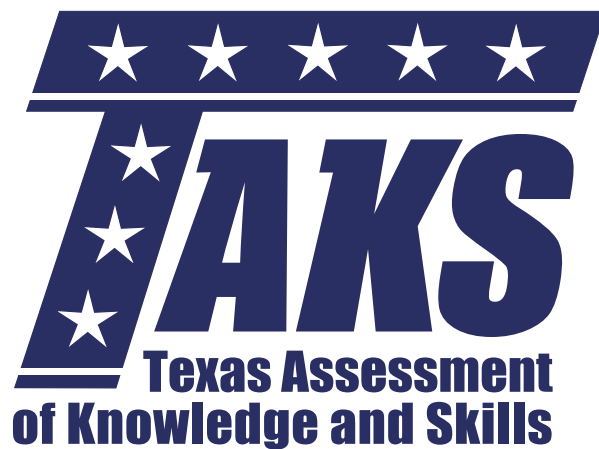


STUDENT NAME _____



**GRADE 8
MATHEMATICS
READING
SOCIAL STUDIES**

Administered Spring 2003

MATHEMATICS

Mathematics Chart

LENGTH

Metric

1 kilometer = 1000 meters

1 meter = 100 centimeters

1 centimeter = 10 millimeters

Customary

1 mile = 1760 yards

1 mile = 5280 feet

1 yard = 3 feet

1 foot = 12 inches

CAPACITY AND VOLUME

Metric

1 liter = 1000 milliliters

Customary

1 gallon = 4 quarts

1 gallon = 128 ounces

1 quart = 2 pints

1 pint = 2 cups

1 cup = 8 ounces

MASS AND WEIGHT

Metric

1 kilogram = 1000 grams

1 gram = 1000 milligrams

Customary

1 ton = 2000 pounds

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.

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	$A = \pi r^2$
Surface Area	cube	$S = 6s^2$
	cylinder (lateral)	$S = 2\pi rh$
	cylinder (total)	$S = 2\pi rh + 2\pi r^2$ or $S = 2\pi r(h + r)$
	cone (lateral)	$S = \pi rl$
	cone (total)	$S = \pi rl + \pi r^2$ or $S = \pi r(l + r)$
	sphere	$S = 4\pi r^2$
Volume	prism	$V = Bh^*$
	cylinder	$V = Bh^*$
	pyramid	$V = \frac{1}{3}Bh^*$
	cone	$V = \frac{1}{3}Bh^*$
	sphere	$V = \frac{4}{3}\pi r^3$
<i>*B represents the area of the Base of a solid figure.</i>		
Pi	π	$\pi \approx 3.14$ or $\pi \approx \frac{22}{7}$
Pythagorean Theorem		$a^2 + b^2 = c^2$
Simple Interest Formula		$I = prt$

DIRECTIONS

Read each question. Then fill in the correct answer on your answer document. If a correct answer is not here, mark the letter for “Not Here.”

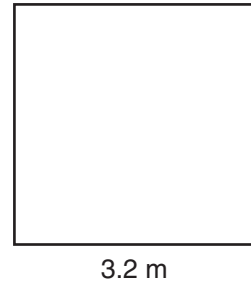
SAMPLE A

Find the greatest common factor of 12 and 18.

- A 3
- B 6
- C 9
- D Not Here

SAMPLE B

Find the perimeter of this square rug in meters.



Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.



- 1 The equation $c = 0.75t$ represents c , the total cost of t tickets on a bus. Which table contains values that fit this equation?

Cost of Bus Tickets

A

t	1	2	3	4
c	\$0.75	\$1.50	\$2.25	\$3.00

Cost of Bus Tickets

B

t	1	2	3	4
c	\$0.75	\$1.00	\$1.25	\$1.50

Cost of Bus Tickets

C

t	1	2	3	4
c	\$1.75	\$2.50	\$3.25	\$4.00

Cost of Bus Tickets

D

t	1	2	3	4
c	\$1.75	\$2.75	\$3.75	\$4.75

- 2 A bag of mixed Yummy Gummies contains 26% green, 34% red, 24% blue, and 16% yellow gummies. Carla put 250 mixed gummies in a bowl. Which proportion can be used to find y , the total number of yellow gummies in the bowl?

F $\frac{250}{y} = \frac{16}{100}$

G $\frac{16}{100} = \frac{y}{250}$

H $\frac{100}{250} = \frac{y}{16}$

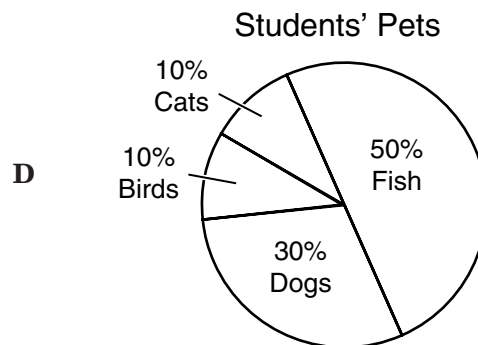
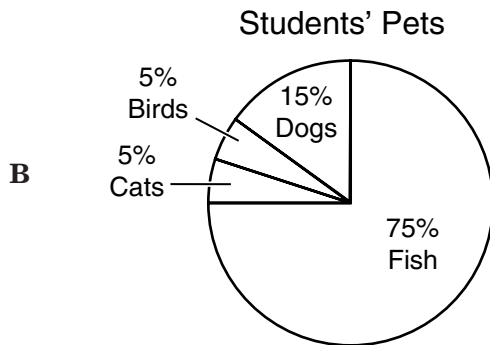
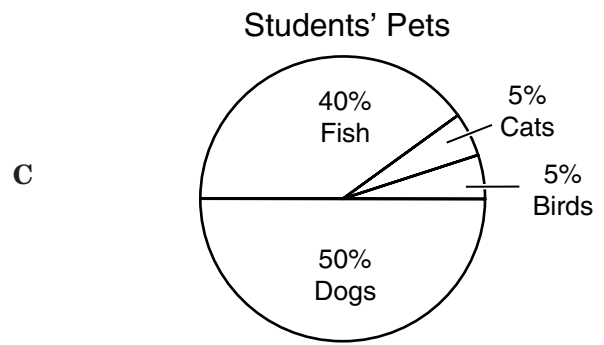
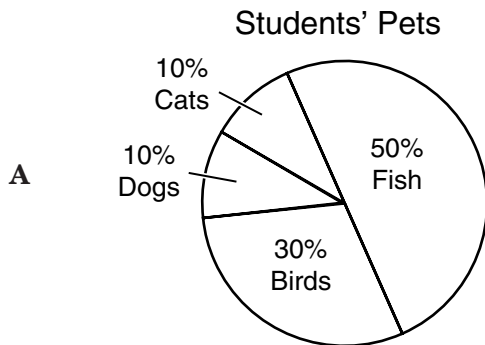
J $\frac{16}{100} = \frac{150}{y}$

- 3 Mr. Dansiger surveyed the students in his science classes about the type and number of pets they owned. The table shows the results of the survey.

