

**Calculator-Active Section**

Answer questions 1–43 on your answer sheet. You may use a calculator.

**1** The elevation of the surface of the Dead Sea is about  $-424.3$  meters. In 2005, the height of Mt. Everest was about  $8,844.4$  meters. How much higher was the peak of Mt. Everest than the surface of the Dead Sea?

- A**  $-9,268.7$  m
- B**  $-8,420.1$  m
- C**  $8,420.1$  m
- D**  $9,268.7$  m

**2** About how many times should you expect to roll an even number on a standard 1–6 number cube if you roll it 600 times?

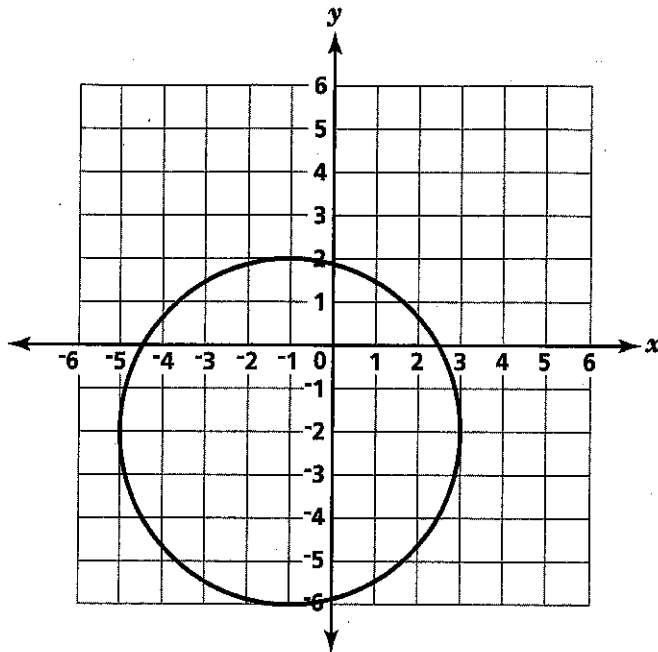
- A** 100
- B** 200
- C** 300
- D** 400

**Go On**

3 Which set of angle measures could form a triangle?

- A  $2^\circ$ ,  $27^\circ$ , and  $33^\circ$
- B  $22^\circ$ ,  $90^\circ$ , and  $145^\circ$
- C  $36^\circ$ ,  $42^\circ$ , and  $102^\circ$
- D  $55^\circ$ ,  $122^\circ$ , and  $159^\circ$

4 The figure shows a circle graphed on a coordinate plane.



What is the approximate circumference of the circle? Use 3.14 for  $\pi$ .

- A 12.6 units
- B 25.1 units
- C 39.5 units
- D 50.3 units

5 Cedric has 1 red pen, 1 blue pen, and 1 black pen in his desk. If he randomly draws two of them from the desk without replacement, what is the probability he will draw the blue and black pens?

- A  $\frac{1}{3}$
- B  $\frac{1}{6}$
- C  $\frac{1}{9}$
- D  $\frac{1}{12}$

6 Holly spends  $7\frac{3}{5}$  hours in school each day. Her lunch period is  $\frac{1}{2}$  hour long, and she spends a total of  $\frac{7}{10}$  hour switching rooms between classes. The rest of her day is spent in 6 classes that are all the same length. How long is each class?

- A  $1\frac{1}{15}$  hours
- B  $1\frac{3}{20}$  hours
- C  $1\frac{11}{60}$  hours
- D  $1\frac{4}{15}$  hours

**Go On**

**7**

There is a proportional relationship between the variables  $x$  and  $y$ .

When  $x$  is  $\frac{1}{2}$ ,  $y$  is 2.

If the equation  $y = kx$  represents the relationship between  $x$  and  $y$ , where  $k$  is the constant of proportionality, what is the value of  $k$ ?

**A**  $\frac{1}{4}$

**B**  $\frac{1}{2}$

**C** 2

**D** 4

**8**

An irrigation system spreads water in circular patterns. Each irrigated section is a circle with a diameter of 40 feet. In terms of  $\pi$ , what is the area of an irrigated section?

**A**  $20\pi \text{ ft}^2$

**B**  $40\pi \text{ ft}^2$

**C**  $400\pi \text{ ft}^2$

**D**  $1,600\pi \text{ ft}^2$

**9**

Abdul surveyed a random sample of adults to find out how many hours per night they sleep. The results are shown below.

7, 7, 6, 8, 8, 7, 7, 8, 6, 7, 5, 8, 8, 7, 6, 7, 6, 9, 6, 7

What is the mean number of hours of sleep for the population from which the sample was drawn?

- A 6.5 hours
- B 7 hours
- C 7.5 hours
- D 8 hours

**10**

Yesterday, Molly's lunch cost \$9.80, and she left a \$1.47 tip. Today, Molly's lunch cost \$12.60. If she tips at the same rate that she did yesterday, how much of a tip should Molly leave?

