VIRGINIA STANDARDS OF LEARNING

Spring 2008 Released Test

GRADE 8 MATHEMATICS

Form M0118, CORE 1

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

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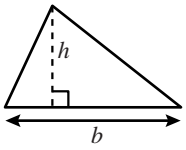
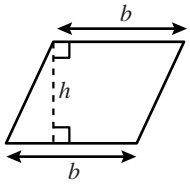
Grade 8 Mathematics Formula Sheet

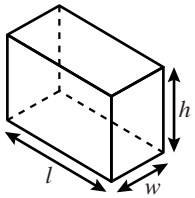
Geometric Formulas



$A = \frac{1}{2}bh$

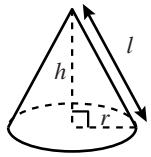


$A = bh$



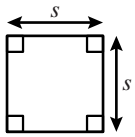
$V = lwh$

$S.A. = 2lw + 2lh + 2wh$



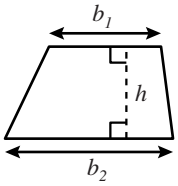
$V = \frac{1}{3}\pi r^2 h$

$S.A. = \pi rl + \pi r^2$

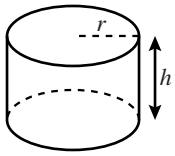


$p = 4s$

$A = s^2$

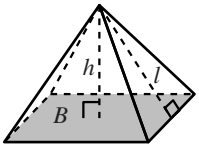


$A = \frac{1}{2}h(b_1 + b_2)$



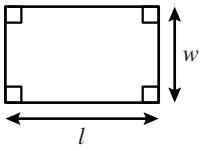
$V = \pi r^2 h$

$S.A. = 2\pi rh + 2\pi r^2$



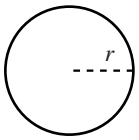
$V = \frac{1}{3}Bh$

$S.A. = \frac{1}{2}lp + B$



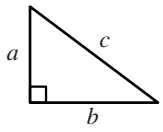
$p = 2l + 2w$

$A = lw$



$C = 2\pi r$

$A = \pi r^2$



$c^2 = a^2 + b^2$

Abbreviations

milligram	mg
gram	g
kilogram	kg
milliliter	mL
liter	L
kiloliter	kL
millimeter	mm
centimeter	cm
meter	m
kilometer	km
square centimeter	cm^2
cubic centimeter	cm^3

ounce	oz
pound	lb
quart	qt
gallon	gal.
inch	in.
foot	ft
yard	yd
mile	mi.
square inch	sq in.
square foot	sq ft
cubic inch	cu in.
cubic foot	cu ft

volume	*V*
total surface area	*S.A.*
area of base	*B*

year	yr
month	mon
hour	hr
minute	min
second	sec

Pi

$\pi \approx 3.14$

$\pi \approx \frac{22}{7}$

Directions

Read each question and choose the best answer. Then fill in the circle on your answer document for the answer you have chosen.

SAMPLE

Vicki had $228. She spends $37 on a gift. How much did she have left?

A $211
B $191
C $181
D $164

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

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

A $4 - 1$
B $8 \div 4$
C $20 + 8$
D $3 \cdot 20$

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

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

3 What is 901,000 written in scientific notation?

A 9.01×10^{-5}
B 9.01×10^{-3}
C 9.01×10^{3}
D 9.01×10^{5}

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

$$7 + 3^2 - 4 \div 2 - 1$$

F $7 + 3$

G $3^2 - 4$

H $2 - 1$

J 3^2

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

A Natural numbers

B Irrational numbers

C Integers

D Rational numbers

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

F $\frac{1}{3}$, $\frac{3}{5}$, 30%

G $\frac{3}{5}$, $\frac{1}{3}$, 30%

H 30%, $\frac{1}{3}$, $\frac{3}{5}$

J $\frac{1}{3}$, 30%, $\frac{3}{5}$

7 Which expression has a value of 27 when n equals 2 ?

A $n + (4^3 \div 8)$

B $n + (4 \div 8)^3$

C $(n + 4)^3 \div 8$

D $(n + 4^3) \div 8$

8 Which has a value between 2 and 3 ?

F $\sqrt{12}$

G $\sqrt{8}$

H $\sqrt{3}$

J $\sqrt{2}$

9 **The area (A) of a trapezoid can be found using the formula $A = \frac{1}{2}h(b_1 + b_2)$.**

What is the area of a trapezoid if $b_1 = 8$ centimeters, $b_2 = 12$ centimeters, and $h = 6$ centimeters?

