

**VIRGINIA
STANDARDS OF LEARNING ASSESSMENTS**

Spring 2003 Released Test

**GRADE 8
MATHEMATICS**

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Mathematics

DIRECTIONS

Read and solve each question.

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 of the following is *not* a prime number?

- A 13
- B 17
- C 33
- D 47

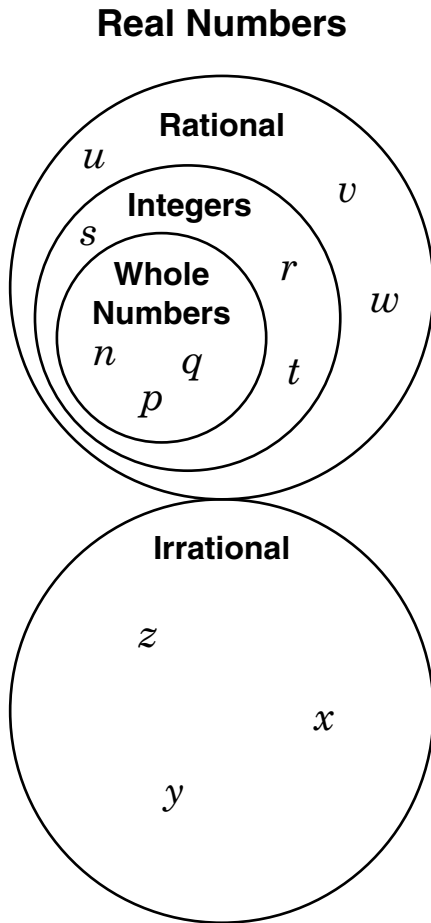
2 On a certain map, $\frac{1}{2}$ inch represents 75 miles. If the distance between two towns on this map is $2\frac{1}{4}$ inches, what is the actual distance between the two towns?

- F 15 mi
- G $16\frac{2}{3}$ mi
- H 337.5 mi
- J 375 mi

3 Which is ordered from least to greatest?

- A 0.003, 3%, $\frac{3}{10}$, $3 \cdot 10^1$
- B $3 \cdot 10^1$, 0.003, $\frac{3}{10}$, 3%
- C $\frac{3}{10}$, 3%, 0.003, $3 \cdot 10^1$
- D $3 \cdot 10^1$, 3%, 0.003, $\frac{3}{10}$

- 4 The diagram shows how some of the subsets of the set of real numbers are related. The letters represent members of the sets.



Terrie wants to replace the letters with actual numbers. Which letter could be replaced with -3 ?

- F n
- G r
- H u
- J x

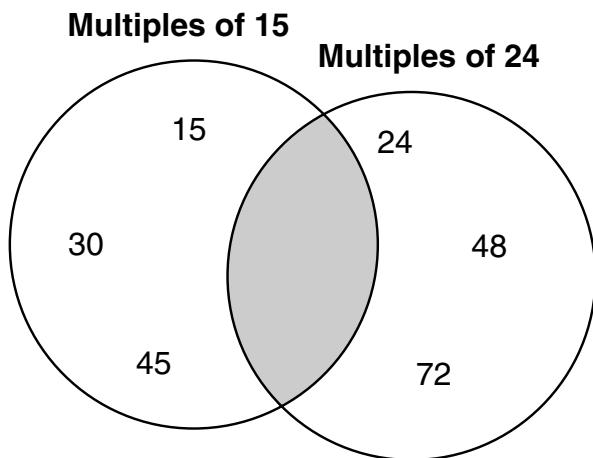
- 5 Which is *not* equivalent to $\frac{20}{3}$?

- A $6\frac{2}{3}$
- B $6.\bar{6}$
- C $66\frac{2}{3}\%$
- D $\frac{40}{6}$

- 6 Peggy is stocking boxes of cereal on a shelf in the supermarket. She has 48 boxes of corn flakes and 72 boxes of bran flakes. The boxes are to be arranged so each row has the same number of boxes and only one kind of cereal. What is the greatest number of boxes that can be in each row?

- F 8
- G 9
- H 12
- J 24

- 7 Sarah is filling numbers in the Venn diagram. No number is to be entered more than once.



What is the least number that can be appropriately placed in the shaded area of the diagram?

- A 360
- B 240
- C 120
- D 60

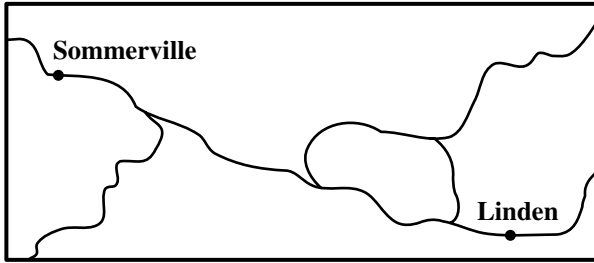
- 8 Which is equivalent to $9 - 2^3$?

