Mathematics Chart

LENGTH

Metric	Customary
1 kilometer = 1000 meters	1 mile = 1760 yards
1 meter = 100 centimeters	1 mile = 5280 feet
1 centimeter = 10 millimeters	1 yard = 3 feet
	1 foot = 12 inches

CAPACITY AND VOLUME

Metric	Customary
1 liter = 1000 milliliters	1 gallon = 4 quarts
	1 gallon = 128 ounces
	1 quart = 2 pints
	1 pint = 2 cups
	1 cup = 8 ounces

MASS AND WEIGHT

Metric	Customary
1 kilogram = 1000 grams	1 ton = 2000 pounds
1 gram = 1000 milligrams	1 pound = 16 ounces

TIME

1 year = 365 days
1 year = 12 months
1 year = 52 weeks
1 week = 7 days
1 day = 24 hours
1 hour = 60 minutes
1 minute = 60 seconds

Metric and customary rulers can be found on the separate Mathematics Chart.

Continued on the next page

Mathematics Chart

Perimeter	square	$P = 4s$
	rectangle	$P = 2l + 2w$ or $P = 2(l + w)$
Circumference	circle	$C = 2\pi r$ or $C = \pi d$
Area	square	$A = s^2$
	rectangle	$A = lw$ or $A = bh$
	triangle	$A = \frac{1}{2}bh$ or $A = \frac{bh}{2}$
	trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$ or $A = \frac{(b_1 + b_2)h}{2}$
	circle	$A = \pi r^2$
Volume	cube	$V = s^3$
	rectangular prism	$V = lwh$ or $V = Bh^*$
	cylinder	$V = \pi r^2 h$ or $V = Bh^*$
**B represents the area of the Base of a solid figure.*		
Pi	π	$\pi \approx 3.14$ or $\pi \approx \frac{22}{7}$

DIRECTIONS

Read each question. Then fill in the correct answer on your answer document.

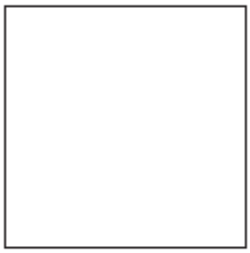
SAMPLE A

Find the greatest common factor of 12 and 18.

A 3
B 6
C 9

SAMPLE B

Find the perimeter of this square rug in meters.



F 12.8m
G 6.4m
H 5 m

1. Emma can run 100 meters in 20 seconds. She competed in a 400-meter race. How many seconds did it take her to run that race?

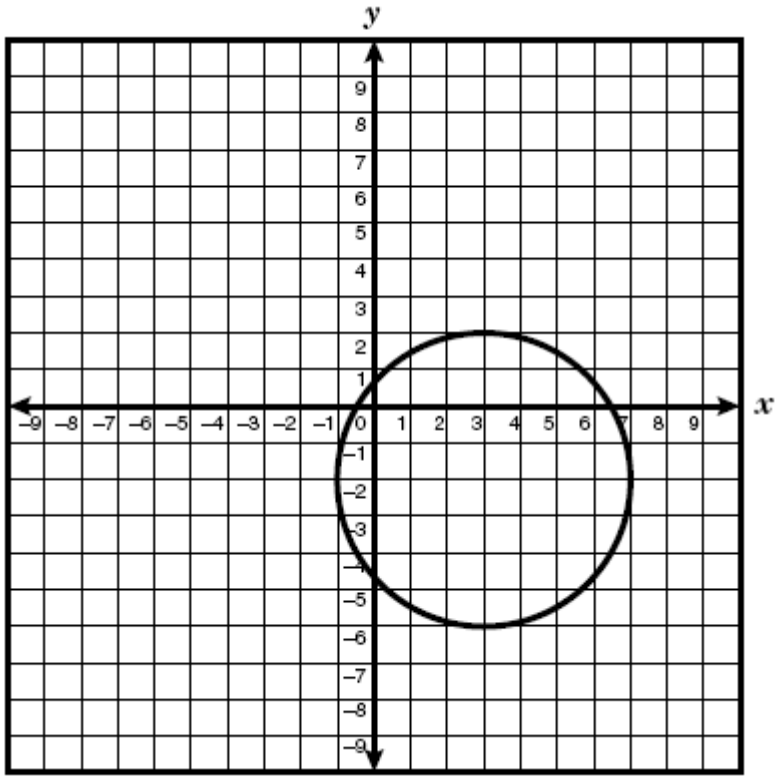
A 2 seconds

B 30 seconds

C 80 seconds

GO ON

2. Which of the following coordinates lie within the circle graphed below?



F (-4, 8)

G (3, −5)

H (-2, -7)

GO ON

3. A theater teacher needed to make 2 costumes for a school play.

- The larger costume required $4\frac{1}{4}$ yards of material
- The smaller costume required $\frac{3}{4}$ yard less than the larger one.

Which equation can be used to find *n*, the number of yards of material needed for the smaller costume?

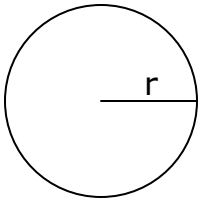
A $n = 4\frac{1}{4} - \frac{3}{4}$

B $n = 2 + 4\frac{1}{4}$

C $n = \frac{3}{4} \times \frac{1}{4}$

GO ON

4. A circular tablecloth has a circumference of 29 feet. Which expression could be used to find the radius of the tablecloth?