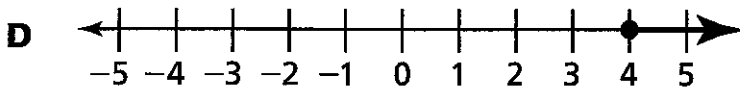
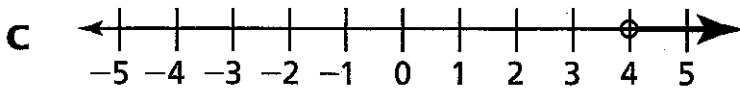
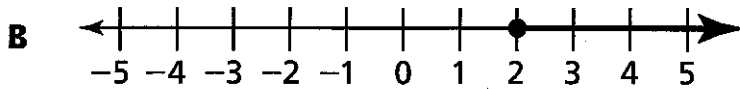
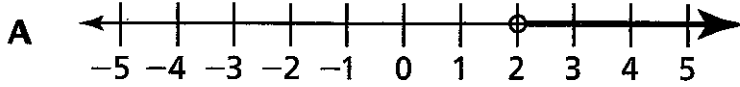
- A \$1.14
- B \$1.47
- C \$1.89
- D \$4.27

**Go On**

**11**

The O'Neil family is taking a road trip. Their final destination is more than 243 miles from their house, and so far they have traveled 157 miles. Their car can travel 21.5 miles on a gallon of gas.

Which number line shows the solution set for the number of gallons of gas the O'Neil family needs to reach their destination?

**12**

A rectangular room on a blueprint is 2 inches wide and 5 inches long. The blueprint uses the scale 1 inch = 72 inches. What is the width of the room in feet?

- A** 12 ft
- B** 18 ft
- C** 30 ft
- D** 36 ft

**13**

Xander bought three shirts for \$13.00 each. A 5% shipping and handling fee was added to the cost of the shirts. How much did Xander pay?

- A** \$13.00
- B** \$13.65
- C** \$39.00
- D** \$40.95

**14**

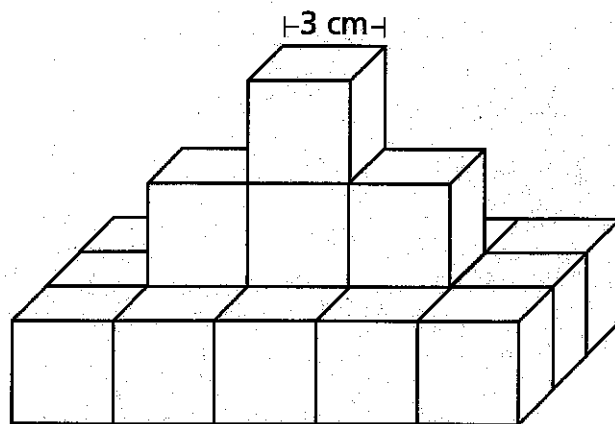
The math club needs to raise more than \$552.35 for a trip to the state competition. The club account has a balance of \$67.25. Which inequality shows how much money each of the 7 club members needs to raise if they all raise the same amount?

- A**  $m < \$69.30$
- B**  $m > \$69.30$
- C**  $m < \$78.91$
- D**  $m > \$78.91$

**Go On**

15

The figure below is composed of cubes.



[not drawn to scale]

What is the surface area of the figure?

- A 174 cm<sup>2</sup>
- B 261 cm<sup>2</sup>
- C 348 cm<sup>2</sup>
- D 522 cm<sup>2</sup>

16

Which number is located the same distance on a number line from  $-5$  as  $3$  is?

- A 13
- B 8
- C  $-7$
- D  $-13$



**17**

A school auditorium can hold 386 people. For a choir concert, there will be 10 staff members in attendance. To solve for the number of guests each of the 33 choir members can invite to the concert if they all invite the same number of people, one of the choir members performed the following calculations.

$$33g + 10 \leq 386$$

$$33g \leq 396$$

$$\frac{33g}{33} \leq \frac{396}{33}$$

$$g \leq 12$$

What did the choir member do wrong?

- A** He used the  $\leq$  symbol in the inequality instead of the  $<$  symbol.
- B** He used the  $\leq$  symbol in the inequality instead of the  $\geq$  symbol.
- C** He added 10 to the right side of the inequality instead of subtracting when simplifying  $33g + 10 \leq 386$ .
- D** He subtracted 10 from the right side of the inequality instead of adding when simplifying  $33g + 10 \leq 386$ .

**18**

Dennis made a scale drawing of his backyard, using the scale  $\frac{1}{4}$  inch = 3 feet. The rectangular swimming pool was 2 inches long and 1 inch wide in the drawing. What was the area of the actual swimming pool?

- A** 12 ft<sup>2</sup>
- B** 24 ft<sup>2</sup>
- C** 288 ft<sup>2</sup>
- D** 576 ft<sup>2</sup>

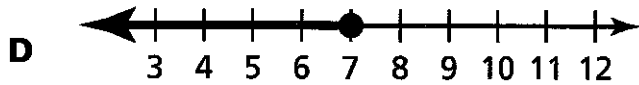
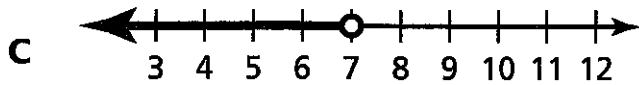
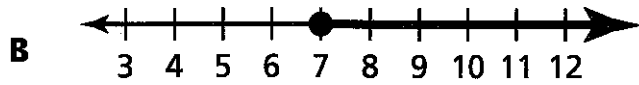
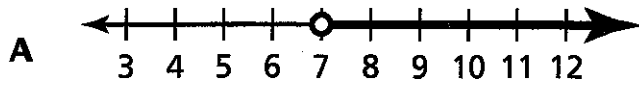
**19**

What is the value of  $-\frac{3}{4} - \left(-\frac{3}{8}\right)$ ? Record your answer and fill in the bubbles on your answer document.