- F 343
- G 4
- H 3
- J 1

- 9 As labor costs, an electrician charges \$36.50 per hour for himself, and \$27.50 for his assistant. What would be the total labor cost for a job taking $6\frac{1}{2}$ hours?

- A \$416.00
- B \$384.00
- C \$264.75
- D \$64.00

10



On the map shown, 1 inch represents 50 miles. The distance between Sommerville and Linden is 2.5 inches. What is the actual distance between these towns?

- F 2.5 miles
 - G 20 miles
 - H 52.5 miles
 - J 125 miles
- 11 Marti wants to buy a dress priced at \$89.75. If the sales tax is 8%, what is the total amount she must pay for the dress?
- A \$71.80
 - B \$82.57
 - C \$96.93
 - D \$97.75

- 12 Just before sunrise, the temperature in degrees Fahrenheit was 13 degrees below zero. By 10 a.m. the temperature had risen 19 degrees. Which shows how to find the temperature in degrees Fahrenheit at 10 a.m.?

- F $13 - 19$
- G $13 + 19$
- H $-13 - 19$
- J $-13 + 19$

- 13 What is the value of $x - (3x + 5)$ when $x = -2$?

- A -1
- B 1
- C 5
- D 9

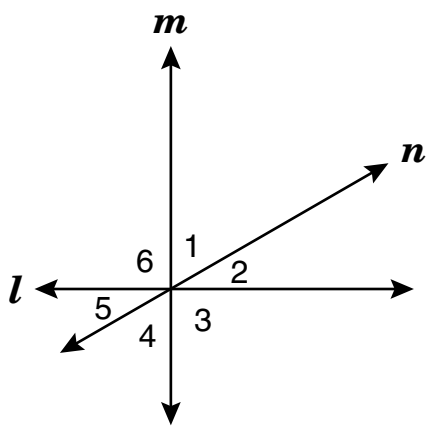
- 14 Between what two consecutive whole numbers does $\sqrt{61}$ lie?

- F 6 and 7
- G 7 and 8
- H 8 and 9
- J 9 and 10

15 $1.2\overline{)2.964}$

- A 0.247
- B 2.47
- C 24.7
- D 247

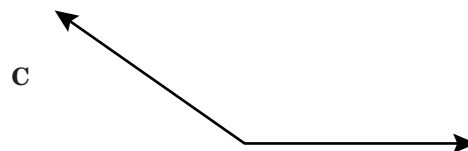
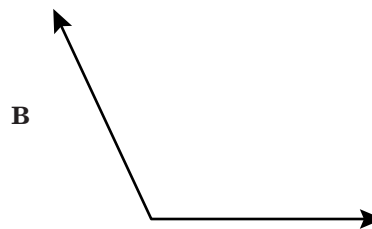
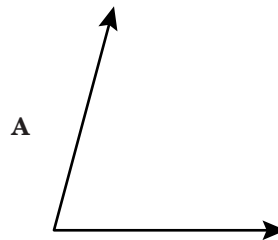
16 Lines l , m , and n intersect at the same point forming the six angles shown. Lines l and m are perpendicular.



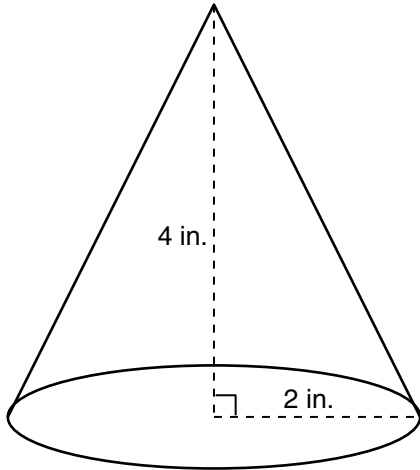
Which angle has the same measure as $\angle 1$?

- F $\angle 2$
- G $\angle 3$
- H $\angle 4$
- J $\angle 5$

17 Which of the following angles measures closest to 170° ?



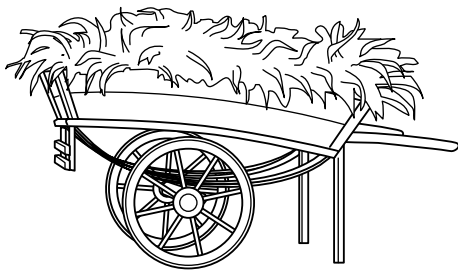
18



Which is closest to the volume of the cone shown above?

