VIRGINIA
STANDARDS OF LEARNING ASSESSMENTS

Spring 2004 Released Test

GRADE 8
MATHEMATICS
CORE 1

Property of the Virginia Department of Education

Mathematics

DIRECTIONS
Read and solve each question. Then mark the space in the answer booklet for the best answer.

SAMPLE

Vicki had $228 in her checking account. She used $37 to buy a birthday gift for her grandmother. After that, how much did she have left in her checking account?
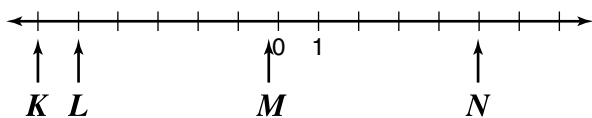
A $211
B $191
C $181
D $164

1 Which is equivalent to the following?

$$7 \cdot 3 + 4 \cdot 6$$

A $7 \cdot 3 + 6 \cdot 4$
B $7 \cdot 4 + 3 \cdot 6$
C $25 \cdot 6$
D $7 \cdot 42$

2 Which arrow shows the location of $^-5$ on the number line?

F K
G L
H M
J N

3 Which of the following is a true statement?

A $\dfrac{2}{5} = 0.40 = 4\%$

B $\dfrac{2}{5} < 0.40 < 4\%$

C $\dfrac{2}{5} = 0.40 = 40\%$

D $\dfrac{2}{5} < 0.40 < 40\%$

4 Which of the following real numbers is *not* a rational number?

F $\sqrt{21}$

G $3\dfrac{5}{8}$

H 2.41414

J $^-13$

5 Look at the set shown below.

$\{2a,\ 3a,\ 4a\}$

If a is a prime number, how many members of the set are also prime?

A 0
B 1
C 2
D 3

GO ON

6 Which is equivalent to $13 - 3^3$?

   F   7

   G   4

   H $^-10$

   J $^-14$

7 $A = \{2, 3, 5, 7, 11, 19, 23, 29\}$

Which of the following is a true statement concerning A?

   A   All numbers in A are odd.

   B   All numbers in A are prime.

   C   All numbers in A are even.

   D   All numbers in A are composites.

8 What is the value of $(12 - 8)^2 + 21 - 4$?

   F   1

   G   3

   H   33

   J   1,089

9 A weather forecaster checked and emptied a rain gauge six times one day. The measurements in inches were 0.243, 0.595, 0.903, 0.756, 0.398, and 0.112. Which is the best estimate of the total rainfall that day?

   A   2.0 in.

   B   2.5 in.

   C   3.0 in.

   D   3.5 in.

10 What is the value of $6n(n - 1) + 4$, when $n = 3$?

   F   44

   G   40

   H   36

   J   19

11 Which of the following is *not* a perfect square?

   A   49

   B   64

   C   81

   D   99

12 A flight engineer for an airline flies an average of 2,923 miles per week. Which is the *best* estimate of the number of miles she flies in 3 years?

   F   150,000

   G   300,000

   H   450,000

   J   600,000

13 For large parties, a restaurant adds a 15% service charge to the bill. How much would be added to a bill of $638.40?

   A $27.68

   B $63.84

   C $95.76

   D $150.00

GO ON

14 On a map, the distance between Milvale and Dracut is $1\frac{1}{4}$ inches. If the map uses a scale of $\frac{1}{4}$ inch represents 1 mile, what is the actual distance in miles from Milvale to Dracut?

F 2

G 3

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

J 5

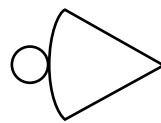**15** Which of the following best represents $\sqrt{39}$? A number between —
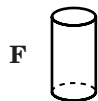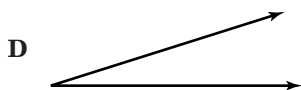
A 3 and 4
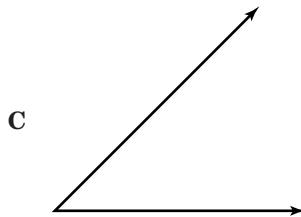**B** 6 and 7
C 7 and 8
D 8 and 10
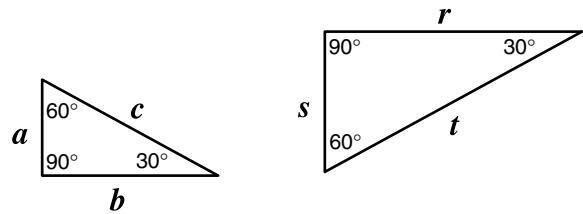
16 This net represents the surface area of a solid figure.

