



# **RELEASED ITEMS**

**MATHEMATICS  
GRADE 4**

**FALL 2005**

MICHIGAN STATE BOARD OF EDUCATION  
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# PART 1

## DIRECTIONS

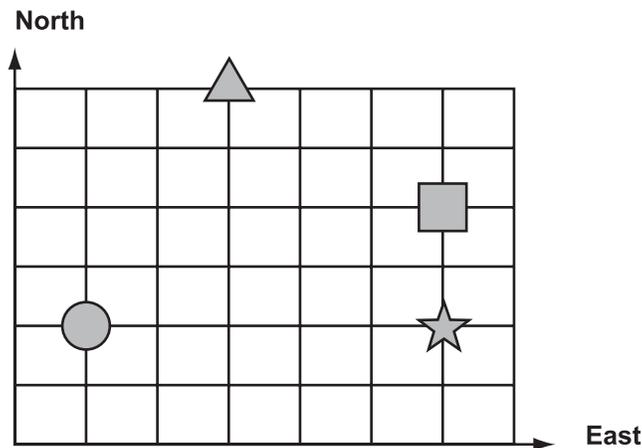
This test has four parts. You may **NOT** use a calculator on the first part. You may use open space in this test booklet for scratch paper. No additional sheets may be used.

**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**.
- One open-ended item 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 Complete the following fact family.

$$\begin{aligned}36 \div 3 &= 12 \\36 \div 12 &= 3 \\3 \times 12 &= 36 \\12 \times 3 &= \square\end{aligned}$$

- A** 15
- B** 24
- C** 33
- D** 36
- 2 Mrs. Enyart said that she was born in the year one thousand, nine hundred forty-two. In what year was she born?
- A** 1429
- B** 1492
- C** 1924
- D** 1942

- 3 There are 31 desks in Mrs. Smith's classroom and 29 desks in Mrs. Jones's classroom. How many desks in all are in both rooms?

A 70 desks  
B 60 desks  
C 58 desks  
D 50 desks

- 4 Complete the following fact family.

$$\begin{aligned}24 \div 6 &= 4 \\24 \div 4 &= 6 \\6 \times 4 &= 24 \\ \square \times 6 &= 24\end{aligned}$$

A 3  
B 4  
C 5  
D 6

- 5 Complete the following fact family.

$$\begin{aligned}4 \times 7 &= 28 \\7 \times 4 &= 28 \\28 \div 4 &= 7 \\ \square \div 7 &= 4\end{aligned}$$

A 35  
B 32  
C 28  
D 24

- 6 Martina has a new box of 64 crayons. She drops the box and 17 crayons are broken. How many crayons are **NOT** broken?
- A 47 crayons
- B 57 crayons
- C 53 crayons
- D 81 crayons
- 7 What is the place value of the 8 in the number 5,280?
- A ones
- B tens
- C hundreds
- D thousands
- 8 The table shows the length of several rivers in Asia.

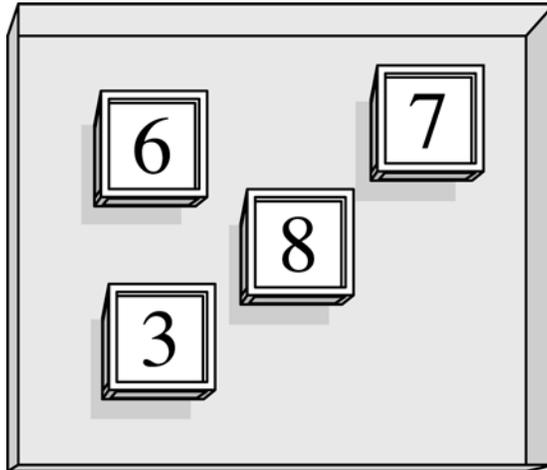
Rivers in Asia

River Name	Length (in miles)
Chang	3,964
Lena	2,734
Syr	1,370
Yenisey	2,543

Which river's length has a 3 in the tens place?

- A Chang
- B Lena
- C Syr
- D Yenisey

- 9 What is the *least* number you could make using all the numbers on these blocks?



- A three thousand, six hundred seventy-eight  
B three thousand, eight hundred seventy-six  
C six thousand, three hundred seventy-eight  
D six thousand, eight hundred seventy-three
- 10 Alonzo takes 88 steps from his house to Sherry's house. He takes 27 more steps to walk from Sherry's house to the store. How many steps does it take Alonzo to walk from his house to Sherry's house to the store?
- A 61  
B 105  
C 113  
D 115

- 11 Ridgewood Elementary School had an election for student body president. Greg received 221 votes. Ellen received 109 votes. Which of the following is *closest* to the difference in the number of votes received?
- A 100
  - B 200
  - C 300
  - D 400
- 12 John had 307 T-shirts for sale. He sold 194 T-shirts. Which of the following is *closest* to the number of shirts that John has left?
- A 100
  - B 200
  - C 300
  - D 500
- 13 Which correctly completes the number sentence?
- $53,277 < \underline{\hspace{2cm}}$
- A 49,999
  - B 50,400
  - C 52,388
  - D 61,003