- F 16.75 cu in.
- G 20.94 cu in.
- H 43.98 cu in.
- J 67.02 cu in.

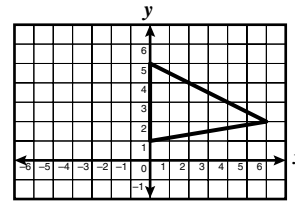
19 The radius of each wheel on this cart is 13 inches.



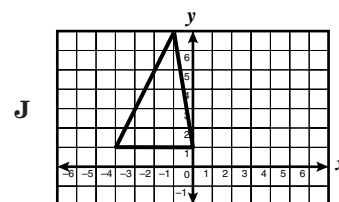
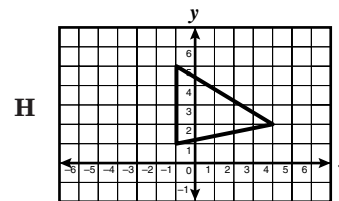
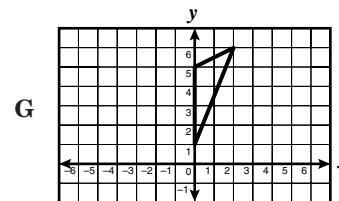
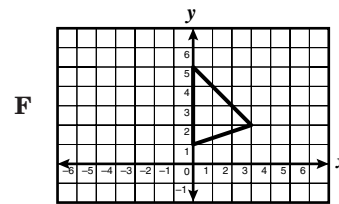
If a steel rim is fitted around the wheel, which is closest to the circumference of the rim?

- A 20.4 in.
- B 40.8 in.
- C 81.6 in.
- D 530.7 in.

20 The diagram below shows a geometric figure on a coordinate plane.



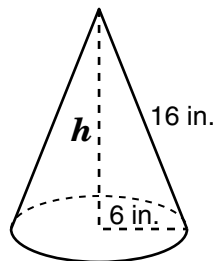
Which of the diagrams below shows a rotation of this geometric figure?



- 21 The measure of the largest angle in an acute triangle is —
- A less than 90°
 - B greater than 90°
 - C equal to the sum of the measures of the other 2 angles
 - D greater than the sum of the measures of the other 2 angles

- 22 LaRue is going to put fertilizer on a rectangular field that measures 124 meters by 234 meters. How many square meters will she have to fertilize?
- F 358 m^2
 - G 716 m^2
 - H $27,776 \text{ m}^2$
 - J $29,016 \text{ m}^2$

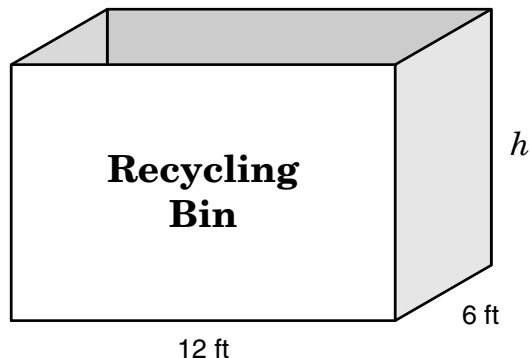
23



Which is closest to the height of a cone that has a slant height of 16 inches and a radius of 6 inches?

- A 10 in.
- B 14.8 in.
- C 20 in.
- D 17.1 in.

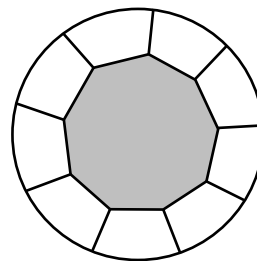
- 24 Thelma and David built a recycling bin with a volume of 576 cubic feet. The bin is a rectangular prism with a base 12 feet long and 6 feet wide.



What is the height, h , of the bin?

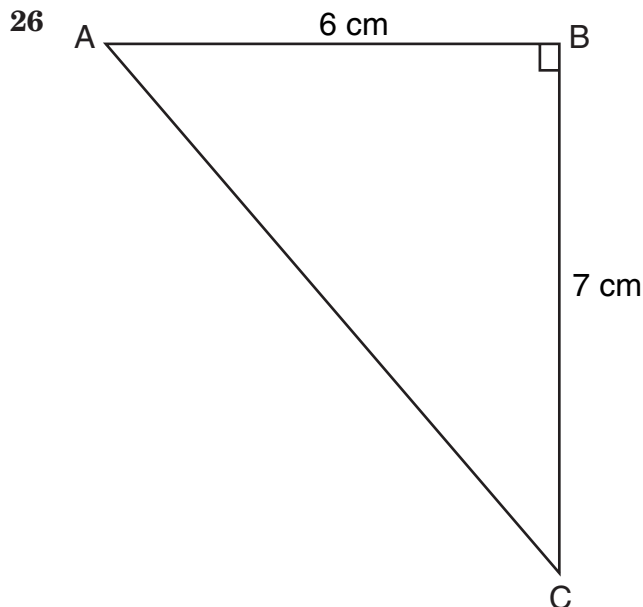
- F 6 ft
- G 7 ft
- H 8 ft
- J 9 ft

- 25 Look at the design below.