Students' Pets

Type of Pet	Cat	Dog	Bird	Fish
Number of Pets	30	90	30	150

Which circle graph best represents the type and number of pets reported by students in the survey?



- 4 Lily surveyed all the members of the middle school band about their favorite class this semester. The results are shown in the table below.

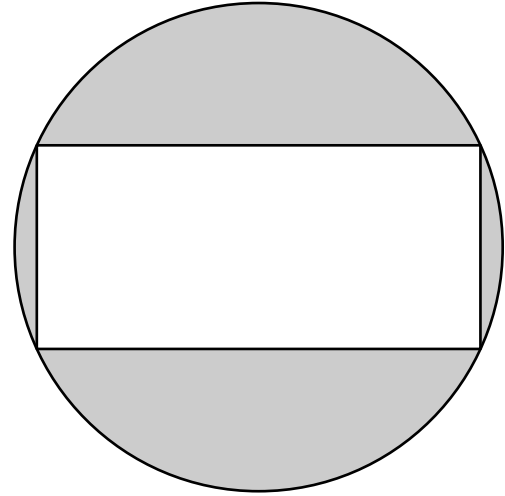
Favorite Class

Class	Number of Students
Band	18
English	9
Math	12
Science	15

From these results, Lily concluded that band was the favorite class among all the students at her school. Which is the best explanation for why her conclusion might not be valid?

- F** The survey should have been done each day for a week.
- G** The sample was not representative of all the students at the school.
- H** The survey should have been done with eighth-grade students only.
- J** The band meets only 3 days a week.
- 5 The Stars, the Tigers, and the Lobos scored a total of 56 goals during the hockey season. The Stars scored 4 more goals than the Tigers, and the Lobos scored twice as many goals as the Tigers. Which is a reasonable conclusion about the goals the teams scored?
- A** The Stars scored the least number of goals.
- B** The Stars and the Lobos scored an equal number of goals.
- C** The Tigers scored exactly half the total goals.
- D** The Lobos scored the greatest number of goals.

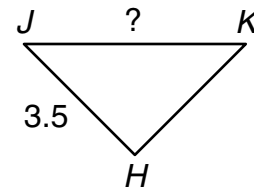
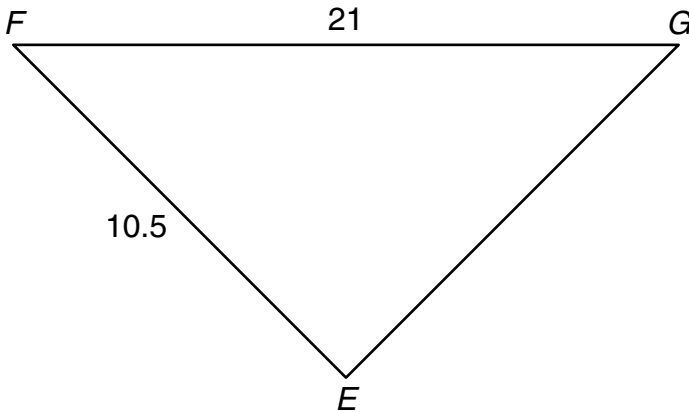
- 6 The figure shows a rectangle inside a circle.



Which procedure should be used to find the area of the shaded region?

- F** Find the area of the circle and then subtract the area of the rectangle.
- G** Find the circumference of the circle and then subtract the perimeter of the rectangle.
- H** Find the circumference of the circle and then subtract the area of the rectangle.
- J** Find the area of the rectangle and then subtract the perimeter of the rectangle.

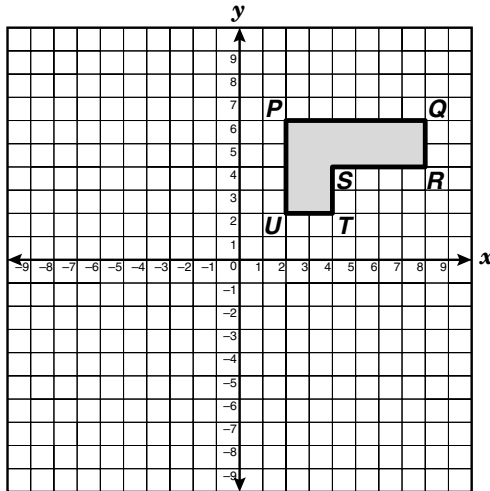
- 7 $\triangle EFG$ is similar to $\triangle HJK$.