Which is a drawing of the figure?

F

G

H

J

GO ON

17 Which of the following measures closest to 45°?

A

B

C

D
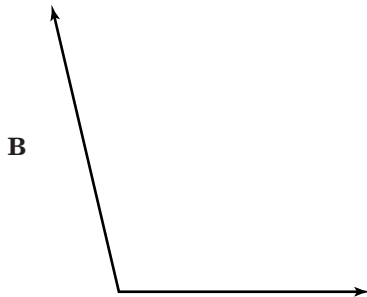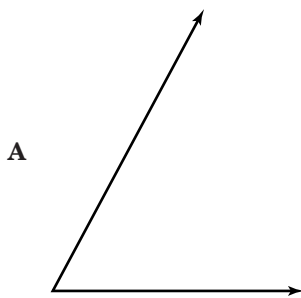
18 This is a pair of similar triangles.

Which of the following proportions is true for these triangles?

F $\dfrac{a}{s} = \dfrac{c}{t}$

G $\dfrac{a}{s} = \dfrac{b}{t}$

H $\dfrac{a}{s} = \dfrac{c}{r}$

J $\dfrac{a}{s} = \dfrac{s}{b}$

19 Which is *closest* to the circumference of a circle with a radius of 9 inches?

A 28.26 in.
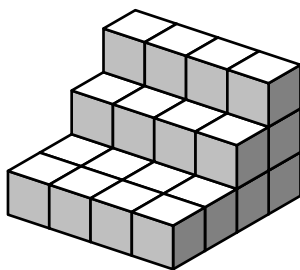B 56.52 in.
C 63.59 in.
D 81.31 in.

20 A quart of milk is closest to —

F a cup of milk
G a milliliter of milk
H a liter of milk
J a gallon of milk

GO ON

21 Marta painted an 18-foot by 12-foot rectangular wall. What is the area of the wall she painted?

A 423 sq ft
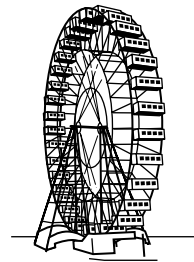
B 216 sq ft

C 60 sq ft

D 30 sq ft

22 This solid is composed of cubes, all of which are the same size.

Using an edge of a cube as one unit, which could be the volume of the figure?

F 28 cubic units

G 24 cubic units

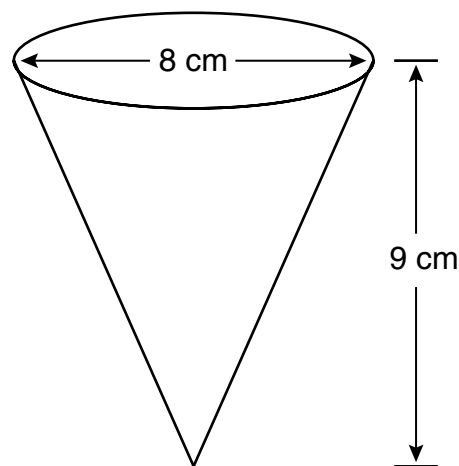H 20 cubic units

J 16 cubic units

23 The original Ferris wheel introduced at the 1893 World's Fair in Chicago had a diameter of 250 feet.

Which is closest to the distance a person who rode this wheel traveled in one complete revolution?

A 393 ft

B 785 ft

C 1,570 ft

D 49,063 ft

24

Which is closest to the volume of this circular cone?

F 150.8 cm^3

G 452.4 cm^3

H 603.2 cm^3

J 1,809.6 cm^3

GO ON

25 Which list gives the plane figures in order by the number of sides, starting with the fewest number of sides?

A Octagon, nonagon, heptagon, pentagon

B Pentagon, octagon, heptagon, nonagon

C Nonagon, octagon, heptagon, pentagon
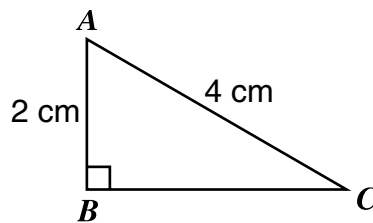
D Pentagon, heptagon, octagon, nonagon

26
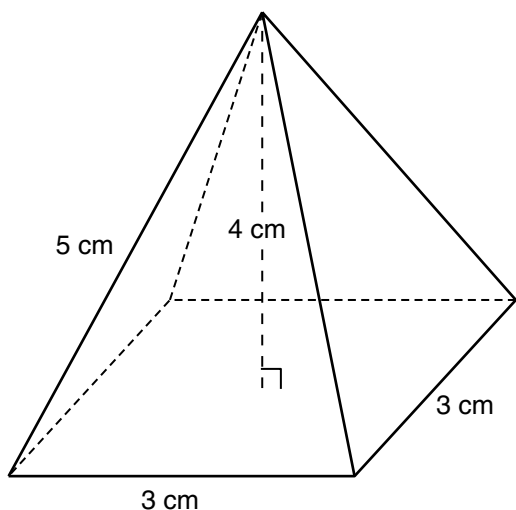
What is the volume of the square-based pyramid shown above?