A 32 cm^2
B 48 cm^2
C 54 cm^2
D 60 cm^2

10

Wren Family Monthly Budget

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

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

F $657.20
G $328.60
H $164.30
J $32.86

11 Which number is a perfect square?

A 2
B 5
C 25
D 52

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

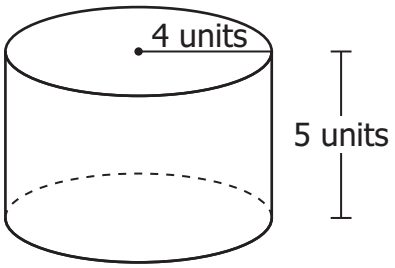
$$3^b + 3$$

F 9
G 12
H 27
J 36

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

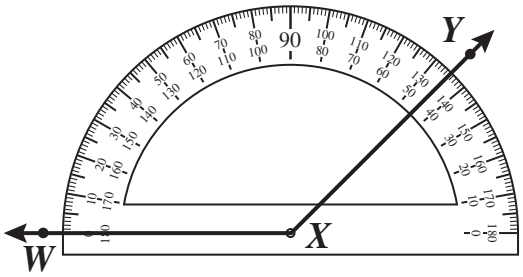
A $25.50
B $30.00
C $50.99
D $59.99

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



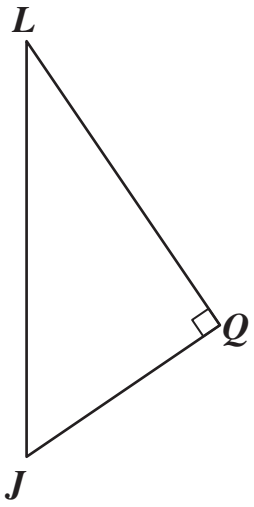
F 63 cubic units
G 88 cubic units
H 226 cubic units
J 251 cubic units

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



A 45°
B 55°
C 135°
D 145°

16



Which names one of the legs of the triangle pictured?

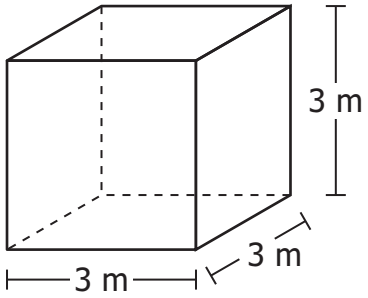
F $\angle LJQ$

G $\overline{LJ}$

H $\angle QLJ$

J $\overline{QL}$

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



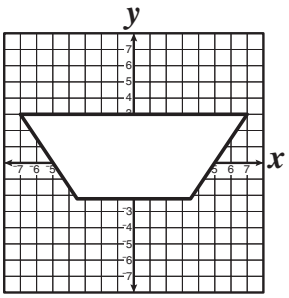
A 81 m^2

B 54 m^2

C 27 m^2

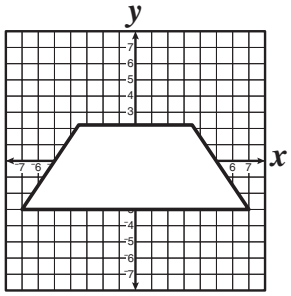
D 9 m^2

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

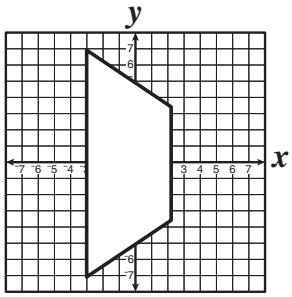


Which is *most* likely the new image Les made?