- 14 The lunchroom serves only hamburgers and pizza on Mondays. Last Monday, 314 students bought a lunch. There were 97 students who bought hamburgers. Which of the following is *closest* to the number of students who bought pizza?
- A 100 students
  - B 200 students
  - C 300 students
  - D 400 students
- 15 There are 8 socks in Viv's drawer. How many pairs are there?
- A 2
  - B 3
  - C 4
  - D 16
- 16 Which of the following is true?
- A  $6 \times 3 = 4 \times 4$
  - B  $20 - 5 = 19 - 3$
  - C  $9 + 8 = 10 + 7$
  - D  $2 \times 3 = 2 + 3$

**17** Which of the following is a true statement?

**A**  $8 \times 2 = 4 \times 4$

**B**  $1 \times 1 = 1 + 1$

**C**  $10 \times 3 = 10 + 10$

**D**  $6 \times 6 = 5 \times 5 + 1$

**18** Which number is equal to 5,912?

**A** 5 hundreds, 9 tens, and 12 ones

**B** 5 thousands, 91 hundreds, and 2 ones

**C** 5 thousands, 9 hundreds, and 12 tens

**D** 5 thousands, 9 hundreds, 1 ten, and 2 ones

## 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**.

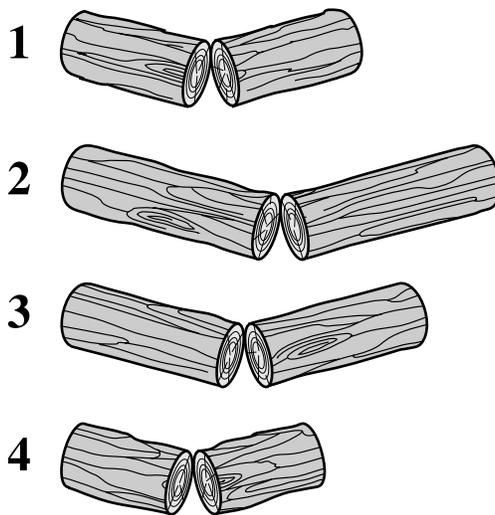
Do **NOT** look at items in other parts of this test.

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

19 A soft drink costs \$0.50. How many quarters would you need to buy it?

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

20 Each of the 4 logs below has been cut in half.



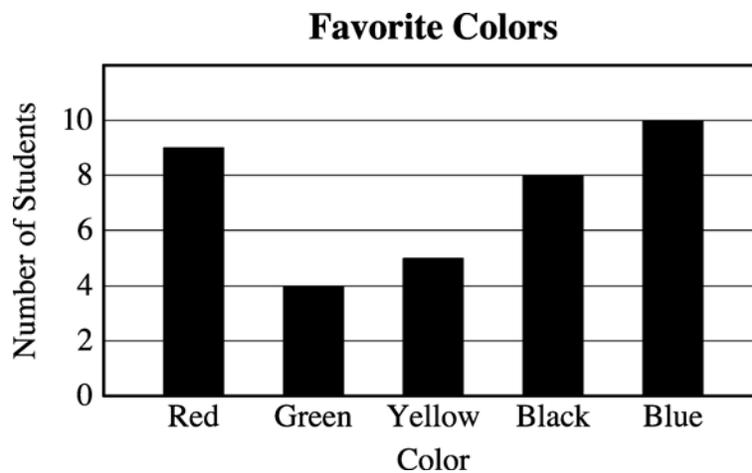
Which log has the *longest* half?

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

21 John put 4 quarters in his bank. How much money did he put in his bank?

- A \$1.00
- B \$1.25
- C \$2.00
- D \$4.00

22 The students in Mr. Carr’s class listed their favorite colors. How many students picked the *most* favored color?

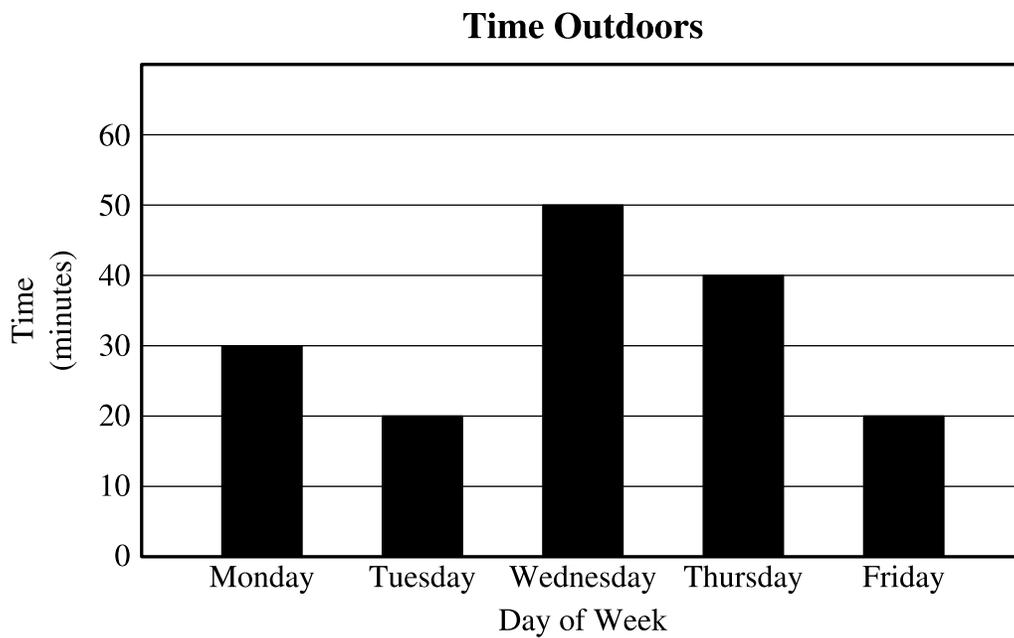


- A 7
- B 8
- C 9
- D 10

23 Cody needs \$5.75 to buy a gift. He only has \$3.25. How much more money does Cody need?

- A \$2.50
- B \$3.25
- C \$3.50
- D \$9.00

24 Kwame made a graph of the time he spent playing outdoors each day for 5 days.



What is the *most* time he spent outdoors in one day?

