

Student Name _____

Teacher Name _____

School _____

System _____



TENNESSEE



Mathematics



Part 1

- 1 The table below shows how the 2009 population of Tennessee was represented by different age groups.

Tennessee Population in 2009

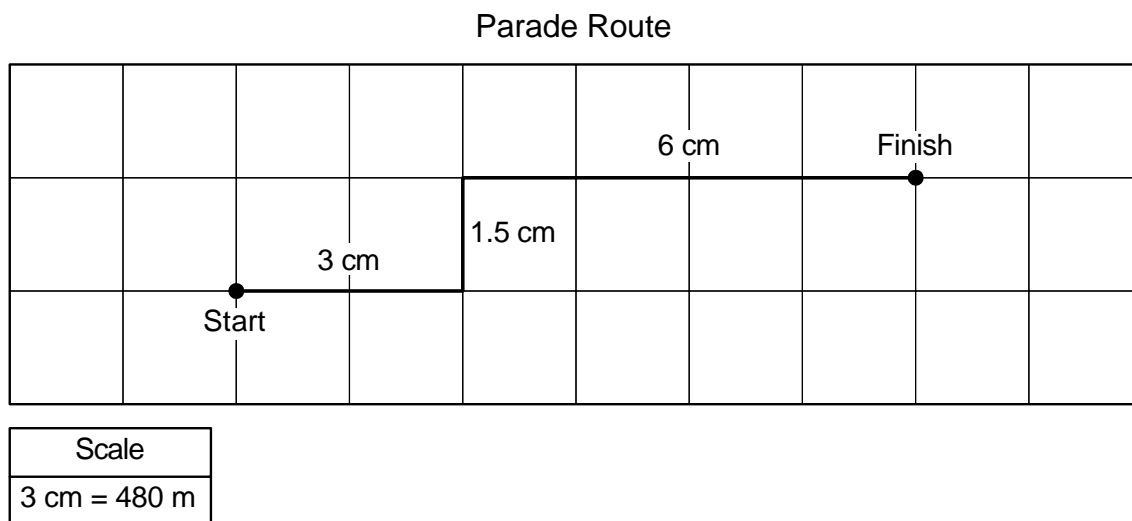
Age Group	Percent of Total Population
0 to 4	7
5 to 18	17
19 to 64	63
65 and over	13

Based on this information, which ratio represents the percent of the total population who were in the 65 and over age group to the percent of the total population who were in the 0 to 18 age group in Tennessee in 2009?

- A 1:8
- B 1:5
- C 13:24
- D 13:17

Go On ►

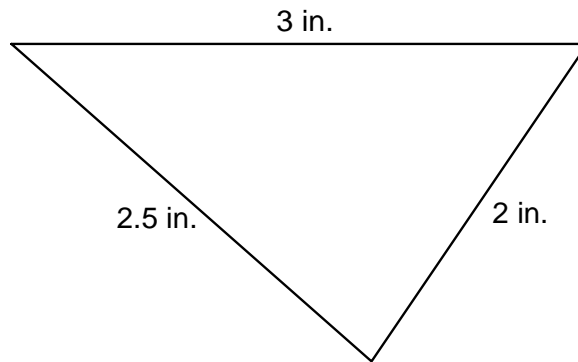
- 2 The map below shows a proposed parade route. The scale shown on the map relates centimeters (cm) to meters (m).



According to the scale, what is the actual length of the proposed parade route?

- A 1,440 m
 - B 1,680 m
 - C 3,360 m
 - D 5,040 m
- 3 An empty water bottle has a weight of 1.2 pounds. When full, the bottle holds about 1.11 pounds of water. Which equation best represents the relationship between x , the number of these bottles that are filled with water, and y , the total weight, in pounds, of the filled bottles?
- A $y = 1.2x + 1.11$
 - B $y = 1.11x + 2.31$
 - C $y = 1.2x$
 - D $y = 2.31x$

- 4 The logo for a bank is in the shape of a triangle. The side lengths of the logo used on the bank's business letters are labeled below in inches.



A similarly shaped logo will appear on billboards. The longest side of the triangle on the billboard will be 36 feet. What will be the length of the shortest side of the triangle on the billboard?