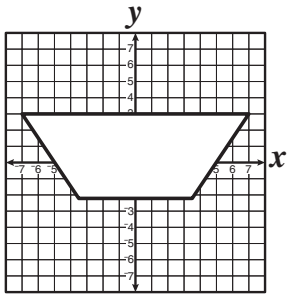
F



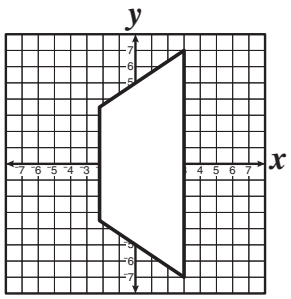
G



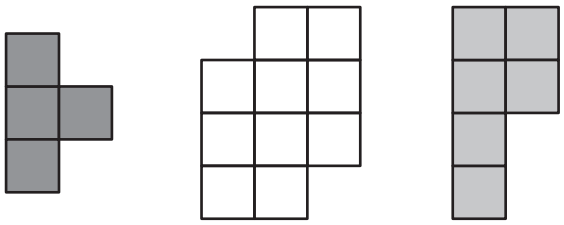
H



J

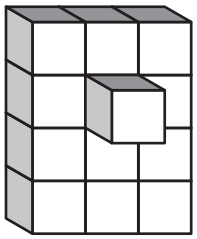


19

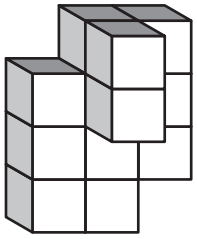


This shows 3 different views of a three-dimensional figure constructed from cubes. Which could be this figure?

A



B



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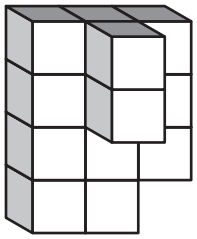

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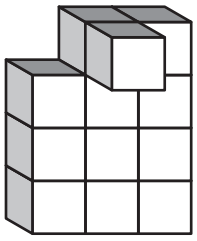
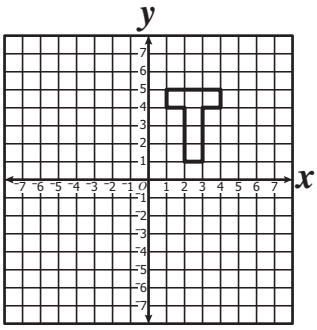
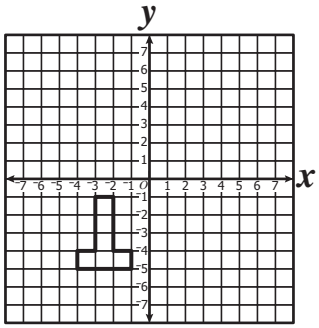


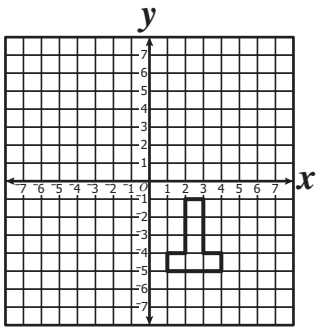
20 Which is a dilation of the figure in the following coordinate grid?



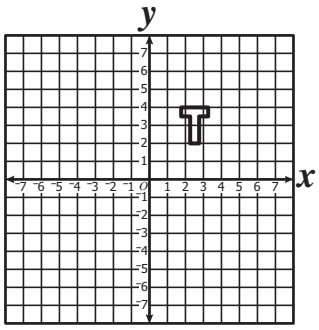
F



G



H



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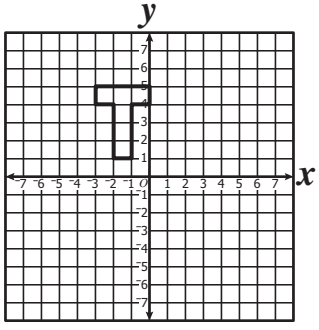
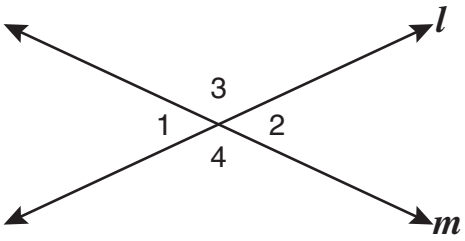


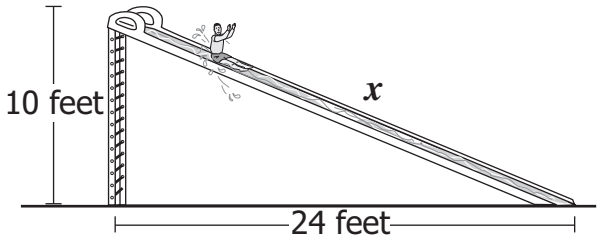
21 **Lines l and m intersect so that the measure of $\angle 1$ is 50°.**



What is the measure of $\angle 2$?