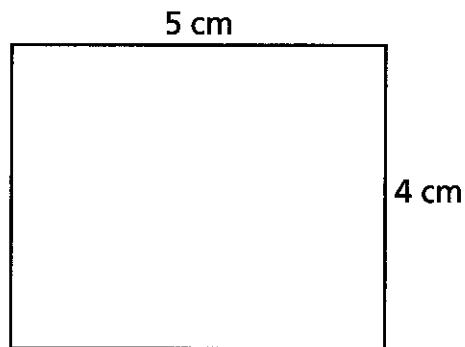
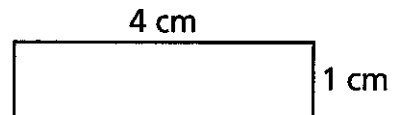
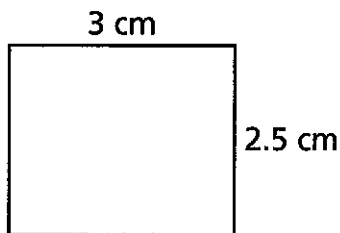
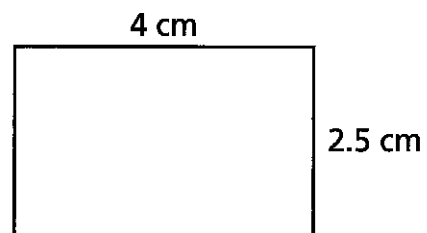
**Go On**

**20**

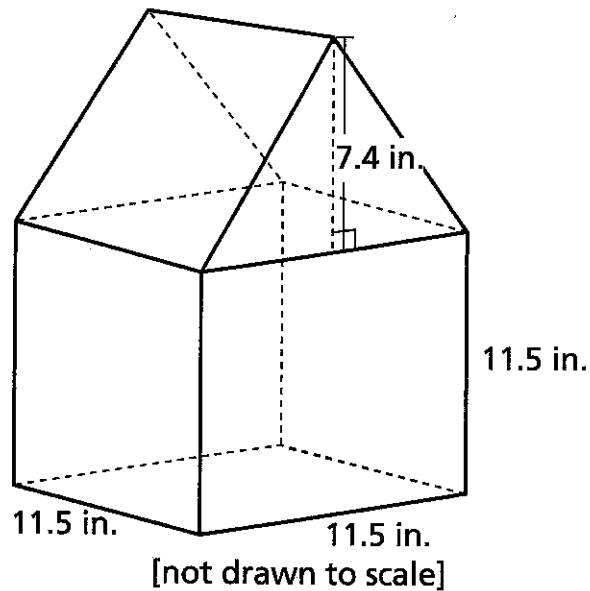
Kathy had less than 55 minutes to listen to songs played by her favorite band when she began listening. So far she has been listening for  $35\frac{3}{4}$  minutes. Each of the songs lasts  $2\frac{3}{4}$  minutes. Which inequality shows the number of additional songs she can listen to?

**21**

Juan's classroom is shaped like a rectangle. The room is 40 feet long and 25 feet wide. Which rectangle could be a scale drawing of Juan's classroom?

**A****C****B****D**

The diagram shows a birdhouse in Michael's back yard.



What is the volume of the birdhouse?

- A 2,499.525 in.<sup>3</sup>
- B 2,010.2 in.<sup>3</sup>
- C 978.7 in.<sup>3</sup>
- D 489.325 in.<sup>3</sup>

Sarah was cutting fabric for a quilt. She cut 5 equal pieces out of a strip of fabric that was  $19\frac{1}{8}$  inches long. When she was finished cutting, Sarah had a leftover piece that was  $2\frac{1}{4}$  inches long. How long was each piece that she cut for the quilt?

- A  $3\frac{3}{4}$  in.
- B  $3\frac{5}{8}$  in.
- C  $3\frac{1}{2}$  in.
- D  $3\frac{3}{8}$  in.

**Go On**

Greg randomly surveyed 25 students in his school district to find out if they ever had an overdue library book. The data are recorded in the table below.

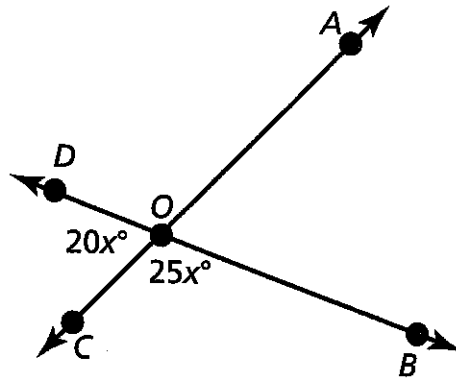
Have You Ever Had an Overdue Library Book?				
Yes	No	No	No	Yes
No	Yes	Yes	No	No
No	No	No	Yes	Yes
No	No	No	No	No
Yes	No	Yes	Yes	No

According to the sample, about what percent of the students in the school district have had an overdue library book?

- A** 9%
- B** 16%
- C** 36%
- D** 64%

25

Lines  $\overline{AC}$  and  $\overline{BD}$  intersect at  $O$  as shown.



What is the measure of  $\angle BOC$ ?

- A  $4^\circ$
- B  $45^\circ$
- C  $80^\circ$
- D  $100^\circ$

26

Daphne was assigned 38 math problems for homework. So far she has completed 13 of them.

If she has 90 minutes left for the remaining problems, what is the average number of minutes she can take for each problem? Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

27

Cleo is 38 years old, which is twice as old as Clara will be in 7 years.

