

Tennessee Comprehensive Assessment Program (TCAP)

Practice and Sample Test Workbook

Includes:

- Tennessee Mathematics Curriculum Standards, Grade 8, Correlated to *Glencoe Mathematics: Applications and Concepts, Course 3* and *Glencoe Pre-Algebra*
- Student Recording Chart
- Diagnostic Test
- Numerous Practice Questions for Each State Performance Indicator
- Full-Size Sample Test

Diagnostic Test



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 1** Which is a reasonable value for point P shown on the number line?

1 _____



8.1.spi.4

A $-\frac{3}{4}$

B $\frac{1}{2}$

C $\frac{3}{4}$

D 0.3

- 2** What is the solution of $5x + 1 = -4$? **8.2.spi.6**

2 _____

F -10

G -1

H $-\frac{3}{5}$

J 1

- 3** The Tennessee Tombigbee Waterway lock system raises and lowers barge traffic a total of 341 feet along its entire route. How many inches is this?

3 _____

A 12,276 in.

B 4,092 in.

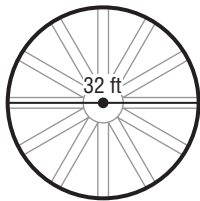
8.4.spi.2

C 1,023 in.

D $28\frac{5}{12}$ in.

- 4** The diameter of the Fall's Mill waterwheel is 32 feet as shown in the figure. What is the area of the side of the waterwheel? **8.4.spi.6**

4 _____



F $16\pi \text{ ft}^2$

G $32\pi \text{ ft}^2$

H $256\pi \text{ ft}^2$

J $1,024\pi \text{ ft}^2$

- 5** How would the graph of $y = mx + 3$ change as the value of m increases from 1 to 4? **8.2.spi.4**

5 _____

A The point of intersection with the y -axis would move up the axis.

B The point of intersection with the y -axis would move down the axis.

C The line would become steeper going from left to right.

D The line would become less steep going from left to right.

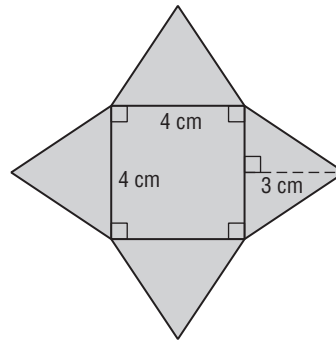


Diagnostic Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

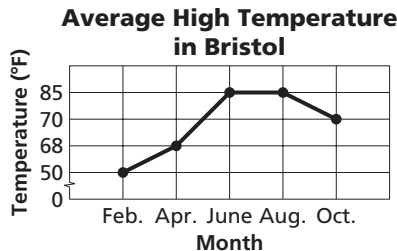
- 6** The figure shown consists of one square and four congruent triangles. What is the total area of the figure? **8.4.spi.7**

F 16 cm^2
G 22 cm^2
H 28 cm^2
J 40 cm^2



6 _____

- 7** Why is this graph misleading? **8.5.spi.8**



- A** The vertical scale is not labeled uniformly.
B Every month is not shown on the horizontal axis.
C The data is graphed incorrectly.
D The graph should be a histogram rather than a line graph.

7 _____

- 8** Approximately 13 million rainbow trout eggs are hatched each year at the Erwin National Fish Hatchery near Erwin. Which is this number written in scientific notation? **8.1.spi.10**

F 1.3×10^4 **G** 1.3×10^6
H 1.3×10^7 **J** 13×10^7

8 _____

- 9** What is the square root of 16? **8.1.spi.5**

A 2 **B** 4
C 8 **D** 32

9 _____

- 10** Which is a reasonable estimate for the area of a circle with diameter 5.97 centimeters? **8.4.spi.3**

F 18 cm^2
G 27 cm^2
H 90 cm^2
J 108 cm^2

10 _____



Diagnostic Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 11** A blueprint shows a circular ice skating rink with a radius of 12 inches. **11** _____

If the scale of the blueprint is $\frac{1}{2}$ inch = 1 foot, what will be the radius of the actual ice rink? **8.4.spi.8**

- A** 6 ft **B** 12 ft
C 18 ft **D** 24 ft

- 12** Which is a true statement about the fraction $-\frac{2}{3}$? **8.1.spi.1** **12** _____

- F** Its opposite is $\frac{2}{3}$ and its reciprocal is $\frac{3}{2}$.
G Its opposite is $\frac{2}{3}$ and its reciprocal is $-\frac{3}{2}$.
H Its opposite is $-\frac{3}{2}$ and its reciprocal is $\frac{2}{3}$.
J Its opposite is $\frac{3}{2}$ and its reciprocal is $\frac{2}{3}$.

- 13** Which rule expresses the relationship between x and y shown by the values in the table? **8.2.spi.1**

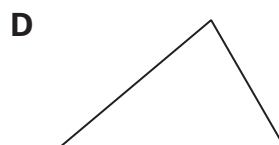
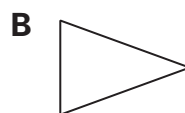
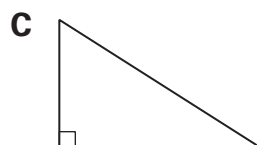
x	y
2	6
3	9
4	12

- A** $y = 3x$
B $y = 2x$
C $y = x + 6$
D $y = x + 4$

- 14** A loan officer at the Volunteer Bank is ordering pens imprinted with the bank's logo. The cost of the order is \$25 plus a charge of \$0.50 per pen. Which equation gives the total cost C for p pens? **8.2.spi.9** **14** _____

- F** $C = 0.50p + 25$
G $C = 25p + 0.5$
H $C = 25.5p$
J $C = 25.5 + p$

- 15** Which figure is similar to the one shown at the right? **8.3.spi.4**



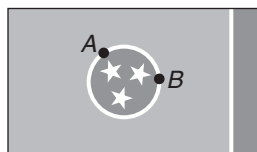
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Diagnostic Test (continued)



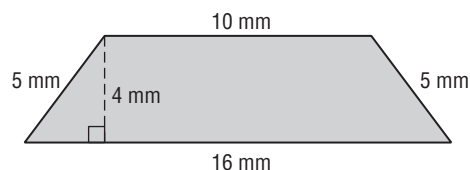
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 16** The Tennessee state flag has a circle containing three congruent stars at its center. In this drawing of the flag, what is the degree measure of \widehat{AB} , if the arc measure of the entire circle is 360° ? **8.3.spi.8** **16** _____



- F** 210° **G** 180°
H 120° **J** 90°

- 17** What is the area of the trapezoid shown in the figure? **8.4.spi.4** **17** _____



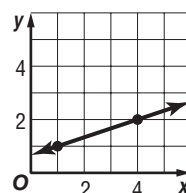
- A** 130 mm^2 **B** 104 mm^2
C 65 mm^2 **D** 52 mm^2

- 18** What is the solution set of $-\frac{2}{3}x \geq 12$? **8.2.spi.10** **18** _____

- F** $x \geq -18$ **G** $x \leq -18$
H $x \geq -8$ **J** $x \leq -8$

- 19** What is the rate of change of the line shown in this graph? **8.2.spi.8** **19** _____

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



- 20** What is the value of the expression $3x - 4y$ if $x = -2$ and $y = 1$? **8.2.spi.2** **20** _____

- F** -10
G -5
H -2
J 2



Diagnostic Test (continued)

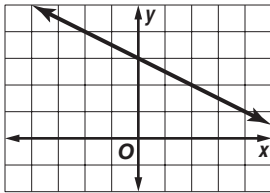


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 21** At a grocery store, one brand of potatoes comes in 2-pound, 5-pound, and 10-pound bags. If a 2-pound bag costs \$1.59, a 5-pound bag costs \$2.99, and a 10-pound bag costs \$3.99, which size is the best buy? **21** _____

A 2-pound bag **B** 5-pound bag **8.1.spi.9**
C 10-pound bag **D** They all cost the same.

- 22** Which is the equation of the line shown in this graph? **8.2.spi.11** **22** _____



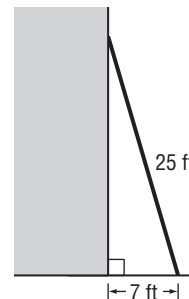
F $y = 3x - \frac{1}{2}$ **G** $y = -3x$
H $y = -\frac{1}{2}x + 3$ **J** $y = -2x + 3$

- 23** If the sum of the measures of two angles is 90° , which statement about the angles must be true? **8.3.spi.3** **23** _____

A The angles are supplementary.
B The angles are complementary.
C The angles are vertical angles.
D The angles are both right angles.

- 24** A 25-foot ladder leans against the side of a house as shown in the figure. If the base of the ladder is 7 feet from the house, how far up the side of the house will the ladder reach? **8.4.spi.9** **24** _____

F 18 ft
G 24 ft
H 28 ft
J 30 ft



- 25** Which unit would be most appropriate for expressing the volume of a swimming pool? **8.4.spi.1** **25** _____

A ounces
B cubic centimeters
C cubic meters
D cubic inches



Diagnostic Test (continued)



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 26** Reese drove 132 miles from Johnson City to Oak Ridge in 3 hours. **26** _____

What was her average speed? **8.4.spi.5**

- F** 44 mi/h **G** 48 mi/h
H 62 mi/h **J** 66 mi/h

- 27** If a quadrilateral has two pairs of opposite sides parallel, what type of **27** _____

quadrilateral must it be? **8.3.spi.1**

- A** trapezoid **B** isosceles trapezoid
C parallelogram **D** hexagon

- 28** The bill for Kwamee's lunch at a Gatlinburg restaurant is \$8.00. If he **28** _____

wants to leave a 15% tip, how much should the tip be? **8.1.spi.6**

- F** \$0.80 **G** \$1.20
H \$1.60 **J** \$2.30

- 29** There are 8 heavy hand weights and 4 light hand weights arranged **29** _____

randomly on a mat for use during an exercise class. If Sarah picks up a hand weight at random, what is the probability that she will pick up a heavy hand weight? **8.1.spi.3**

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

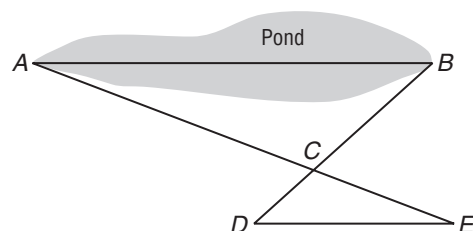
- 30** Austin has test scores of 72, 84, 96, and 89. Which is the best estimate **30** _____

of his average score for these four tests? **8.1.spi.8**

- F** 75 **G** 80
H 85 **J** 94

- 31** Latisha used similar triangles to calculate the length of the pond behind **31** _____

her house. If $DE = 50$ feet, $DC = 20$ feet, $BC = 40$ feet, and $\triangle ABC$ is similar to $\triangle EDC$, how many feet long is the pond (AB)? **8.3.spi.6**



- A** 25 ft **B** 50 ft **C** 100 ft **D** 200 ft



Diagnostic Test (continued)



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

32 Which sentence is true? **8.1.spi.2**

32 _____

F $\frac{2}{3} > \frac{4}{5}$

G $\frac{2}{3} = \frac{4}{5}$

H $\frac{2}{3} < \frac{4}{5}$

J $\frac{2}{3} = \frac{4}{9}$

33 What is the probability of getting a 5 when a fair number cube is rolled?

33 _____

A $\frac{1}{6}$

B $\frac{1}{5}$

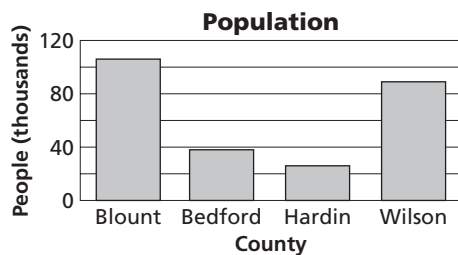
C $\frac{1}{3}$

D $\frac{1}{2}$

8.5.spi.6

34 This bar graph shows the 2000 populations of four Tennessee counties. Which statement is true? **8.5.spi.2**

34 _____



F The Blount County population was twice that of Wilson County.

G The Bedford County population was twice that of Hardin County.

H Blount County's population was about 4 times Hardin County's population.

J Wilson County's population was about 3 times Bedford County's population.