A 40º
B 50º
C 100º
D 130º

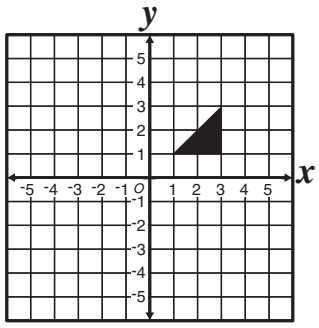
22 **A water slide is one side of a right triangle as shown.**



What is x, the length of the water slide?

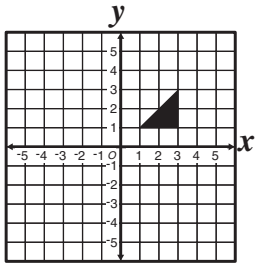
F 14 ft
G 21 ft
H 26 ft
J 34 ft

23 The figure shows a triangle on a coordinate plane.

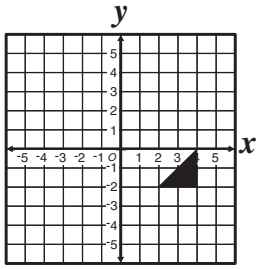


Which of the following shows the triangle translated 3 units to the right and 1 unit down?

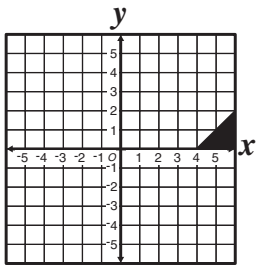
A



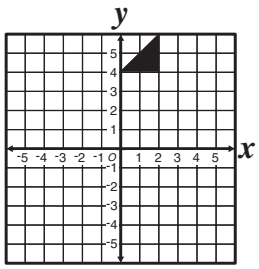
B



C



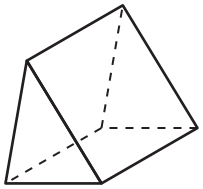
D



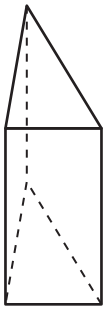
24

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

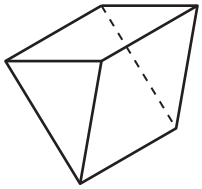
F



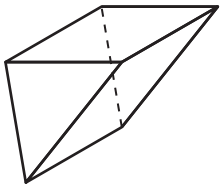
G



H

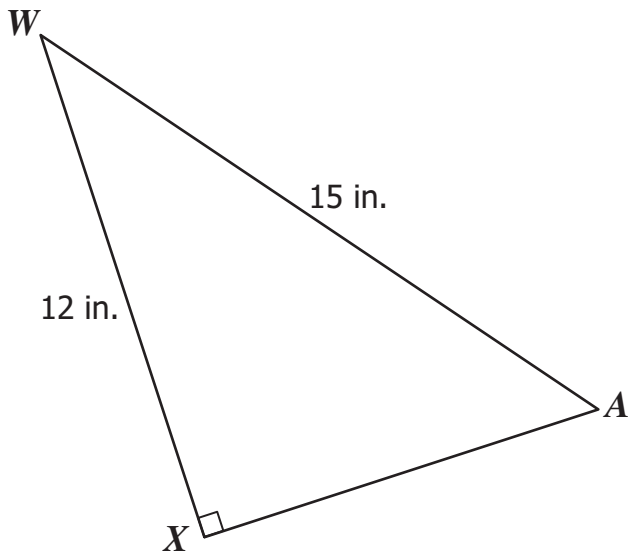


J



GO ON

25



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

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

GO ON

26 Sandra has a bag of same-sized cookies. The number of cookies and the different animal pictures on the cookies are listed below.

- **9 lion**
- **5 elephant**
- **3 tiger**
- **9 bear**

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

F $\frac{3}{26}$

G $\frac{3}{23}$

H $\frac{1}{4}$

J $\frac{1}{3}$

27

$$\begin{bmatrix} 0 & 1 & 0 \\ 1 & 0 & 2 \\ 0 & 2 & 2 \\ 2 & 0 & 0 \end{bmatrix}$$

How many rows does this matrix have?