In how many years will Clara be as old as Cleo is now?

- A 12 years
- B 19 years
- C 26 years
- D 33 years

**Go On**

**28** Chris used 45 feet of fencing to enclose a circular garden. What is the approximate radius of the garden? Use 3.14 for  $\pi$ .

- A 51.27 ft
- B 14.32 ft
- C 7.17 ft
- D 3.78 ft

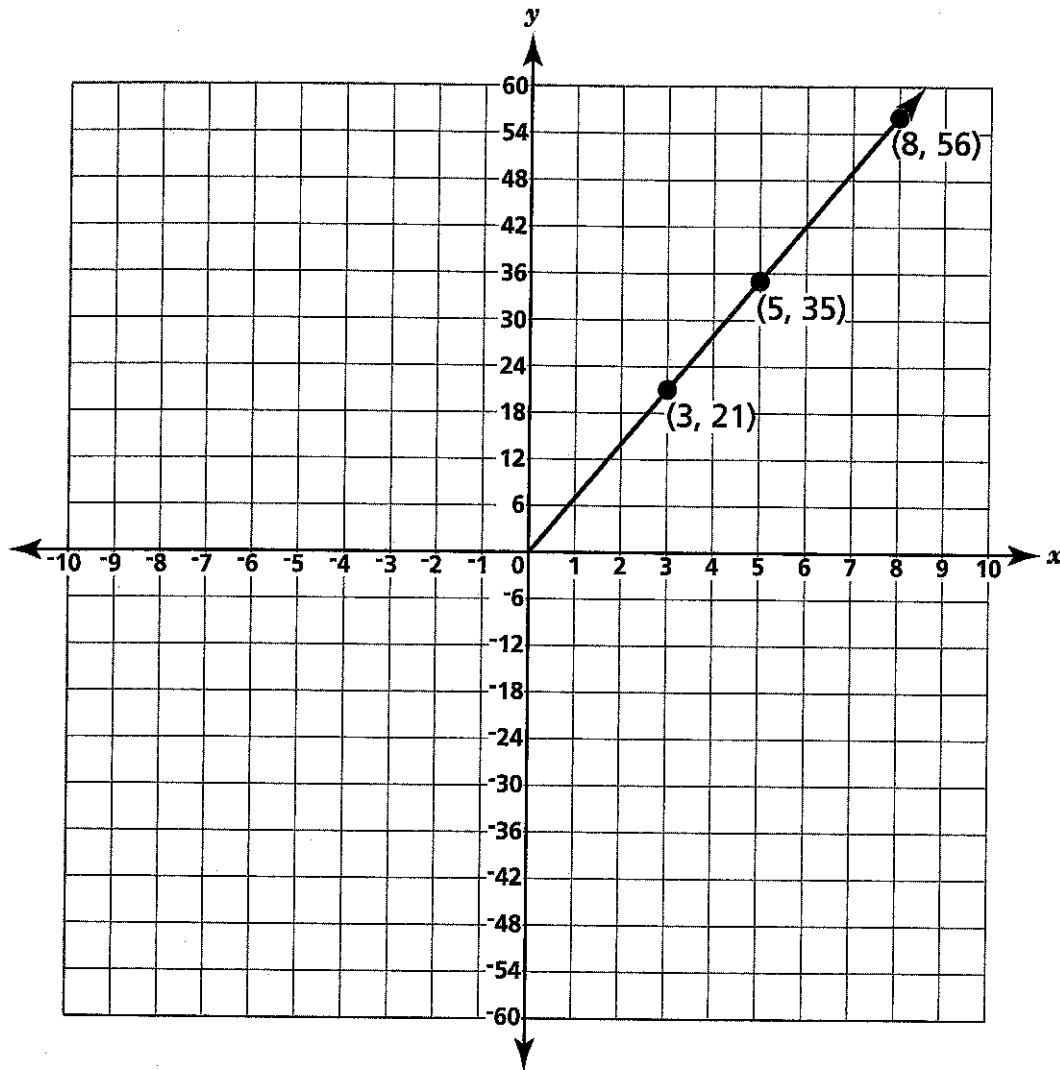
**29** The table shows the diameters in inches of a random sample of 10 tomatoes sold by two supermarket chains.

	Tomato Diameters (in.)
Supermarket Chain A	3.0, 2.5, 3.0, 3.0, 3.0, 2.5, 2.5, 3.0, 3.0, 2.5
Supermarket Chain B	2.5, 3.0, 2.0, 2.5, 3.0, 2.5, 2.0, 2.0, 2.0, 2.5

Which statement is *best* supported by the data?

- A On average, the tomatoes sold by supermarket chain A have a diameter about  $\frac{1}{2}$  inch less than those sold by supermarket chain B.
- B On average, the tomatoes sold by supermarket chain A have a diameter about 1 inch less than those sold by supermarket chain B.
- C On average, the tomatoes sold by supermarket chain A have a diameter about 1 inch more than those sold by supermarket chain B.
- D On average, the tomatoes sold by supermarket chain A have a diameter about  $\frac{1}{2}$  inch more than those sold by supermarket chain B.

The graph below shows a proportional relationship,  $y = kx$ .



What is the constant of proportionality,  $k$ ?