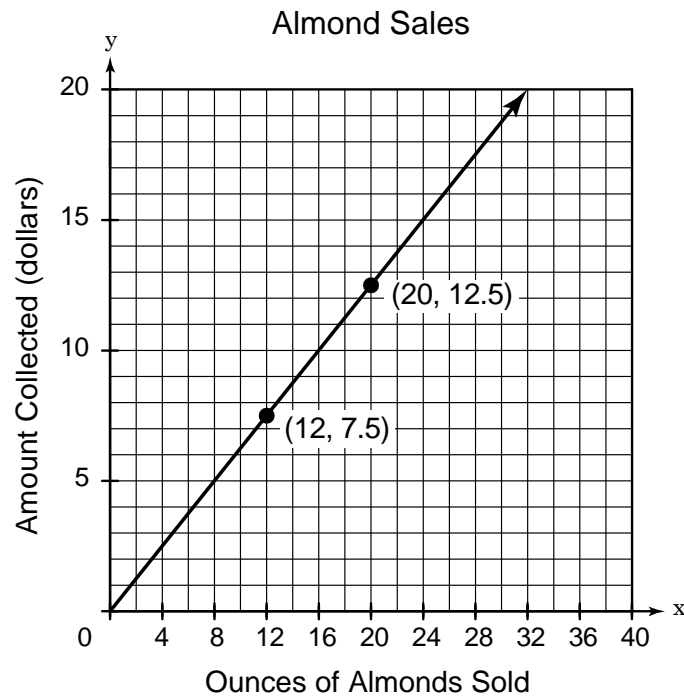
- A 24 ft
B 26 ft
C 30 ft
D 35 ft
- 5 Which inequality is true?

- A $\frac{4}{20} < \frac{3}{25}$
B $\frac{7}{20} > \frac{8}{25}$
C $\frac{12}{25} < \frac{9}{20}$
D $\frac{13}{25} > \frac{11}{20}$

Go On ►

- 6 David filled his fish tank by pouring pitchers of hot and cold water into the fish tank until it was full. He used h pitchers of hot water. The number of pitchers of cold water he used was 1 less than 2 times the number of pitchers of hot water he used. If David used a total of 17 pitchers of water to fill the fish tank, which equation can be used to find h ?
- A $2h + 1 = 17$
 - B $2h - 1 = 17$
 - C $h + 2h + 1 = 17$
 - D $h + 2h - 1 = 17$
- 7 The rectangular floor of Jacob's bedroom and the rectangular floor of Jacob's closet are similar in shape. Each dimension of the bedroom floor is $2\frac{3}{4}$ times the corresponding dimension of the closet floor. The area of the closet floor is 20 square feet. Which measurement is closest to the area of the bedroom floor?
- A 55 square feet
 - B 110 square feet
 - C 151 square feet
 - D 165 square feet

- 8 Dan sells almonds. The graph below shows the relationship between the number of ounces of almonds Dan sells and the amount he collects in dollars.



Which statement is best supported by the slope of this graph?

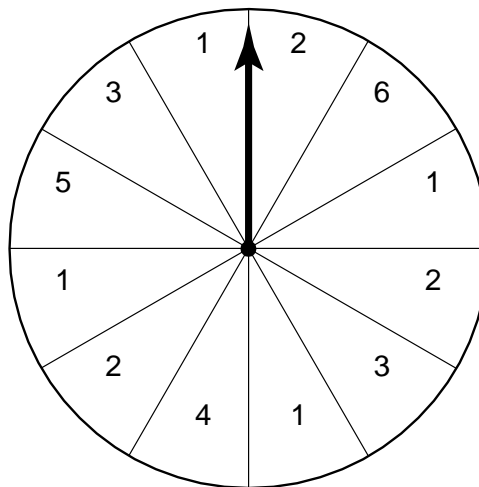
- A When Dan sells 4 ounces of almonds, he collects \$5.
- B When Dan sells 5 ounces of almonds, he collects \$8.
- C Dan collects \$5 for every 8 ounces of almonds he sells.
- D Dan collects \$4 for every 5 ounces of almonds he sells.

