher's Name	Number of Students
Mr. Carter	24
Mr. Rojas	27
Ms. Lucas	25
Ms. Manor	23
Ms. Paris	23

Which class has exactly the median number of students?

- A Mr. Carter's class
- B Mr. Rojas's class
- C Ms. Lucas's class
- D Ms. Paris's class

57 This chart shows the heights of the players at a basketball camp.

**Heights of Players at Coach Jones' Basketball Camp**



What was the median height of the players?

- A 52 inches
- B 53 inches
- C 54 inches
- D 55 inches

58 Which list shows the numbers in order from *least* to *greatest*?

- A 3,800,902 3,808,290 4,808,092 4,880,901
- B 4,880,901 4,808,092 3,808,290 3,800,902
- C 4,808,092 3,808,290 4,880,901 3,800,902
- D 3,800,902 4,808,092 3,808,290 4,880,901

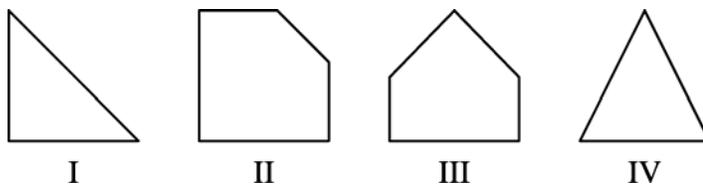
59 Which is equal to 4,002?

- A 4 ones and 2 ones
- B 4 hundreds and 2 ones
- C 4 thousands and 2 ones
- D 4 ones and 2 thousands

60 A fruit stand sold 502 peaches, 43 watermelons, and 910 apples. How many pieces of fruit were sold in all?

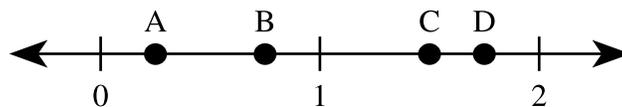
- A 186
- B 654
- C 1,005
- D 1,455

61 Which shape appears to contain exactly 3 right angles?



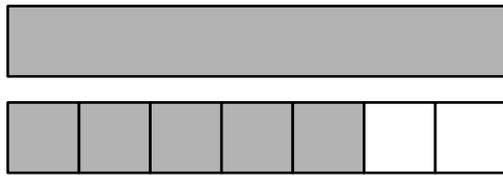
- A I
- B II
- C III
- D IV

62 Which point on the number line below *best* represents 1.75?



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

63 Which *best* describes the shaded part of the drawing below?



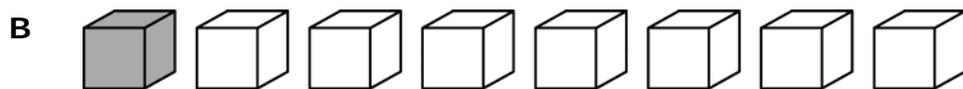
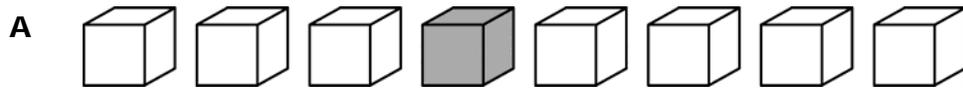
A  $\frac{3}{4}$