- A  $\frac{1}{14}$
- B  $\frac{1}{7}$
- C 7
- D 14

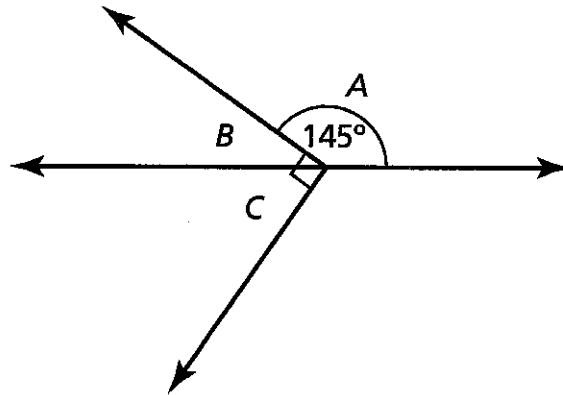
**Go On**

**31** Of the 32 popcorn buckets Montel sold for a fundraiser, 18 were caramel corn buckets, and the rest were cheese corn buckets. The cheese corn buckets cost \$15.25 each.

If Montel raised a total of \$510.50, how much did each caramel corn bucket cost?

- A** \$15.50
- B** \$15.75
- C** \$16.50
- D** \$16.75

**32** Angles  $A$ ,  $B$ , and  $C$  are shown below.



What is the measure of  $\angle C$ ?

- A**  $35^\circ$
- B**  $55^\circ$
- C**  $125^\circ$
- D**  $145^\circ$



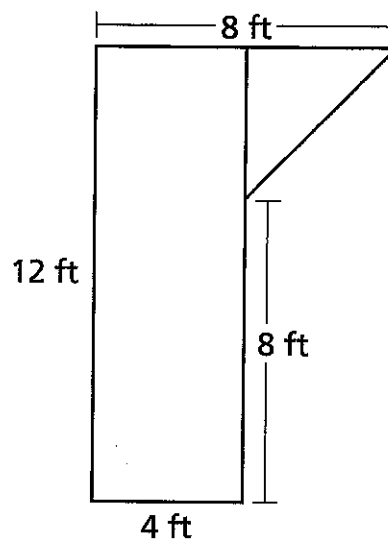
**33**

The outside temperature at midnight was  $3.4^{\circ}\text{C}$ . The temperature then changed at a constant rate of  $-0.78^{\circ}\text{C}$  per hour for 8 hours. What was the outside temperature at 8:00 AM?

- A  $9.64^{\circ}\text{C}$
- B  $9^{\circ}\text{C}$
- C  $-2.2^{\circ}\text{C}$
- D  $-2.84^{\circ}\text{C}$

**34**

The image shows one of the walls in Jennifer's apartment.



[not drawn to scale]

Jennifer wants to paint the wall. What is the area?

- A  $16\text{ ft}^2$
- B  $31\text{ ft}^2$
- C  $48\text{ ft}^2$
- D  $56\text{ ft}^2$

**Go On**

35 Which fraction equals  $\frac{8}{-16}$ ?

A 2

B -2

C  $\frac{1}{2}$

D  $-\frac{1}{2}$

36 The Mulraneys hired a contractor to build an addition to their home. The contractor proposed a rectangular room with an area of 300 square feet. The Mulraneys asked the contractor to change the area to 363 square feet by increasing both the length and the width by the same percentage.

By what percentage did the Mulraneys ask the contractor to increase the length of the room? Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

37 The number of representatives from each grade on the school's student council is proportional to the number of students at that grade level. The numbers for grades 7 and 8 are shown in the table.

**STUDENTS AND REPRESENTATIVES**

Grade	Number of Students	Number of Representatives
7	176	22
8	144	18

What is the constant of proportionality that gives the number of students per representative?

A 6

B 7

C 8

D 9

38

Luanne made a photocopy of a drawing of a rectangle. The original drawing was 4.5 inches wide and 6 inches long. The copy was 6.75 inches wide and 9 inches long. What was the scale factor of the original to the copy?

- A 2:3
- B 1:2
- C 4:9
- D 1:3

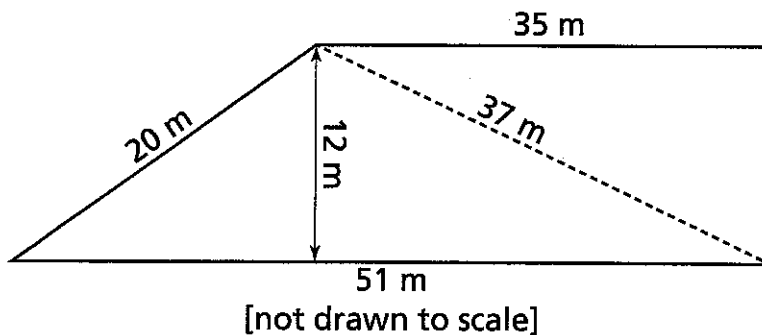
39

A landscaper is raising the price she charges to mow a lawn by 20%. If she used to charge \$30 to mow a lawn, what is her new rate?

- A \$30.20
- B \$30.60
- C \$32.00
- D \$36.00

40

The diagram shows one of the fields on Mr. Bernard's farm.



What is the area of the field?

- A  $700 \text{ m}^2$
- B  $612 \text{ m}^2$
- C  $516 \text{ m}^2$
- D  $420 \text{ m}^2$

**Go On**

**41**

A spinner is divided into four colors, but not equally. Shannon spun the spinner 500 times. The number of times the spinner landed on each of the four colors is shown in the table.

Color	Number of Times
Blue	164
Green	86
Red	104
Yellow	146

Which is *most likely* the probability of the spinner landing on red?