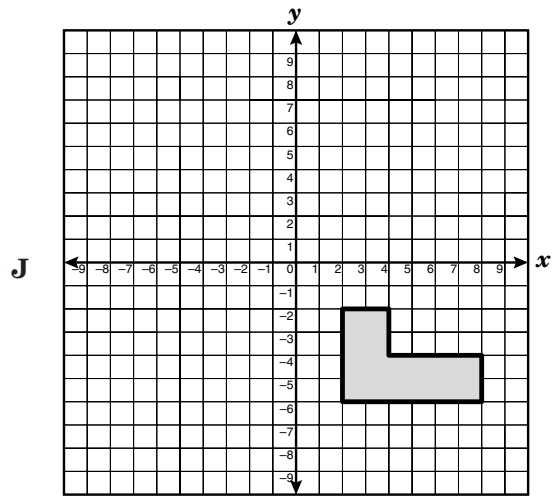
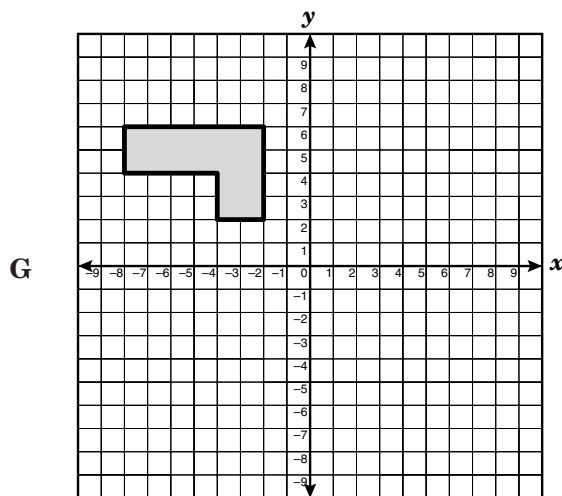
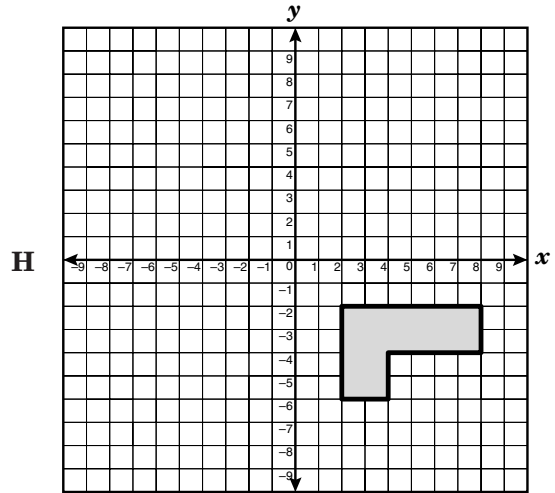
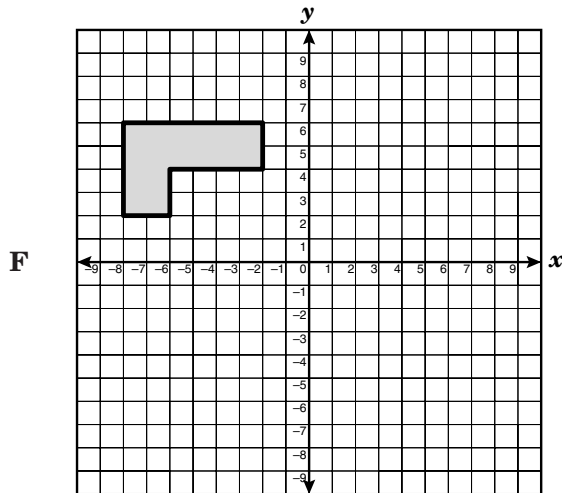
Find the length of \overline{JK} .

- A 3 units
B 7 units
C 14 units
D 24.5 units
-
- 8 The results of a random survey showed that 42 out of 80 people plan to vote for Mr. Vu for city council. Which is the best prediction of the total number of votes he will receive if 2,000 people vote?
- F 25
G 50
H 120
J 1,000
- 9 Jasmine has an average of 95 on 15 quiz grades. If her teacher drops Jasmine's lowest grade, a 72, which equation can be used to find n , Jasmine's new quiz average?
- A $n = \frac{95 - 72}{14}$
B $n = \frac{(95 \times 15) - 72}{14}$
C $n = \frac{(95 \times 15) - 72}{15}$
D $n = \frac{95(72 - 15)}{14}$

10 Polygon $PQRSTU$ is shown on the coordinate grid below.



Which coordinate grid shows the reflection of polygon $PQRSTU$ across the x -axis?



- 11 Ms. Gonzalez's monthly electricity bills for March through June were \$97.09, \$103.96, \$114.73, and \$121.82. She estimated that the electricity cost a total of \$400.00 over these 4 months. Which best describes her estimate?
- A Less than the actual amount because she rounded to the nearest \$100
 - B Less than the actual amount because she rounded to the nearest \$10
 - C More than the actual amount because she rounded to the nearest \$100
 - D More than the actual amount because she rounded to the nearest \$10

- 12 A baseball card was worth \$3 when it was issued in 1996. The table shows the value of the card each year since 1996.

Value of Baseball Card

Year	Value of Card
1996	\$3.00
1997	\$3.30
1998	\$3.65
1999	\$4.05
2000	\$4.50
2001	\$5.00

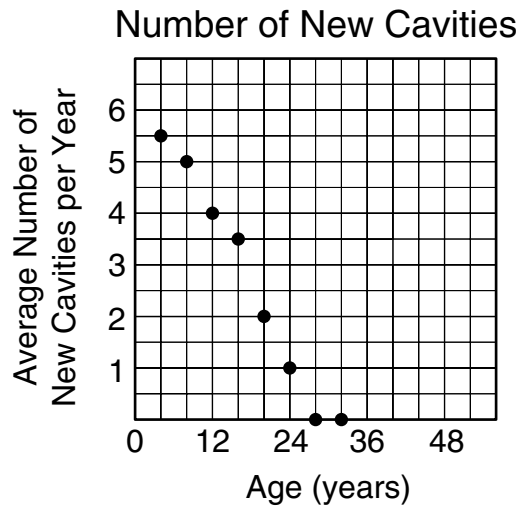
Based on the information in the table, what is a reasonable prediction for the value of the baseball card in 2004?

- F Between \$5 and \$6
- G Between \$6 and \$7
- H Between \$7 and \$8
- J Between \$8 and \$9

- 13 A bicycle wheel travels about 82 inches in 1 full rotation. What is the diameter of the wheel, to the nearest inch?

- A 5 in.
- B 10 in.
- C 13 in.
- D 26 in.