35 Which expression is equivalent to $(8x + 1) + (5x - 2)$? **8.2.spi.5**

35 _____

A $13x - 1$

B $13x + 3$

C $13x^2 - 3$

D $40x^2 - 11x - 2$

36 What is the value of $(-6)(-1) - 3 \times 6 + 2$? **8.1.spi.11**

36 _____

F 20

G -10

H -14

J -22

37 What is the volume of the cylindrical grain silo represented here? **8.2.spi.7**

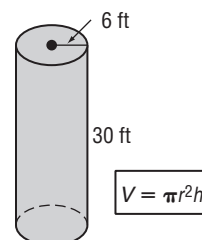
37 _____

A $270\pi \text{ ft}^3$

B $1,080\pi \text{ ft}^3$

C $4,320\pi \text{ ft}^3$

D $5,400\pi \text{ ft}^3$



Go on

Diagnostic Test (continued)

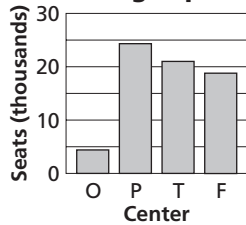
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 38** The table gives the number of seats at four event centers. Which bar graph correctly shows this data? (O = Opry House, P = The Pyramid, T = Thompson-Boling Arena, F = Freedom Hall) **8.5.spi.4**

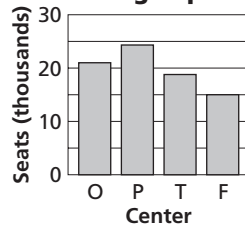
38 _____

Event Center	Number of Seats
Opry House	4,400
The Pyramid	21,000
Thompson-Boling Arena	24,535
Freedom Hall	18,865

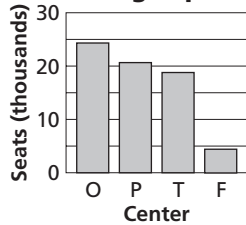
F Seating Capacity



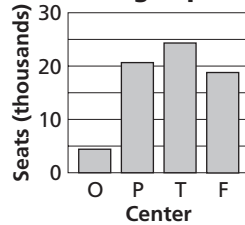
G Seating Capacity



H Seating Capacity



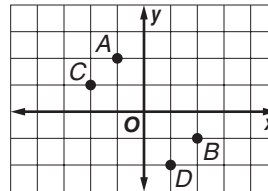
J Seating Capacity



- 39** Which point is located at $(-1, 2)$?

A A
B B
C C
D D

8.3.spi.2



39 _____

- 40** What is the value of $\frac{3}{5} \times \frac{1}{3}$? **8.1.spi.7**

F $\frac{1}{2}$

G $\frac{3}{8}$

H $\frac{4}{15}$

J $\frac{1}{5}$

40 _____

- 41** Suppose the noon temperature in Jackson was 62°F . If the temperature increased x degrees by 3 P.M., when it was 74°F , which equation represents this situation? **8.2.spi.3**

A $62 - x = 74$

B $62 + x = 74$

C $74 + x = 62$

D $3x = 74$

41 _____

Go on 

Diagnostic Test (continued)



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

Use the following information for Questions 42 and 43.

The table gives the 2000 census information for the six most-populated counties in Tennessee.

County	Population
Shelby	897,472
Davidson	569,891
Knox	382,032
Hamilton	307,896
Rutherford	182,023
Sullivan	153,048

42 What is the mean population for these six counties? **8.5.spi.3**

F 744,424 people

G 415,394 people

H 344,964 people

J 307,896 people

42 _____

43 What is the median population for these six counties? **8.5.spi.7**

A 307,896 people

B 344,964 people

C 382,032 people

D 415,394 people

43 _____

44 In the last five gymnastics events, Li-Shyung scored 8.8, 9.0, 9.1, 9.2, and 9.5. What is the mean of her scores? **8.5.spi.3**

F 7.6

G 7.85

H 9.12

J 9.15

44 _____

45 If the measures of two angles of a triangle are 30 and 50, what is the measure of the third angle? **8.3.spi.5**

A 80

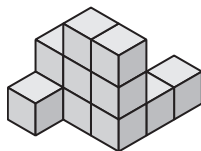
B 100

C 120

D 180

45 _____

46 How many cubes were used to build the model shown? **8.3.spi.7**



F 8 cubes

G 9 cubes

H 10 cubes

J 11 cubes

46 _____



Diagnostic Test (continued)



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 47** If $m\angle X = 50$ and $m\angle Y = 130$, what type of angles are $\angle X$ and $\angle Y$? **47** _____

A vertical
B straight
C complementary
D supplementary

8.3.spi.3

- 48** The table gives the employment distribution in Tennessee in 2002. If 100 people employed in Tennessee were chosen at random, about how many of them would you expect to be government employees? **48** _____
- 8.5.spi.5**

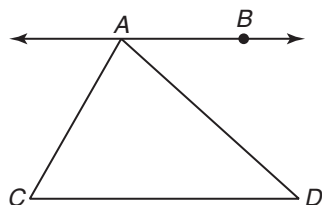
Area	Percent
Service	28.5
Trade	23.4
Government	15.1
Manufacturing	17.2

F 29 people
G 23 people
H 17 people
J 15 people

- 49** Members of the middle school Speech Club are trying to decide whether to sell discount movie tickets, discount shopping mall certificates, or geraniums as a fund-raiser. Which group of students should they survey to help them determine the best choice for their fund-raiser? **49** _____
- 8.5.spi.1**

A randomly chosen middle school students in a movie theater
B randomly chosen middle school students at a shopping mall
C randomly chosen middle school students who are in a 4-H Club
D randomly chosen middle school students in the school cafeteria

- 50** In the figure, \overleftrightarrow{AB} is parallel to \overleftrightarrow{CD} . If $m\angle BAD = 42$, what is $m\angle ADC$? **50** _____
- 8.3.spi.9**



F 42
G 48
H 84
J 138



Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.1.spi.1 Identify the opposite and the reciprocal of a rational number.

1 Which value is the opposite of $\frac{4}{5}$? **1** _____

A $-\frac{5}{4}$

B $-\frac{4}{5}$

C $\frac{5}{4}$

D 5

2 Which value is the reciprocal of $\frac{4}{5}$? **2** _____

F 5

G $\frac{5}{4}$

H $-\frac{4}{5}$

J $-\frac{5}{4}$

3 Which pair of values are opposites? **3** _____

A $\frac{1}{2}, 2$

B $\frac{1}{2}, -2$

C $\frac{1}{2}, -\frac{1}{2}$

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

4 Which pair of values are reciprocals? **4** _____

F $\frac{1}{2}, 2$

G $\frac{1}{2}, -2$

H $\frac{1}{2}, -\frac{1}{2}$

J $-\frac{1}{2}, 2$

5 Peja says the opposite of -5 is $-\frac{1}{5}$ but Annika says that $-\frac{1}{5}$ is the reciprocal of -5 . Who is correct and why? **5** _____

A Peja is correct because $-5 + \left(-\frac{1}{5}\right) = 0$.

B Peja is correct because $-5 \times \left(-\frac{1}{5}\right) = 0$.

C Annika is correct because $-\frac{1}{5} + (-5) = 1$.

D Annika is correct because $-5 \times \left(-\frac{1}{5}\right) = 1$.

6 Which value is the reciprocal of $-\frac{5}{3}$? **6** _____

F $-\frac{3}{5}$

G $\frac{3}{5}$

H $\frac{5}{3}$

J 3

7 Which value is the opposite of $\frac{7}{10}$? **7** _____

A $\frac{10}{7}$

B $\frac{7}{10}$

C $-\frac{7}{10}$

D $-\frac{10}{7}$

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.1.spi.2 Compare rational numbers using the appropriate symbol ($<$, $>$, $=$).

1 Which symbol belongs in the blank?

$$-8 \quad \underline{\hspace{1cm}} \quad -2$$

A $<$

B $>$

C $=$

D \approx

1 _____

2 Which sentence is true?

F $-\frac{4}{5} = \frac{4}{5}$

G $\frac{6}{7} < -\frac{7}{6}$

H $-\frac{2}{3} < -\frac{3}{2}$

J $0 > -3$

2 _____

3 Which sentence is true?

A $1.33 > 1.\overline{33}$

B $1.33 = 1.\overline{3}$

C $1.33 > 1.\overline{3}$

D $1.33 < 1.\overline{3}$

3 _____

4 Which sentence is true?

F $0 < -5$

G $-\frac{8}{3} > \frac{7}{9}$

H $-4.2 > -\frac{8}{3}$

J $-5 < -4.2$

4 _____

5 Which sentence is true?

A $-11 > 9.6$

B $-11 < -10.2$

C $0.2 < 0.02$

D $-11 < -11.5$

5 _____

6 Oscar wants to show that $\frac{5}{6} > \frac{7}{12}$. What method could he use?

F Change $\frac{5}{6}$ to $\frac{10}{12}$. Since $\frac{10}{12}$ is greater than $\frac{7}{12}$, the inequality is true.

G Change $\frac{5}{6}$ to 0.5 and $\frac{7}{12}$ to 0.7. Since 0.7 is greater than 0.5, the inequality is true.

H Multiply $\frac{5}{6}$ by 6 to get 5 and multiply $\frac{7}{12}$ by 12 to get 7. Since 7 is greater than 5, the inequality is true.

J Multiply 6×7 and 5×12 . Since $42 < 60$, the inequality is true.

6 _____

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.1.spi.3 Use ratios and proportions to represent real-world situations (i.e., scale drawings, probability).

- 1** Crystal made a scale drawing of Ruby Falls. If the drawing is 6 inches wide by 8 inches long and the original photograph she was copying had a width of 10 inches, how long was the original photograph? **1** _____
- A** 16 in. **B** $13\frac{1}{3}$ in.
C 12 in. **D** $7\frac{1}{2}$ in.
- 2** Juan built a model of the statue of Athena housed in the Parthenon in Nashville. His model is 6 inches tall. If the scale of his model is 1:84, how tall, in feet, is the actual statue? **2** _____
- F** 14 ft **G** 42 ft
H 168 ft **J** 504 ft
- 3** Yolanda is watching a circus parade. There were 6 white horses, 8 black horses, and 4 brown horses in the parade. If a horse is selected at random, what is the probability that it is white? **3** _____
- A** $\frac{2}{9}$ **B** $\frac{1}{3}$
C $\frac{1}{2}$ **D** $\frac{4}{9}$
- 4** Darnell has a chili recipe that serves 6 people. The recipe calls for 2 tablespoons of chili powder. If he increases the recipe to serve 15 people, how many tablespoons of chili powder should he use? **4** _____
- F** 11 tablespoons **G** 7 tablespoons
H 5 tablespoons **J** 3 tablespoons
- 5** Charlie, who is 4 feet tall, casts a shadow that is 6 feet long. How long is the shadow cast by a 20-foot flagpole that is nearby? **5** _____
- A** $13\frac{1}{3}$ ft **B** 15 ft
C 22 ft **D** 30 ft
- 6** During a trip to Reelfoot Lake, Greta photographed 4 mud turtles, 3 map turtles, 2 slider turtles, and 1 stinkpot turtle. If one of the photos is chosen at random, what is the probability it is a photo of a slider turtle? **6** _____
- F** $\frac{1}{10}$ **G** $\frac{1}{5}$ **H** $\frac{2}{5}$ **J** $\frac{1}{2}$

Standards Practice

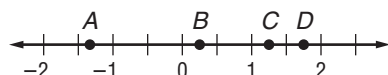


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.1.spi.4 Determine the approximate locations of rational numbers on a number line.

- 1 Which point on the number line represents $1\frac{1}{4}$?

1 _____



A A

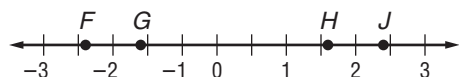
B B

C C

D D

- 2 Which point on the number line represents -2.4 ?

2 _____



F F

G G

H H

J J

- 3 Which number would be located between 2 and 3 on a number line?

3 _____

A $\frac{22}{7}$

B $\frac{14}{5}$

C $\frac{7}{4}$

D $\frac{2}{3}$

- 4 Which number would be located between 0 and 1 on a number line?

4 _____

F $\frac{7}{3}$

G $\frac{2}{5}$

H $-\frac{1}{3}$

J -0.5

- 5 Where would $-\frac{3}{5}$ be located on a number line?

5 _____

A between -5 and -3

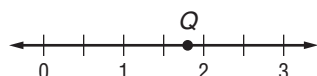
B between -1 and 0

C between 0 and 1

D between 3 and 5

- 6 Which is a reasonable value for point Q shown on the number line?

6 _____



F $\frac{2}{3}$

G $1\frac{1}{4}$

H $1\frac{4}{5}$

J $2\frac{1}{4}$

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.1.spi.5 Determine the square roots of perfect squares (< 169).