Circumference: the distance around the edge of a circle

$C = 2\pi r$

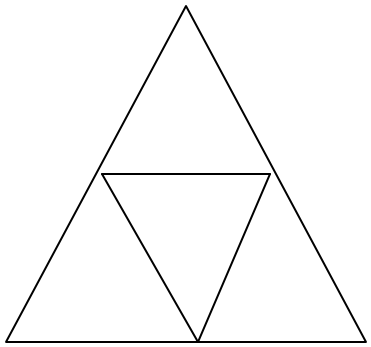
F $29 \times 2\pi$

G $\frac{29}{2\pi}$

H $2\pi - 29$

GO ON

5. A large equilateral triangle is divided into 4 small congruent equilateral triangles. What method can be used to find the area of the larger equilateral triangle, given the area of one of the smaller congruent triangles?



A Subtract the area of one smaller congruent triangle from the area of the larger equilateral triangle

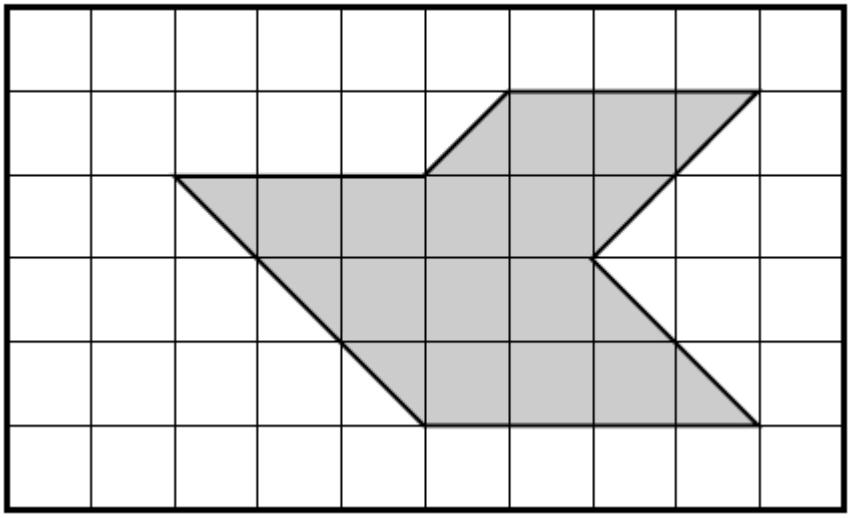
B Multiply the area of one smaller congruent equilateral triangle by 4

C Add the area of the larger equilateral triangle to the areas of the 4 smaller congruent equilateral triangles

GO ON

6. A plan for a flower bed is shown in the shaded part of the grid below.

Flower-Bed Plan



Each square on the grid represents 5 square feet. What will be the approximate area of the flower bed?

F 20 ft²

G 80 ft²

H 10 ft²

GO ON

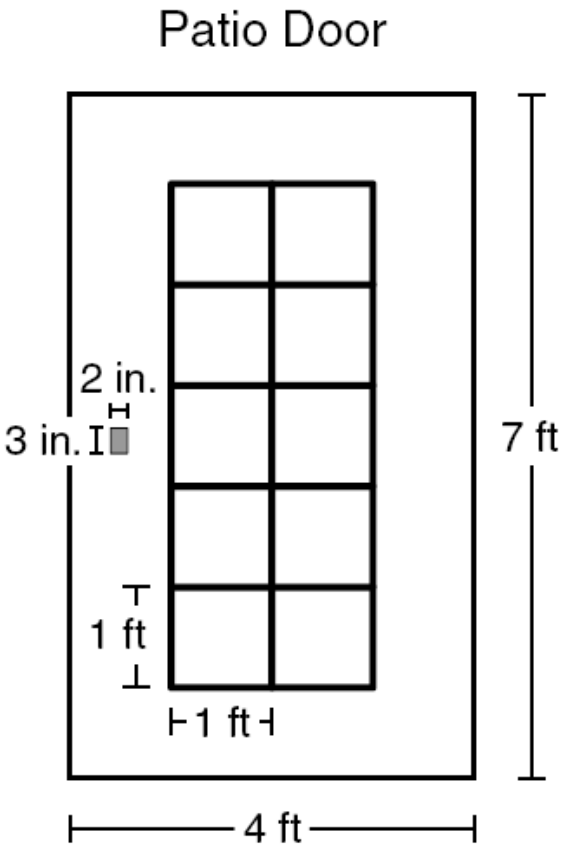
7. Which of the following is true about similar figures?

A Similar figures are the same size.

B Similar figures always have the same shape.

C Similar figures are different shapes.

8. Ms. Wagner painted the outside of her patio door as shown below. She did not paint the windows or the doorknob.



Area = length x width

Which is closest to the painted area of the door?