B  $\frac{6}{7}$

C  $1\frac{5}{8}$

D  $1\frac{5}{7}$

64 Which picture shows half of the boxes painted gray?

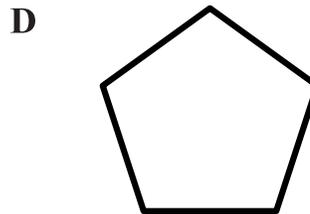
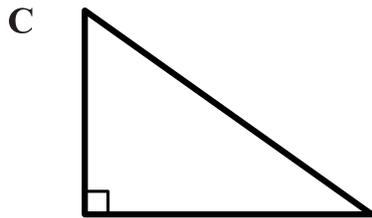
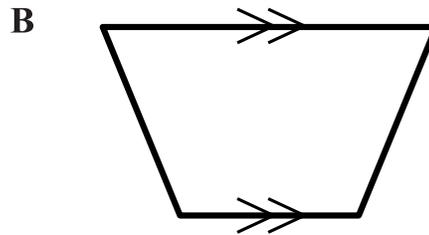
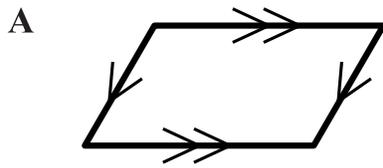


- 65 Which fraction is *greater than*  $\frac{1}{2}$ ?
- A  $\frac{1}{4}$
  - B  $\frac{2}{8}$
  - C  $\frac{3}{8}$
  - D  $\frac{3}{4}$
- 66 Caylor bought 6 books in her favorite series. The total was \$18.12. Each book cost the same amount. How much did each book cost?
- A \$ 0.32
  - B \$ 3.02
  - C \$ 3.20
  - D \$32.00
- 67 Max brushes his teeth three times a day. How many times does he brush his teeth in one year?
- A 365
  - B 730
  - C 1,080
  - D 1,095

68 Which type of angle has a measure that is smaller than a right angle?

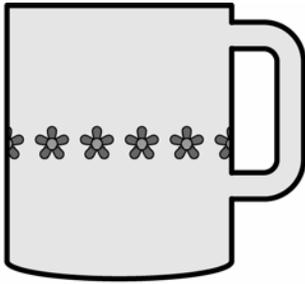
- A acute
- B obtuse
- C straight
- D congruent

69 Which figure below has two sets of parallel sides?

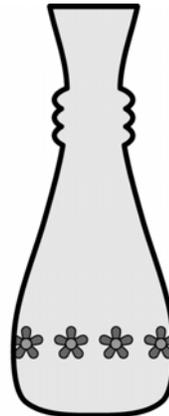


70 Which drawing below has exactly one line of symmetry?

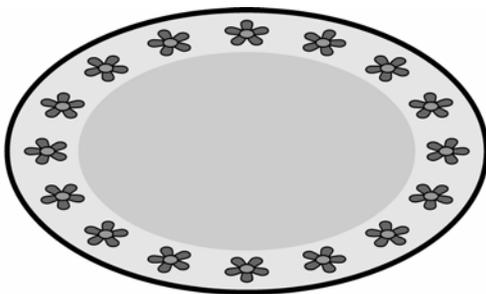
A



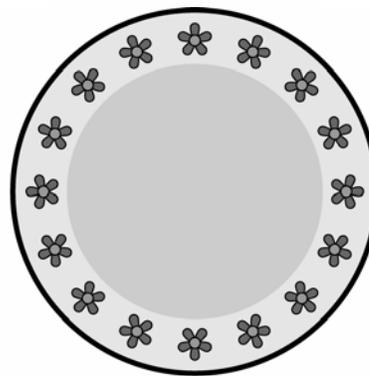
B



C



D



**71 (4 points)**

Five people work together at a local factory.

Roger works for 5 hours and earns \$40.

Marti works for 7 hours and earns \$56.

Bill works for 4 hours and earns \$32.

Leroy works for 8 hours and earns \$64.

Paula works for 6 hours and earns \$48.

- Make a two-column table that lists the workers' hours and pay in order from *greatest to least*.
- Each worker earns the same amount of money per hour. Explain how you could use the table to find this amount.