Go On ►

9 Sandy mixes 8 ounces of cream cheese with 12 ounces of salsa to make a dip for vegetables. She wants to use this mixture to make 48 ounces of dip. Exactly how many ounces of cream cheese should she use?

- A $3\frac{1}{3}$ ounces
- B $19\frac{1}{5}$ ounces
- C 32 ounces
- D 72 ounces

10 Ronald has a spinner with 12 equal sections, as shown below.



Ronald will spin the arrow on the spinner 60 times. Based on theoretical probability, what is the total number of times he should expect the arrow to land on an even number?

- A 5
- B 15
- C 25
- D 30

11 What is the value of the expression shown below?

$$10.8 - \sqrt{16} + 4\frac{1}{4}$$

- A 2.55
- B 6.30
- C 7.05
- D 11.05

12 Mr. O'Connor bought 5 large pizzas. After receiving a \$4 discount, he paid a total of \$55 for these pizzas. The equation below can be used to find p , the original cost, in dollars, of each pizza.

$$5p - 4 = 55$$

- A \$10.20
- B \$11.80
- C \$12.50
- D \$15.00

Go On ►

- 13 The table below shows corresponding values for t and w .

t	w
-3	11
0	2
3	-7
6	-16

Which equation best represents the pattern shown by the data in the table?

- A $w = 9t + 2$
 - B $w = 3t + 20$
 - C $w = -3t + 2$
 - D $w = -9t + 20$
- 14 What is the value of $\frac{3}{4}x - \frac{1}{2}y$ when $x = 64$ and $y = 24$?

- A 60
- B 36
- C 14
- D 12

- 15 The table below shows the total distance run by each of five people last week.

Distance Run Last Week

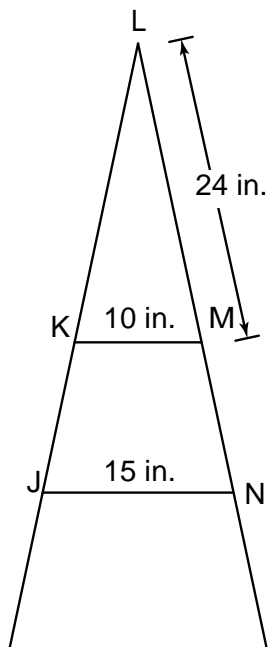
Name	Total Distance (in miles)
Albert	15
Jennifer	17
Lynda	25
Renee	18
Salvador	15

Which person ran a total distance that is equal to the median of this data set?

- A Jennifer
 - B Lynda
 - C Renee
 - D Salvador
- 16 For every 50 boxes of cereal a company produces, 3 boxes contain toys. The company produced 3,000 boxes of cereal on Wednesday. Exactly how many boxes of cereal containing toys were produced by this company on Wednesday?
- A 20
 - B 60
 - C 100
 - D 180

Go On ►

17 The diagram below represents the side view of a ladder.



Triangle JLN is similar to Triangle KLM . What is the length of \overline{MN} ?

- A 5 inches
- B 12 inches
- C 29 inches
- D 36 inches

Go On ►

18 What value of x is the solution to the equation $\frac{1}{6} = \frac{3}{8}x - \frac{1}{3}$?

A $\frac{1}{12}$

B $\frac{3}{16}$

C $\frac{16}{27}$

D $\frac{4}{3}$

19 Which table represents a linear relationship between x and y ?

A

x	y
2	5
3	8
6	17
8	23
9	26

B

x	y
2	9
3	6
6	3
9	2
18	1

C

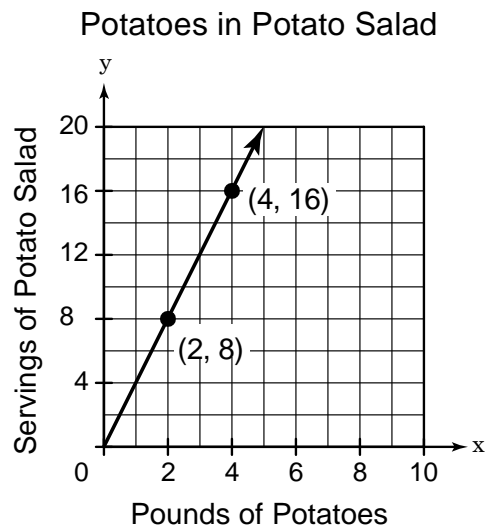
x	y
2	4
4	7
6	11
8	16
10	22

D

x	y
2	5
4	10
6	15
8	20
9	25

Go On ►

- 20 Mrs. Williams is making potato salad. The graph below shows the relationship between the number of servings of potato salad she makes and the number of pounds of potatoes she uses.