F 18 ft²

G 10 ft²

H 45 ft²

GO ON

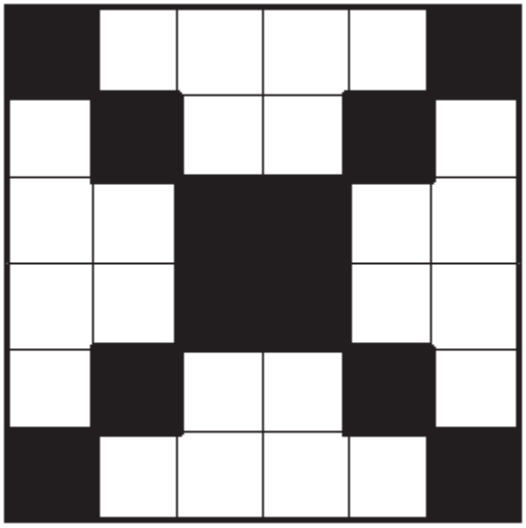
9. Which sequence follows the rule 8n − 4, where n represents the position of a term in the sequence?

A 4, 12, 20, 28, 36, …

B 4, 16, 64, 216, 1,024, …

C 4, 8, 12, 16, 20, …

10. Sandra colored $\frac{1}{3}$ of her picture black, as shown below.



What percent of her picture did Sandra color black?

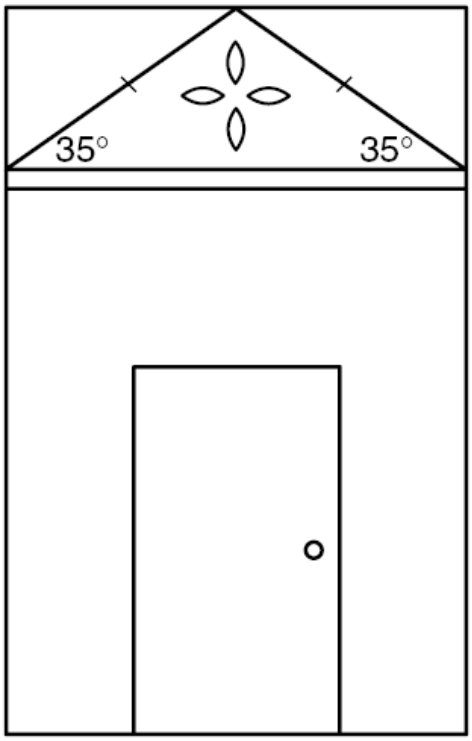
F $66\frac{2}{3}\%$

G 12%

H $33\ \frac{1}{3}\%$

GO ON

11. Mr. Jones installed a triangular piece of stained glass above his front door.



Which of the following best describes the triangle with the given measures?

A Acute equilateral triangle

B Obtuse isosceles triangle

C Right triangle

GO ON

12. The Spanish club members include:

- 8 sixth graders,
- 12 seventh graders
- 10 eighth graders.

What percent of the Spanish club members are seventh graders?

F 40%

G 60%

H 100%

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13. Hilda bought the following

- 4 orders of french fries at $0.67
- 3 hamburgers at $1.28
- 4 shakes at $2.25

What other information is necessary to find Hilda's correct change?

A Where she bought the food

B Why she ordered the food

C Amount she gave the cashier

14. Which description shows the relationship between a term and n, its position in the sequence?

Position	1	2	3	4	5	n
Value of Term	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	

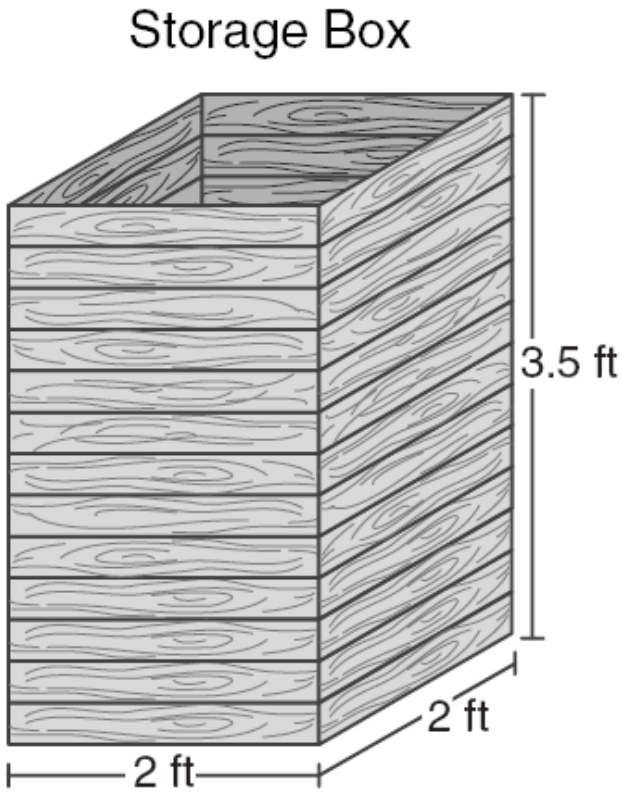
F Multiply *n* by $\frac{1}{2}$

G Divide *n* by $\frac{1}{2}$

H Add $\frac{1}{2}$ to *n*

GO ON

15. Mr. Williams built a wooden storage box.



Volume = length x width x height

What is the **volume** of the storage box?