- 1** The area of a square picture of The Hermitage is 64 square centimeters. How many centimeters long is each side of the picture? **1** _____

A 32 cm **B** 16 cm
C 8 cm **D** 4 cm

- 2** The area of a square dining room floor is 144 square feet. How many feet long is each side of the floor? **2** _____

F 11 ft **G** 12 ft
H 22 ft **J** 36 ft

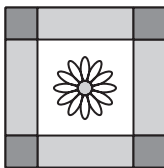
- 3** Which statement is true? **3** _____

A $\sqrt{81} = 9$ **B** $\sqrt{72} = 6$
C $\sqrt{49} = 8$ **D** $\sqrt{121} = 19$

- 4** Which statement is true? **4** _____

F $\sqrt{9} = 9$ **G** $\sqrt{16} = 8$
H $\sqrt{4} = 16$ **J** $\sqrt{4} = 2$

- 5** The figure shows a square potholder. If the area of the potholder is 100 square inches, how long is each of its sides? **5** _____



A 50 in. **B** 25 in.
C 10 in. **D** 5 in.

- 6** Which statement is true? **6** _____

F $\sqrt{1} = 0.5$ **G** $\sqrt{25} = 12.5$
H $\sqrt{49} = 2,401$ **J** $\sqrt{36} = 6$

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.1.spi.6 Work flexibly with fractions, decimals, and percents to solve one- and two-step word problems.

- 1 Maddie was rollerblading to the grocery store, a distance of 6 blocks from her house. How many blocks had she gone when she was two-thirds of the way from her house to the store?

1 _____

- A 2 blocks
- B 3 blocks
- C 4 blocks
- D 5 blocks

- 2 If Galen makes 80 percent of his free throws, how many would you expect him to make when he attempts 50 free throws?

2 _____

- F 20 free throws
- G 35 free throws
- H 40 free throws
- J 45 free throws

- 3 Dan bought the items listed in the table. What was the total cost before tax?

Item	Price
CD	\$8.25
DVD	\$12.75
Cassette tape	\$6.50

3 _____

- A \$25.50
- B \$26.50
- C \$27.50
- D \$29.50

- 4 Alana bought 4 gallons of milk for \$1.85 each. She gave the clerk a ten-dollar bill. How much change did she receive?

4 _____

- F \$7.40
- G \$3.60
- H \$3.00
- J \$2.60

- 5 A string of decorative lights contains 100 lights bulbs. If $\frac{1}{4}$ of the light bulbs are blue and $\frac{1}{2}$ of the light bulbs are white, how many are neither blue nor white?

5 _____

- A 25 light bulbs
- B 40 light bulbs
- C 50 light bulbs
- D 75 light bulbs

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.1.spi.7 Compute efficiently and accurately with whole numbers, fractions, decimals, and percents.

- | | |
|--|-------------------|
| 1 What is the value of $0.63 + 5.1 - 2.0$? | 1 _____ |
| A 3.64 | B 3.73 |
| C 5.71 | D 7.73 |
| 2 What is 50 percent of 70? | 2 _____ |
| F 14 | G 20 |
| H 35 | J 50 |
| 3 What is the value of 9×16 ? | 3 _____ |
| A 94 | B 134 |
| C 144 | D 151 |
| 4 What is the value of $220 \div 4$? | 4 _____ |
| F 55 | G 50.2 |
| H 5.5 | J 5.2 |
| 5 What is the value of $\frac{3}{4} + \frac{1}{8}$? | 5 _____ |
| A $\frac{1}{3}$ | B $\frac{9}{16}$ |
| C $\frac{7}{8}$ | D $1\frac{1}{4}$ |
| 6 What is the value of 0.9×2.4 ? | 6 _____ |
| F 1.94 | G 2.16 |
| H 18.6 | J 21.6 |
| 7 12 is what percent of 48? | 7 _____ |
| A 30% | B 25% |
| C 20% | D 12% |
| 8 What is the value of $2\frac{1}{2} - 1\frac{2}{3}$? | 8 _____ |
| F $\frac{5}{6}$ | G $\frac{11}{12}$ |
| H $1\frac{1}{6}$ | J $1\frac{1}{3}$ |
| 9 10 is 50 percent of what number? | 9 _____ |
| A 5 | B 10 |
| C 20 | D 50 |

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.1.spi.8 Use estimation strategies to select a reasonable solution to a real-world problem involving computing with rational numbers.

- 1** During the yellow fever epidemic of 1878 in Memphis, approximately 5,150 people died. If the population of Memphis in 1878 was about 19,000, which is the best estimate of the fraction of the population that died during the epidemic?

A $\frac{1}{6}$
C $\frac{1}{2}$

B $\frac{1}{4}$
D $\frac{2}{3}$

1 _____

- 2** A company gives group rates for whitewater rafting trips on the Ocoee River. The cost is \$39 per person for groups of 12 or more. Which is a reasonable estimate of the total price for a group of 21 people?

F \$200
H \$800

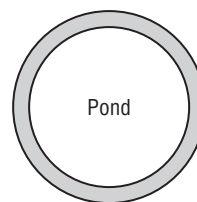
G \$600
J \$1,000

2 _____

- 3** The figure shows a circular pond with a path around it. If the radius of the pond is 50 feet and the path is 10 feet wide, what is the best estimate of the area of the path?

A 300 ft²
C 3,300 ft²

B 1,100 ft²
D 12,200 ft²



3 _____

- 4** Neyland Stadium in Knoxville has a capacity of 102,854 people. When the stadium was first built in 1921, there was seating for only 3,200 people. About how many times as large is the stadium's capacity now than when it was built?

F 51 times
H 24 times

G 32 times
J 18 times

4 _____

- 5** A hotel in Knoxville contains 265 rooms. If about $\frac{1}{3}$ of the rooms have brown draperies, which is the best estimate of the number of rooms with brown draperies?

A 70 rooms
C 90 rooms

B 80 rooms
D 100 rooms

5 _____

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.1.spi.9 Calculate rates involving cost per unit to determine the best buy.

- 1** A $10\frac{3}{4}$ -ounce can of soup costs \$1.19. Which of these prices for a 26-ounce can of the same soup would make it a better buy than the $10\frac{3}{4}$ -ounce can? **1** _____

A \$4.29 **B** \$3.99
C \$3.59 **D** \$2.29

- 2** A 28-ounce jar of peanut butter costs \$3.99. Which of these prices for a 40-ounce jar of peanut butter would make the 28-ounce jar a better buy than the 40-ounce jar? **2** _____

F \$4.99 **G** \$5.29
H \$5.49 **J** \$5.99

- 3** Brent is shopping for cereal at a grocery store. A 20-ounce box of his favorite cereal costs \$3.39, while a 34-ounce box of the same cereal is priced at \$4.99. In order to determine the better buy, Brent found the unit price for each box. Which statement is true? **3** _____

- A** The 20-ounce box costs \$0.1695 per ounce and the 34-ounce box costs less per ounce.
B The 20-ounce box costs \$0.1695 per ounce and the 34-ounce box costs more per ounce.
C The 34-ounce box costs \$0.1695 per ounce and the 20-ounce box costs less per ounce.
D The 34-ounce box costs \$0.1695 per ounce and the 20-ounce box costs more per ounce.

- 4** A grocery store sells baby carrots in three different-sized bags as shown in this table. Which size is the best buy? **4** _____

Size	Price
16-ounce bag	\$0.80 each
32-ounce bag	2 bags for \$3.00
48-ounce bag	\$2.00 each

- F** 16-ounce bag
G 32-ounce bag
H 48-ounce bag
J They all cost the same.

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.1.spi.10 Use exponential, scientific, and calculator notation to represent large numbers in real-world situations.

- 1 _____
- 1 There are about 100 miles of gravel roads in Great Smoky Mountain National Park. Which of the following is this number written in scientific notation?
- A** 1.0×10^3 **B** 1.0×10^2
C 1.0×10^{-1} **D** 1.0×10^{-2}
- 2 _____
- 2 The Graceland mansion has 1.5×10^4 square feet of floor space. How is this number written in standard notation?
- F** 1,500 **G** 6,000
H 15,000 **J** 600,000
- 3 _____
- 3 Buford divided 240 by 1,200,000 on his calculator. The answer was displayed as $2E-4$. How is this number written in standard notation?
- A** 20,000 **B** 0.002
C 0.0002 **D** 0.00002
- 4 _____
- 4 Suppose the Memphis Grizzlies scored 3^4 points in one of their basketball games. How many points did they score?
- F** 12 points **G** 27 points
H 64 points **J** 81 points
- 5 _____
- 5 The Cherokee National Forest contains about 630,000 acres. Which of the following is this number written in scientific notation?
- A** 6.3×10^5 **B** 6.3×10^4
C 6.3×10^{-4} **D** 6.3×10^{-5}
- 6 _____
- 6 Martin saved 2^5 pennies last week. How many pennies did he save?
- F** 64 pennies **G** 32 pennies
H 25 pennies **J** 10 pennies
- 7 _____
- 7 To calculate the population density of Tennessee, Shelonda used her calculator to divide the population of the state by its area. The calculator displayed the answer as $1.38E2$. How is this number written in standard notation?
- A** 0.0138 **B** 0.138
C 13.8 **D** 138

Standards Practice

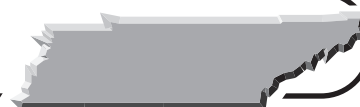


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.1.spi.11 Apply order of operations in computing with rational numbers using no more than two parentheses and exponents 1 and 2.

- 1 What does $2 + 3 \times 4 - 8 \div 2$ equal? **1** _____
A 2 **B** 6
C 10 **D** 16
- 2 What does $-2(6 - 4) + 20 \div 5 + 5$ equal? **2** _____
F -2 **G** 5
H $8\frac{1}{5}$ **J** 13
- 3 What does $\frac{1}{2}(12) + 3\left(-\frac{1}{3}\right)$ equal? **3** _____
A $8\frac{2}{3}$ **B** 7
C 5 **D** -3
- 4 What is the value of $3 + 4 \div 2 - 1$? **4** _____
F $2\frac{1}{2}$ **G** $3\frac{1}{2}$
H 4 **J** 7
- 5 What is the value of $4 - (9 - 2(3 + 1))$? **5** _____
A -28 **B** -24
C -20 **D** 3
- 6 What is the value of $(3^2 + 4)(5^2 - 20)$? **6** _____
F 100 **G** 89
H 65 **J** 29
- 7 What is the value of $(2 + 3)^2 - (2^2 + 3^2)$? **7** _____
A 0 **B** 12
C 16 **D** 30
- 8 Which order of operations is correct when simplifying an expression? **8** _____
F exponents, parentheses, multiplication/division, addition/subtraction
G parentheses, exponents, addition/subtraction, multiplication/division
H exponents, parentheses, addition/subtraction, multiplication/division
J parentheses, exponents, multiplication/division, addition/subtraction

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.2.spi.1 Generalize a variety of patterns with symbolic rules.

- 1 Which equation expresses the relationship between x and y shown by the values in this table?

x	y
1	-3
3	-1
7	3

- A** $y = x + 4$
B $y = x - 4$
C $y = 4x$
D $y = -3x$

1 _____

- 2 Which term describes the pattern 1, 4, 9, 16, 25, ...?

- F** perfect squares
H multiples of 4
G perfect cubes
J primes

2 _____

- 3 Given the equation $y = x^2 - 6$, what is the value of y when x is 4?

- A** -2
C $\sqrt{10}$
B 2
D 10

3 _____

- 4 What is the next symbol in the pattern shown?



- F**
H
G
J

4 _____

- 5 Which equation expresses the relationship that y is 5 more than twice x ?

- A** $y = 2x + 5$
C $y = 5x + 2$
B $y = x + 5$
D $y = 5 > 2x$

5 _____

- 6 What is the next number in the pattern 7, 10, 13, 16, ...?

- F** 18
H 20
G 19
J 23

6 _____

- 7 What is the next number in the pattern 15, 12, 9, 6, ...?

- A** 5
C 3
B 4
D 2

7 _____

Standards Practice

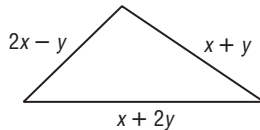


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.2.spi.2 Evaluate a first-degree algebraic expression given values for two or more variables.

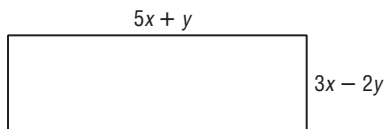
- 1** What is the value of the expression $5x + 6y - 3$ if $x = 2$ and $y = -1$? **1** _____
- A** 13 **B** 8
C 2 **D** 1

- 2** If x is 3 centimeters and y is 2 centimeters, what is the perimeter of the triangle shown in this figure? **2** _____



- F** 27 cm **G** 20 cm
H 16 cm **J** 5 cm

- 3** If x is 10 inches and y is 6 inches, what are the dimensions of the rectangle shown in this figure? **3** _____



- A** 42 in. by 56 in.
B 42 in. by 44 in.
C 18 in. by 21 in.
D 18 in. by 56 in.