- A 60 minutes
- B 50 minutes
- C 40 minutes
- D 20 minutes

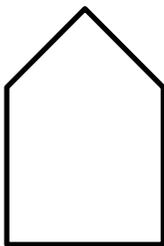
25 Which temperature is *below* freezing?

- A 35°F
- B 38°F
- C 49°F
- D 29°F

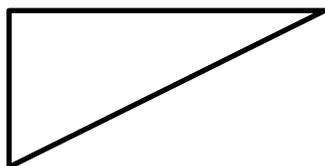
26 Which new figure can be formed by putting the rectangle and the triangle together?



A



B



C

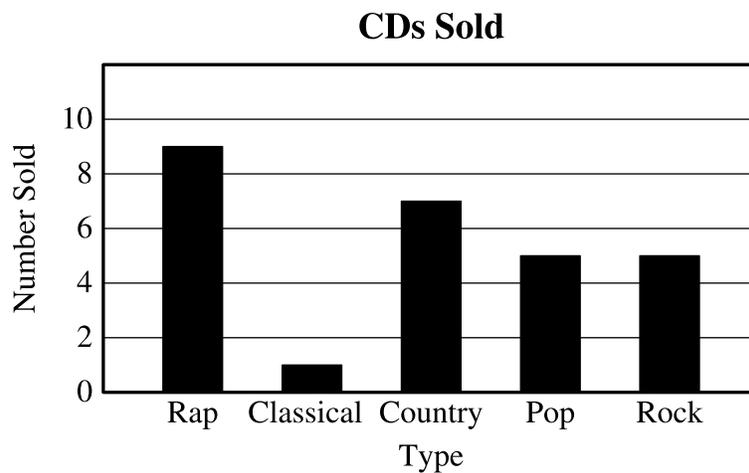


D



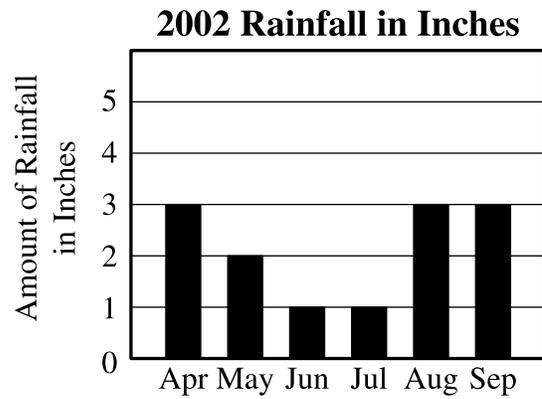
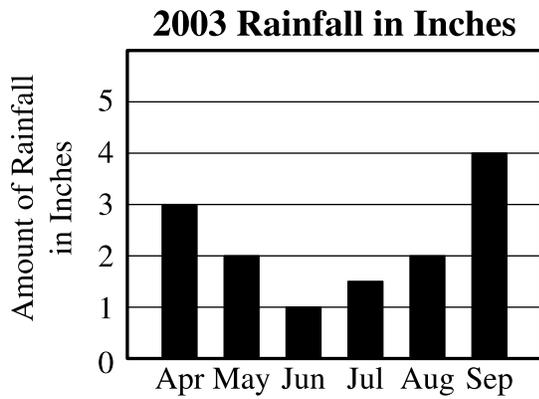
- 27 The calendar in Val’s classroom shows that it is February. About how long is it until summer?
- A 4 years
  - B 4 minutes
  - C 4 weeks
  - D 4 months

- 28 This graph shows the CD sales for one day. Look at the CDs that sold the most. How many were sold?



- A 5
  - B 7
  - C 8
  - D 9
- 29 Lani went to the store with \$8.00 and spent \$0.60 to buy some gum. How much money did Lani have left?
- A \$7.40
  - B \$7.60
  - C \$8.40
  - D \$8.60