F 9 cm^3

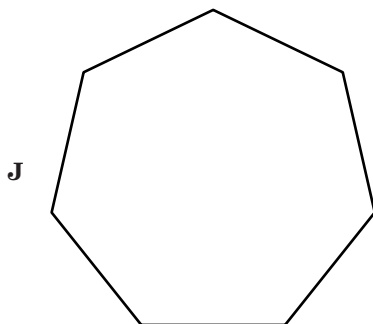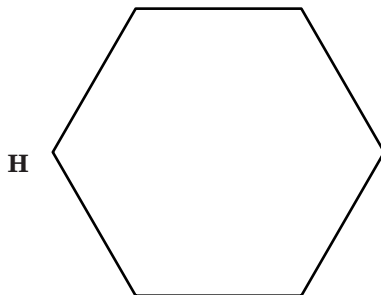**G** 12 cm^3

H 24 cm^3

J 36 cm^3

27

What is the length of $\overline{BC}$?

A 2 cm

B 5 cm

C $\sqrt{12}$ cm

D $\sqrt{20}$ cm

28 Which of the following is a heptagon?

F

G

H

J
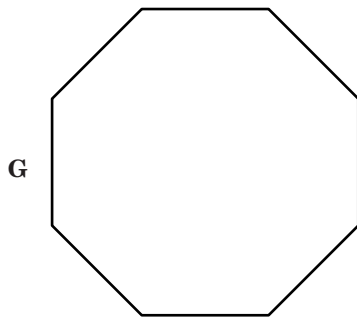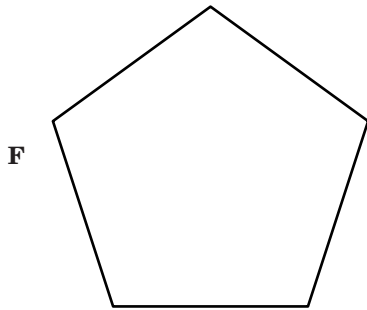
29
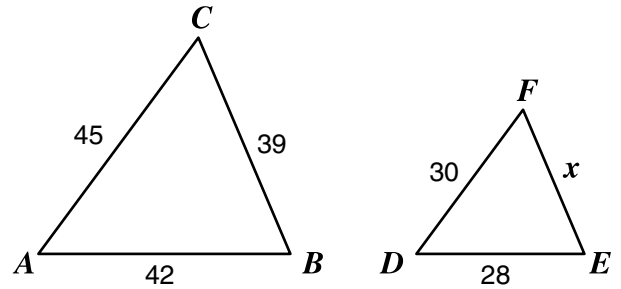
What value of x would make $\triangle ABC$ similar to $\triangle DEF$?

A   26

B   29

C   31

D   32

30 In the diagram below, lines l and p intersect.

If the measure of $\angle a$ is 109°, what is the measure of $\angle b$?

F   109°

G   100°

H   71°

J   19°

GO ON

31 In a bag of candies there are 13 red candies, 13 green candies, 13 yellow candies, and 13 blue candies. If you choose 1 candy from the bag, what is the probability the candy will *not* be blue?
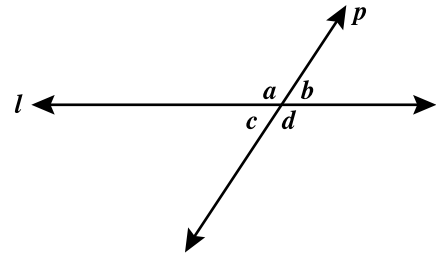
A $\frac{1}{4}$

B $\frac{1}{2}$

C $\frac{2}{3}$

D $\frac{3}{4}$

32 The list shows the scores made by each member of Jaime's discussion group on the last test.

71 80 62 93 68 87 73 78

Which stem-and-leaf plot correctly displays the information?