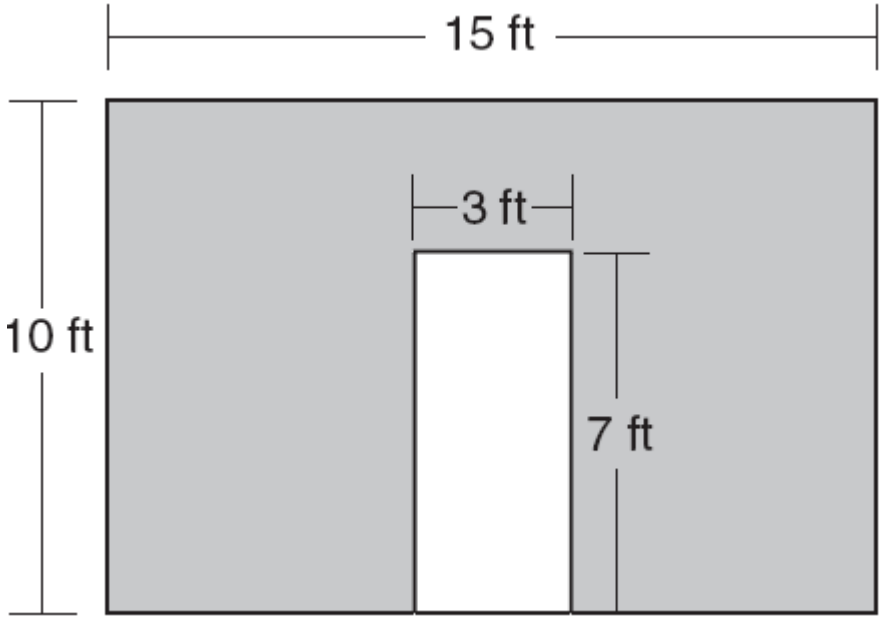
A 7.5 ft^3

B 14 ft^3

C 70 ft^3

GO ON

16. Mrs. Jones wants to paint a wall but not the door on the wall.



Area = length x height

How many square feet of wall does Mrs. Jones need to paint?

F 150 ft²

G 35 ft²

H 129 ft²

GO ON

17. A sports-shop owner bought some baseball cards and then sold them for $7.50 each. He sold 150 cards on Monday. What piece of information is needed to find the amount of profit he made from the sale of the baseball cards?

A How much the shop owner paid for the baseball cards

B Which baseball players are on the cards

C Who the store owner bought the cards from

18. Mr. Hall bought 7 cows for $3,500.00. He later bought another cow for $660.00. What was the mean cost of all the cows?

F $594.00

G $4,160.00

H $520.00

19. Timothy collected the following data during a science experiment.

Ball Drop Times

Trial	Time (seconds)
1	18
2	11
3	15
4	11
5	13
6	11

Which measure of data is represented by 12 seconds?

A Range

B Mean

C Median

20. Simplify the expression below.

$$4 + 2(13 - 4) \div 3^2$$

F 7

G 6

H 48

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21. Which number is equivalent to 20.4%?