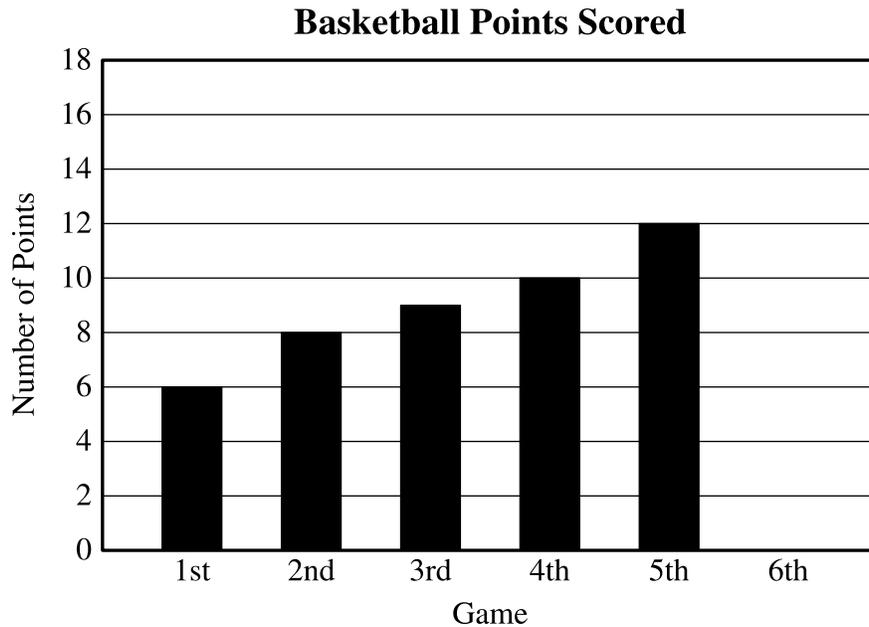
- 30 The amounts of rainfall from April through September for two different years are shown in the two graphs below.



Which was the maximum amount of rainfall in one month?

- A 1 inch
  - B 2 inches
  - C 3 inches
  - D 4 inches
- 31 Which of these heights is tallest?
- A 4 feet 6 inches
  - B 5 feet 1 inch
  - C 5 feet 7 inches
  - D 4 feet 11 inches

32 This graph shows the number of points a team scored in their first five games.



What would be a reasonable prediction of the score for the team’s sixth game if they continue to improve at this rate?

- A below 12
- B between 12 and 14
- C between 16 and 18
- D above 18

33 Rachel checked out 3 videotapes from the library. Each tape is 2 hours long. Which number sentence shows the number of hours it will take Rachel to watch all 3 tapes?

- A  $2 \times 3 = 6$
- B  $3 + 2 = 5$
- C  $5 - 3 = 2$
- D  $3 + 2 + 3 = 8$

## 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.

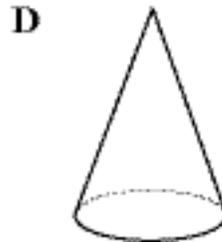
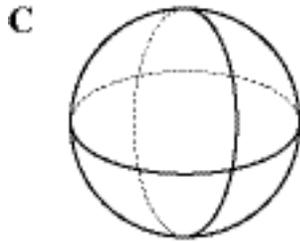
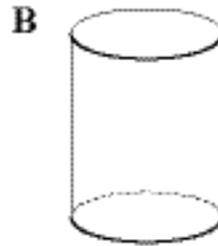
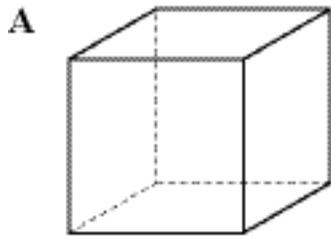
If you finish early, you may check your work for Part 3 **ONLY**.

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

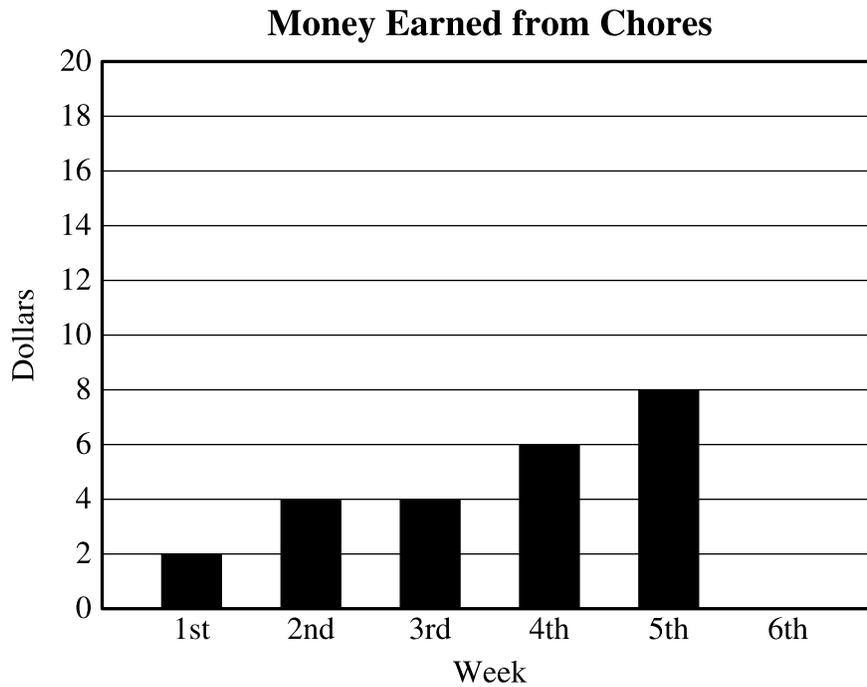
You will have at least 50 minutes to finish Part 3 of this test.