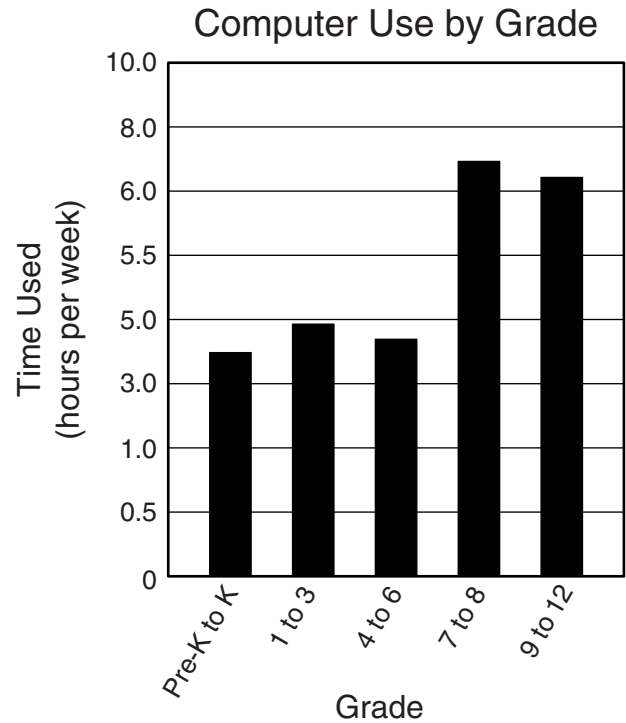
- 14 A dentist kept a record of the number of new cavities his patients had per year for the last 10 years. The scatterplot below shows the average number of new cavities per year for patients in the 4- to 32-year age range.



Which description best represents the relationship of the dentist's data?

- F Negative trend
 - G No trend
 - H Positive trend
 - J Cannot be determined
- 15 Bobby saved \$32 when he purchased a jacket at a clearance sale. If the sale price was 40% off the regular price, what was the regular price of the jacket?
- A \$48
 - B \$72
 - C \$80
 - D \$128

- 16 The bar graph shows the average number of hours per week that students in different grades use computers.



Which statement best explains why a person reading the graph might get an incorrect idea about the differences in the number of hours computers are used by students in the grades shown?

- F The title of the graph is misleading.
- G The grade intervals do not show how much time college students use computers.
- H The vertical scale should show minutes of computer use instead of hours.
- J The intervals on the vertical scale are not consistent.

- 17 The following table shows the number of pages in novels that Chloe read for pleasure each month during the school year.

Chloe's Novel Reading

Month	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April
Number of Pages Read	370	393	380	376	396	372	385	391

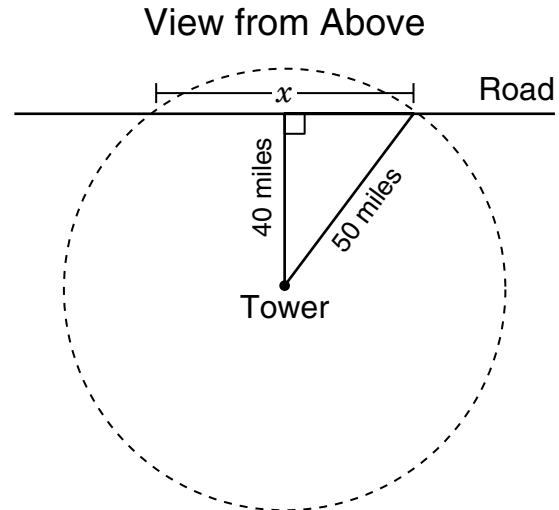
If Chloe read only 125 pages during the month of May, which measure of data changed the most?

- A The mean
- B The median
- C The mode
- D All measures were affected equally.

- 18 Before the last game of the basketball season, Fernando had scored a total of 73 points. He scored 20 points in the last game, making his season average 15.5 points per game. To find the total number of games he played, first find the sum of 73 and 20 and then —

- F add the sum to 15.5
- G subtract 15.5 from 73
- H multiply the sum by 15.5
- J divide the sum by 15.5

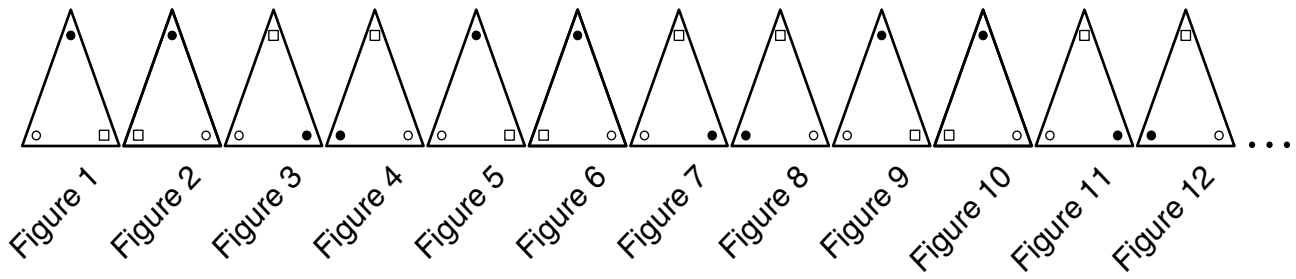
- 19 A cell-phone tower that has a transmission range of 50 miles is located 40 miles due south of a straight road.



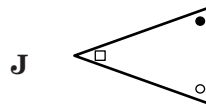
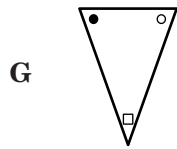
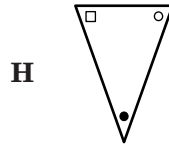
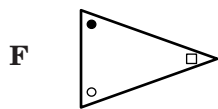
Find x , the length of the section of road that is within the transmission range of the tower.

- A 10 mi
- B 30 mi
- C 60 mi
- D 90 mi

20 The figures below have a repeating pattern.



Which shows a 180° rotation of the 19th figure in the pattern?



21 Three roommates agreed to split the cost of food and rent evenly. Last month they spent a total of \$349.66 for food and \$365 for rent. Find the amount that each of the 3 roommates paid.

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

- 22** A spinner and a fair number cube are used in a game. The spinner has an equal chance of landing on 1 of 4 colors: red, purple, blue, or green. The faces of the cube are labeled 1 through 6. What is the probability of a player spinning the color red and then rolling a 5 or 6?