- A 17%
- B 21%
- C 29%
- D 33%

**42**

Which expression is equivalent to  $14 - 9$ ?

- A  $-14 + 9$
- B  $-9 - 14$
- C  $9 - (-14)$
- D  $14 + (-9)$

In the table below,  $x$  is proportional to  $y$ .

$x$	$y$
75	15
105	21
60	12
85	17

If  $y = kx$ , where  $k$  is the constant of proportionality, what is the value of  $k$ ?

- A  $\frac{1}{5}$
- B  $\frac{1}{3}$
- C 3
- D 5

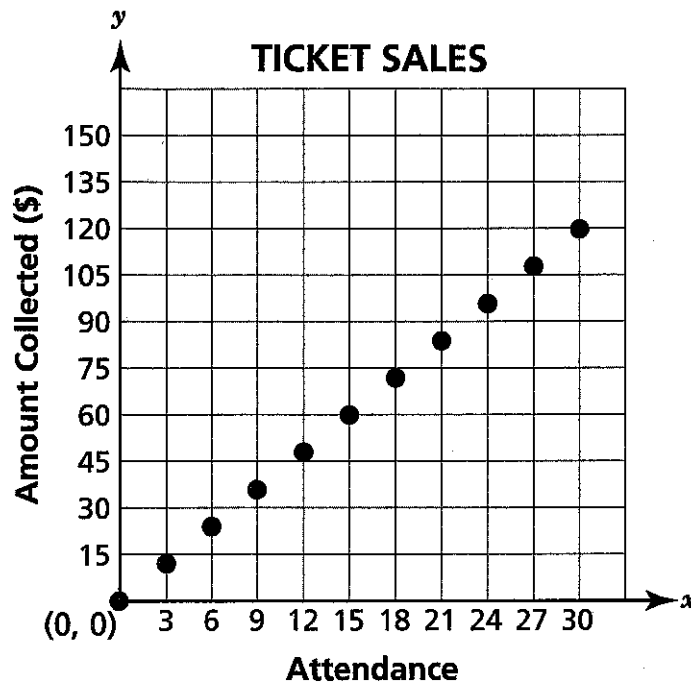
**STOP**

## Calculator Inactive Section

Answer questions 44–65 on your answer sheet. You may NOT use a calculator.

44

The graph shows the relationship between the attendance at a school basketball game and the amount of money collected from ticket sales.



What does the point  $(0, 0)$  represent?

- A the number of dollars collected if no one attends the game
- B the number of dollars collected if 30 people attend the game
- C the number of dollars collected for each person attending the game
- D the number of people attending the game for each dollar collected

The ages of the male and female homeroom teachers at Lincoln Middle School are listed in the table below.

### AGES OF MALE HOMEROOM TEACHERS

27	31	42
37	58	55
29	36	45

### AGES OF FEMALE HOMEROOM TEACHERS

25	51	32
38	23	33
27	41	54

The interquartile range is the same for both data sets. How does the difference in the medians of the two data sets compare to the interquartile range?

- A The difference in the medians is  $\frac{1}{5}$  of the interquartile range.
- B The difference in the medians is  $\frac{1}{2}$  of the interquartile range.
- C The difference in the medians is 2 times the interquartile range.
- D The difference in the medians is 5 times the interquartile range.

**Go On**

**46** Patrick read 20 pages of his book in 4 hours. Todd read 25 pages in 5 hours. Did both boys read at the same rate?

**A** No, because  $\frac{25 \text{ pages}}{4 \text{ hours}} > \frac{20 \text{ pages}}{5 \text{ hours}}$ .

**B** No, because  $\frac{20 \text{ pages}}{4 \text{ hours}} < \frac{25 \text{ pages}}{5 \text{ hours}}$ .

**C** Yes, because  $\frac{25 \text{ pages}}{4 \text{ hours}} = \frac{20 \text{ pages}}{5 \text{ hours}}$ .

**D** Yes, because  $\frac{20 \text{ pages}}{4 \text{ hours}} = \frac{25 \text{ pages}}{5 \text{ hours}}$ .

**47** How can  $\frac{5}{16}$  be written as a decimal?

**A** 0.1875

**B** 0.3125

**C** 1.6

**D** 3.2



A bag contains a number of small tiles, each with the letter A, E, I, O, or U on it. Marla randomly chose a tile from the bag, and then put it back. She repeated this process until she had chosen a letter 250 times. The table shows the number of times she chose each letter.

**RESULTS OF RANDOMLY  
CHOOSING A TILE 250 TIMES**

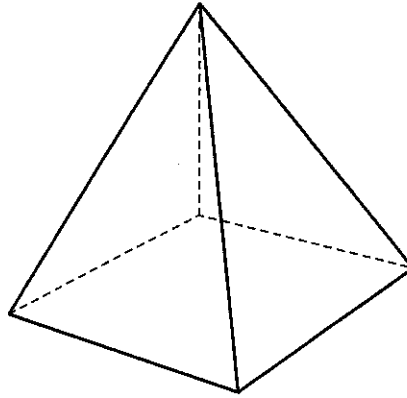
Letter	Number of Times
A	62
E	44
I	30
O	76
U	38

Which is the experimental probability of choosing an E?

- A** 12%
- B** 18%
- C** 25%
- D** 30%

**Go On**

Suppose the square pyramid shown is sliced by a plane that is perpendicular to the base and parallel to an edge of the base.



If the plane does *not* pass through the top vertex of the pyramid, what two-dimensional figure is formed by the intersection of the plane and the pyramid?