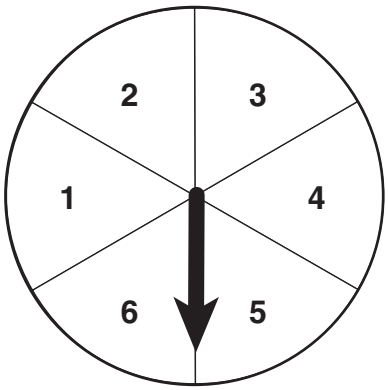
A 3

B 4

C 7

D 12

28 A spinner consists of six equal regions as shown.



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

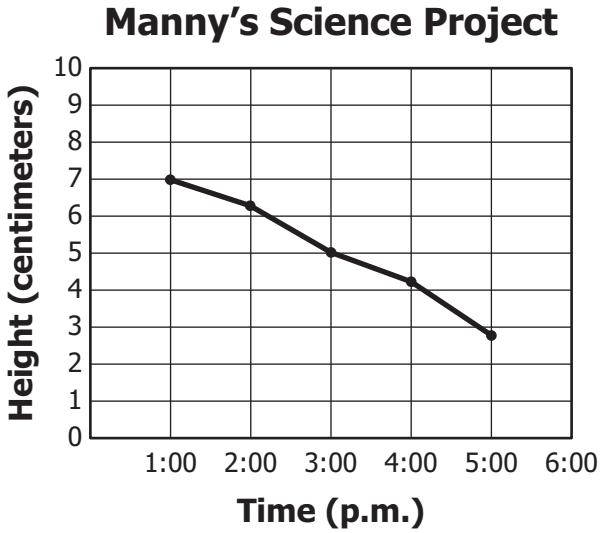
F $\frac{1}{6}$

G $\frac{1}{3}$

H $\frac{1}{2}$

J $\frac{2}{3}$

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



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

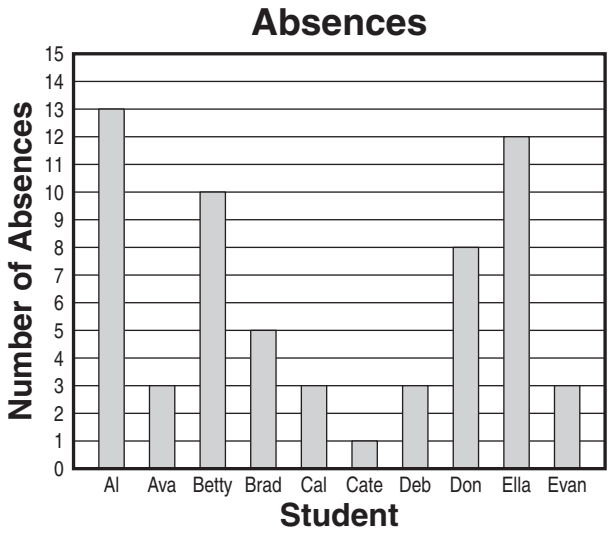
A 3.00 cm

B 2.75 cm

C 1.50 cm

D 0.25 cm

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



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

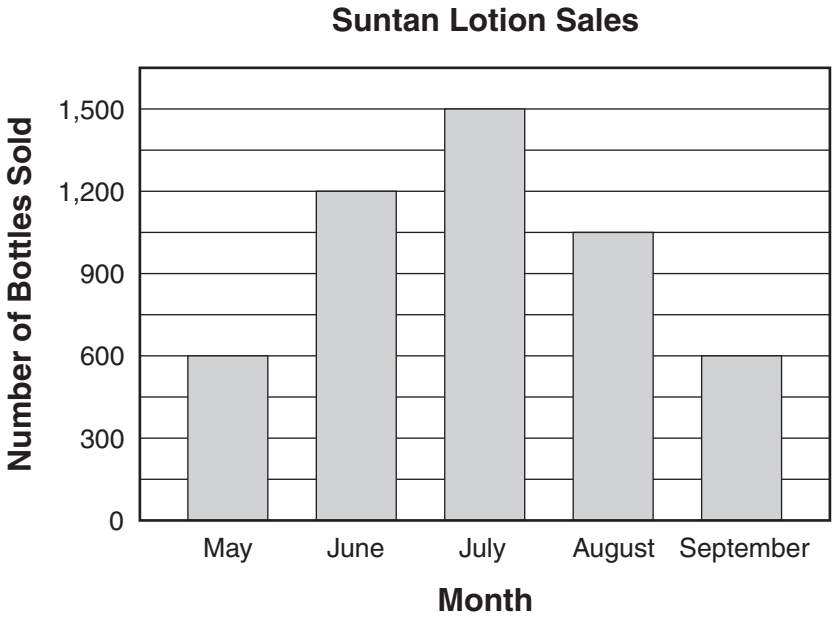
F 13

G 10

H 4

J 3

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



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

A 30%

B 32%

C 40%

D 48%

32 A bag contains 12 marbles: 5 are orange, 3 are blue, and the rest are red. If one marble is selected at random from the bag, what is the probability that it will be red or blue?