- 34** A can of soup is an example of what kind of figure?
- A** cone
  - B** sphere
  - C** pyramid
  - D** cylinder
- 35** The length of one string is 90 cm. The length of another string is 55 cm. What is the total length of the two strings together?
- A** 1 meter 25 centimeters
  - B** 1 meter 45 centimeters
  - C** 2 meters 25 centimeters
  - D** 2 meters 45 centimeters
- 36** Mark bought some school supplies for \$4.15. He handed the store clerk a \$5.00 bill. How much change should Mark receive from the clerk?
- A** \$1.95
  - B** \$1.85
  - C** \$0.95
  - D** \$0.85

37 Which of these figures does **NOT** have *at least* one base?



38 Darrell graphed the money he has earned for the past five weeks.



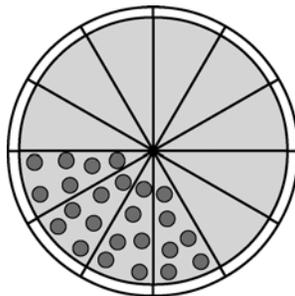
If this pattern continues, what would be a reasonable prediction of his earnings for the sixth week?

- A over \$20
- B between \$14 and \$18
- C between \$12 and \$14
- D between \$8 and \$10

39 John and his 3 friends share \$1.00 equally. How much does each boy get?

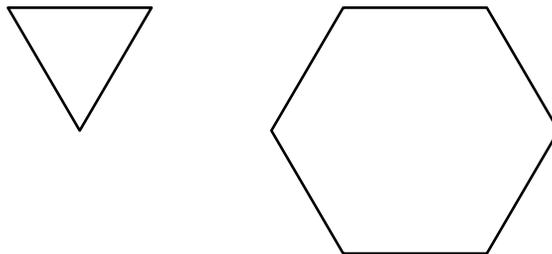
- A \$0.10
- B \$0.25
- C \$0.50
- D \$0.75

40 What fractional part of the pizza has pepperoni?



- A  $\frac{4}{4}$
- B  $\frac{8}{12}$
- C  $\frac{4}{8}$
- D  $\frac{4}{12}$

41 Each side of the triangle and the hexagon below is about 2 centimeters long.



Which is the *best* estimate of the number of triangles that will fit completely inside the hexagon?

- A 1
- B 3
- C 6
- D 9

- 42 Find the perimeter of a square that is 10 inches on each side.
- A 20 inches
  - B 30 inches
  - C 40 inches
  - D 100 inches
- 43 Erin is making banana pudding. She buys bananas at the store. What is the *most likely* amount of bananas she would buy?
- A 2 pounds
  - B 2 grams
  - C 2 ounces
  - D 2 inches
- 44 There are 6 tables in the classroom. There are 4 students sitting around each table. Which number sentence shows how to find the total number of students sitting around the tables?
- A  $6 - 4 = 2$
  - B  $6 + 4 = 10$
  - C  $6 \times 4 = 24$
  - D  $6 \div 4 = 1 \text{ R } 2$

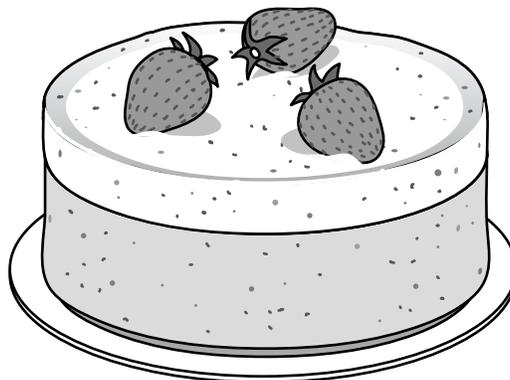
45 Mr. Garza has two boards. One board is 80 cm long and the other is 40 cm long. What is the total length of the two boards?

- A 1 meter 20 centimeters
- B 1 meter 40 centimeters
- C 2 meters
- D 2 meters 20 centimeters

46 Find the perimeter of a square that is 6 cm on each side.

- A 12 cm
- B 18 cm
- C 24 cm
- D 36 cm

47 Which of the following is the *best* estimate of the weight of these strawberries?

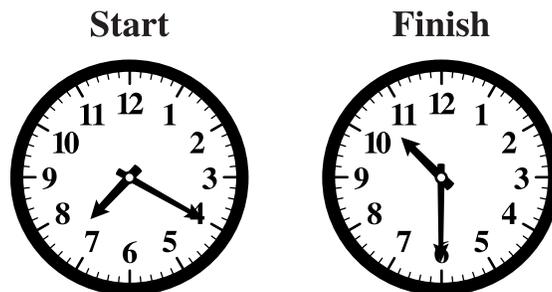


- A 6 ounces
- B 6 pounds
- C 16 ounces
- D 16 pounds

48 A square baking pan is 9 inches on each side. What is the perimeter of the pan?

- A 18 inches
- B 27 inches
- C 36 inches
- D 81 inches

49 The two clocks show the start and finish times of a concert. How long did the concert last?



- A 4 hr 50 min
- B 4 hr 10 min
- C 3 hr 10 min
- D 2 hr 50 min

## 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.

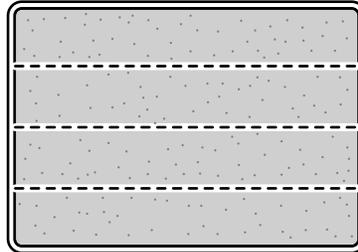
- 50 Pinar made a bracelet for her best friend.



What fraction shows how many of the shapes on the bracelet are hearts?