Which term identifies the shaded part in the center of the design?

- A Pentagon
- B Heptagon
- C Nonagon
- D Decagon



What is the length of \overline{AC} ?

- F $\sqrt{85}$ cm
- G $\sqrt{13}$ cm
- H 8 cm
- J 10 cm

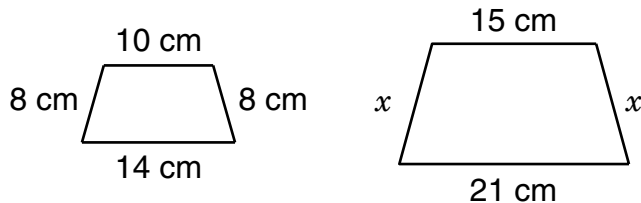
27 Use your inch ruler to help you answer this question. Which is closest to the length of \overline{AB} ?



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

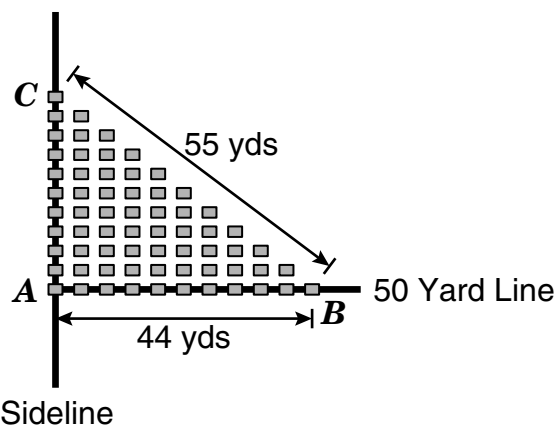
Note that due to varying printer properties, measurement items may not appear in exact proportions.

28 What must the value of x be in order for the figures below to be similar?



- F 16 cm
- G 14 cm
- H 12 cm
- J 10 cm

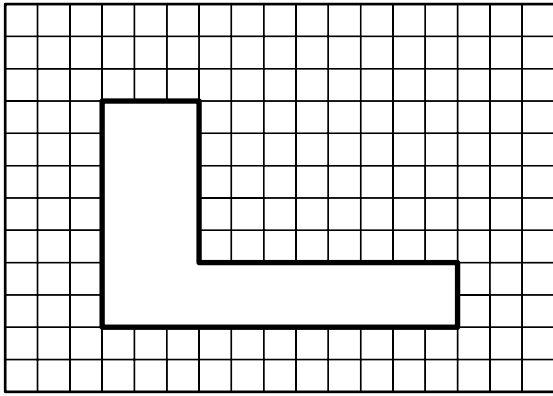
29 Margo is designing a band formation for a halftime ceremony at a football game. This drawing shows where the band members will stand during the ceremony.



How many yards apart are the band members standing at points A and C?

- A 11
- B 33
- C 44
- D 55

30



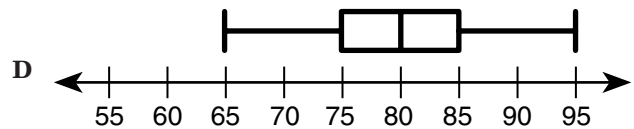
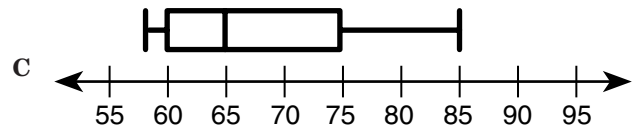
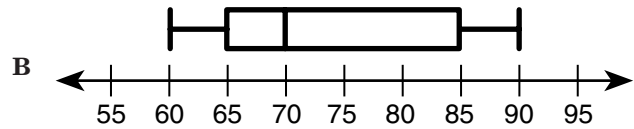
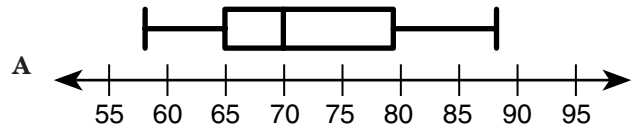
In this scale drawing of a molding, each square represents 1 square inch. What is the area of the molding?

- F 24 sq in.
- G 34 sq in.
- H 35 sq in.
- J 37 sq in.