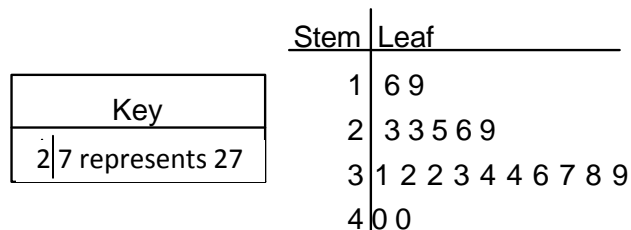


Which statement is supported by the slope of this graph?

- A To make 2 servings of potato salad, Mrs. Williams uses 1 pound of potatoes.
- B To make 4 servings of potato salad, Mrs. Williams uses 1 pound of potatoes.
- C To make 1 serving of potato salad, Mrs. Williams uses 12 pounds of potatoes.
- D To make 3 servings of potato salad, Mrs. Williams uses 12 pounds of potatoes.

- 21 Heath mixes gasoline and oil to make fuel for his motorbike. He adds 16 fluid ounces of oil for every 2 gallons of gasoline. Exactly how many fluid ounces of oil does Heath need to add to $3\frac{1}{4}$ gallons of gasoline to make this fuel?
- A 14 fluid ounces
- B $17\frac{1}{4}$ fluid ounces
- C $24\frac{1}{4}$ fluid ounces
- D 26 fluid ounces

- 22 The stem-and-leaf plot below shows the number of words each student in Mrs. Cook's class spelled correctly last month on a spelling test.



What is the interquartile range of this data set?

- A 5
- B 12
- C 25
- D 37

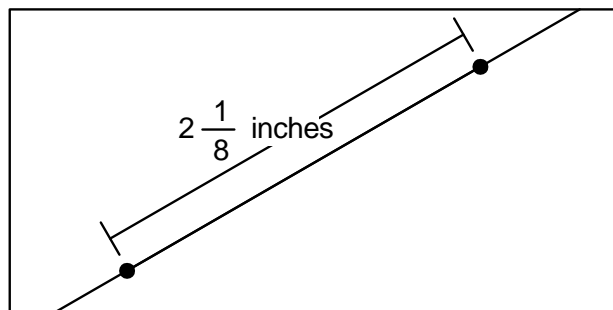
Go On ►

23 The scale on a map is shown below.

Scale

$$\frac{1}{4} \text{ inch} = 10 \text{ miles}$$

Patricia measured the distance between two points on this map, as shown below.



According to the scale shown, what is the actual distance between the two points?

- A 5 miles
- B 19 miles
- C 24 miles
- D 85 miles

24 Robert wrote a story. The introduction was 3 pages long, and each chapter was 6 pages long. Robert's story had a total of 99 pages. Which equation can be used to find c , the total number of chapters in Robert's story?