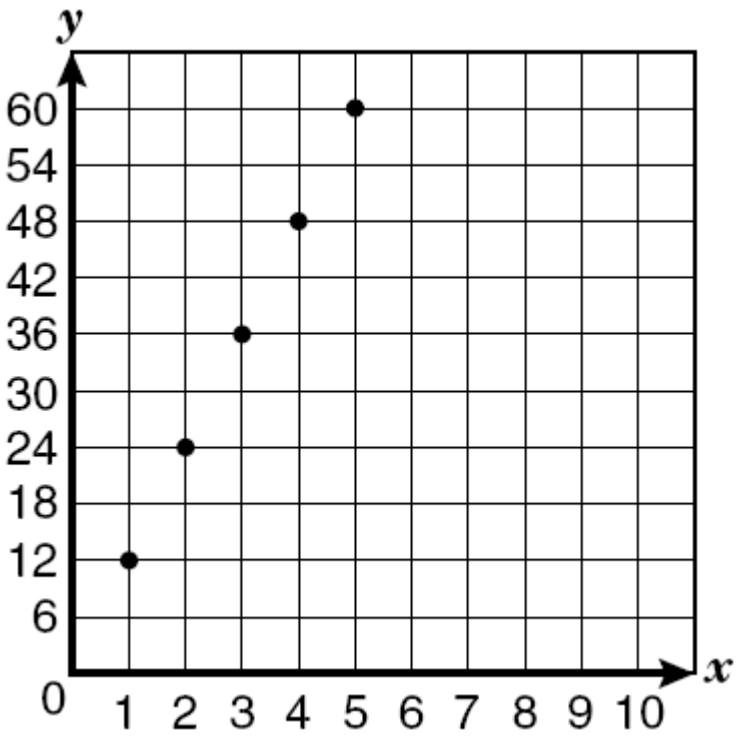
A 0.204

B 2,004

C 2,040

GO ON

22. Which of the following relationships is best represented by the data in the graph?



12 inches = 1 foot
3 feet = 1 yard
5280 feet = 1 mile

F Conversion of feet to inches

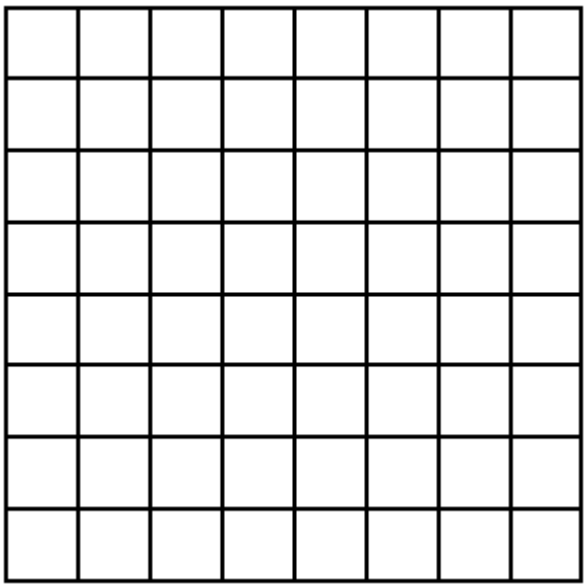
G Conversion of feet to yards

H Conversion of inches to yards

GO ON

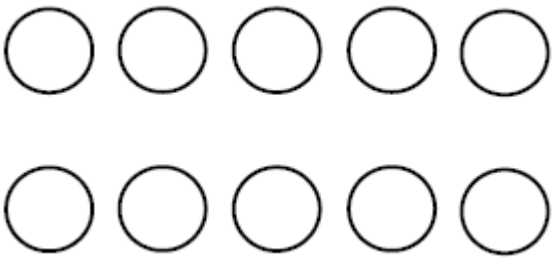
23. Which model represents 8^2?

A



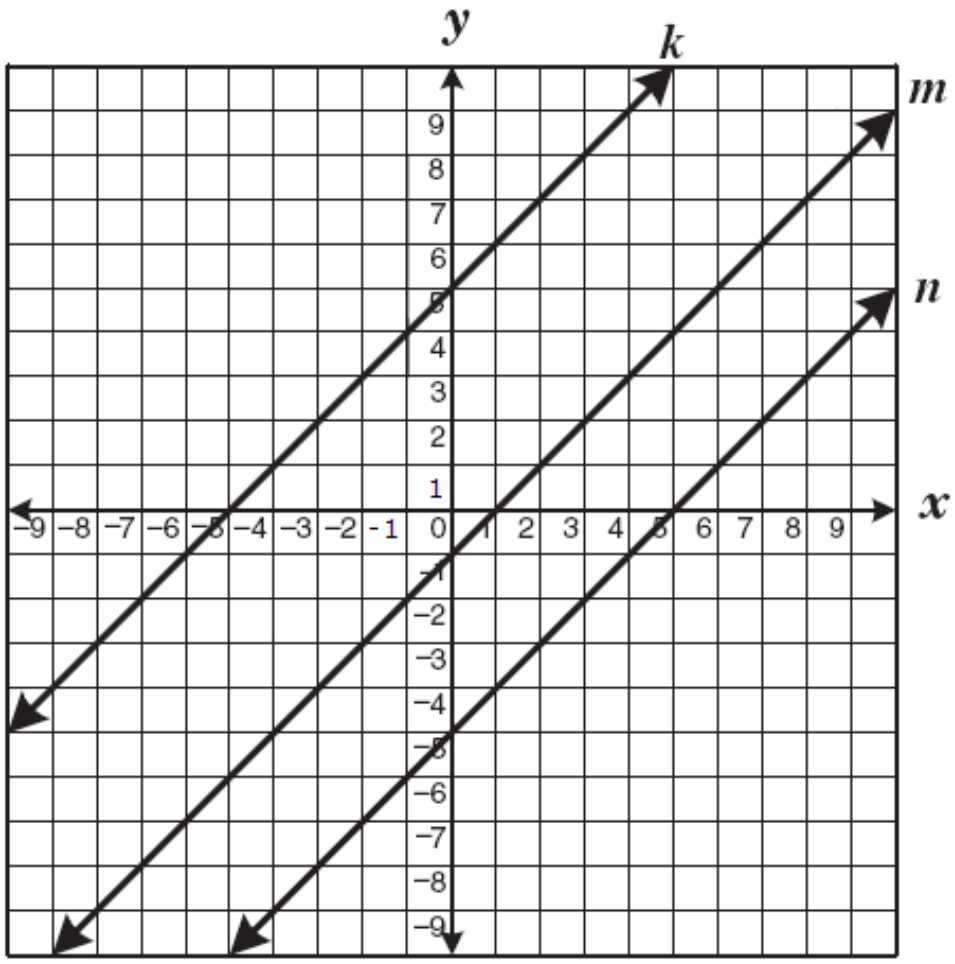
B

C



GO ON

24. Which line contains the ordered pair (2, −3)?



F *k*

G *m*

H *n*

GO ON

25. The table shows the number of lunch specials sold at a diner each day last week.

Lunch Specials

Day of Week	Number of Orders
Saturday	95
Sunday	87
Monday	35
Tuesday	27
Wednesday	31
Thursday	39
Friday	50

Which statement is supported by the information in the table?