31 A study was conducted to determine the effectiveness of a speed limit sign. The speeds of cars at the 65 mph sign were:

79 60 70 65 70 85 74 58 71 88 65

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



32 In a random survey, 25 out of 150 people were able to give a correct answer to the question asked. If 500 people are surveyed, about how many would be expected to answer the question correctly?

- F 4
- G 20
- H 83
- J 325

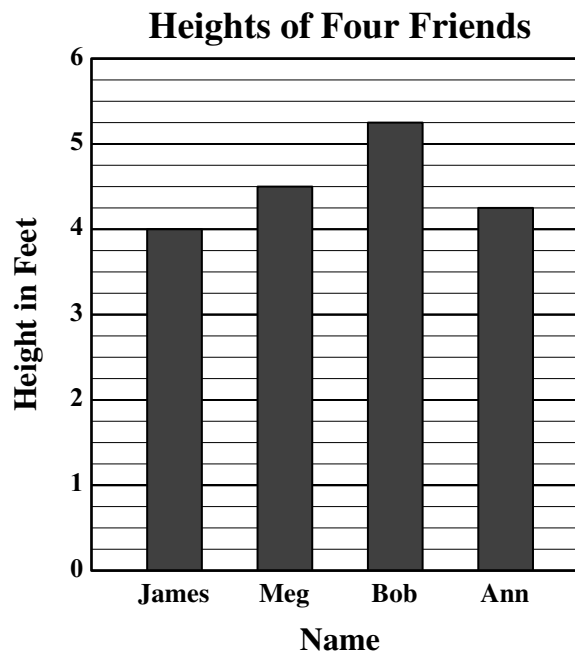
33 The stem-and-leaf plot shows the number of home runs hit per year by the leading hitter of the major leagues over a 10-year period.

Stem	Leaf
3	7, 8, 9
4	0, 4, 8, 8
5	6, 7, 8

What is the mode for the data?

- A 37
- B 44
- C 48
- D 58

34 The graph shows the heights of four friends.



Based on the graph, which statement is *false*?

- F James is 4 feet tall.
- G Bob is 5 feet 3 inches tall.
- H Meg is taller than Ann.
- J Ann is 4 feet 1 inch tall.

- 35 Soccer is the world's most popular sport. The table lists the records of 5 World Cup winners.

Country	Games Won	Games Lost	Ties	Total Points
Argentina	24	15	9	57
Brazil	44	11	11	99
England	18	11	12	48
Italy	31	11	12	74
West Germany	39	14	15	93

What was the median number of total points scored by these teams?

- A 51
- B 74
- C 74.2
- D 99

- 36 Kay, Lil, and May made a table of their history quiz grades during the grading period.

Kay	B	B	C	C	B	A	B	A	C	B	C	B
Lil	C	A	B	C	A	A	C	B	B	B	C	A
May	A	A	A	A	B	A	B	B	A	A	A	B

Which matrix *best* organizes the data?

F

	A	B	C
Kay	2	6	4
Lil	4	4	4
May	8	4	0

G


	A	B	C
Kay	2	6	4
Lil	5	4	3
May	8	4	0

H

	A	B	C
Kay	3	5	4
Lil	4	4	4
May	8	4	0

J

	A	B	C
Kay	2	6	4
Lil	4	4	4
May	8	3	1

ALTON  TIGERS

Starting Lineup

Guard	Hal Conley	65 in.
Guard	Sid Rowley	61 in.
Forward	Jeno Brown	72 in.
Forward	Emmit Cello	72 in.
Center	Raoul Diaz	74 in.

What is the mean height of the players in the starting lineup of the Alton Tigers?

- A 67.4 in.
- B 68.8 in.
- C 72 in.
- D 74 in.

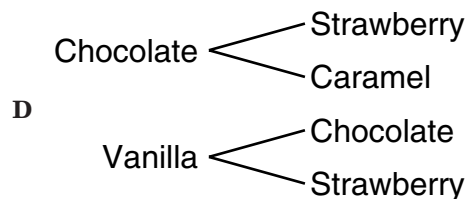
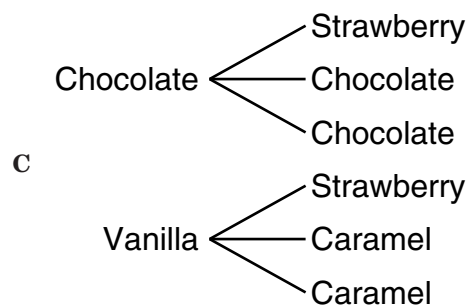
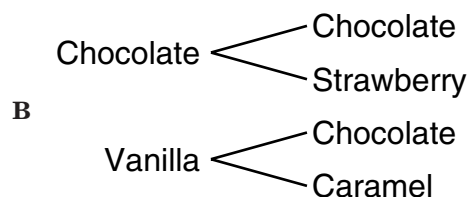
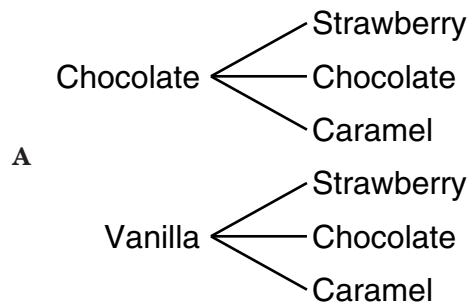
38 These are the sides of a number cube used in a game.