F $\frac{1}{4}$

G $\frac{1}{3}$

H $\frac{5}{12}$

J $\frac{7}{12}$

33 A towing company charges a flat fee of $50 in addition to $2 a mile to tow vehicles. Which equation shows the relation between y, the total cost, and x, the number of miles a vehicle is towed?

A $y = 2x + 50$

B $y = 2x - 50$

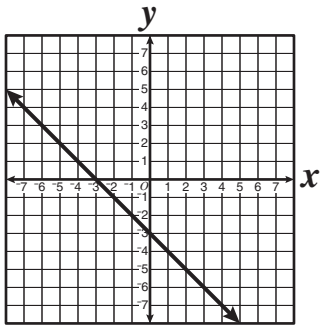
C $y = \frac{x}{2} + 50$

D $y = \frac{x}{2} - 50$

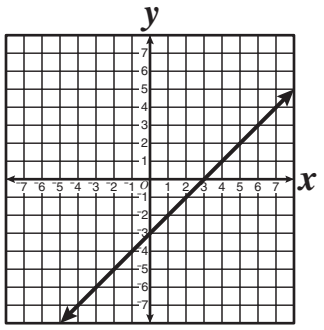
34 Which graph best represents the following?

$$y = x - 3$$

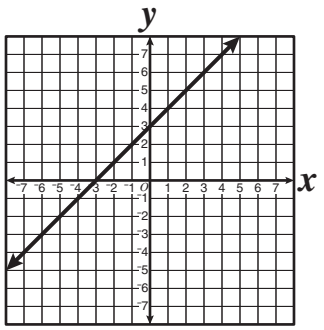
F



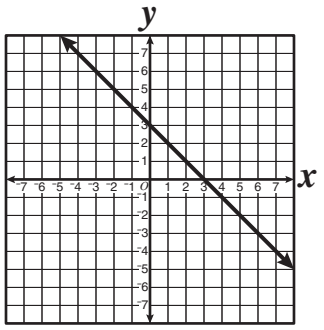
G



H



J



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

$$7x + 3 > 17$$

A 0
B 1
C 2
D 3

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

$$y = 3x + 10$$

F $(2, 13)$

G $(^{-}2, 16)$

H $(^{-}3, 1)$

J $(1, 11)$

37 **Steven read that the actual distance between Memphis and Chicago is about 525 miles. On a map, the distance between the two cities is about $10\frac{1}{2}$ inches. Which is *most likely* the scale used to make the map?**

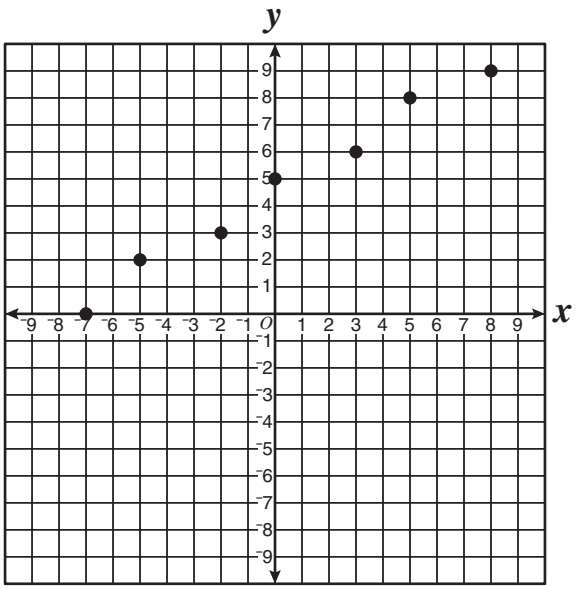
A 1 inch represents 50 miles

B 1 inch represents 25 miles

C 1 inch represents 30 miles

D 1 inch represents 40 miles

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



Which set best represents the domain of the function?