F

Stem	Leaf
6	2, 8
7	1, 3, 8
8	0, 7
9	3

G

Stem	Leaf
6	2, 8
7	1, 3, 8
8	7
9	3

H

Stem	Leaf
6	2
7	3
8	2
9	1

J

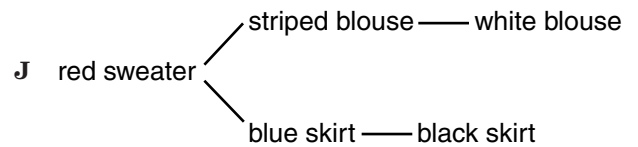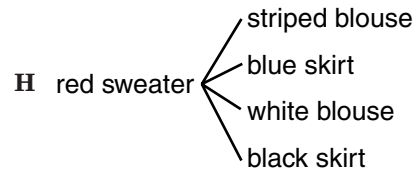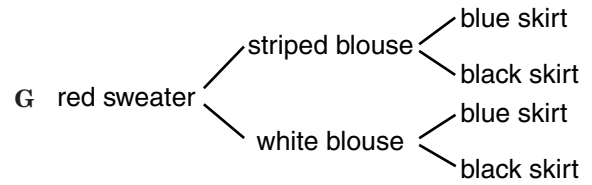| Stem	Leaf
6	1, 0
7	1, 2
8	7
9	3

33

Lunch Sales
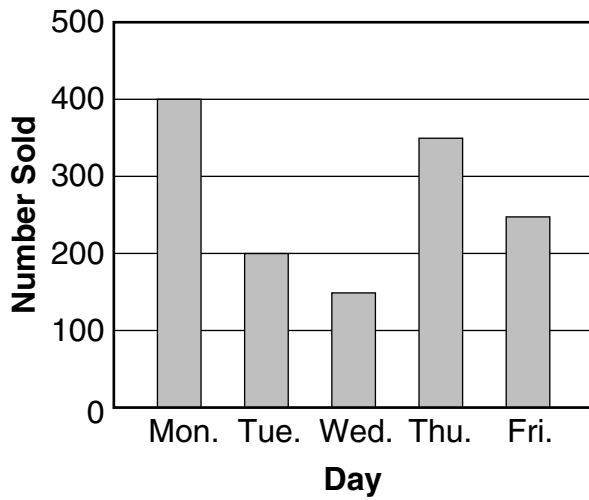
What was the daily average (mean) number of lunches sold during the week?

A 225
B 250
C 270
D 290

34 For a trip, Tyler packed one red sweater, one striped blouse, one white blouse, one blue skirt, and one black skirt. Which shows all the possible ways that she could combine one sweater, one blouse, and one skirt?

F red sweater
striped blouse —— blue skirt
white blouse —— black skirt

G red sweater
striped blouse
blue skirt
black skirt
white blouse
blue skirt
black skirt

H red sweater
striped blouse
blue skirt
white blouse
black skirt

J red sweater
striped blouse —— white blouse
blue skirt —— black skirt

GO ON
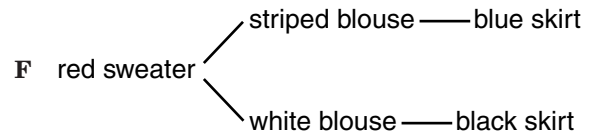
35 Cathy and Terry participated in a mathematics competition at school. The table shows how they placed in each of the eight categories of the competition.

Category

	S	T	U	V	W	X	Y	Z
Cathy	1st	2nd	3rd	1st	2nd	1st	2nd	2nd
Terry	3rd	1st	1st	2nd	3rd	2nd	1st	1st

**Which matrix *best* summarizes the results for Cathy and Terry?**

A
$$\begin{array}{c} \\ \text{Cathy} \\ \text{Terry} \end{array} \begin{array}{ccc} \text{1st} & \text{2nd} & \text{3rd} \\ \end{array}$$
$$\text{A} \quad \begin{array}{c} \text{Cathy} \\ \text{Terry} \end{array} \begin{bmatrix} 3 & 4 & 1 \\ 4 & 2 & 2 \end{bmatrix}$$

$$\text{B} \quad \begin{array}{c} \text{Cathy} \\ \text{Terry} \end{array} \begin{bmatrix} 4 & 2 & 2 \\ 3 & 4 & 1 \end{bmatrix}$$
(1st 2nd 3rd)

$$\text{C} \quad \begin{array}{c} \text{Cathy} \\ \text{Terry} \end{array} \begin{bmatrix} 4 & 2 & 1 \\ 3 & 4 & 2 \end{bmatrix}$$
(1st 2nd 3rd)