- 4** If $a = 3$ and $b = 4$, what is the value of the expression $3 - a + 2b$? **4** _____
- F** 5 **G** 6
H 8 **J** 14

- 5** What is the value of the expression $r - 2t + s$ if $r = 8$, $t = 7$, and $s = 6$? **5** _____
- A** 0 **B** 7
C 12 **D** 26

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.2.spi.3 Represent situations and solve real-world problems using symbolic algebra.

Use the following information for Questions 1 and 2.

If the number of acres of farmland presently in Tennessee is increased by 6 million, the result is more than 17.7 million.

- 1 Which inequality could be used to find x , the number of million acres of farmland presently in Tennessee? **1** _____
- A** $x + 6 > 17.7$ **B** $6x > 17.7$
C $x - 6 > 17.7$ **D** $\frac{x}{6} > 17.7$

- 2 How many acres of farmland are presently in Tennessee? **2** _____
- F** more than 106.2 million acres
G more than 23.7 million acres
H more than 11.7 million acres
J more than 2.95 million acres

Use the following information for Questions 3 and 4.

A Tennessee Walking Horse requires 2 gallons of feed per day.

- 3 Which expression represents the number of gallons of feed per day required for h Tennessee Walking Horses? **3** _____
- A** $h + 2$ **B** $h - 2$
C $\frac{h}{2}$ **D** $2h$

- 4 If Rosita's Tennessee Walking Horses eat 20 gallons of feed per day, how many horses does she have? **4** _____
- F** 2 horses **G** 5 horses
H 10 horses **J** 20 horses

- 5 Let x be the number of visitors at the 1982 World's Fair in Knoxville. If twice the number of visitors decreased by 255,572 is 22,000,000, which equation could be used to find the number of visitors, and how many visitors were there? **5** _____
- A** $x - 255,572 = 22,000,000$; 22,255,572 visitors
B $2x - 255,572 = 22,000,000$; 11,127,786 visitors
C $2x + 22,000,000 = 255,572$; 10,872,214 visitors
D $2x - 255,572 = 22,000,000$; 22,255,572 visitors

Standards Practice

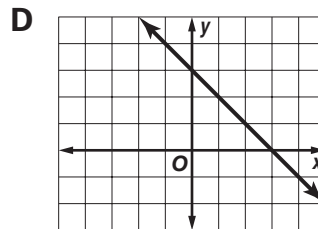
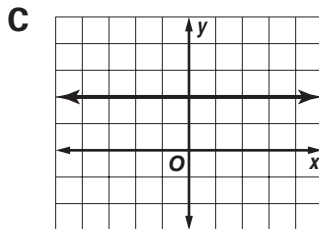
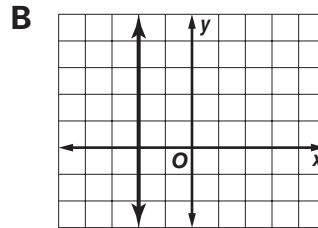
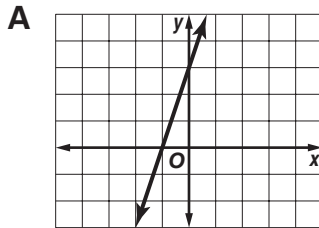


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.2.spi.4 Connect symbolic expressions and graphs of lines.

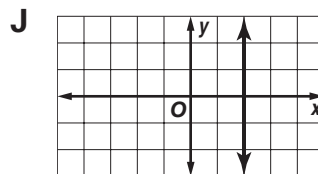
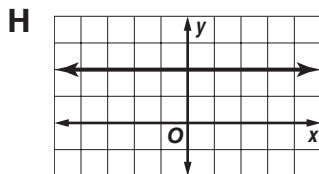
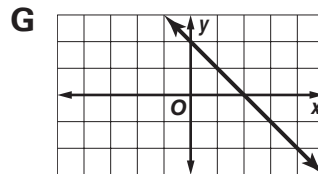
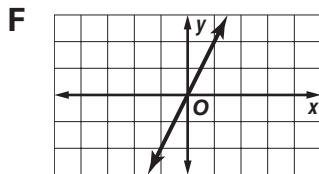
- 1** Which is the graph of $x + y = k$, where $k > 0$, $x \neq 0$, and $y \neq 0$?

1 _____



- 2** Which is the graph of $y = kx$, where $k > 0$, $x \neq 0$, and $y \neq 0$?

2 _____



- 3** How would the graph of $y = 3x + b$ change as b increases from 1 to 4?

3 _____

- A** The point of intersection with the y -axis would move up the axis.
- B** The point of intersection with the y -axis would move down the axis.
- C** The line would become steeper going from left to right.
- D** The line would become less steep going from left to right.

- 4** Which equation could be the equation of the line shown in this graph, where $k < 0$?

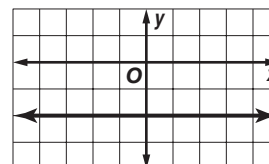
4 _____

F $y = k$

G $y = x - k$

H $y = kx$

J $x = k$



Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.2.spi.5 Generate equivalent forms for simple algebraic expressions.

1 Simplify: $4 - (7x + 6)$. 1 _____

A $-3x - 2$

B $-3x + 6$

C $-7x + 10$

D $-7x - 2$

2 Simplify: $2(y - 3)$. 2 _____

F $2y - 3$

G $2y - 6$

H $y - 6$

J $y - 1$

3 Simplify: $(a - b) + (2a + 3b + c)$. 3 _____

A $2a^2 - 3b^2 + c$

B $3a + 4b + c$

C $8abc$

D $3a + 2b + c$

4 Which expression is equivalent to $(4n - 8) - (n^2 + 3n + 1)$? 4 _____

F $-n^2 + 7n - 7$

G $-n^2 + n - 9$

H $-n^3 - 9$

J $-3n^2 - 11n - 1$

5 Simplify: $(2w)(3w + 1)$. 5 _____

A $6w^2 + 2w$

B $6w^2 + 1$

C $5w + 1$

D $8w^2$

6 Which expression is equivalent to $(5x + 2y) + (3x + 8y)$? 6 _____

F $15x + 16y$

G $8x + 16y$

H $8x + 10y$

J $18xy$

7 Which expression is equivalent to $(4a)(-2a)$? 7 _____

A $2a$

B $-6a^2$

C $-8a$

D $-8a^2$

8 Simplify: $(5m - 4p) - (3m - p)$. 8 _____

F $-23mp$

G $-15m^2 + 4p^2$

H $2m - 5p$

J $2m - 3p$

9 Which expression is equivalent to $6\left(\frac{1}{2}a + 2c - \frac{2}{3}\right)$? 9 _____

A $3a + 12c - 4$

B $12a + 12c - 12$

C $\frac{13}{2}a + 2c - \frac{2}{3}$

D $3a + 2c - \frac{2}{3}$

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.2.spi.6 Solve one- and two-step linear equations involving integers.

1 What is the solution of $5x = -15$? **1** _____
A -20 **B** -10 **C** -3 **D** 3

2 What is the solution of $\frac{x}{12} = 3$? **2** _____
F 36 **G** 15 **H** 4 **J** $\frac{1}{4}$

3 What is the solution of $a - 15 = -22$? **3** _____
A 330 **B** $\frac{22}{15}$ **C** -7 **D** -37

4 What is the solution of $b + 19 = 4$? **4** _____
F -23 **G** -15
H 15 **J** 23

5 What is the solution of $4 - a = -1$? **5** _____
A -5 **B** -3
C 3 **D** 5

6 What is the solution of $\frac{x+9}{12} = -2$? **6** _____
F -132 **G** -33
H -15 **J** 1

7 What is the solution of $5 = -11a - 39$? **7** _____
A -16 **B** -4
C $-\frac{34}{11}$ **D** 4

8 What is the solution of $1 - y = 16$? **8** _____
F -17 **G** -15
H 15 **J** 17

9 What is the solution of $4(2x + 3) = 20$? **9** _____
A 1 **B** $\frac{4}{3}$
C $\frac{17}{8}$ **D** 4

Standards Practice

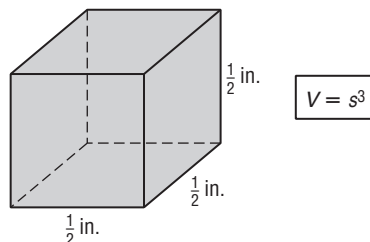


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.2.spi.7 Apply given formulas to solve real-world problems.

- 1** What is the volume, in cubic inches, of the cube shown in the figure?

1 _____



- A** $1\frac{1}{2} \text{ in}^3$ **B** $\frac{1}{4} \text{ in}^3$
C $\frac{1}{8} \text{ in}^3$ **D** $\frac{1}{16} \text{ in}^3$
- 2** The formula $F = \frac{9}{5}C + 32$ can be used to convert C degrees Celsius to F degrees Fahrenheit. How many degrees Fahrenheit are equivalent to 15° Celsius?
- F** 102.6°F **G** 89°F
H 67°F **J** 59°F

2 _____

- 3** The formula $f = 3y$ gives the number of feet f in y yards. How many feet are there in 6 yards?
- A** 18 ft **B** 9 ft
C 3 ft **D** 2 ft

3 _____

- 4** The formula $L = 4c + 2d$ gives the total number of legs L in a group of c cows and d ducks. If there are a total of 46 legs in a group of cows and ducks that includes 7 ducks, how many cows are there?
- F** 8 cows **G** 9 cows
H 16 cows **J** 18 cows

4 _____

- 5** The amount of tax t on an item that costs x dollars is given by the formula $t = 0.07x$. Which of the amounts is the pre-tax price of a new book if the sales tax on it is \$1.40?
- A** \$22.00 **B** \$20.00
C \$14.00 **D** \$10.00

5 _____

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.2.spi.8 Interpret graphs which represent rates of change.

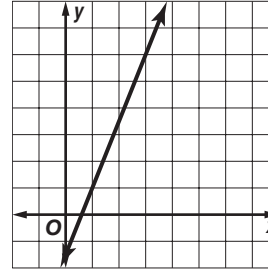
- 1** What is the rate of change of the line shown in this graph?

A $-\frac{5}{2}$

B $-\frac{2}{5}$

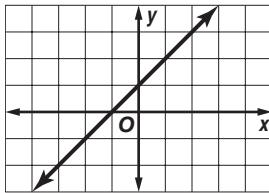
C $\frac{2}{5}$

D $\frac{5}{2}$

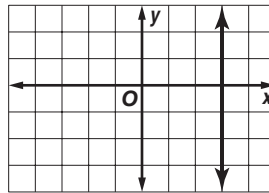


1 _____

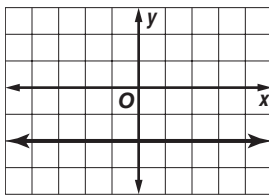
Use the graphs for Questions 2 and 3.



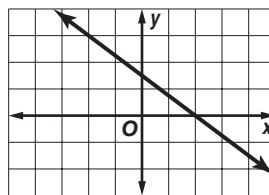
Graph 1



Graph 2



Graph 3



Graph 4

- 2** Which graph shows a negative rate of change?

F Graph 1

G Graph 2

H Graph 3

J Graph 4

2 _____

- 3** Which graph shows a zero rate of change?

A Graph 1

B Graph 2

C Graph 3

D Graph 4

3 _____

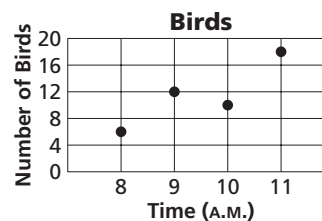
- 4** This graph shows the number of birds Rachel saw on a fence. What is the average rate of change in the number of birds observed each hour from 8 A.M. until 11 A.M.?

F 3

G 4

H 6

J 12



4 _____

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.2.spi.9 Formulate multi-step equations that represent relationships and real-world situations.