A $3c + 6 = 99$

B $3c - 6 = 99$

C $6c + 3 = 99$

D $6c - 3 = 99$

25 What is the value of the expression $\frac{1}{2}(4.5) + 3 \div \frac{3}{4}$?

A 7

B $6\frac{1}{4}$

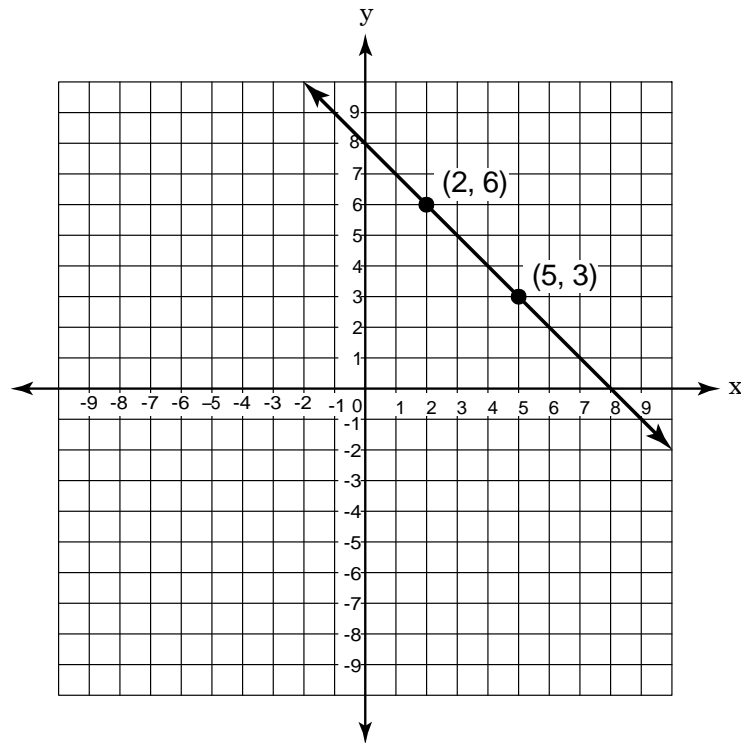
C 5

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

STOP 

Part 2

26 The graph below shows a linear relationship between x and y .



Based on the graph, which equation best represents the relationship between x and y ?

- A $y = -x + 8$
- B $y = x + 8$
- C $y = x - 8$
- D $y = -x - 8$

27 Frank needs to purchase cans of soda for a picnic. At the grocery store, he can purchase two 12-packs of soda for a total cost of \$5.99. At this rate, what will be the total cost to purchase 144 cans of soda?

- A \$35.94
- B \$71.88
- C \$125.99
- D \$143.76

28 Which inequality is true?

- A $\frac{7}{12} < 0.8 < \frac{2}{3}$
- B $\frac{7}{12} < 0.7 < \frac{2}{3}$
- C $\frac{7}{12} < 0.6 < \frac{2}{3}$
- D $\frac{7}{12} < 0.5 < \frac{2}{3}$

Go On ►

29 What is the value of $h - \frac{g+5}{6}$ when $g = 4$ and $h = 2\frac{2}{9}$?

A $\frac{13}{3}$

B $\frac{11}{3}$

C $\frac{13}{18}$

D $\frac{11}{18}$

30 Sharon owes her mother \$42. She borrows \$18 more from her mother to buy a DVD. Sharon will repay her mother in 4 equal payments. If Sharon has \$12, which statement is true?

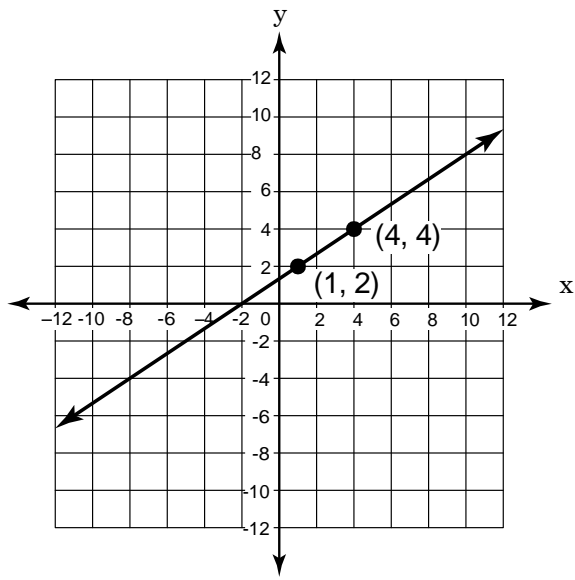
A Sharon has enough money for her first payment with no money left over.

B Sharon needs \$3 more in order to have enough money for her first payment.

C Sharon needs \$4 more in order to have enough money for her first payment.

D Sharon has enough money for her first two payments with no money left over.

31 The graph below represents a linear equation.



What value of x makes this equation true when $y = -2$?