$$\text{D} \quad \begin{array}{c} \text{Cathy} \\ \text{Terry} \end{array} \begin{bmatrix} 3 & 4 & 2 \\ 4 & 2 & 1 \end{bmatrix}$$
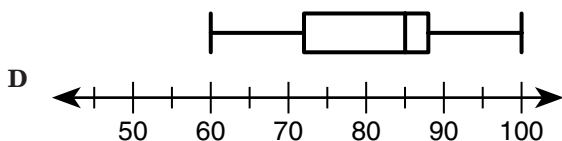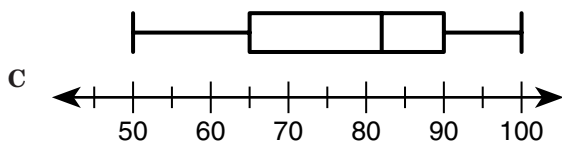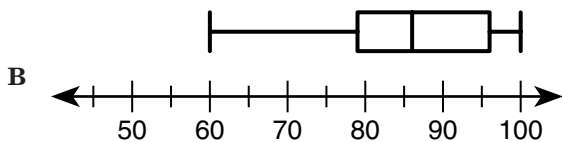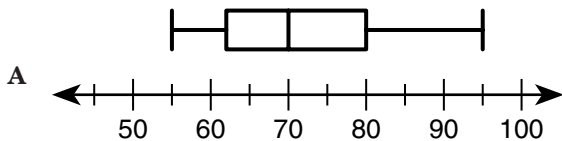(1st 2nd 3rd)

36 Which scattergram shows the relationship between the amount of gasoline in an automobile's tank and the distance traveled since the last fill-up?
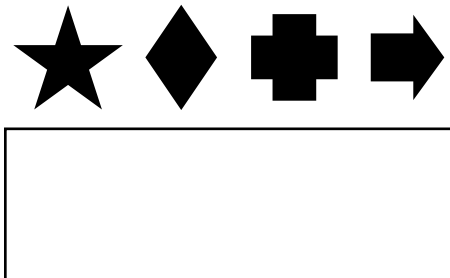
F

G

H

J
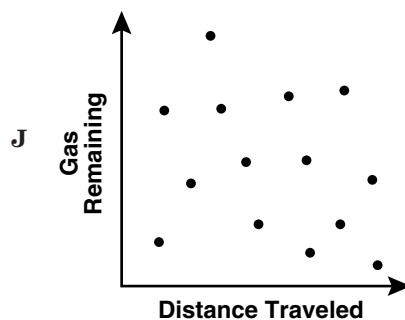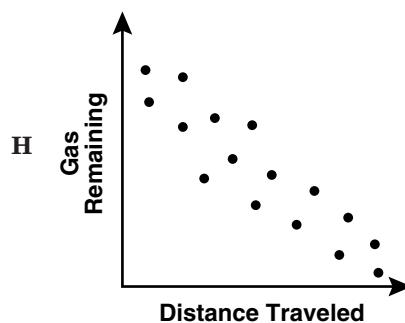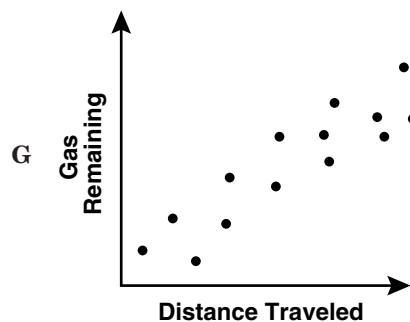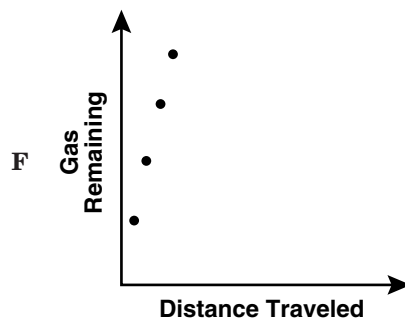
37 Nicole listed her homework scores from her mathematics class.

100, 97, 95, 80, 88, 84, 96, 60, 78, 83

Which box-and-whisker plot correctly displays the information?