- 1 A plumber charges \$50 for a service call plus \$35 per hour for his work. If he works for h hours at a job, which equation gives the total charge C for the visit? **1** _____
- A** $C = 50 + 35h$ **B** $C = 35 + 50h$
C $C = 50 + 35 + h$ **D** $C = 85h$
- 2 Mary has 3 more than 3 times as many pairs of shoes as her brother. Mary has 54 pairs of shoes. Which equation gives x , the number of pairs of shoes that Mary's brother has? **2** _____
- F** $x^3 = 54$ **G** $3x = 54$
H $3x + 6 = 54$ **J** $3x + 3 = 54$
- 3 Bill has x dimes and gives 10 to Sam. Bill now has 76 dimes left. Which equation gives n , the number of dimes Bill had in the beginning? **3** _____
- A** $n + 10 = 76$ **B** $n - 10 = 76$
C $\frac{n}{10} = 76$ **D** $10n = 76$
- 4 Lukas read 4 times as many books as Sheila during the summer. Mark read 8 more than 3 times as many books as Sheila did. If Lukas and Mark read the same number of books, which equation gives x , the number of books Sheila read during the summer? **4** _____
- F** $3x(8) = 4x$ **G** $3x + 8 = 4$
H $3 + x = 4x - 8$ **J** $3x + 8 = 4x$
- 5 The Sampsons are buying a car for \$20,000, which includes the interest on a loan to make the purchase. After making a down payment of \$2,000, they will be financing the balance over 60 months. Which equation can be used to find the amount a of their monthly payment? **5** _____
- A** $60a = 20,000$ **B** $60a + 2,000 = 20,000$
C $a + 60 = 2,000$ **D** $2,000a + 60 = 20,000$
- 6 One cellular phone plan charges a flat rate of \$30 per month plus \$0.20 per minute for all calls. Another plan charges \$59 per month with free unlimited minutes. Which equation could you solve to find the number of minutes m for which the costs of the two plans are the same? **6** _____
- F** $30m + 0.20 = 59$ **G** $30 + 0.20 + m = 59$
H $0.20m + 30 = 59$ **J** $30 + 0.20m = 59 + 0.20m$

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.2.spi.10 Solve one-step linear inequalities.

- 1 What is the solution set of $5x < -20$? 1 _____
A $x < -25$ **B** $x > -25$
C $x > -4$ **D** $x < -4$
- 2 What is the solution set of $6 > \frac{a}{2}$? 2 _____
F $a < 12$ **G** $a > 12$
H $a < 3$ **J** $a > 3$
- 3 What is the solution set of $9 + c \geq -11$? 3 _____
A $c \geq -2$ **B** $c \geq -20$
C $c \leq -2$ **D** $c \leq -20$
- 4 What is the solution set of $-9k < -36$? 4 _____
F $k < -27$ **G** $k > -4$
H $k < 4$ **J** $k > 4$
- 5 Which inequality has the solution set $z > -2$? 5 _____
A $z - 1 > 3$ **B** $-2z < -4$
C $8 > -4z$ **D** $5 > 7 + z$
- 6 Which inequality has the solution set $b \leq 5$? 6 _____
F $b + 4 \geq 9$ **G** $30 \leq 6b$
H $-4b \geq -20$ **J** $b - 5 \geq 0$
- 7 Which inequality has the solution set $r < 3$? 7 _____
A $12 > 4r$ **B** $6 - r < 9$
C $-6r < -18$ **D** $9r > -3$
- 8 What is the solution set of $x - 2.1 < 3.6$? 8 _____
F $x > 5.7$ **G** $x < 5.7$
H $x < 1.5$ **J** $x > 1.5$
- 9 What is the solution set of $-12 \leq -6 + x$? 9 _____
A $x \geq 6$ **B** $x \geq -6$
C $x \leq 6$ **D** $x \leq -6$

Standards Practice

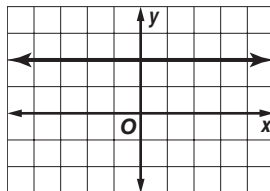


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.2.spi.11 Connect the appropriate graph to a linear equation.

- 1** Which is the equation of the line shown in this graph?

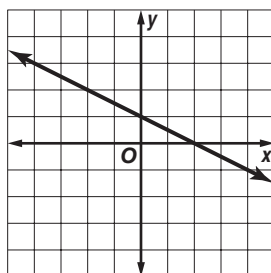
A $y = 2$ **B** $x = 2$
C $y = 2x$ **D** $y = x + 2$



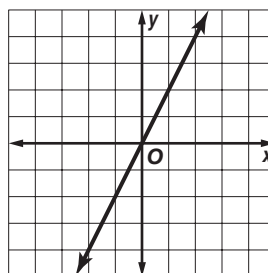
1 _____

- 2** Which is the graph of $y = \frac{1}{2}x$?

F

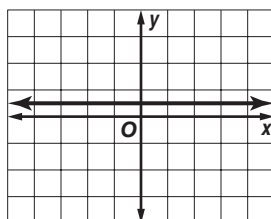


G

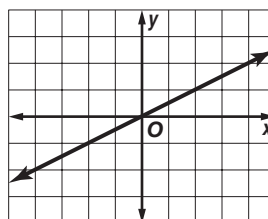


2 _____

H

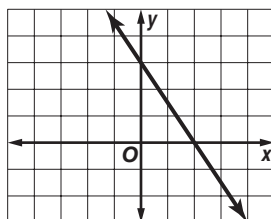


J

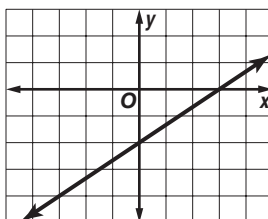


- 3** Which is the graph of $3x + 2y = -6$?

A

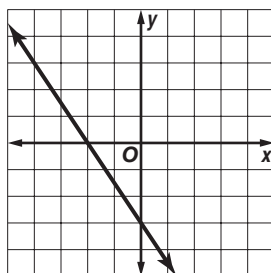


B

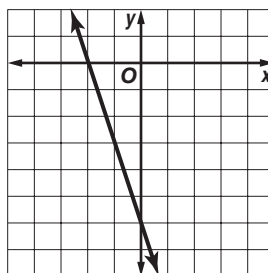


3 _____

C



D



Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.3.spi.1 Classify types of two- and three-dimensional geometric figures using their defining properties.

1 Which statement is true for all rectangles?

1 _____

- A** Rectangles have only one pair of parallel sides.
- B** Rectangles have perpendicular diagonals.
- C** Rectangles have four congruent sides.
- D** Rectangles have four right angles.

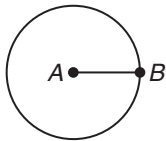
2 Which statement is true for all equilateral triangles?

2 _____

- F** Equilateral triangles have three congruent sides.
- G** Equilateral triangles have exactly two congruent sides.
- H** Equilateral triangles have no congruent sides.
- J** Equilateral triangles have one right angle.

3 In circle A shown here, what is \overline{AB} called?

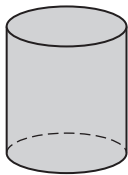
3 _____



- | | |
|------------------------|-------------------|
| A circumference | B area |
| C radius | D diameter |

4 What type of figure is shown?

4 _____



- | | |
|----------------|-------------------|
| F prism | G sphere |
| H cone | J cylinder |

5 Which statement is true for all square pyramids?

5 _____

- A** A square pyramid has a square base and four triangular faces.
- B** A square pyramid has a triangular base and three triangular faces.
- C** A square pyramid has two square bases and four rectangular faces.
- D** A square pyramid has two triangular bases and three rectangular faces.

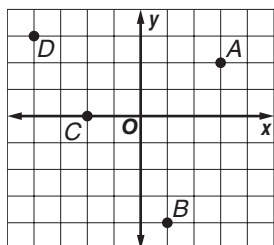
Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.3.spi.2 Use ordered pairs to describe given points in a coordinate system.

Use this graph for Questions 1–4.



1 What are the coordinates of point *A*?

A (2, 3)

B (3, 2)

C (-2, 3)

D (-3, 2)

1 _____

2 What are the coordinates of point *B*?

F (-4, 1)

G (4, -1)

H (1, -4)

J (-1, 4)

2 _____

3 What are the coordinates of point *C*?

A (-2, 0)

B (2, 0)

C (0, -2)

D (0, 2)

3 _____

4 What are the coordinates of point *D*?

F (3, -4)

G (4, -3)

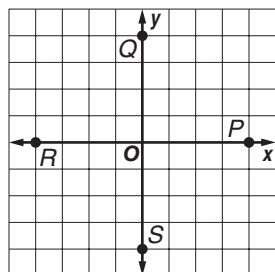
H (-3, 4)

J (-4, 3)

4 _____

5 Which point is located at (0, 4)?

5 _____



A *P*

B *Q*

C *R*

D *S*

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.3.spi.3 Identify relationships among angles (i.e., complementary, supplementary, interior, exterior, vertical, corresponding).

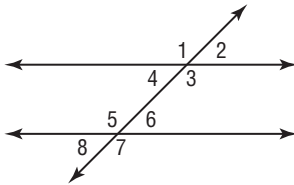
1 If $m\angle A = 30$ and $m\angle B = 60$, what type of angles are $\angle A$ and $\angle B$? **1** _____

- A** complementary
- B** supplementary
- C** vertical
- D** right

2 If $m\angle X = 40$ and $m\angle Y = 140$, what type of angles are $\angle X$ and $\angle Y$? **2** _____

- F** complementary
- G** supplementary
- H** vertical
- J** straight

Use the figure below for Questions 3–6.



3 What type of angles are $\angle 2$ and $\angle 4$? **3** _____

- A** interior
- B** exterior
- C** corresponding
- D** vertical

4 What type of angles are $\angle 1$ and $\angle 8$? **4** _____

- F** interior
- G** exterior
- H** corresponding
- J** vertical

5 What type of angles are $\angle 3$ and $\angle 6$? **5** _____

- A** interior
- B** exterior
- C** corresponding
- D** vertical

6 What type of angles are $\angle 4$ and $\angle 8$? **6** _____

- F** interior
- G** exterior
- H** corresponding
- J** vertical

Standards Practice

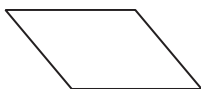


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

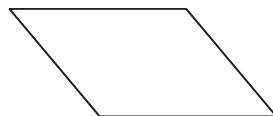
PERFORMANCE INDICATOR 8.3.spi.4 Recognize similar geometric figures.

1 Which figure is similar to the one shown at the right?

A

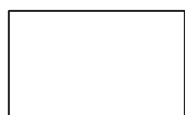


B

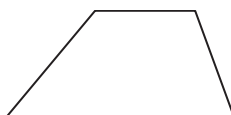


1 _____

C



D



2 Which pair of figures are similar?

F

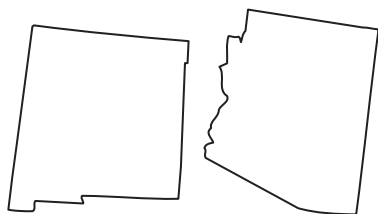


G

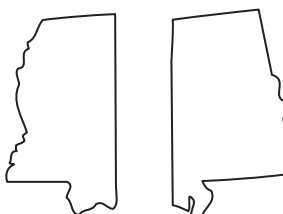


2 _____

H

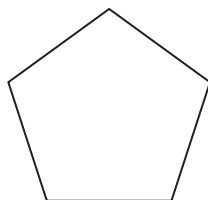


J

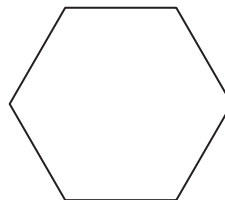


3 Which figure is similar to the one shown at the right?

A

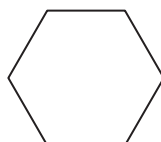


B

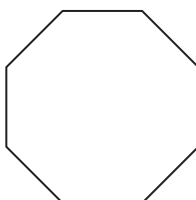


3 _____

C



D



Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.3.spi.5 Determine the measure of an angle of a triangle given the measures of the other two angles.

- 1** If the measures of two angles of a triangle are 92 and 38, what is the measure of the third angle?

1 _____

A 180

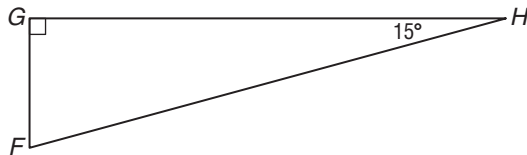
B 130

C 60

D 50

- 2** What is the measure of $\angle F$ in the triangle shown?

2 _____



F 75

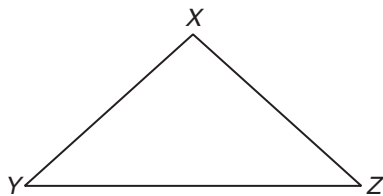
G 80

H 85

J 165

- 3** Brittany's house sits on a lot that has the shape of an isosceles triangle like the one shown in the figure. What is the measure of $\angle X$ if $m\angle Z = 42$ and the measures of $\angle Y$ and $\angle Z$ are equal?