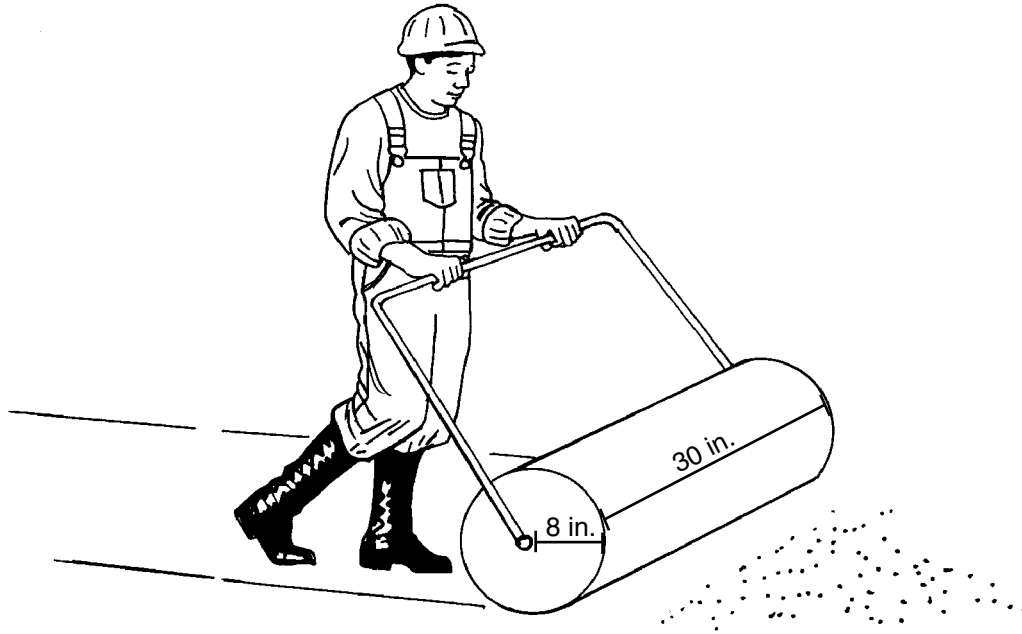
F $\frac{3}{10}$

G $\frac{1}{8}$

H $\frac{1}{12}$

J $\frac{1}{24}$

- 23 For small paving jobs, a contractor uses a roller pushed by a worker.



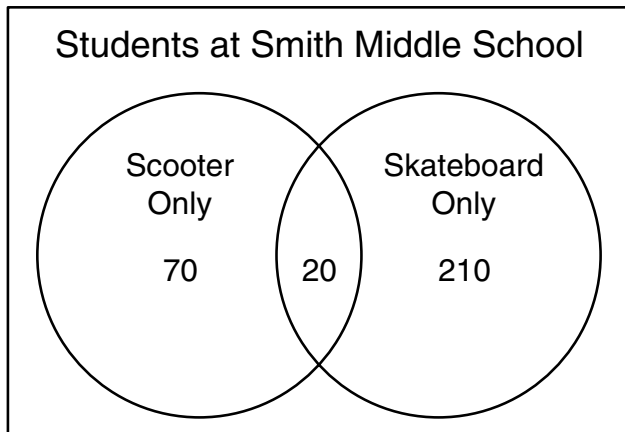
To the nearest square inch, what is the area of pavement with which the surface of the roller will come into contact in one complete rotation?

- A 753 in.²
- B 1,507 in.²
- C 1,708 in.²
- D 1,909 in.²

-
- 24 A jeweler bought 2 meters of silver chain. She used 20 centimeters to make a bracelet and 60 centimeters to make a necklace. How many meters of silver chain did she have left?

- F 1,200 m
- G 120 m
- H 1.2 m
- J 0.12 m

- 25 The Venn diagram shows how many of the 400 students at Smith Middle School have a scooter only, a skateboard only, or both a scooter and a skateboard.



Use the information in the diagram to find the probability that 1 student chosen at random has neither a scooter nor a skateboard.

- A $\frac{1}{20}$
- B $\frac{1}{4}$
- C $\frac{7}{10}$
- D $\frac{3}{4}$

- 26 Rae's recipe for lemon-lime punch calls for the following ingredients:

1 quart of apple juice

$2\frac{3}{4}$ cups of lemon-lime soda

64 ounces of pineapple juice

2 quarts of cold water

$\frac{1}{4}$ cup of lemon juice

What is the smallest container that will hold all the ingredients?

- F A 4-quart container
- G A 5-quart container
- H A 6-quart container
- J A 7-quart container

- 27 Vanita can read an average of 18 pages during a 30-minute reading period at school. At this rate, approximately how long will it take her to read a 380-page book?

- A 11 h
- B 21 h
- C 23 h
- D 42 h

28 A cardboard box is 60 inches long, 18 inches wide, and 24 inches high. Which is closest to the volume of the box in cubic feet?

- F 8.5 ft^3
- G 15 ft^3
- H 18 ft^3
- J 24 ft^3

29 Which expression can be used to find the n th term in the following arithmetic sequence, where n represents a number's position in the sequence?

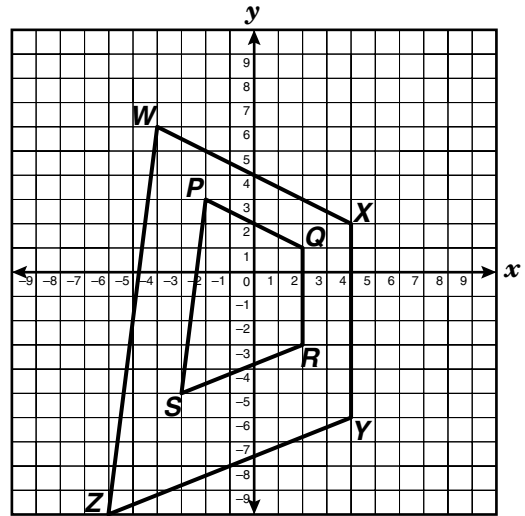
Position in Sequence	1	2	3	4	n
Term	5	9	13	17	?

- A $n + 4$
- B $3n + 4$
- C $5n$
- D $4n + 1$

30 The area of a square is 125 square meters. Which best represents the length of a side of the square?

- F 10.8 m
- G 11.2 m
- H 11.9 m
- J 12 m

31 Quadrilateral $PQRS$ was dilated to form quadrilateral $WXYZ$.



Which number best represents the scale factor used to change quadrilateral $PQRS$ into quadrilateral $WXYZ$?