A

B

C

D

38 How many different ways could Lisa arrange these four stickers in this rectangle?

F 4

G 8

H 12

J 24

39 This shows all the different ways a pair of number cubes can land in a game Robbie is playing.
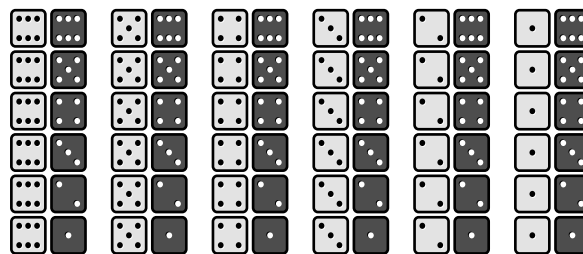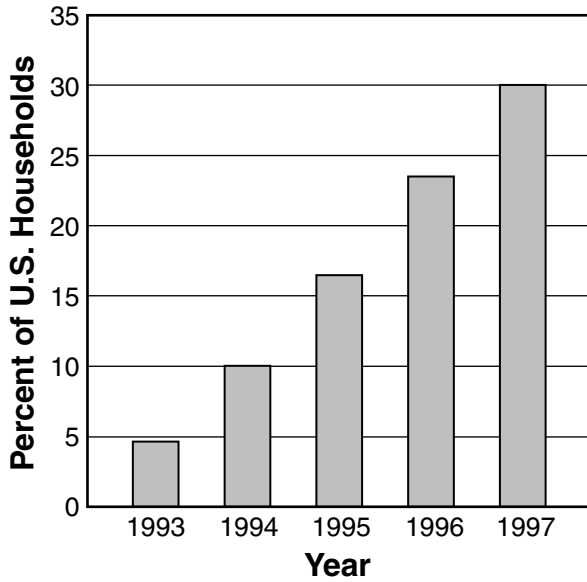

To win on his next turn, he needs to roll an 8. What is the probability that Robbie will win on his next turn?

A $\dfrac{5}{36}$

B $\dfrac{4}{72}$

C $\dfrac{3}{36}$

D $\dfrac{5}{35}$

GO ON

40

U.S. Households With Computers With Installed CD-ROM Drives, 1993-97

According to the data in the graph, which would be the most reasonable prediction for the percent of households with CD-ROMs in their computers in 1998?

F   24%

G   36%

H   40%

J   44%

41   The spinner below is used in a game.
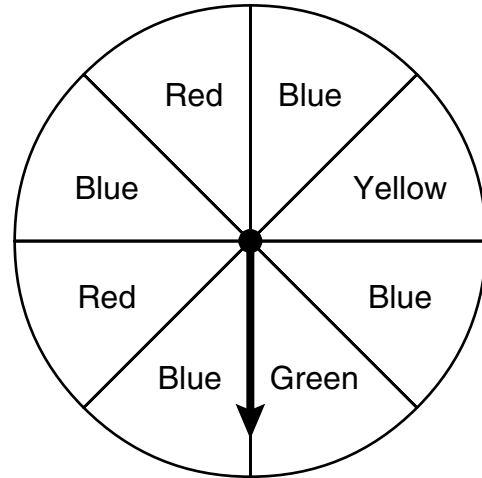
In a single spin, what is the probability of the arrow landing on a Green or Blue space?

A $\dfrac{1}{8}$

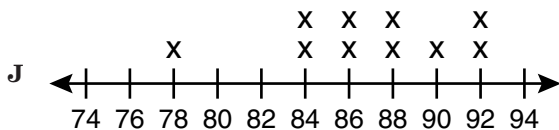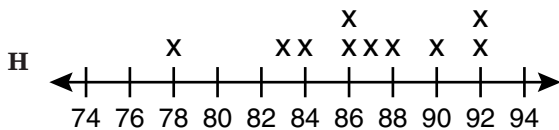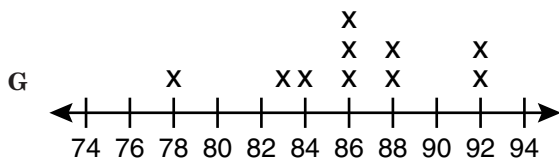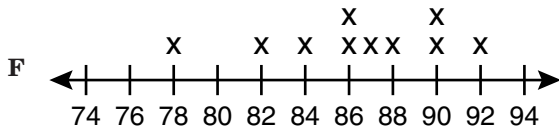B $\dfrac{1}{4}$