3 _____



A 180

B 96

C 84

D 42

- 4** In a triangle, the measure of the smallest angle is 23 and the measure of the largest angle is 4 times that of the smallest angle. What is the measure of the third angle of this triangle?

4 _____

F 55

G 65

H 75

J 92

- 5** In $\triangle MNO$, $m\angle M = x$, $m\angle N = 2x$, and $m\angle O = 120$. What is $m\angle M$?

5 _____

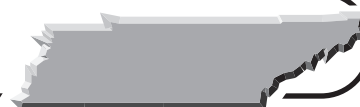
A 40

B 30

C 20

D 10

Standards Practice

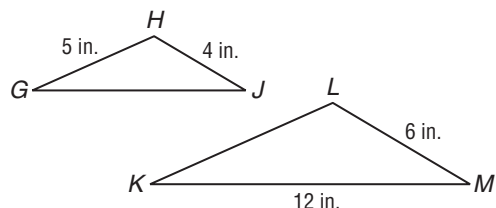


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.3.spi.6 Apply relationships among angles and side lengths of similar geometric figures.

Use the following information for Questions 1 and 2.

In the figure, $\triangle GHJ$ is similar to $\triangle KLM$.



1 What is the length of \overline{KL} ?

A 10 in.

B 7.5 in.

C 7 in.

D 6.8 in.

1 _____

2 What is the length of \overline{GJ} ?

F 10 in.

G 9 in.

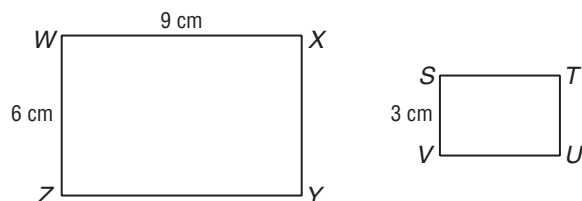
H 8 in.

J 7 in.

2 _____

Use the following information for Questions 3 and 4.

In the figure, rectangle $WXYZ$ is similar to rectangle $STUV$.



3 What is the length of \overline{ST} ?

A 4 cm

B 4.5 cm

C 6 cm

D 18 cm

3 _____

4 What is the perimeter of rectangle $STUV$?

F 7.5 cm

G 10.5 cm

H 15 cm

J 30 cm

4 _____

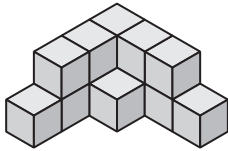
Standards Practice

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.3.spi.7 Apply spatial reasoning and visualization to solve real-world problems.

- 1** How many cubes were used to build the model shown?

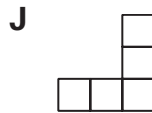
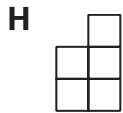
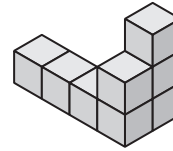
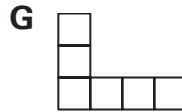
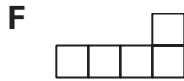
1 _____



- A** 10 cubes **B** 11 cubes
C 12 cubes **D** 13 cubes

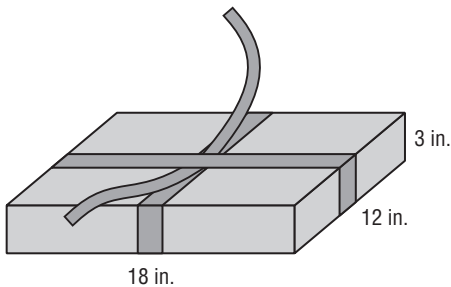
- 2** Which figure shows a top view of the model shown at the right?

2 _____



- 3** Felix is putting ribbon around a gift box that is 12 inches wide, 18 inches long, and 3 inches high, as shown in the figure. If he wants 18 extra inches to tie a bow, how long should the ribbon be?

3 _____



- A** 90 in. **B** 84 in.
C 72 in. **D** 54 in.

- 4** Wendy has a planter in the shape of a cube on her porch. The inside of the planter measures 2 feet on each side. If the planter is three-fourths full of dirt, how many cubic feet of dirt does it contain?

4 _____

- F** 3 ft³ **G** 3.375 ft³
H 6 ft³ **J** 8 ft³

Standards Practice



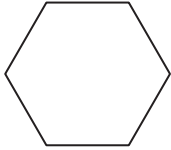
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.3.spi.8 Apply geometric ideas and relationships in areas outside the mathematics classroom (i.e., art, science, everyday life).

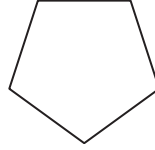
1 Which figure could tessellate in a plane?

1 _____

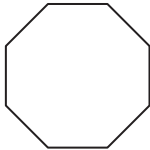
A



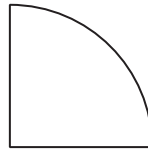
B



C



D



2 Vlade was playing billiards. He needs to bank the cue ball *C* off the top rail of the table to hit the other ball *B*. At which numbered point in the figure should he aim?

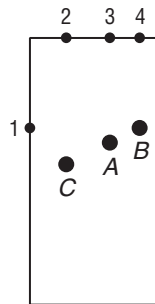
2 _____

F 1

G 2

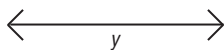
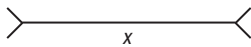
H 3

J 4



3 Which relationship is true about x and y , the lengths of the two horizontal segments in the figure shown here?

3 _____



A $x = y$

B $x > y$

C $y > x$

D $x \neq y$

4 How many square quarry tiles 16 inches on a side are needed to cover a rectangular floor whose dimensions are 16 feet by 24 feet?

4 _____

F 150 tiles

G 216 tiles

H 256 tiles

J 384 tiles

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

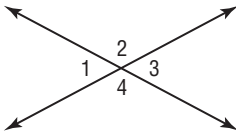
PERFORMANCE INDICATOR 8.3.spi.9 Solve problems using angle relationships (i.e., complementary, supplementary, interior, exterior, vertical, corresponding).

1 What is the measure of a complement of an angle whose measure is 30° ? **1** _____

- A** 30° **B** 60°
C 90° **D** 150°

Use the following information for Questions 2 and 3.

The measure of $\angle 1$ is $(6x + 20)$ and the measure of $\angle 3$ is $(x + 50)$.



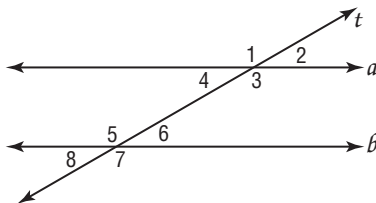
2 Which equation could you use to find the value of x ? **2** _____

- F** $(6x + 20) + (x + 50) = 90$
G $(6x + 20)(x + 50) = 180$
H $(6x + 20) + (x + 50) = 180$
J $6x + 20 = x + 50$

3 What is the measure of $\angle 1$? **3** _____

- A** 56° **B** $37\frac{1}{7}^\circ$
C 36° **D** 6°

4 If line a is parallel to line b , $m\angle 2 = (x + 10)$, and $m\angle 6 = (3x - 30)$, what is the value of x ? **4** _____



- F** 10 **G** 20
H 30 **J** 50

5 What is the measure of the supplement of an angle whose measure is 70° ? **5** _____

- A** 180° **B** 110°
C 90° **D** 20°

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.4.spi.1 Select units of appropriate size and type to measure angles, perimeter, area, surface area, and volume.

- 1 Which unit would you use to measure an angle? **1** _____
A inches B miles
C hours D degrees
- 2 Which unit of measure would be appropriate to express the distance from Manchester to Rockwood? **2** _____
F centimeters G miles
H cubic meters J square yards
- 3 Franklin is buying his girlfriend a bottle of perfume. Which would be a reasonable volume for the bottle? **3** _____
A 2.7 oz B 2.7 gal
C 2.7 L D 2.7 kg
- 4 A group of volunteers are going to paint the outside of the Mabry-Hazen House Museum in Knoxville. Which unit would be appropriate to express the surface area to be painted? **4** _____
F centimeters G quarts
H cubic inches J square feet
- 5 Which would be a reasonable measure for the area of Fort Donelson National Battlefield near Dover? **5** _____
A 552 acres B 552 cm²
C 552 ft² D 552 m³
- 6 Which unit could best be used to express the perimeter of Nashville International Airport? **6** _____
F milliliters G inches
H miles J tons
- 7 Which unit would be most appropriate to express the volume of a cardboard container in the shape of a rectangular prism? **7** _____
A millimeters B cubic inches
C square feet D cubic miles

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.4.spi.2 Convert from one unit to another within the same system.

- 1** How many ounces are in 1 gallon of milk? **1** _____
A 16 oz **B** 32 oz
C 64 oz **D** 128 oz

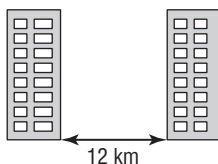
- 2** It took Collin 240 minutes to drive from Dyersburg to Clarksville. How many hours did the trip take? **2** _____
F 4 h **G** 6 h
H 8 h **J** 10 h

- 3** An airplane flies at an altitude of 31,680 feet. How many miles is this? **3** _____
A 4 mi **B** 5 mi
C 6 mi **D** 7 mi

- 4** With an elevation of 6,643 feet, Clingmans Dome is the highest point in Tennessee. To the nearest yard, how many yards is 6,643 feet? **4** _____
F 2,214 yd **G** 1,107 yd
H 553 yd **J** 185 yd

- 5** The Carnival Week celebration in Memphis lasts for 9 days. How many hours are there in 9 days? **5** _____
A 240 h **B** 216 h
C 168 h **D** 24 h

- 6** How many meters apart are the two buildings shown in the figure? **6** _____



- F** 120 m **G** 1,200 m
H 12,000 m **J** 120,000 m

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.4.spi.3 Estimate length, perimeter, circumference, area, and volume using a variety of strategies.

- 1 About how many inches long is the pencil shown here?

1 _____



- A 1 in. B 3 in.
C 5 in. D 7 in.

- 2 Which is a reasonable estimate for the perimeter of the top of a dining room table?

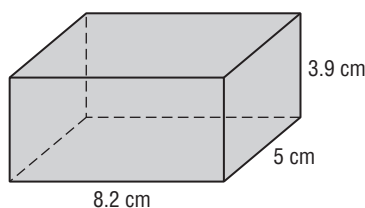
2 _____

- F 4 ft G 8 ft
H 20 ft J 40 ft

- 3 What is a reasonable estimate of the surface area of the rectangular prism?

3 _____

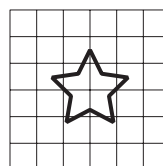
- A 17 cm^2
B 92 cm^2
C 160 cm^2
D 184 cm^2



- 4 What is a reasonable estimate of the perimeter of the star shown here?

4 _____

- F 20 units
G 10 units
H 7 square units
J 3.5 square units



- 5 What is a reasonable estimate of the circumference of a circle with radius 12 meters?

5 _____

- A 36 m B 72 m
C 144 m D 420 m^2

- 6 Which is a reasonable estimate for the volume of a cube whose edges are 4.08 inches long?

6 _____

- F 32 in. G 64 in^3
H 128 in^3 J 256 in^3

Standards Practice

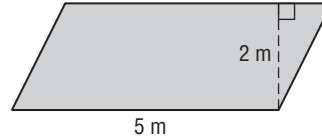


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.4.spi.4 Apply formulas to find the area of triangles, parallelograms, and trapezoids.

- 1 What is the area of this parallelogram?

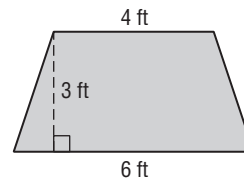
A 5 m^2
B 10 m^2
C 15 m^2
D 16 m^2



1 _____

- 2 What is the area of the trapezoidal table top shown at the right?

F 72 ft^2
G 27 ft^2
H 16 ft^2
J 15 ft^2



2 _____

- 3 What is the area of a triangle with base 8 inches and height 6 inches?

A 48 in^2 **B** 42 in^2
C 24 in^2 **D** 14 in^2

3 _____

- 4 What is the area of a parallelogram with base 10 feet and height 8 feet?

F 80 ft^2 **G** 60 ft^2
H 40 ft^2 **J** 36 ft^2

4 _____

- 5 What is the area of a trapezoid with bases 12 centimeters and 20 centimeters long, and height 8 centimeters?

A 48 cm^2 **B** 128 cm^2
C 256 cm^2 **D** $1,920 \text{ cm}^2$

5 _____

- 6 What is the area of a right triangle whose base is 5.5 yards and whose height is 3.2 yards?

F 35.2 yd^2 **G** 17.6 yd^2
H 8.8 yd^2 **J** 4.35 yd^2

6 _____

- 7 What is the area of a trapezoid with bases 10.6 millimeters and 15.4 millimeters, and height 4.2 millimeters?