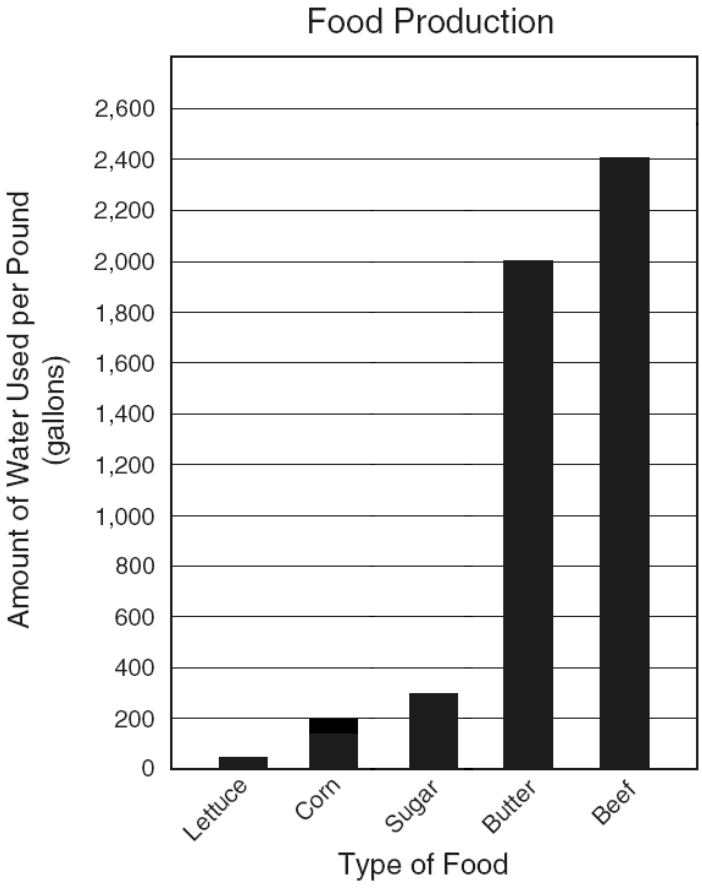
A Friday had the fewest orders.

B Sunday had more than twice as many orders as on Thursday.

C There were more orders placed on Tuesday than on Thursday.

GO ON

26. The graph below shows the number of gallons of water used to produce one pound of various types of food.



Which statement is best supported by these data?

F Butter needs 10 times as much water as corn.

G Corn needs more water than sugar does

H Butter and Beef need the same amount of water

GO ON

27. Which problem situation matches the equation below?

$$x - 4.72 = 5.28$$

A Sam's lunch cost $4.72
He received $5.28 in change
X is the amount of money he gave the cashier

B Betty biked 4.72 kilometers in a race
The winner's time was 5.28 seconds faster than Betty's
X is the time in seconds it took Betty to finish the race

C Jan and Matt measured the wingspans of butterflies
Jan's butterfly had a wingspan of 4.72 centimeters
Matt's butterfly had a wingspan of 5.28 centimeters
X is the average length of a butterfly's wingspan

GO ON

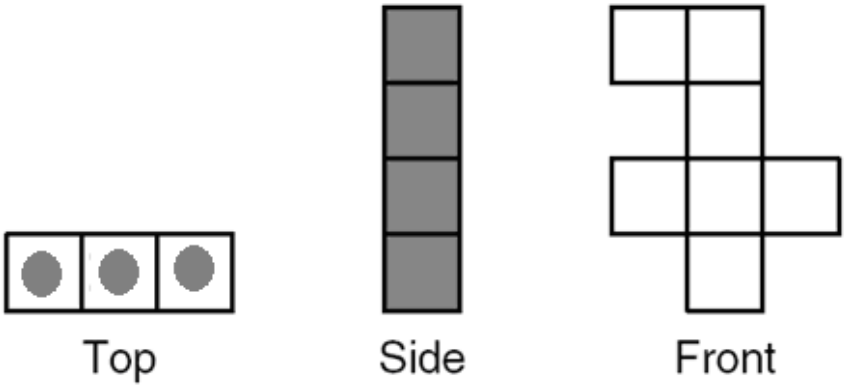
28. Which list shows the percents in order from greatest to least?

F 34%, 19%, 25%, 9%

G 0.25%, 0.50%, 0.79%, 1%

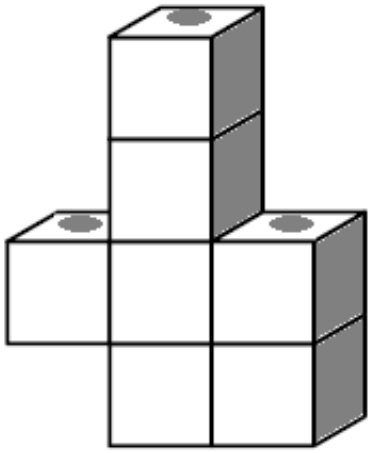
H 75%, 50%, 25%, 12.5%

29. The top, side, and front views of a solid figure made of cubes are shown below.

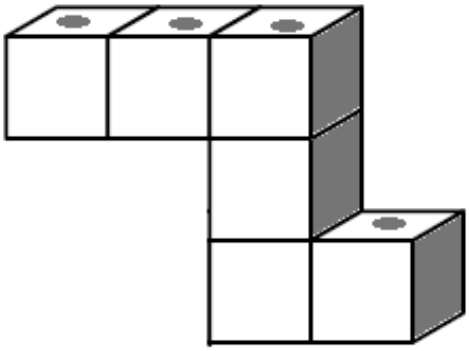


Which solid figure is best represented by these views?