F $\{-7, -5, -2, 0, 3, 5, 8\}$

G $\{0, 2, 3, 5, 6, 8, 9\}$

H $\{-7, -5, -2, 0, 2, 3, 5, 6, 8, 9\}$

J $\{0, 3, 5, 8\}$

39 Which ordered pair makes the equation *false*?

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

A $(^{-}1, 0)$

B $(0, 2)$

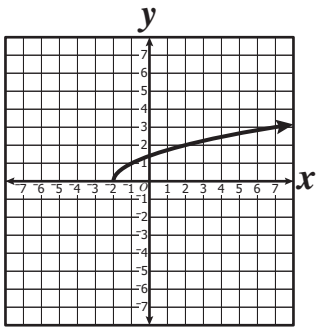
C $(2, 3)$

D $(1, 4)$

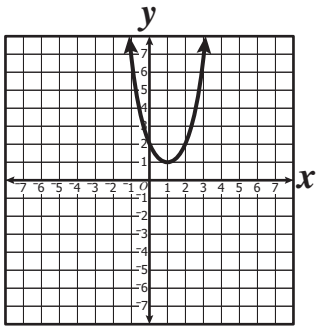
40 Which graph most likely contains all the ordered pairs in the table?

x	y
−2	0
−1	1
2	2
7	3

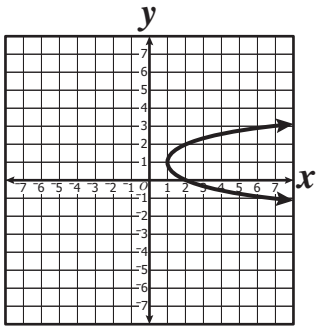
F



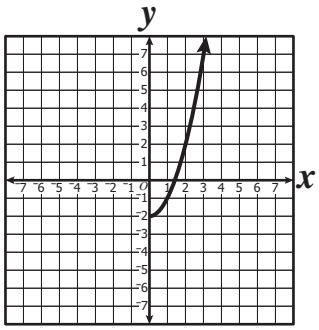
G



H



J



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

$$5n = 8 + 3n$$

A $n = 4$

B $n = 2$

C $n = \frac{8}{3}$

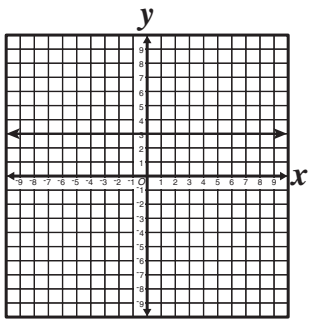
D $n = \frac{8}{5}$

GO ON

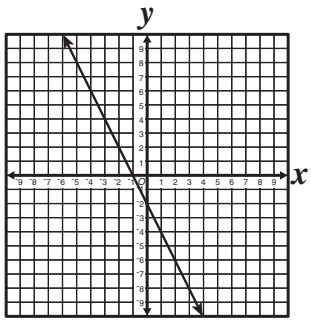
42 Which of the following graphs contains all the ordered pairs in the table?

x	y
−4	−4
−2	−3
0	−2
2	−1

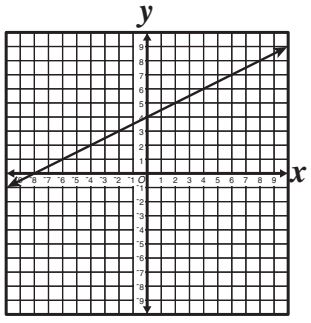
F



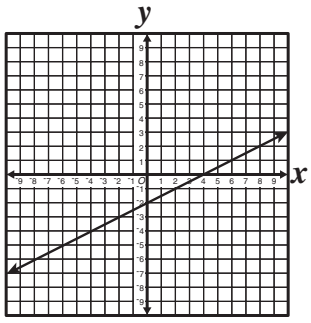
G



H



J



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

$$y = 2x + 4$$

A

x	y
−2	0
−1	2
0	4
1	6

B

x	y
−2	8
−1	6
0	4
1	6

C

x	y
−2	0
−1	2
0	4
1	2

D

x	y
−2	0
−1	6
0	5
1	6

44 Mrs. Garcia used 5 cups of flour to make 3 loaves of bread. How many loaves of bread can she make with 30 cups of flour?

F 10
G 18
H 28
J 50

45 Which ordered pair makes the equation true?

$$2x = 18 - y$$

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

46 What value for w makes the equation true?

$$4w - 8 = 16$$

F $^{-}6$
G $^{-}2$
H 2
J 6

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

$$R = 0.50m + 35$$

What is the dependent variable in the formula?

A R
B 0.50
C m
D 35

STOP