A 54.6 mm^2 **B** 52.5 mm^2
C 27.3 mm^2 **D** 18.2 mm^2

7 _____

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.4.spi.5 Solve real-world problems involving rate/time/distance (i.e., $d = rt$).

- 1 Olivia jogs at an average speed of 4 miles per hour. If she jogs for $\frac{1}{2}$ hour, how many miles does she travel? **1** _____
A 2 mi **B** 4 mi
C $4\frac{1}{2}$ mi **D** 8 mi
- 2 Barbara just finished rollerblading on campus at Vanderbilt University in Nashville. If she traveled 6 miles in 45 minutes, what was her average speed? **2** _____
F 4.5 mph **G** 6 mph
H 8 mph **J** 12 mph
- 3 A boat travels up the Cumberland River at a speed of 40 miles per hour for 2 hours. How many miles does it travel? **3** _____
A 10 mi **B** 20 mi
C 40 mi **D** 80 mi
- 4 A snail is crawling at a rate of 26 feet per minute. How many feet will the snail travel if it maintains this speed for $\frac{1}{4}$ hour? **4** _____
F 6.5 ft **G** 156 ft
H 390 ft **J** 1,560 ft
- 5 A marathon runner completes the 26.2-mile course in 4 hours. What is his average speed during the race? **5** _____
A 104.8 mph **B** 26.2 mph
C 13.1 mph **D** 6.55 mph
- 6 Max's dog Jake runs at 15 feet per second. At this speed, how far will Jake run in 60 seconds? **6** _____
F 1,800 ft **G** 900 ft
H 75 ft **J** 4 ft
- 7 An arrow flies at a speed of 40 meters per second. How long will it take the arrow to travel 200 meters? **7** _____
A 8 s **B** 5 s
C 4 s **D** 2 s

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

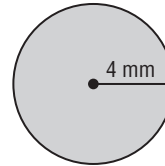
PERFORMANCE INDICATOR 8.4.spi.6 Apply formulas to find the circumference and area of circles.

Use the following information for Questions 1 and 2.

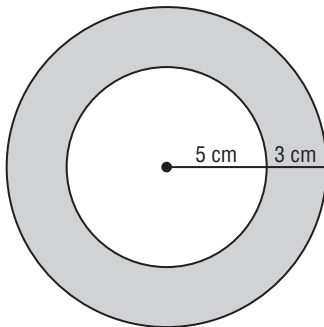
Tamara is making a quilt. There are six circular pieces of the same size included in the design. The diameter of each circle is 22 inches.

- 1 What is the area of each circular piece? 1 _____
- A** $11\pi \text{ in}^2$ **B** $22\pi \text{ in}^2$
- C** $121\pi \text{ in}^2$ **D** $576\pi \text{ in}^2$
- 2 How many inches of thread will Tamara need to sew around the edge of each circular piece when she stitches the quilt together? 2 _____
- F** $11\pi \text{ in.}$ **G** $22\pi \text{ in.}$
- H** $121\pi \text{ in.}$ **J** $576\pi \text{ in.}$

Use this circle for Questions 3 and 4.



- 3 What is the circumference of the circle? 3 _____
- A** $8\pi \text{ mm}$ **B** $16\pi \text{ mm}$
- C** $48\pi \text{ mm}$ **D** $64\pi \text{ mm}$
- 4 What is the area of the circle? 4 _____
- F** $8\pi \text{ mm}^2$ **G** $16\pi \text{ mm}^2$
- H** $24\pi \text{ mm}^2$ **J** $40\pi \text{ mm}^2$
- 5 What is the area of the shaded ring shown in the figure? 5 _____



- A** $64\pi \text{ cm}^2$ **B** $55\pi \text{ cm}^2$
- C** $39\pi \text{ cm}^2$ **D** $25\pi \text{ cm}^2$

Standards Practice

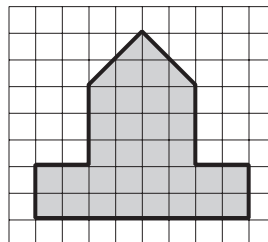


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.4.spi.7 Estimate or find the area of irregular and complex shapes.

- 1 What is a reasonable estimate of the area in square units of the shaded region in this figure?

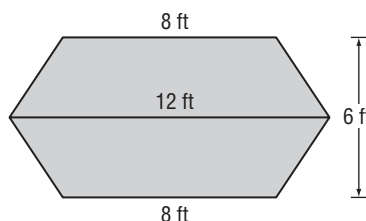
A 50 square units
B 44 square units
C 38 square units
D 32 square units



1 _____

- 2 The figure shown here is formed by two identical isosceles trapezoids. What is the total area of the figure?

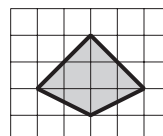
F 30 ft^2
G 45 ft^2
H 60 ft^2
J 120 ft^2



2 _____

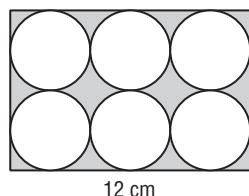
- 3 What is a reasonable estimate of the area in square units of the shaded region in this figure?

A 4 square units
B 6 square units
C 8 square units
D 10 square units



3 _____

- 4 In the figure, six circles of the same size are arranged inside a rectangle so that they just touch each other as well as the sides of the rectangle. What is the total area of the shaded portion of the figure?



F $(96 - 24\pi) \text{ cm}^2$
G $(72 - 12\pi) \text{ cm}^2$
H $(72 - 24\pi) \text{ cm}^2$
J $(96 - 12\pi) \text{ cm}^2$

4 _____

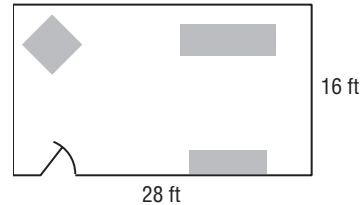
Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.4.spi.8 Solve problems involving scale factors using ratios and proportions.

- 1** The figure shows a scale drawing of the living room in a house. If the scale for the drawing is $\frac{1}{4}$ inch = 1 foot, what are the dimensions of the scale drawing?



1 _____

- A** 4 in. by 7 in.
B 8 in. by 14 in.
C 16 in. by 28 in.
D 64 in. by 112 in.

- 2** A picture 3 inches wide and 5 inches long is enlarged. If the length of the enlargement is 20 inches, what is the width of the enlargement?

2 _____

- F** $33\frac{1}{3}$ in. **G** 24 in.
H 18 in. **J** 12 in.

- 3** A gift shop sells miniature models of the Gatlinburg Space Needle. If the actual structure is 342 feet high and the scale of the model is $\frac{1}{2}$ inch = 19 feet, how many inches tall is the model?

3 _____

- A** 18 in. **B** 15 in.
C 12 in. **D** 9 in.

- 4** A 20-foot statue of Pharaoh Ramses the Great guards the entrance to The Pyramid Arena in Memphis. Jian is making a model of the statue. If his model is 10 inches tall, what is the scale?

4 _____

- F** 1:120 **G** 1:24
H 1:12 **J** 1:2

- 5** The scale on a map of Tennessee reads 1 inch = 20 miles. How many inches apart will Nashville and Knoxville be on this map if the distance between the two cities is 180 miles?

5 _____

- A** 12 in. **B** 10 in.
C 9 in. **D** 6 in.

- 6** Doll furniture is built using a scale of $\frac{1}{4}$ inch = 1 foot. How long was the actual sofa if the model of it is 2 inches long?

6 _____

- F** 2 ft **G** 4 ft
H 6 ft **J** 8 ft

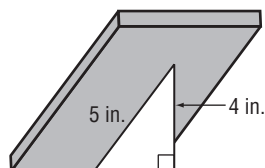
Standards Practice

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.4.spi.9 Solve real-world problems using the Pythagorean Theorem (no radicals).

- 1 A picture frame has a triangular brace on the back to make it stand up as shown in the figure. What is the length of the third side of the brace?

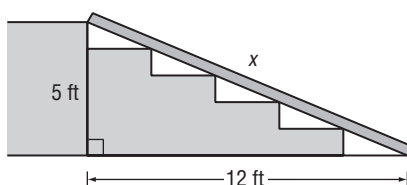
A 1 in.
B 2 in.
C 3 in.
D 4 in.



1 _____

- 2 What is the length x of the ramp that lies over the stairs shown in this figure?

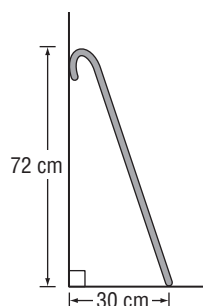
F 13 ft
G 14 ft
H 15 ft
J 16 ft



2 _____

- 3 Julio leans his cane against the wall as shown in the figure. If the base of the cane is 30 centimeters from the wall and the top of the cane hits the wall 72 centimeters above the floor, how long is his cane?

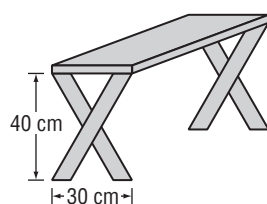
A 100 cm
B 92 cm
C 85 cm
D 78 cm



3 _____

- 4 How long is each leg of the bench shown in the figure?

F 70 cm
G 60 cm
H 50 cm
J 20 cm



4 _____

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.5.spi.1 Identify an appropriate sample to test a given hypothesis.

- 1 A company's employee relations department is trying to measure their employees' interest in having an onsite childcare program. Which group should be surveyed? **1** _____
- A** employees between the ages of 20 and 40
B employees between the ages of 40 and 60
C employees over the age of 60
D retired employees
- 2 A school cafeteria manager wants to test the hypothesis that students would like more choices for lunch. Which sample should be used? **2** _____
- F** teachers
G students who buy their lunch
H students who bring their lunch from home
J school administration
- 3 The Great Smoky Mountains Credit Union wants to increase the number of members' children who have accounts. On which group should they focus their advertising efforts? **3** _____
- A** adults in the county
B students in the local elementary school
C current members who have children
D people who have closed their accounts
- 4 Dwayne hopes to validate his hypothesis that the Raccoon Mountain Caverns near Chattanooga are the best caves in Tennessee. Which group should he survey? **4** _____
- F** his friends
G his family
H randomly chosen cave explorers
J randomly chosen students at his school
- 5 A company that makes disposable diapers is developing a new diaper for infants. Which group should they survey about their new product? **5** _____
- A** randomly chosen persons at a mall
B parents of teenagers
C randomly chosen teenagers at a music store
D persons purchasing baby products at a discount store

Standards Practice

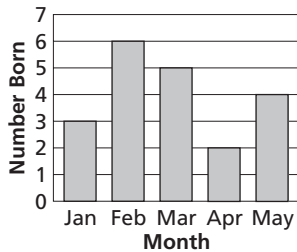


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.5.spi.2 Interpret appropriate graphical representations of data (i.e., histograms, box plots, scatterplots).

Use the following information for Questions 1 and 2.

The bar graph shows the number of students in a school choir who were born in each of the months from January through May.



1 How many students have birthdays in May?

1 _____

- A** 2 students
- B** 3 students
- C** 4 students
- D** 5 students

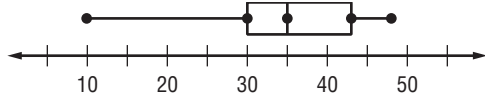
2 How many total students are represented in this graph?

2 _____

- F** 20 students
- G** 19 students
- H** 18 students
- J** 17 students

Use the following information for Questions 3 and 4.

The box-and-whisker plot represents the quiz scores for the students in an 8th grade mathematics class.



3 About what percent of the scores are between 10 and 35?

3 _____

- A** 10%
- B** 25%
- C** 50%
- D** 60%

4 What is the range of the students' scores?

4 _____

- F** 48
- G** 42
- H** 38
- J** 13

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.5.spi.3 Determine the mean of a given set of real-world data.

- 1** The table gives the number of NCAA Women's Basketball Championships that each university's team has won through the 2003–2004 season. What is the mean number of championships won by these four teams?

1 _____

University	Number of Championships
University of Tennessee	6
University of Connecticut	5
Louisiana Tech University	2
Stanford University	2

- A** 3.5 championships **B** 3.75 championships
C 4 championships **D** 4.5 championships

- 2** The table gives the number of women from several states who were crowned as Miss America from 1921 through 2003. What is the mean number of Miss America winners from these six states?

2 _____

State	Number of Miss America Winners
Illinois	5
Michigan	4
Mississippi	4
Tennessee	2
Florida	2
North Carolina	1

- F** 5 Miss Americas **G** 4 Miss Americas
H 3 Miss Americas **J** 2 Miss Americas

- 3** During her last five business trips, Katie earned 472, 818, 702, 990, and 688 miles toward her frequent-flier program. What is the mean number of miles per trip that she earned?