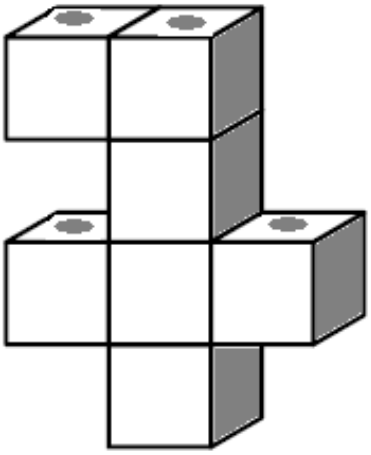
A



C



B



GO ON

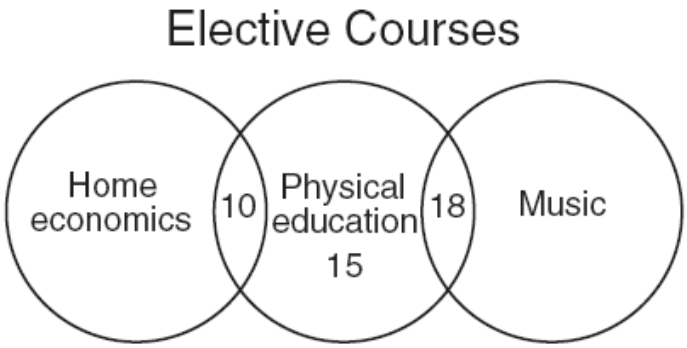
30. A school counselor collected the following data about students taking elective courses.

Elective Courses

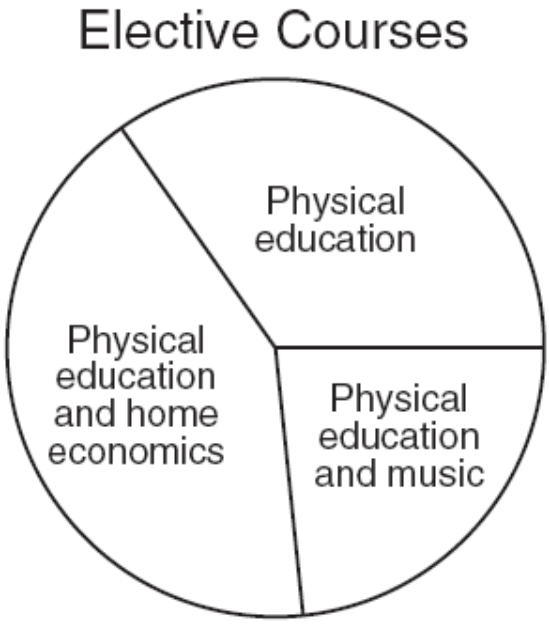
Course	Number of Students
Physical education only	15
Physical education and music	18
Physical education and home economics	10

Which graph best represents this data?

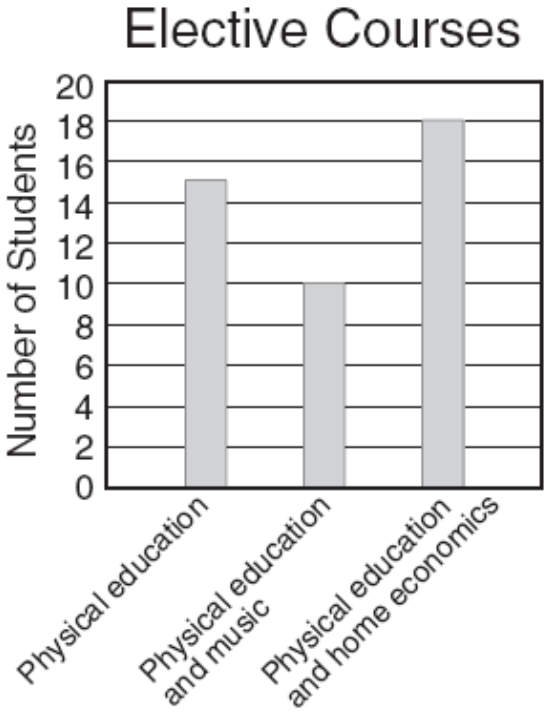
F



G



C



GO ON

31. There are four stores having sales on rosebushes.

Rosebush Sales

Store	Sale Price
Sheldon's Plant Mart	4 rosebushes for $11.00
Rose Mart	3 rosebushes for $9.00
Kathleen's Roses	2 rosebushes for $5.90

At which store would you save the most money?

A Sheldon's, because each rosebush costs $2.75

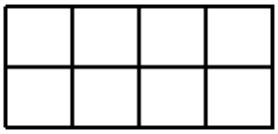
B Rose Mart, because each rosebush costs $3.00