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

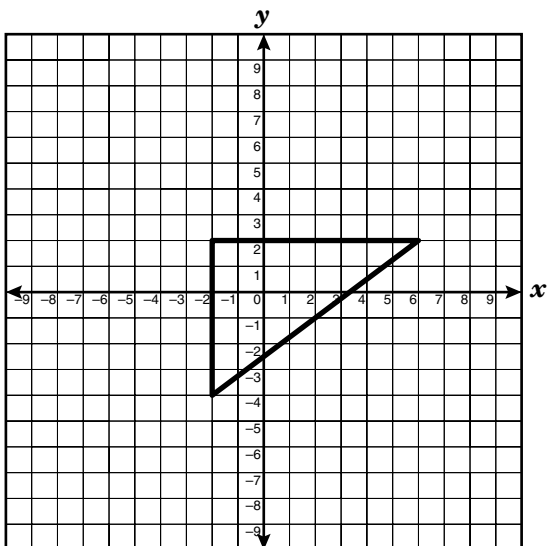
- 32** Tim ran 150 meters in 25 seconds, and Evan ran 90 meters in 15 seconds. Based on these rates, which statement is true?
- F** Tim's average speed was 4 meters per second faster than Evan's average speed.
- G** Tim's average speed was 2.4 meters per second faster than Evan's average speed.
- H** Tim's average speed was 2 meters per second faster than Evan's average speed.
- J** Tim's average speed was equal to Evan's average speed.

- 33** There are 4 children in the Carter family. Roger is $1\frac{1}{4}$ times as tall as Charlie. John is 3 inches taller than Roger. Grace is 58 inches tall, and she is 2 inches taller than Charlie. How tall is John in feet and inches?

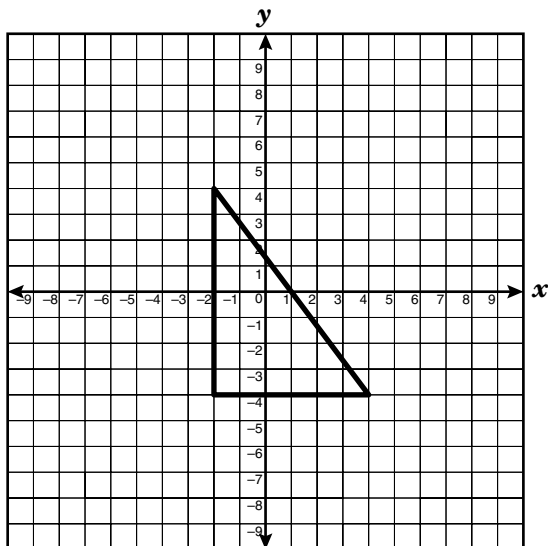
- A** 5 ft 3 in.
- B** 5 ft 10 in.
- C** 6 ft $\frac{1}{2}$ in.
- D** 6 ft 1 in.

- 34 Which graph shows a right triangle with one vertex at coordinates $(-2, -4)$ and another vertex in the first quadrant?

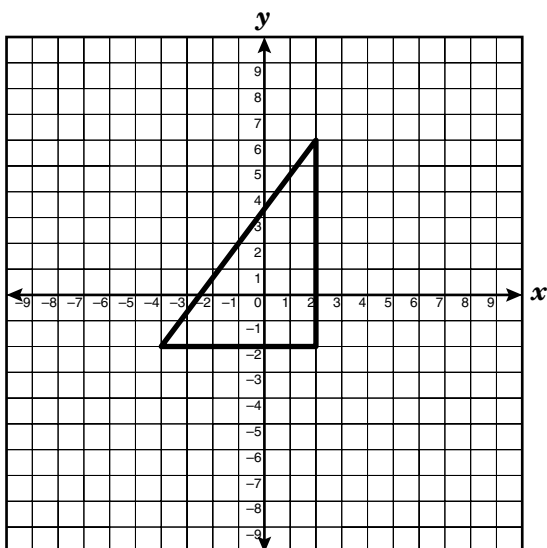
F



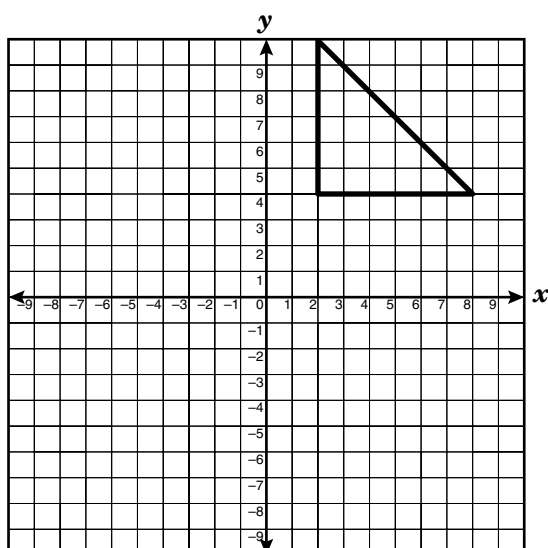
H



G



J



35 Antonio and his two brothers equally shared the cost of a new CD with a list price of \$18. They received a 20% discount off the list price and paid 8.25% sales tax on the discounted price. Find the approximate amount that each of the 3 brothers paid toward the cost of the CD.