- A a square
- B a triangle
- C a rectangle
- D a trapezoid

Richard mows  $\frac{1}{3}$  of his yard in  $\frac{1}{2}$  hour. At that same rate, how much of his yard would Richard mow in 1 hour?

- A  $\frac{1}{6}$
- B  $\frac{2}{5}$
- C  $\frac{2}{3}$
- D  $\frac{3}{2}$

**51**

Point  $C$  is located 8 inches from point  $A$  and 6 inches from point  $B$ . Points  $A$  and  $B$  are 2 inches apart. Which statement is true?

- A** The points cannot be connected to form a triangle.
- B** The points can be connected to form exactly one triangle.
- C** The points can be connected to form exactly two triangles.
- D** The points can be connected to form more than two triangles.

**52**

A storeowner is considering changing the hours the store is open each day. He conducts a survey to determine what his customers' reactions would be. Which survey method would likely produce the most representative sample?

- A** choose every tenth customer who comes in
- B** choose every customer who comes in within 10 minutes of closing
- C** choose every customer who requests longer hours
- D** choose every customer who is waiting outside the store when it opens

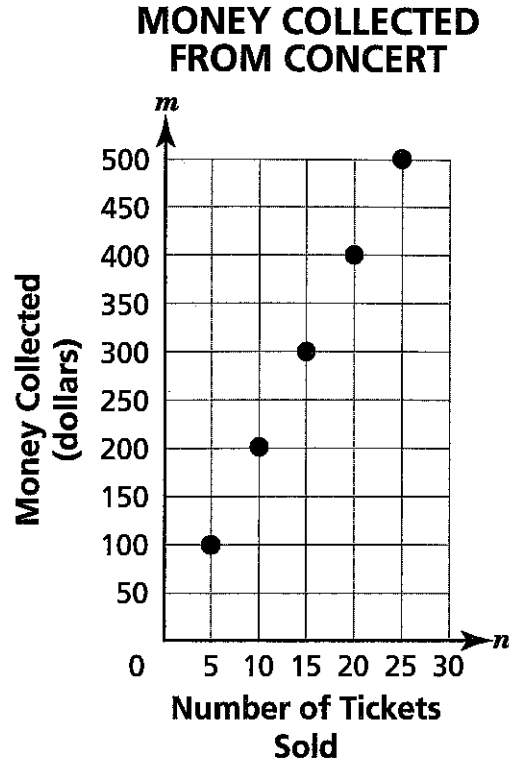
**53**

Lien jogged  $\frac{2}{3}$  of a mile in  $\frac{1}{12}$  of an hour. What was her speed in miles per hour?

- A**  $\frac{1}{18}$  miles per hour
- B**  $\frac{1}{5}$  miles per hour
- C** 4 miles per hour
- D** 8 miles per hour

**Go On**

Martin's class is organizing a concert to raise money for a charity. The graph below shows the relationship between the number of tickets sold,  $n$ , and the money collected,  $m$ .



Which equation shows the relationship that is represented in the graph?

- A**  $m = 20n$
- B**  $m = 25n$
- C**  $m = 200n$
- D**  $m = 500n$

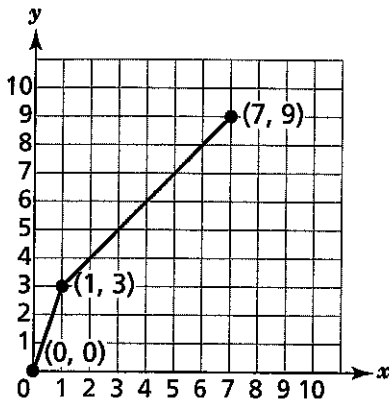
55

What is  $(-4.8y + 20.1) - (12.7y + 9.3)$ ?

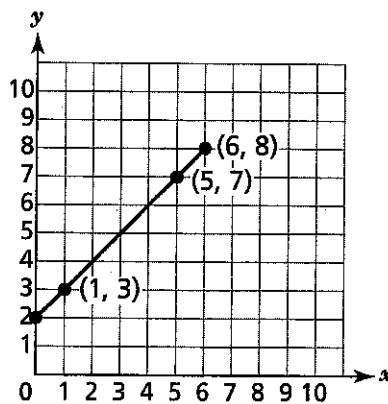
- A  $-17.5y + 10.8$
- B  $-7.9y + 29.4$
- C  $7.9y - 29.4$
- D  $17.5y - 10.8$

56

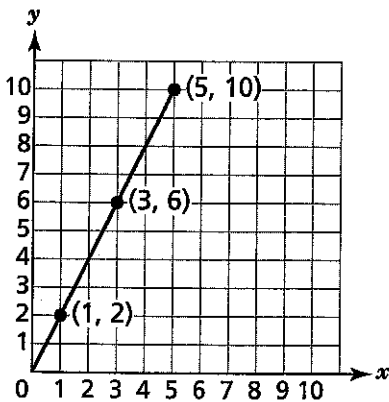
Which graph shows a proportional relationship between  $x$  and  $y$ ?