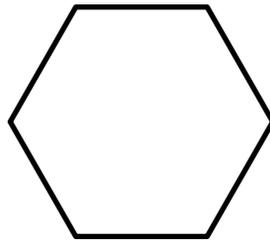
- A  $\frac{3}{6}$
- B  $\frac{6}{9}$
- C  $\frac{6}{15}$
- D  $\frac{15}{6}$
- 51 Which of these babies is *oldest*?
- A Mary is 17 months old.
- B Arthur is 1 year 2 months old.
- C Jeanne is 9 months old.
- D Patty is  $1\frac{1}{2}$  years old.
- 52 Which geometric object has *at least* one curved surface and one flat surface?
- A pyramid
- B sphere
- C prism
- D cone

- 53 Jeremy baked some cornbread in a rectangular pan. He cut the cornbread into 24 pieces by making 4 rows in one direction. Which number sentence shows how many rows he made in the other direction?

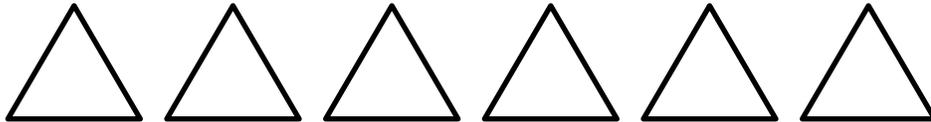


- A  $24 - 4 = 20$
- B  $24 \div 4 = 6$
- C  $24 + 4 = 28$
- D  $24 \times 4 = 96$
- 54 Which age is the *youngest*?
- A 10 years 1 month
- B 120 months
- C 9 years 8 months
- D 9 years 4 months
- 55 At what temperature does water begin to boil?
- A  $0^{\circ}\text{C}$
- B  $32^{\circ}\text{C}$
- C  $100^{\circ}\text{C}$
- D  $200^{\circ}\text{C}$

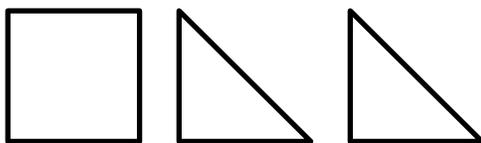
56 Which group of figures **CANNOT** be made by cutting up the hexagon?



A



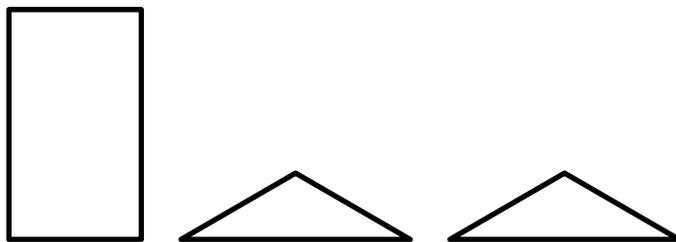
B



C



D



57 What is 20° above freezing in Celsius?

- A 50°C
- B 40°C
- C 30°C
- D 20°C

**58 (4 points)**

Katrina buys 2 pencils that cost \$0.25 each and 1 notebook that costs \$2.50.

- A** Draw a picture of the items that Katrina buys.
- B** Use correct math words to tell how Katrina can find the cost of the things she buys.
- C** Write a number sentence to find the total cost of the things Katrina buys.
- D** What is the total cost of the items that Katrina buys?

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

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

**59** Bill, Gary, and Steve each saved all their pennies last year. Bill saved 1,169 pennies. Gary saved 1,099 pennies. Steve saved 1,203 pennies. Which sentence about the number of pennies saved by these boys is true?

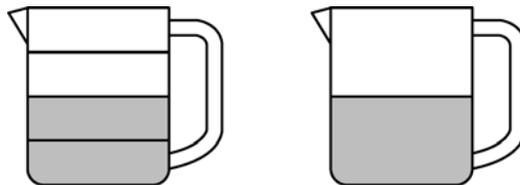
- A** Bill saved the most.
- B** Gary saved more than Steve.
- C** Bill saved fewer pennies than Steve.
- D** Steve saved the least amount of pennies.

- 60 The addresses of the houses on Lake Street follow a skip counting pattern, as shown below.



What is the address of the house with the question mark?

- A 301 Lake Street
  - B 302 Lake Street
  - C 303 Lake Street
  - D 304 Lake Street
- 61 The pictures show equal fractions. Which equation is shown by these pictures?



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

62 Derek is pulling weeds from his garden. The garden has 6 equal rows of plants. Derek has pulled the weeds from 3 of the rows. Which equation shows how many rows Derek has finished?

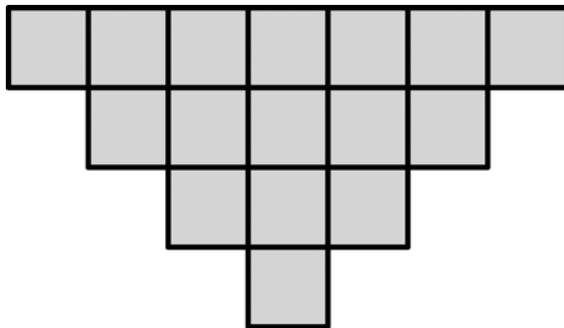
A  $\frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{3}{6}$