- A** \$4.80
- B** \$5.20
- C** \$6.50
- D** \$15.59

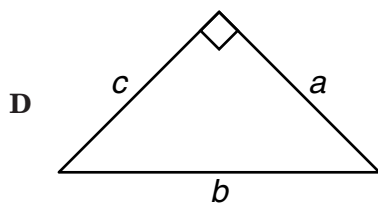
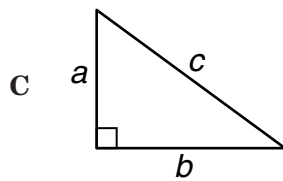
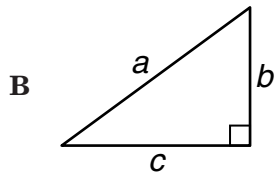
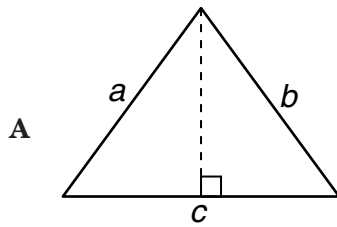
36 Let n represent the position of a number in the following arithmetic sequence.

$$\frac{1}{2}, 1, \frac{3}{2}, 2, \dots$$

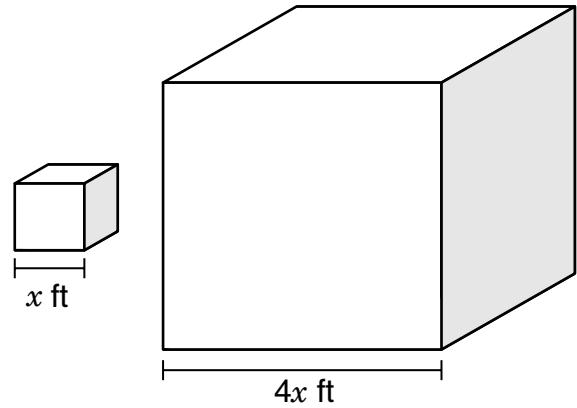
Which expression can be used to find any term in the sequence?

- F** $2n$
- G** $\frac{1}{2}n$
- H** $\frac{3}{2}n$
- J** $\frac{5}{2}n$

- 37 Which figure best represents a triangle with sides a , b , and c in which the relationship $a^2 + b^2 = c^2$ is always true?



- 38 The dimensions of two cubes are shown below.

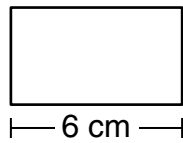


The volume of the smaller cube is 64 cubic feet. Find the volume of the larger cube.

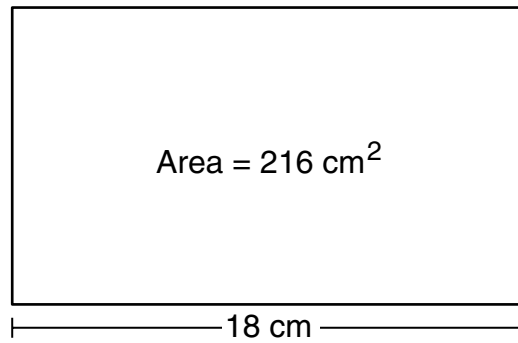
- F 16,384 ft³
G 4,096 ft³
H 768 ft³
J 256 ft³

- 39 Rectangle I is similar to rectangle II.

Rectangle I



Rectangle II



The area of rectangle II is 216 square centimeters. Find the area of rectangle I.

- A 4 cm^2
- B 12 cm^2
- C 24 cm^2
- D 108 cm^2

-
- 40 Mr. Park's total monthly charge for local and long-distance telephone service, c , can be found using the equation $c = 20 + 0.07m$, where m represents the number of minutes of long-distance calls Mr. Park made during that month. Find the total charge for a month during which Mr. Park made 100 minutes of long-distance calls.

- F \$7.00
- G \$20.00
- H \$20.07
- J \$27.00

- 41 A clothing store surveyed 100 boys aged 12 to 16 about their preferred T-shirt colors. The results are shown in the table.

T-Shirt Colors

Color	Frequency
Purple	35
Orange	45
Green	15
Yellow	5

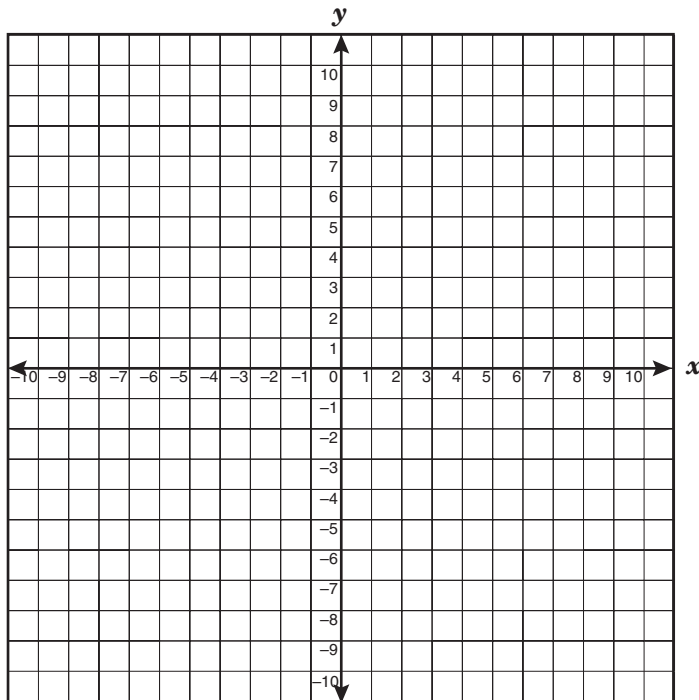
If the store uses only these data to order T-shirts, which conclusion best reflects the data collected?

- A More than half of each order should be orange T-shirts.
- B More than half of each order should be purple T-shirts and orange T-shirts.
- C Only purple T-shirts and orange T-shirts should be ordered.
- D About a third of the order should be green T-shirts and yellow T-shirts.

- 42 A librarian arranged some books on the shelf using the Dewey decimal system. Choose the group of book numbers that is listed in order from least to greatest.

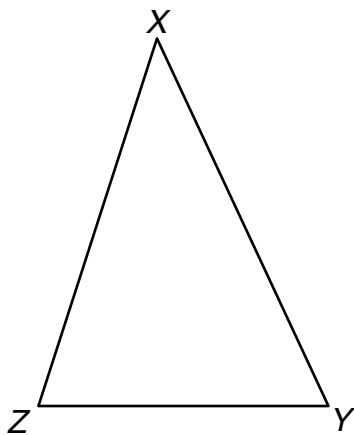
- F 549.010, 549.101, 549.02, 549.3
- G 392.4, 397.46, 399.53, 399.062
- H 101.2, 101.04, 104.21, 110.0
- J 834, 834.19, 834.2, 834.29

- 43 A circle with a radius of 3 units has its center at $(-4, -2)$ on a coordinate grid.