- A - 5
- B 0
- C 1
- D 3

Go On ►

32 Which table represents a relationship between x and y that is directly proportional?

A

x	y
2	$\frac{1}{4}$
4	$\frac{1}{8}$
6	$\frac{1}{12}$
8	$\frac{1}{16}$
10	$\frac{1}{20}$

C

x	y
3	$\frac{15}{7}$
6	$\frac{12}{7}$
9	$\frac{9}{7}$
12	$\frac{6}{7}$
15	$\frac{3}{7}$

B

x	y
2	7
4	11
6	15
8	19
10	23

D

x	y
3	8
6	16
9	24
12	32
15	40

33 Lila bought some fabric online for \$318. This amount included a \$6 shipping fee, and each yard of fabric cost \$12. Which equation can be used to find x , the number of yards of fabric Lila bought?

- A $12x - 6 = 318$
- B $12x + 6 = 318$
- C $12(x - 6) = 318$
- D $12(x + 6) = 318$

34 Jordan read in a newspaper that about 26% of households in the United States have one dog as a pet. Which best represents the fraction of households in the United States that have one dog as a pet?

A $\frac{13}{50}$

B $\frac{13}{37}$

C $\frac{13}{32}$

D $\frac{13}{25}$

35 Ben is drawing a series of regular polygons. Every side in every polygon is the same length. The table below shows the relationship between the number of sides in the polygon and the perimeter of the polygon.

Regular Polygon Perimeters

Number of Sides	Perimeter (in centimeters)
3	21
5	35
6	42
8	56

Ben will draw a regular polygon with 12 sides that are all the same length as the sides in the other polygons. What will the perimeter of the 12-sided polygon be?

A 63 inches

B 77 inches

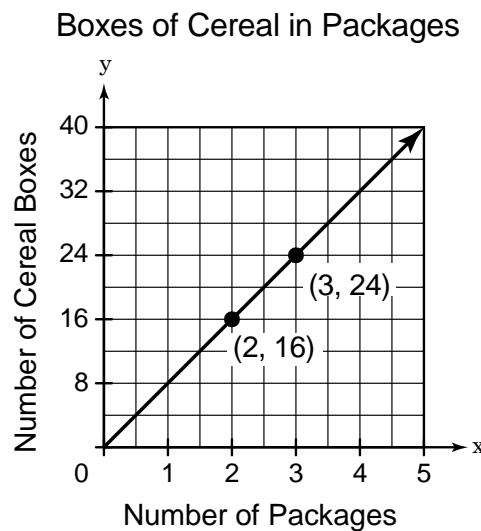
C 84 inches

D 98 inches

Go On ►

- 36 An airplane is descending at a rate of 450 feet every 30 seconds. At this rate, which is closest to the number of feet the airplane will descend in 6 minutes?
- A 1,350 feet
 - B 2,250 feet
 - C 5,400 feet
 - D 8,100 feet

- 37 A restaurant owner is buying packages of single-serving boxes of cereal. The graph below shows the relationship between the number of packages and the number of cereal boxes.



Which statement best describes the slope of this graph?

- A The slope of the graph represents the number of cereal boxes in each package.
- B The slope of the graph represents the number of packages of cereal boxes that the restaurant bought.
- C The slope of the graph represents the number of cereal boxes in the packages that the restaurant bought.
- D The slope of the graph represents the number of packages of cereal boxes that the restaurant uses each week.

38 Gary has a stack of 20 cards that are the same size and shape. Each card has a different number from 1 through 20 written on it. Gary will select a card at random from the stack, record the number on the card, and replace the card in the stack. He repeats this process a total of 300 times. Based on theoretical probability, what is the total number of times he should expect to record a number that is odd and a multiple of 3?

- A 15
- B 45
- C 53
- D 90

39 Amy spent \$42 for 3 gallons of paint and some paintbrushes. Amy spent \$7.50 for the paintbrushes. The equation below can be used to find g , the total cost, in dollars, of each gallon of paint.

$$3g + 7.5 = 42$$

What is g , the total cost of each gallon of paint?

- A \$5.20
- B \$6.00
- C \$11.50
- D \$16.50

Go On ►

40 Joseph is mixing cleaning solution with water to clean his kitchen floor. He should use 1 fluid ounce of cleaning solution for every $\frac{1}{2}$ gallon of water. If Joseph fills a bucket with $4\frac{1}{2}$ gallons of water, exactly how many fluid ounces of cleaning solution should he use?