B  $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{3}{3}$

C  $\frac{1}{9} + \frac{1}{9} + \frac{1}{9} = \frac{3}{9}$

D  $\frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{3}{18}$

63 What is the area of the game board?



A 1 square unit

B 4 square units

C 9 square units

D 16 square units

64 Carrie and her friends are running in a race. Which unit can be used to measure the length of the race?

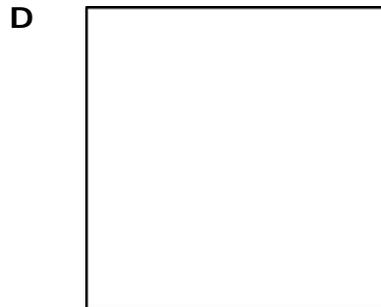
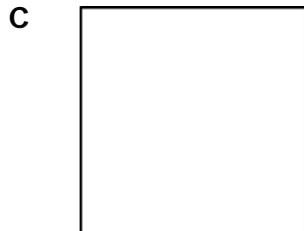
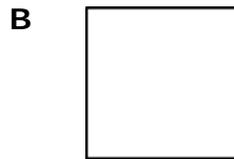
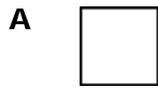
A square feet

B square meters

C liters

D meters

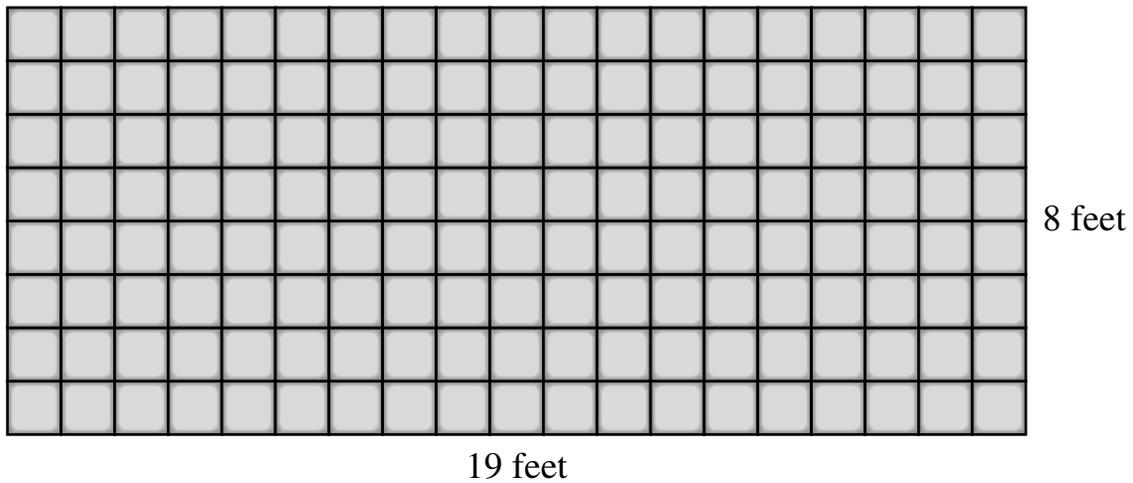
65 Which of these figures is *closest* to 1 square centimeter in area?



66 India is 3 feet, 5 inches tall. Her mother is 5 feet, 7 inches tall. How much taller is India's mother than India?

- A 2 feet, 2 inches
- B 2 feet, 12 inches
- C 8 feet, 12 inches
- D 9 feet

67 What is the perimeter of Mrs. Johnson’s kitchen floor?

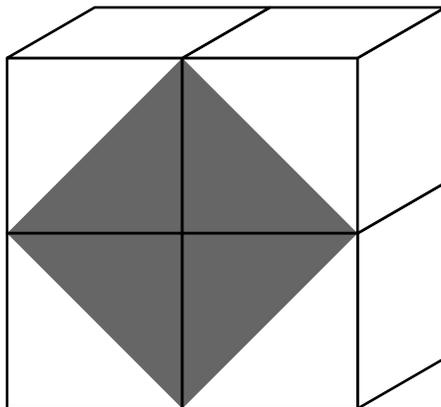


- A 27 feet
- B 54 feet
- C 89 feet
- D 152 feet

68 Justin is drawing a map of the United States. Which of these is *best* for showing a city on his map?

- A line
- B point
- C line segment
- D perpendicular lines

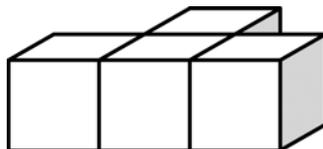
69 Look at the four blocks stacked below.



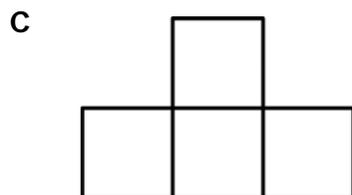
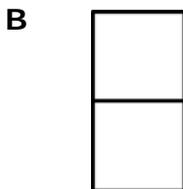
What shape is formed by the shaded parts of the blocks?