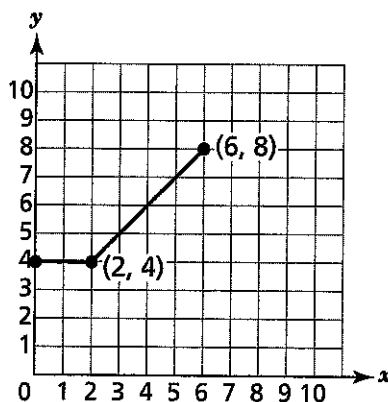
A



C



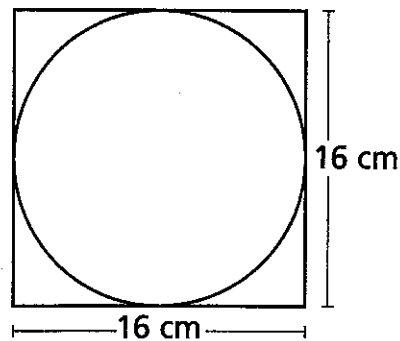
B



D

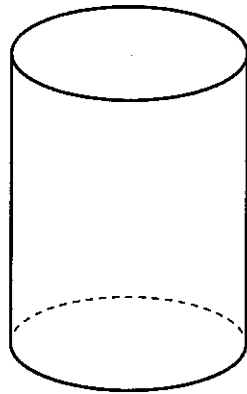
**Go On**

Monique drew a square and inscribed circle on a sheet of paper, as shown below.



Monique randomly drops a pen point-down to leave a mark on the drawing. Assume the pen point lands somewhere on the paper. What is the approximate probability, expressed as a percent, that the pen mark will land outside of the circle? Use 3.14 for  $\pi$ . Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

Suppose the cylinder shown is sliced by a plane.



Which statement about the two-dimensional figure formed by the intersection of the plane and the cylinder is correct?

- A** If the plane is parallel to the base or perpendicular to the base, the resulting figure is a circle.
- B** If the plane is parallel to the base or perpendicular to the base, the resulting figure is a rectangle.
- C** If the plane is parallel to the base, the resulting figure is a circle, and if the plane is perpendicular to the base, the resulting figure is a rectangle.
- D** If the plane is parallel to the base, the resulting figure is a rectangle, and if the plane is perpendicular to the base, the resulting figure is a circle.

59

Ann opened a new savings account with an initial deposit of \$250. Which combination will result in a zero balance in Ann's account?

- A** Every week for 5 weeks, deposit \$10 on Monday, Wednesday, and Friday, and withdraw \$27.50 on Tuesday and Thursday.
- B** Every week for 5 weeks, deposit \$20 on Monday, Wednesday, and Friday, and withdraw \$27.50 on Tuesday and Thursday.
- C** Every week for 10 weeks, deposit \$10 on Monday, Wednesday, and Friday, and withdraw \$27.50 on Tuesday and Thursday.
- D** Every week for 10 weeks, deposit \$20 on Monday, Wednesday, and Friday, and withdraw \$27.50 on Tuesday and Thursday.

60

Andy, Brenda, Carla, and Diego put their names in a hat and pull out two names. If A represents Andy, B represents Brenda, C represents Carla, and D represents Diego, what are all the different pairs of names they can pull out?

- A** AB, CD, BC, DC, BA, AC
- B** AB, CD, BA, DC, AC, CA
- C** AB, AC, AD, CB, CD, CA
- D** AB, AC, AD, BC, BD, CD

61

Tim is thinking of buying some juice boxes, which are on sale for \$0.65 each. The total cost,  $c$ , of all the juice boxes will be proportional to the number of juice boxes,  $n$ , that he buys.

Which equation represents the relationship between  $c$  and  $n$ ?

- A**  $c = 0.65 - n$
- B**  $c = 0.65 + n$
- C**  $c = 0.65 \times n$
- D**  $c = 0.65 \div n$

**Go On**

62

The probability of an event is 1. Which word **best** describes this probability?

- A certain
- B impossible
- C likely
- D unlikely

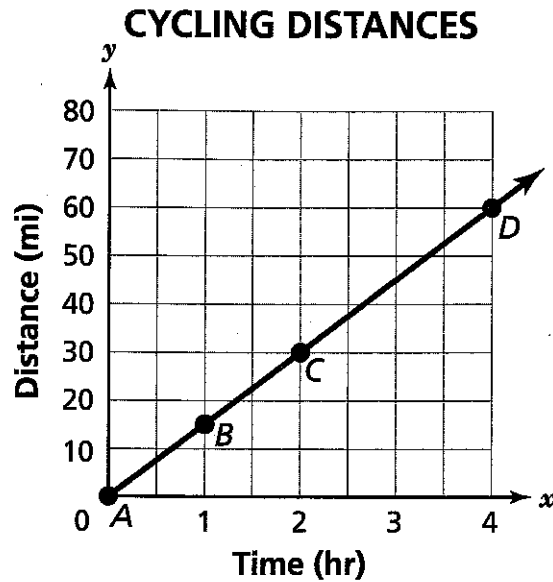
63

Javier is evaluating the expression  $(-8)[10 + (-5) + (-8)]$ .

Multiplying the numbers 10,  $-5$ , and  $-8$  by a certain number and then adding the three products will give Javier the fully evaluated expression. What is that number? Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.



The graph shows the relationship between the amount of time Sheila rides her bicycle and the distance she travels.



Which point on the graph represents Sheila's constant speed in miles per hour?

- A** Point A
- B** Point B
- C** Point C
- D** Point D

A store is having a 20%-off sale. Michael says that he can find the sale price of an item that has a regular price of  $p$  by evaluating the expression  $0.8p$ . Susan says that she can find the sale price for the same item by evaluating the expression  $p - 0.2p$ .

Who is correct?

- A** Neither is correct.
- B** Michael
- C** Susan
- D** Both are correct.

**STOP**