- A 9 fluid ounces
- B 5 fluid ounces
- C $2\frac{2}{5}$ fluid ounces
- D $2\frac{1}{4}$ fluid ounces

41 The heights, in inches, of the five starting players on a basketball team are listed below.

73, 79, 76, 74, 73

What is the mean of this data set?

- A 73 inches
- B 74 inches
- C 75 inches
- D 76 inches

42 What is the value of the expression $\frac{3}{8} + 0.75(2.2) - \frac{2}{5}$?

A $1\frac{5}{8}$

B $1\frac{29}{40}$

C $1\frac{39}{50}$

D $2\frac{3}{40}$

43 The lowest point in Tennessee has an elevation of 178 feet. The lowest point in the United States has an elevation of -282 feet. Michelle plans to drive from the lowest point in Tennessee to the lowest point in the United States. Which integer best represents the overall change in elevation for Michelle's trip?

A 460 feet

B 104 feet

C -104 feet

D -460 feet

Go On ►

44 The table below shows values of x and y.

x	y
-2	5
0	1
2	-3

Which equation best represents the relationship between the values of x and y?

A $y = -5x - 5$

B $y = -2x + 1$

C $y = x - 5$

D $y = x + 1$

45 What value of x makes the equation below true?

$$2\left(\frac{2}{5}x + 3\right) = 14$$

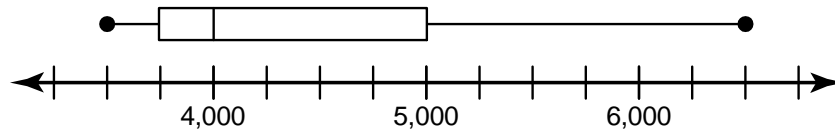
A $\frac{10}{3}$

B $\frac{25}{3}$

C 10

D 25

- 46 There are 19 people working at a business. The box-and-whisker plot shows information about the monthly salaries of these 19 people.