C $\dfrac{1}{2}$

D $\dfrac{5}{8}$

42 Sam listed his scores from history class.

84, 86, 83, 78, 92, 87, 92, 90, 88, 86

Which line plot correctly displays his scores?

```
                    X        X
        X       X X  X X X   X   X
F   ←+—+—+—+—+—+—+—+—+—+—+—+—+—+—+→
    74  76  78  80  82  84  86  88  90  92  94
```

```
                 X
                 X   X       X
        X        X X X   X   X
G   ←+—+—+—+—+—+—+—+—+—+—+—+—+—+—+→
    74  76  78  80  82  84  86  88  90  92  94
```

```
                 X           X
        X       X X X X X X X X
H   ←+—+—+—+—+—+—+—+—+—+—+—+—+—+—+→
    74  76  78  80  82  84  86  88  90  92  94
```

```
              X X X       X
        X     X X X X X   X
J   ←+—+—+—+—+—+—+—+—+—+—+—+—+—+—+→
    74  76  78  80  82  84  86  88  90  92  94
```

43 A car-rental agency charges $38 per day plus $0.21 for each mile driven. Sandra paid $88.40 for renting a car from them for one day. Which of the following could be used to find the number of miles she drove that day?

A $0.21x + 38 = 88.4$

B $0.21x = 88.4$

C $38x = 0.21(88.4)$

D $38x + 0.21 = 88.4$

44 What value for t makes this equation true?

$$\frac{1}{2}(t + 7) = 48$$

F 17

G 31

H 89

J 103

45

n	−3	−2	−1	0	1	2
3^n	$\frac{1}{27}$	?	$\frac{1}{3}$	1	3	9

Which number replaces the "?" in the table?

A $\dfrac{1}{81}$

B $\dfrac{1}{9}$

C ⁻1

D ⁻9

GO ON

46 Ron wanted to find a rule for finding the terms in this sequence of numbers.

1   2   6   24   . . .

He rewrote the first four terms this way.

$1 \quad 1 \cdot 2 \quad 1 \cdot 2 \cdot 3 \quad 1 \cdot 2 \cdot 3 \cdot 4$

If Ron continues to write terms this way, what will be the sixth term in the sequence?

F 216
G 480
H 600
J 720

47 Jeffrey's dogs ate 42 pounds of food during July. At that rate, which is *closest* to the number of days a 100-pound bag of dog food would last?

A 3
B 74
C 135
D 140

48 What is the solution to $\frac{1}{2}x + 3 = 7$?

F 2
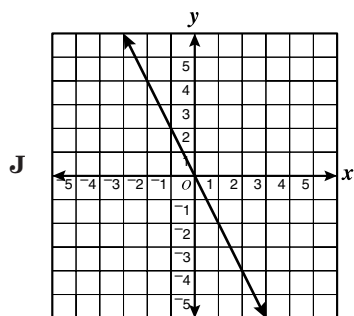G 4
H 5
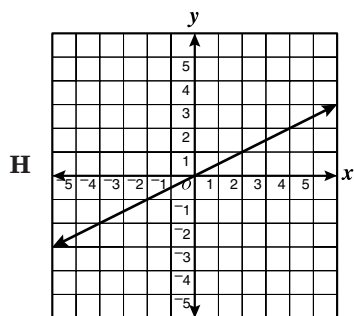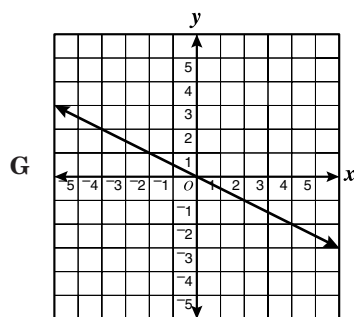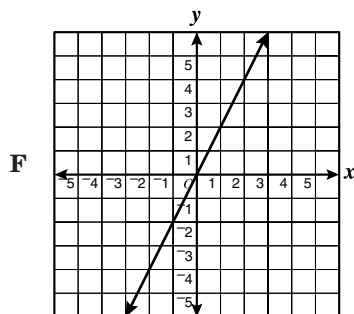J 8

49 Don is solving the sentence below for x.

$$5x - 8 = 0$$

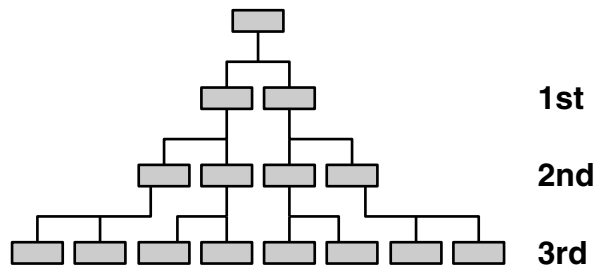Which of the following is equivalent to this sentence?