- A a triangle
- B a square
- C a pentagon
- D a hexagon

70 Look at the figure below.



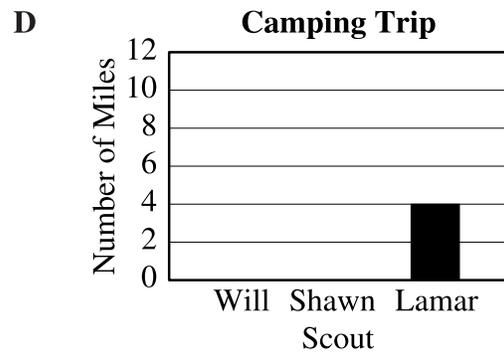
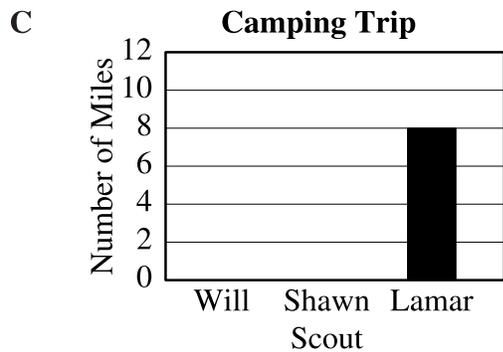
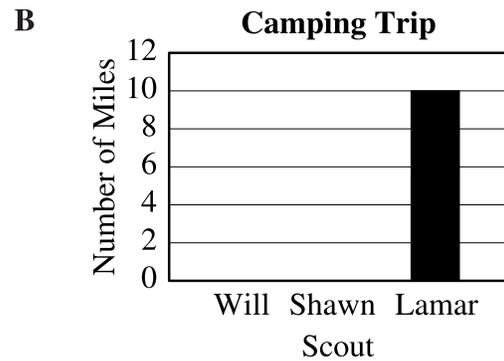
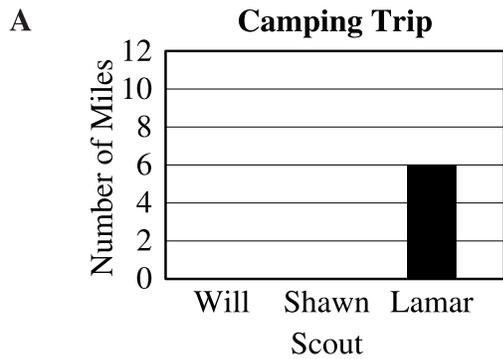
What does the top view of this figure look like?



71 Some scouts made a table to show the number of miles they hiked while on a camping trip.

Scout	Number of Miles
Will	10
Shawn	6
Lamar	8

Which bar correctly shows the number of miles Lamar hiked?



72 What number completes the number sentence below?

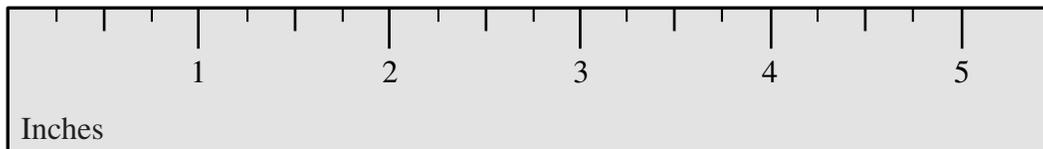
$$3 \times \square = 12$$

- A 3
- B 4
- C 5
- D 6

73 Mark has 9 toy cars and 29 stickers to put on the cars. He wants to put the *same* number of stickers on each car. He knows that  $29 \div 9 = 3 \text{ R}2$ . What does R2 represent?

- A the number of stickers Mark will put on each car
- B the number of cars that will not have stickers
- C the number of stickers Mark will have left over
- D the number of extra stickers Mark will need

74 Lupe is measuring an ant for science class. How long is the ant?



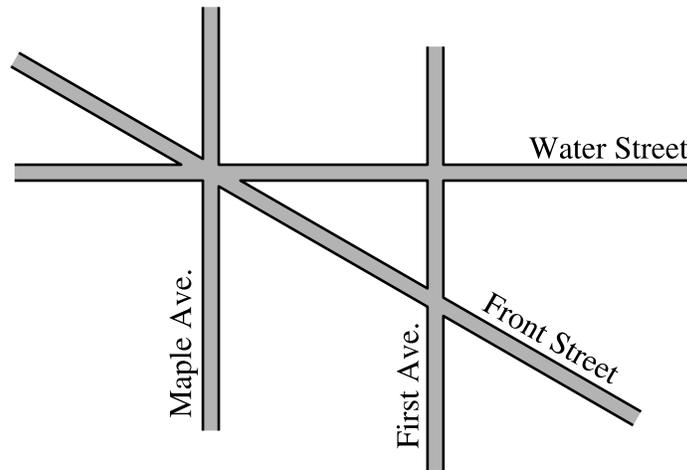
- A  $\frac{1}{4}$  inch
- B  $\frac{3}{8}$  inches
- C  $\frac{1}{2}$  inch
- D  $\frac{5}{8}$  inches

- 75 Use your ruler to measure the perimeter of the gum wrapper, in cm. What is the perimeter?



- A 28 centimeters  
B 34 centimeters  
C 40 centimeters  
D 70 centimeters
- 76 A baker puts three ingredients into a large mixing bowl. The weights of the ingredients are 3 pounds, 4 ounces; 1 pound, 1 ounce; and 5 pounds, 7 ounces. What is the total weight of the ingredients?
- A 4 pounds, 5 ounces  
B 6 pounds, 8 ounces  
C 8 pounds, 11 ounces  
D 9 pounds, 12 ounces
- 77 Which letter has perpendicular lines?
- A M  
B Y  
C H  
D Z

78 Which two roads on the following map appear to be parallel?



- A Maple Ave. and Water St.
- B First Ave. and Front St.
- C Water St. and Front St.
- D First Ave. and Maple Ave.



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Scoring Key

Part 1:

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

Part 2:

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

Continued on the next page.

Part 3:

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

Part 4:

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