**ANSWER THIS ITEM IN YOUR ANSWER FOLDER.**

**SHOW ALL YOUR WORK IN YOUR ANSWER FOLDER.**

**72** Which math problem can be checked using  $3 \times 6 = 18$ ?

**A**  $18 \times 3 =$

**B**  $18 + 3 =$

**C**  $18 \div 3 =$

**D**  $18 - 3 =$

73 Which is equal to 6.45?

A  $\frac{6}{45}$

B  $\frac{45}{100}$

C  $6\frac{45}{100}$

D  $6\frac{4}{5}$

74 What mixed number represents the shaded portion of the two models shown below?



A  $1\frac{2}{6}$

B  $1\frac{4}{6}$

C  $2\frac{4}{6}$

D  $2\frac{2}{4}$

75 What is the sum of  $\frac{1}{4} + \frac{3}{8}$ ?

A  $\frac{3}{32}$

B  $\frac{13}{48}$

C  $\frac{1}{3}$

D  $\frac{5}{8}$

76 Jim put  $\frac{1}{3}$  cup of flour in a bowl. Then he mixed in  $\frac{1}{6}$  cup more flour. Now how much flour is in the bowl?

A  $\frac{1}{18}$  cup

B  $\frac{2}{9}$  cups

C  $\frac{3}{6}$  cups

D 1 cup

77 Which value of  $g$  makes the number sentence true?

$$\frac{5}{8} - g = \frac{2}{8}$$

A  $\frac{1}{8}$

B  $\frac{2}{8}$

C  $\frac{3}{8}$

D  $\frac{7}{8}$

78 Which of the following is equivalent to  $\frac{2}{5}$ ?

A 0.25

B  $2 \times \frac{1}{5}$

C 2.5

D 4%

79 John needs \$2.50. He has \$0.75. How much more money does he need?

A \$ .75

B \$1.25

C \$1.50

D \$1.75

80 Quito had \$137.82 saved, and then he earned \$47.50 more. Which shows how much money Quito has now?

**A**     \$137.82  
           +   47.50  
           \$612.82

**B**     \$137.82  
           +   47.50  
           \$185.32

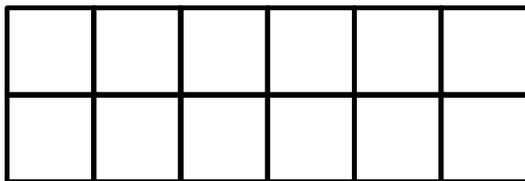
**C**     \$137.82  
           +   47.5  
           \$142.57

**D**     \$137.82  
           +   47.50  
           \$184.82

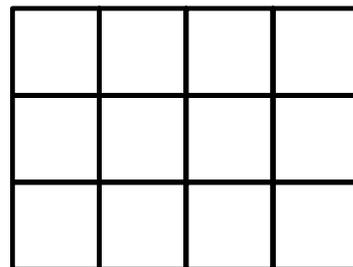
81 Anne has 8 apples. Laura has 2.5 times as many apples as Anne. How many apples does Laura have?

- A** 10.5
- B** 16
- C** 20
- D** 33

82 Which phrase *best* describes the difference between Figure A and Figure B?



**Figure A**



**Figure B**

- A** the perimeter
- B** the area
- C** the number of squares
- D** the volume

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## Scoring Key

## Part 1:

Item #	Answer Key
1	D
2	A
3	C
4	D
5	A
6	D
7	C
8	C
9	A
10	B
11	A
12	A
13	D
14	B
15	D
16	A
17	C
18	A

## Part 2:

Item #	Answer Key
19	B
20	D
21	B
22	B
23	B
24	B
25	A
26	D
27	D
28	B
29	B
30	A
31	D
32	D
33	A
34	B

Continues on the next page.

Part 3:

Item #	Answer Key
35	C
36	A
37	A
38	C
39	D
40	A
41	A
42	A
43	C
44	C
45	C
46	B
47	A
48	B
49	B
50	A

Part 4:

Item #	Answer Key
51	A
52	C
53	A
54	B
55	C
56	A
57	B
58	A
59	C
60	D
61	B
62	D
63	D
64	C
65	D
66	B
67	D
68	A
69	A
70	B
72	C
73	C
74	B
75	D
76	C
77	C
78	B
79	D
80	B
81	C
82	A