Sam will win the game he is playing if he gets a number less than 3 the next time he rolls the number cube. What is the probability that Sam will win the game on his next roll?

- F $\frac{1}{6}$
- G $\frac{1}{3}$
- H $\frac{1}{2}$
- J $\frac{2}{3}$

39 An ice-cream parlor makes sundaes with chocolate or vanilla ice cream and strawberry, chocolate, or caramel topping. Which tree diagram shows all possible combinations of sundaes with one flavor of ice cream and one topping?



40 During an experiment, Roscoe tossed a fair coin 10 times and got 6 “heads”. What is the probability the coin will land showing heads on Roscoe’s next toss?

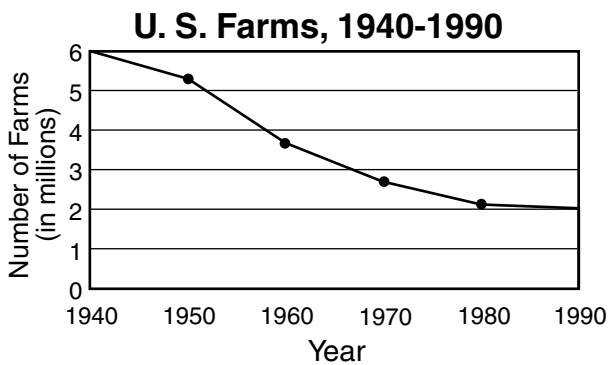
F $\frac{1}{2}$

G $\frac{6}{10}$

H $\frac{4}{6}$

J $\frac{6}{4}$

41



According to the graph, which was most likely the number of farms in 1955?

- A 5,000,000
- B 4,500,000
- C 4,000,000
- D 3,750,000

42 Darrell had biology test scores of 76, 78, 76, 82, 62, and 100.

For this data, which measure is greatest?

- F Mean
- G Median
- H Mode
- J Range

43 A taxi company based its fares on the following chart.

Miles	0.1	0.2	0.3	1.0	3.0
Fare	\$2.05	\$2.10	\$2.15	\$2.50	\$3.50

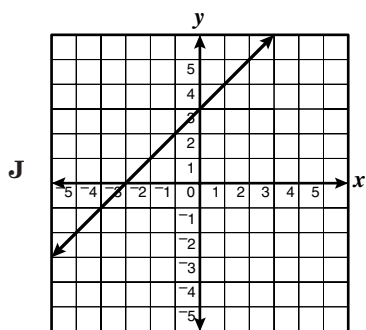
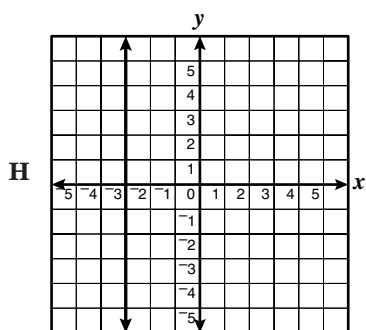
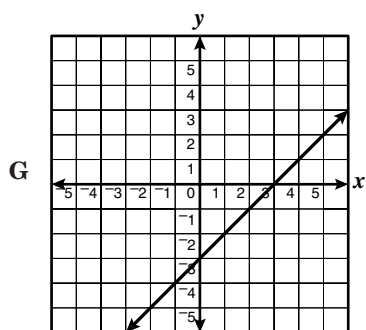
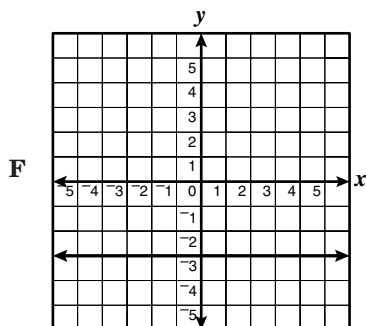
If the pattern continues, what would be the fare for a trip of 6 miles?

- A \$3.00
- B \$5.00
- C \$11.00
- D \$15.00

44

x	y
3	-3
0	-3
-3	-3

If the line containing these points is plotted on a coordinate plane, what should the graph look like?