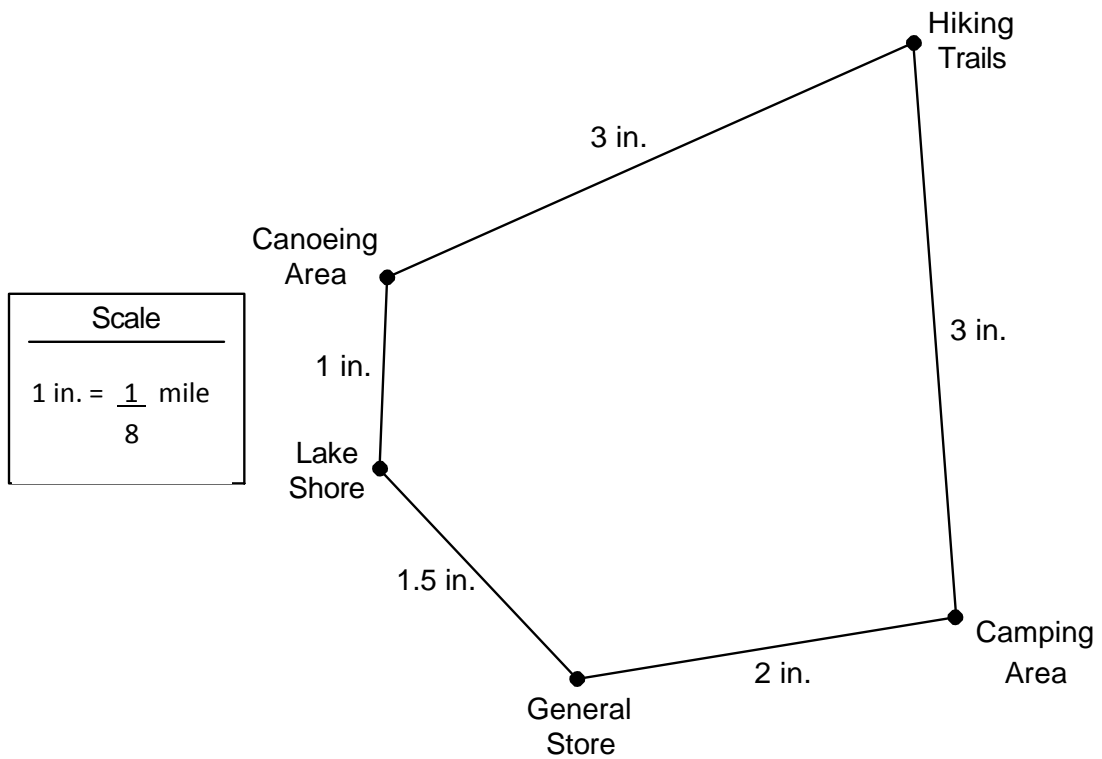


If each of the 19 people earns a different monthly salary, which statement must be true, based on the box-and-whisker plot?

- A Exactly 4 people earn \$5,000 or more each month.
- B Exactly 5 people earn less than \$3,500 each month.
- C Exactly 8 people earn less than \$4,000 each month.
- D Exactly 10 people earn \$4,000 or more each month.

Go On ►

- 47 The map below shows locations and paths in a state park where Joshua is camping. The scale shown on the map relates inches (in.) to miles (mi).



According to the scale, what is the shortest distance that Joshua can walk from the camping area to the canoeing area and then back to the camping area using the trails shown?

- A $\frac{9}{16}$ mile
- B $\frac{3}{4}$ mile
- C $1\frac{1}{8}$ miles
- D $1\frac{1}{2}$ miles

48 What is the value of $(2j) \div (3k)$ when $j = \frac{3}{4}$ and $k = \frac{5}{6}$

A $\frac{3}{5}$

B $\frac{33}{46}$

C $3\frac{3}{4}$

D $10\frac{13}{24}$

49 Which inequality is not true?

A $1\frac{3}{4} \leq 1.75$

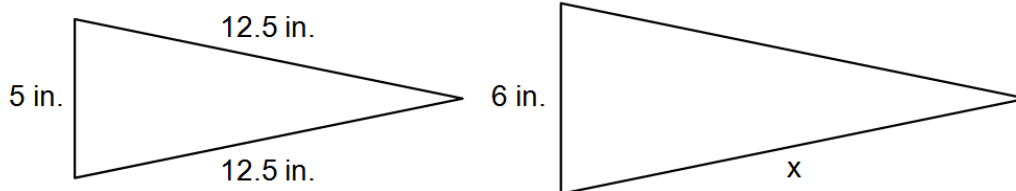
B $2\frac{3}{8} \leq 2.38$

C $3\frac{3}{7} \geq 3.38$

D $4\frac{2}{5} \geq 4.52$

Go On ►

50 Shawn has the two flags shown below.



The flags are similar in shape. What is the value of x , if it represents one of the longer sides of the larger flag?

- A 12.6 inches
- B 13.5 inches
- C 14 inches
- D 15 inches

51 In Leah's art class, 7 students are in the seventh grade, and the other 18 students are in the eighth grade. What percent of the students in Leah's art class are in seventh grade?

- A 39%
- B 28%
- C 25%
- D 11%

Mathematics Answer Key

Question	SPI	Answer	Question	SPI	Answer
1	2.6	C	27	2.7	A
2	1.4	B	28	2.2	C
3	3.5	D	29	3.1	C
4	4.1	A	30	2.5	B
5	2.2	B	31	3.6	A
6	3.7	D	32	1.3	D
7	2.5	C	33	3.7	B
8	3.4	C	34	2.6	A
9	1.1	B	35	3.5	C
10	5.4	C	36	2.7	C
11	2.1	D	37	3.4	A
12	3.8	B	38	5.4	B
13	1.2	C	39	3.8	C
14	3.1	B	40	1.1	A
15	5.3	A	41	5.3	C
16	2.7	D	42	2.1	A
17	4.1	B	43	2.5	D
18	3.6	D	44	1.2	B
19	1.3	A	45	3.6	C
20	3.4	B	46	5.3	D
21	1.1	D	47	1.4	C
22	5.3	B	48	3.1	A
23	1.4	D	49	2.2	D
24	3.7	C	50	4.1	D
25	2.1	B	51	2.6	B
26	1.2	A			