C Kathleen's Roses, because each rosebush costs $2.95

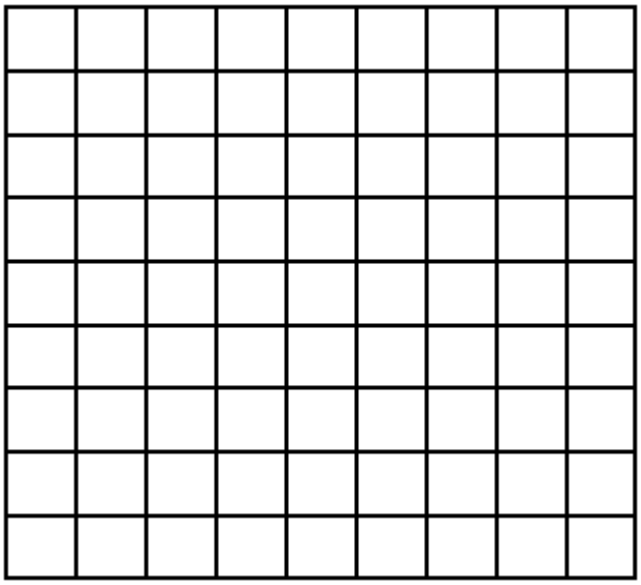
GO ON

32. Which model represents 9^2?

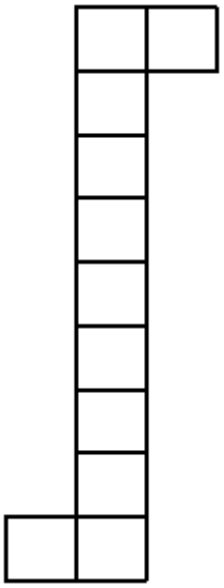
F



G

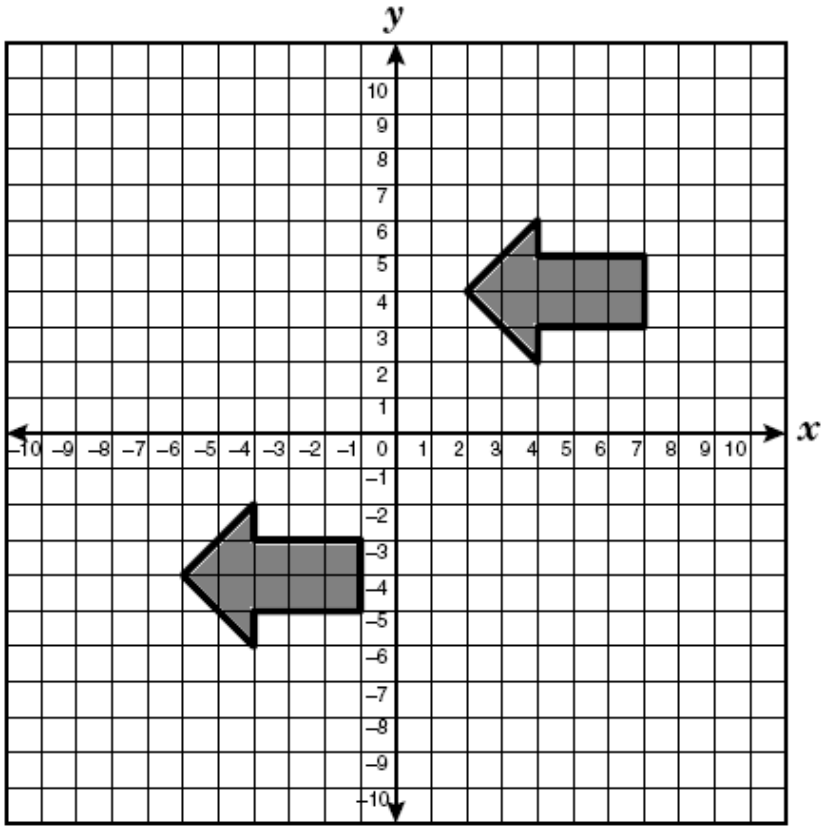


H



GO ON

33. The figure below was transformed from quadrant I to quadrant III.



This transformation best represents a —

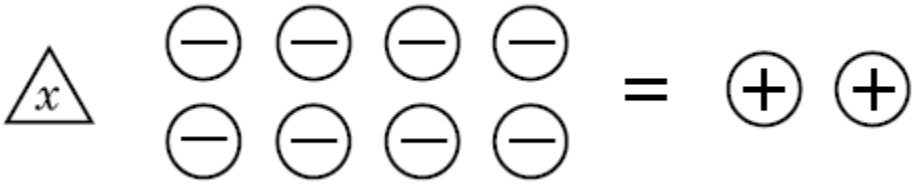
A Translation

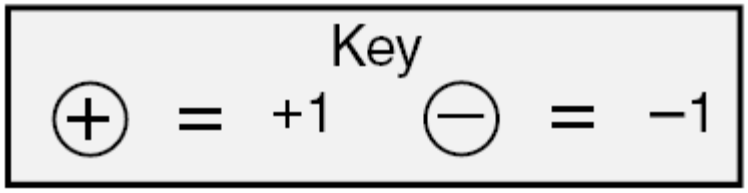
B Rotation

C Reflection

GO ON

34. The model represents the equation x − 8 = 2.





What is the value of *x*?

F $x = -8$

G $x = 10$

H $x = 6$

GO ON

35. Peaches are on sale for $0.95 a pound. Mrs. Hines bought 2 pounds. About how much did she pay?

A Between $3.00 and $3.50

B Less than $0.50

C Between $1.50 and $2.00

36. The table below shows the results of a canned-food drive.

Canned-Food Drive

Homeroom Number	Number of Cans
1	45
2	63
3	92
4	27
5	115
6	

Which number could be added to the set of data in order for the median and mode of the set to be equal?

F 22

G 63

H 98

GO ON

37. An athlete can run 20 yards in 3 seconds. If the athlete's rate of speed stayed the same, about how long did it take him to run 60 yards?

A 9 sec

B 20 sec

C 4 sec

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38. Ms. Adams went on a road trip. The trip was 792 miles, and the average price of gasoline was $1.30 per gallon. What information is needed to find the amount Ms. Adams spent on gasoline for the trip?

F Number of hours the trip took

G Number of miles per hour the car traveled

H Average number of miles the car traveled per gallon of gasoline