- 45 Mona's bank charges a \$10 fee per month plus a \$0.12 fee per check. The formula below gives f , the total fee in dollars for a month in which Mona writes n checks.

$$f = 10 + 0.12n$$

How many checks did Mona write during a month in which her total fee was \$12.52?

- A 5
- B 21
- C 124
- D 188

- 46 What value for x makes $x + 2\frac{1}{3} = 4\frac{2}{3}$ true?

- F 2
- G $2\frac{1}{3}$
- H $2\frac{2}{3}$
- J 3

47 Last season, Ellen and Janet together won 32 tennis matches. Ellen won 6 more matches than Janet. How many matches did Ellen win?

- A 13
- B 16
- C 19
- D 25

48

x	y
-3	-7
0	-1
3	5

Which equation is true for all pairs of values in the table?

- F $y = 2x - 1$
- G $y = 2x + 1$
- H $y = x - 4$
- J $y = x + 2$

49 The basketball concession stand sold 327 drinks in two games. Which proportion could be used to make the best estimate for the number of drinks that will be sold for 10 games?

- A $\frac{327}{10} = \frac{2}{x}$
- B $\frac{10}{2} = \frac{327}{x}$
- C $\frac{2}{327} = \frac{x}{10}$
- D $\frac{2}{327} = \frac{10}{x}$

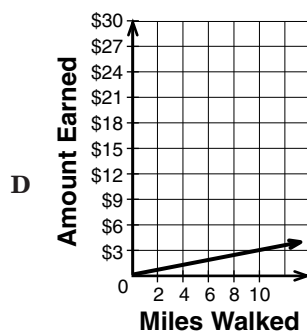
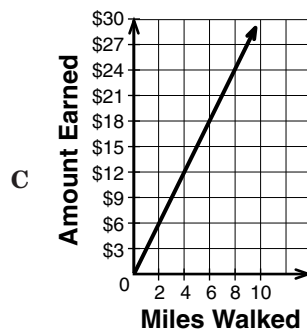
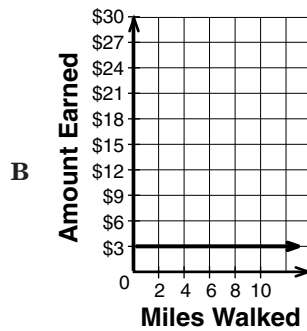
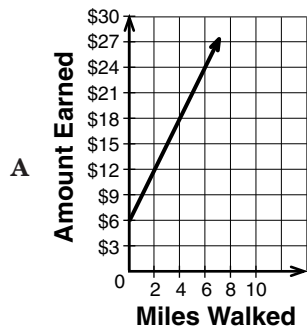
50 Which of the following ordered pairs represents a point in the third quadrant of a coordinate plane?

- F (-6, 4)
- G (-5, -7)
- H (3, -2)
- J (4, 2)

51

Miles Walked	Amount Earned
2	\$6
4	\$12
6	\$18
8	\$24
10	\$30

Which graph best illustrates the relationship shown in this table?



52 What is the solution to

$$3x - 4 = 17?$$

F $4\frac{1}{3}$

G 7

H $18\frac{1}{3}$

J 21

53 The table shows p , the charge in cents, for a long-distance phone call that lasts t minutes.

t	p
1	20
2	28
3	36
4	44

Which describes this relationship?

A $p = 20t + 12$

B $p = 8t + 12$

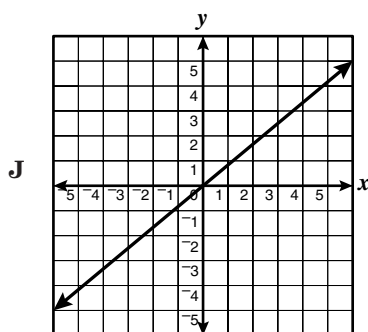
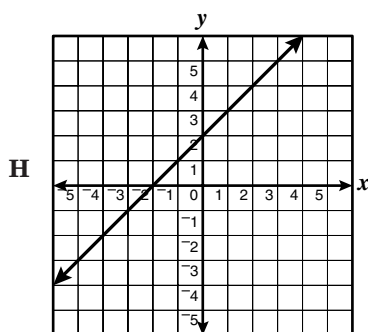
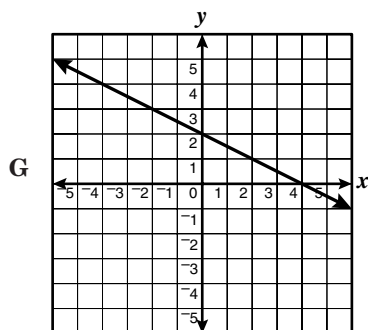
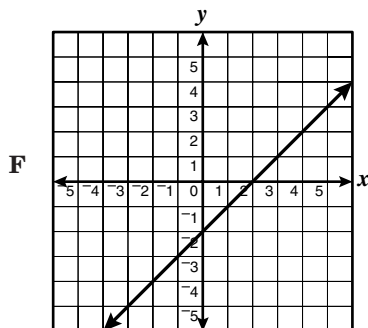
C $p = 11t$

D $p = 20t$

54

x	y
-3	-1
0	2
3	5

Which graph corresponds to this table?