A $x - 8 = \dfrac{1}{5}$

B $x - 8 = {}^-5$

C $5x = 8$

D $5x = {}^-8$

50

x	y
−4	−2
0	0
2	1

Which is a graph of a line that contains all the points in this table of ordered pairs?

F

G

H

J

51 Laureen is studying her genealogy and has started a family tree of ancestors from which she is directly descended.

1st

2nd

3rd

Laureen has been able to identify direct ancestors for six previous generations. How many direct ancestors does she have in the 6th generation before hers?

A 12

B 16

C 32

D 64

GO ON

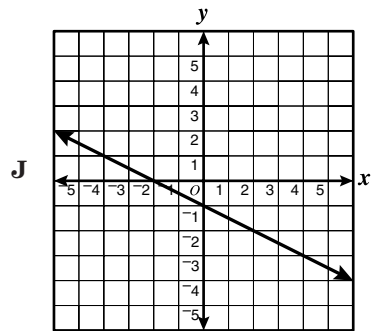**52** Part of the statement below is circled.

$$\textcircled{3}x + 5 = 21$$

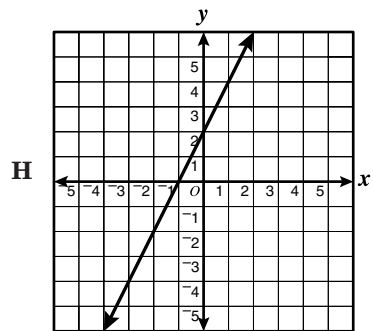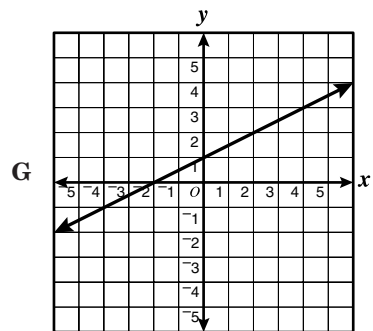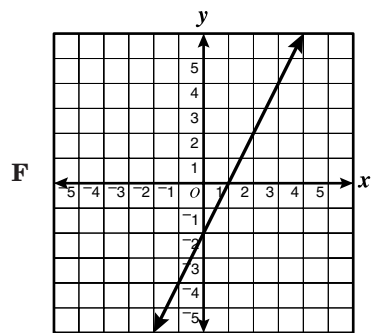Which *best* describes the circled part of the statement?

F Coefficient

G Variable

H Term

J Expression

53 Laurie used 5 yards of fabric to make 2 costumes for the school play. How many yards of fabric would she need to make 20 more of these costumes?

A 8

B 27

C 40

D 50

54 Which graph corresponds to $y = 2x - 2$?

F

G

H

J

GO ON

55 Which means "the sum of 8 and 4 times a number is 36"?

- **A** $8x + 4 = 36$
- **B** $4x + 8 = 36$
- **C** $4(x + 8) = 36$
- **D** $4x = 36 + 8$

56 A parking garage charges $2.00 for the first hour and $0.80 for each additional hour. Which of the following could be used to find *C*, the cost in dollars of parking *h* hours?

- **F** $C = 0.80(h - 1) + 2$
- **G** $C = 2(h - 1) + 0.80$
- **H** $C = 2.80(h - 1)$
- **J** $C = 3.60(h - 1)$

57 Mr. Rosenthal purchased dining room furniture on a no-interest, 24 months-to-pay sale. The total cost of the furniture was $1,892 including sales tax. He planned to make a deposit of $350 and used

$$1,892 = 350 + 24x$$

to determine the amount of each monthly payment, *x*. How much should Mr. Rosenthal pay each month?

- **A** $64.25
- **B** $64.70
- **C** $93.42
- **D** $643.50

58

x	y
-2	-1
0	3
3	9
5	13
10	23

Which is the function described by the table of ordered pairs?

- **F** $y = x + 1$
- **G** $y = 3x$
- **H** $y = 2x + 3$
- **J** $y = x + 13$

59 A taxi charges $2.00 for up to and including the first mile, and $1.60 for each mile thereafter. What would the taxi charge for a trip of 4 miles?

- **A** $6.40
- **B** $6.80
- **C** $8.00
- **D** $8.40

60 A bottle of liquid dog vitamins indicates that a dog gets 2 drops of vitamins each day for every 5 pounds of body weight. How many drops of vitamins should a 20-pound dog get each day?

- **F** 2
- **G** 4
- **H** 8
- **J** 22

STOP