If the circle is translated 6 units to the right and 3 units up, what will be the coordinates of the new center?

- A $(2, 1)$
- B $(1, 2)$
- C $(-2, 1)$
- D $(1, -2)$



44 The following statements are true about $\triangle XYZ$.

- The measure of each angle is evenly divisible by 12.
- The measure of $\angle Z$ is greater than the measure of $\angle Y$.
- The measure of $\angle Y$ is greater than the measure of $\angle X$.
- The measure of $\angle X$ is greater than 40° .

Which choice fits all 4 statements for angles X , Y , and Z ?

F $m\angle X = 72^\circ$
 $m\angle Y = 60^\circ$
 $m\angle Z = 48^\circ$

G $m\angle X = 60^\circ$
 $m\angle Y = 72^\circ$
 $m\angle Z = 48^\circ$

H $m\angle X = 50^\circ$
 $m\angle Y = 60^\circ$
 $m\angle Z = 70^\circ$

J $m\angle X = 48^\circ$
 $m\angle Y = 60^\circ$
 $m\angle Z = 72^\circ$

45 An electronic device counted 3,962 vehicles passing through an intersection during a 7-hour period. If the number of vehicles passing through this intersection per hour remains the same, which proportion can be used to find x , the number of vehicles that would be counted by the device during a 9-hour period?

A $\frac{7}{3,962} = \frac{x}{9}$

B $\frac{3,962}{7} = \frac{x}{9}$

C $\frac{7}{x} = \frac{9}{3,962}$

D $\frac{7}{3,962} = \frac{16}{x}$

46 A certain bacterium measures approximately 0.000015 millimeter in length. How is this length expressed in scientific notation?

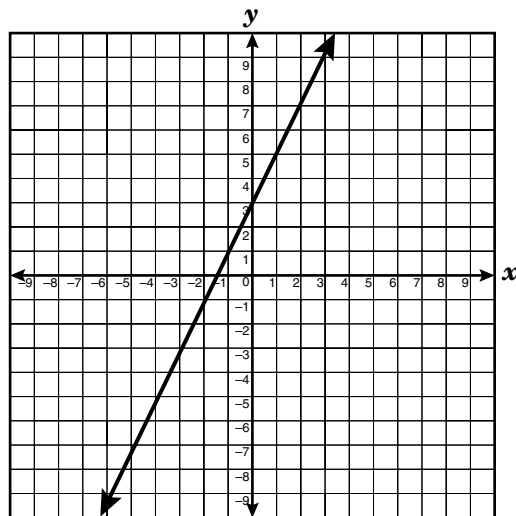
F 1.5×10^{-5} mm

G 1.5×10^{-4} mm

H 0.15×10^5 mm

J 15×10^4 mm

47 The graph of the line $y = 2x + 3$ is drawn on the coordinate grid below.



Which table of ordered pairs contains only points on this line?

A

x	y
-2	1
0	3
1	5
3	9

C

x	y
-1	-2
3	0
5	1
7	2

B

x	y
-2	-1
0	3
1	5
2	7

D

x	y
2	1
0	3
1	5
2	7

48 A camp leader plans to buy 3 hot dogs per person for a cookout. If 30 people are going on the cookout and if hot dogs cost \$3.99 per package, what other information is needed to find the cost of the hot dogs?

F The number of meals at which hot dogs will be served

G The cost of mustard and relish

H The number of people who eat hot dogs

J The number of hot dogs in a package

- 49 Mrs. Pardue wants to purchase some apples. She compared prices from several different on-line grocers. Which grocer's price table is based on a constant unit price?

Groceries 2 U

A

Number of Apples	Total Cost
10	\$2.00
20	\$3.50
30	\$5.50
40	\$7.00

The Market

C

Number of Apples	Total Cost
10	\$2.50
20	\$4.00
30	\$6.00
40	\$7.50

The Dotted Grocer

B

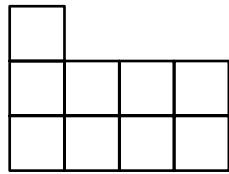
Number of Apples	Total Cost
10	\$2.00
20	\$4.00
30	\$6.00
40	\$8.00

Web Grocer

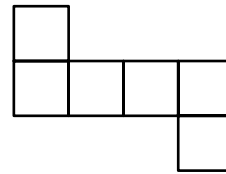
D

Number of Apples	Total Cost
10	\$2.50
20	\$5.00
30	\$7.50
40	\$9.50

50 The drawings show the top view and the front view of a solid figure built with cubes.

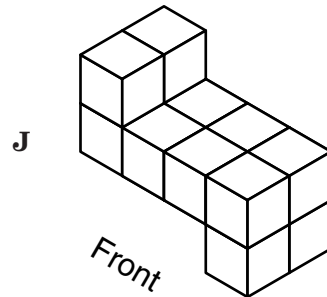
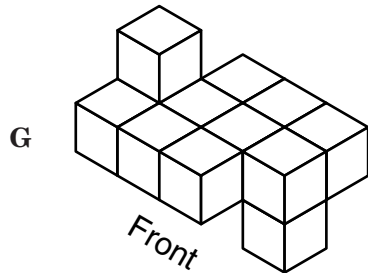
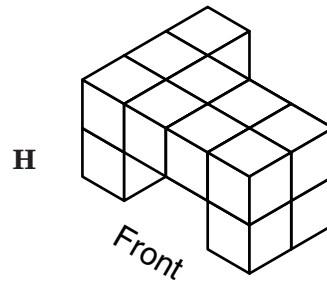
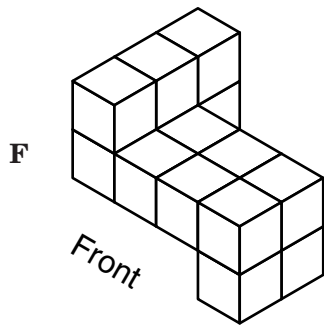


Top View



Front View

Which drawing shows a 3-dimensional view of the solid figure represented above?



BE SURE YOU HAVE RECORDED ALL OF YOUR ANSWERS
ON THE ANSWER DOCUMENT.