55

n	0	4	6
$2(n+3)$	6	14	?

Which value is missing in the table?

- A 15
- B 18
- C 21
- D 36

56 Part of the statement below is circled.

$$\textcircled{7x + 9} = 45$$

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

- F Coefficient
- G Variable
- H Term
- J Expression

- 57 The table shows the relationship between j , Jerry's age and t , Tara's age.

j (Jerry's Age)	1	2	3	4	5
t (Tara's Age)	7	8	9	10	11

Which of the following describes the relationship?

- A $t = j + 6$
- B $t = 2j + 1$
- C $t = 2j + 2$
- D $t = 6j$

- 58 Which is a solution for

$$5(x - 3) = 15?$$

- F 0
- G $\frac{12}{5}$
- H $\frac{18}{5}$
- J 6

- 59 Mr. Kitran's age is 4 years less than 3 times Henry's age. If Henry is h years old, which of the following represents Mr. Kitran's age?

- A $3h + 4$
- B $3h - 4$
- C $4h + 3$
- D $3(h - 4)$

- 60 At the same time that a 60-foot tall building casts a shadow that is 21.5 feet long, a nearby tree casts a shadow that is 18 feet long. Which measure is closest to the height of the tree?

- F 56.5 ft
- G 50.2 ft
- H 6.5 ft
- J 3.3 ft

Answer Key

Test Sequence	Correct Answer	Reporting Category	Reporting Category Description
1	C	005	Number and Number Sense
2	H	005	Number and Number Sense
3	A	005	Number and Number Sense
4	G	005	Number and Number Sense
5	C	005	Number and Number Sense
6	J	005	Number and Number Sense
7	C	005	Number and Number Sense
8	J	005	Number and Number Sense
9	A	006	Computation and Estimation
10	J	006	Computation and Estimation
11	C	006	Computation and Estimation
12	J	006	Computation and Estimation
13	A	006	Computation and Estimation
14	G	006	Computation and Estimation
15	B	006	Computation and Estimation
16	H	007	Measurement and Geometry
17	D	007	Measurement and Geometry
18	F	007	Measurement and Geometry
19	C	007	Measurement and Geometry
20	J	007	Measurement and Geometry
21	A	007	Measurement and Geometry
22	J	007	Measurement and Geometry
23	B	007	Measurement and Geometry
24	H	007	Measurement and Geometry
25	C	007	Measurement and Geometry
26	F	007	Measurement and Geometry
27	B	007	Measurement and Geometry
28	H	007	Measurement and Geometry
29	B	007	Measurement and Geometry
30	J	007	Measurement and Geometry
31	A	008	Probability and Statistics
32	H	008	Probability and Statistics
33	C	008	Probability and Statistics
34	J	008	Probability and Statistics
35	B	008	Probability and Statistics
36	F	008	Probability and Statistics
37	B	008	Probability and Statistics
38	G	008	Probability and Statistics
39	A	008	Probability and Statistics
40	F	008	Probability and Statistics
41	B	008	Probability and Statistics
42	F	008	Probability and Statistics
43	B	009	Patterns, Functions, and Algebra
44	F	009	Patterns, Functions, and Algebra
45	B	009	Patterns, Functions, and Algebra

Test Sequence	Correct Answer	Reporting Category	Reporting Category Description
46	G	009	Patterns, Functions, and Algebra
47	C	009	Patterns, Functions, and Algebra
48	F	009	Patterns, Functions, and Algebra
49	D	009	Patterns, Functions, and Algebra
50	G	009	Patterns, Functions, and Algebra
51	C	009	Patterns, Functions, and Algebra
52	G	009	Patterns, Functions, and Algebra
53	B	009	Patterns, Functions, and Algebra
54	H	009	Patterns, Functions, and Algebra
55	B	009	Patterns, Functions, and Algebra
56	J	009	Patterns, Functions, and Algebra
57	A	009	Patterns, Functions, and Algebra
58	J	009	Patterns, Functions, and Algebra
59	B	009	Patterns, Functions, and Algebra
60	G	009	Patterns, Functions, and Algebra