3 _____

- A** 518 mi **B** 702 mi
C 734 mi **D** 740 mi

- 4** Randy has test grades of 82, 92, 98, and 100. What is his mean (average) test grade?

4 _____

- F** 95 **G** 93
H 92 **J** 18

Standards Practice



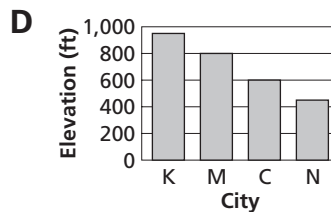
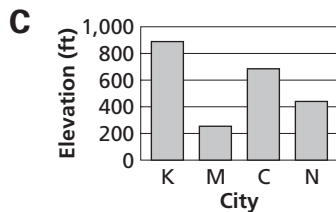
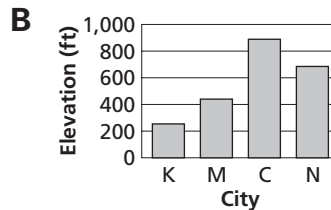
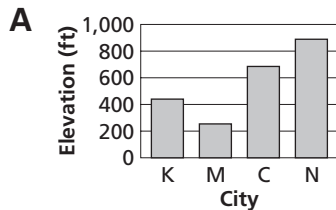
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.5.spi.4 Connect data sets and their graphical representations (i.e., histograms, stem-and-leaf plots, box plots, scatterplots).

- 1** The table gives the elevations of four cities in Tennessee. Which bar graph correctly shows this data? (K = Knoxville, M = Memphis, C = Chattanooga, N = Nashville)

1 _____

City	Knoxville	Memphis	Chattanooga	Nashville
Elevation (ft)	889	254	685	440



- 2** The list at the right gives the test scores for the students in an 8th grade mathematics class. Which stem-and-leaf plot correctly shows this data?

98	84	75	90	81	68
93	91	85	79	97	92
77	95	88	65	80	89
87	98	89	82	75	99

2 _____

F

Stem	Leaf
9	7 8 8 9
8	6 8 9 9
7	7 8 9
5	6 7 7 8 9
4	8
3	9
2	8 9
1	8 9
0	8 9

9|7 = 97

G

Stem	Leaf
9	0 1 2 4 5 7 8 9 9
8	0 1 2 3 5 7 8 8 9
7	5 8
6	5 5 7 9

9|0 = 90

H

Stem	Leaf
9	8 0 3 1 7 2 5 8 9
8	4 1 5 8 0 9 7 9 2
7	5 9 7 5
6	8 5

9|8 = 98

J

Stem	Leaf
9	0 1 2 3 5 7 8 8 9
8	0 1 2 4 5 7 8 9 9
7	5 5 7 9
6	5 8

9|0 = 90

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.5.spi.5 Make conjectures and predictions based on data.

- 1** Oil production in Tennessee peaked in 1982 at about 1,000,000 barrels. The table shows the state's oil production for several years. Based on the data in the table, about how many barrels of oil would you expect to be produced in 2010?

1 _____

Year	Barrels
1995	340,000
1999	348,000
2003	350,000

- A** 1,000,000 barrels **B** 480,000 barrels
C 360,000 barrels **D** 320,000 barrels

- 2** If it would take Lauren 6 hours to paint the kitchen alone, and it would take Hakim 4 hours to paint the kitchen alone, about how long would you expect it to take them working together?

2 _____

- F** 10 h **G** 5 h
H 2.4 h **J** 2 h

- 3** The table gives the stopping distance in feet for a car traveling at various speeds. What would you predict the stopping distance to be when the car is traveling at a speed of 50 miles per hour?

3 _____

Speed (mph)	10	20	30	40
Stopping Distance (ft)	14	42	83	137

- A** 142 ft **B** 204 ft
C 326 ft **D** 420 ft

- 4** Nathan has \$1,000 in a savings account that earns 2% annual interest, compounded quarterly. The table gives the amount, to the nearest dollar, in the account after a number of years, assuming he makes no deposits or withdrawals during this time and the interest rate remains unchanged. Which is the best estimate of the amount in the account after 10 years?

4 _____

Number of Years	1	2	4
Amount in Account	\$1,020	\$1,041	\$1,083

- F** \$1,088 **G** \$1,105
H \$1,127 **J** \$1,221

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.5.spi.6 Connect the symbolic representation of a probability to an experiment.

- 1** What is the probability of getting 2 heads when two fair coins are tossed? **1** _____

A $\frac{3}{4}$

B $\frac{1}{2}$

C $\frac{1}{3}$

D $\frac{1}{4}$

- 2** The table gives the number of United States Presidents who served in each war. If one of these Presidents is selected at random, what is the probability that he served in the Revolutionary War? **2** _____

War	Number of Presidents
Revolutionary War	3
War of 1812	3
Civil War	7
World War I	1
World War II	7

F $\frac{1}{7}$

G $\frac{1}{5}$

H $\frac{1}{3}$

J $\frac{3}{7}$

- 3** Each of the letters in the word TENNESSEE is written on a slip of paper and the slips are placed in a hat. If one slip is chosen at random from the hat, what is the probability that it has the letter E written on it? **3** _____

A $\frac{2}{9}$

B $\frac{1}{4}$

C $\frac{1}{3}$

D $\frac{4}{9}$

- 4** Suppose the exhibitors at a craft show fall into the categories listed in the table. If one of these exhibitors is chosen at random to receive a discount from the promoter of the craft show, what is the probability that the exhibitor is a furniture maker? **4** _____

Craft	Number of Exhibitors
Weaving	5
Pottery making	8
Woodworking	11
Furniture making	6

F $\frac{1}{3}$

G $\frac{1}{4}$

H $\frac{1}{5}$

J $\frac{1}{6}$

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.5.spi.7 Determine the median of a given set of real-world data (even number of data).

Use the following information for Questions 1 and 2.

The table gives the number of Country Music Award nominations and wins for several country music stars.

Name	Nominations	Wins
Loretta Lynn	38	8
Dolly Parton	38	8
Trisha Yearwood	20	3
Tammy Wynette	27	3
Reba McEntire	44	6
Johnny Cash	28	9

1 What is the median number of nominations?

- A** 24 nominations
C 33 nominations

- B** 28 nominations
D 38 nominations

1 _____

2 What is the median number of wins?

- F** 6 wins
H 8 wins

- G** 7 wins
J 9 wins

2 _____

Use the following information for Questions 3 and 4.

The table shows the predicted high and low temperatures (°F) for several cities on a given day.

City	Nashville	Chicago	Fairbanks	Honolulu	Phoenix	New York
High Temperature	56°F	46°F	−5°F	82°F	66°F	36°F
Low Temperature	42°F	38°F	−6°F	71°F	42°F	29°F

3 What is the median high temperature?

- A** 41°F
C 56°F

- B** 51°F
D 66°F

3 _____

4 What is the median low temperature?

- F** 33.5°F
H 40°F

- G** 38°F
J 42°F

4 _____

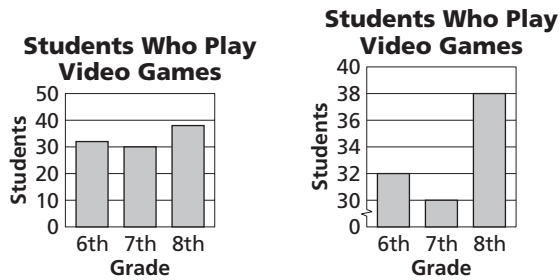
Standards Practice

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR 8.5.spi.8 Recognize misleading presentations of data.

- 1 These two graphs show the number of students at a middle school who play video games at home. Which statement is true?

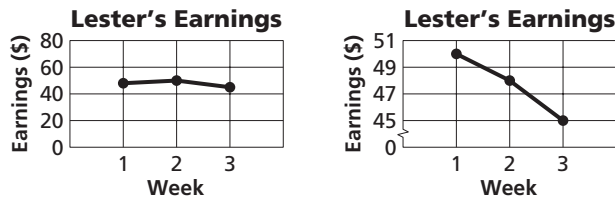
1 _____



- A** The two graphs have the same vertical scale.
B The two graphs represent different data.
C The graph on the left shows the data incorrectly.
D The graph on the right is misleading due to the break in its vertical scale.

- 2 These two graphs show Lester's earnings from his part-time job. Which statement best explains why the graphs are so different?

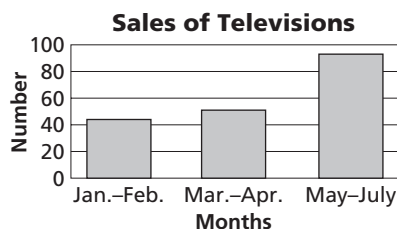
2 _____



- F** The vertical scales are different.
G The earnings are different and the vertical scales are different.
H One graph gives his earnings in dollars, while the other gives his earnings in cents.
J The graph on the right shows his earnings after taxes were deducted.

- 3 The manager of a store used this graph to show a large increase in TV sales recently. Why is the graph misleading?

3 _____



- A** The bar for Jan.-Feb. is too tall.
B The bar for Mar.-Apr. is too narrow.
C The third bar is for 3 months while the other bars are for just 2 months.
D Every month of the year is not shown.

Sample Test

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 1 Which sentence is true?

A $0 > 6$

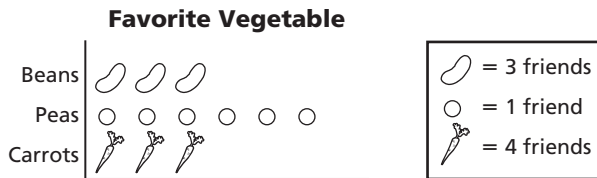
B $-5 > 0$

C $\frac{1}{4} > \frac{1}{3}$

D $-\frac{1}{2} > -\frac{3}{4}$

1 _____

- 2 Maria surveyed 27 friends about their favorite vegetable. The results are shown in this pictograph. Why is the graph misleading?



2 _____

F The carrots are drawn too small.

G The peas are drawn too large.

H The responses for all 27 friends are not represented in the graph.

J The scale is not the same for each vegetable.

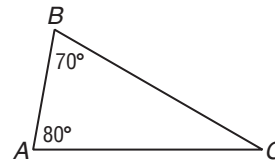
- 3 What is the measure of $\angle C$ in the triangle shown at the right?

A 30

B 40

C 50

D 150



3 _____

- 4 Rosemary bought a model train that is 30 inches long. If it was made using a 1:87 scale, how many inches long is the real train?

F 3,240 in.

G 2,610 in.

H 870 in.

J 117 in.

4 _____

- 5 A plant in Clarksville produces about 102,000 tons of zinc each year. If this is about 26% of the annual zinc production in the United States, which is a reasonable estimate of the number of tons of zinc produced in the United States each year?

A 25,000 T

B 262,000 T

C 300,000 T

D 400,000 T

5 _____

Go on 

Sample Test (continued)



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

6 Which pairs of values are reciprocals?

6 _____

F $-3, -\frac{1}{3}$

G $-\frac{1}{3}, 3$

H $-3, 3$

J $-\frac{1}{3}, \frac{1}{3}$

7 What is the value of $(3 + 4 \times 2)^2 - 10^2$?

7 _____

A -33

B 21

C 96

D 101

8 Marcus drove his car in the rain on Interstate 40 at 50 miles per hour for x hours. During this time he traveled 286 miles. Which equation represents this situation?

8 _____

F $50x = 286$

G $x \div 50 = 286$

H $x = 50 \div 286$

J $x + 50 = 286$

9 Two angles are supplementary. If the measure of one angle is twice the measure of the other, what is the measure of the larger angle?

9 _____

A 30

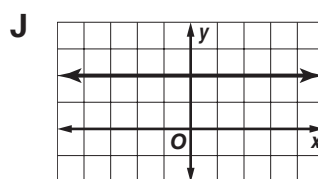
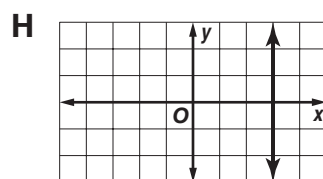
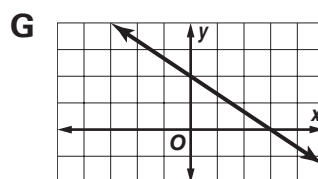
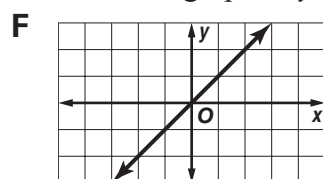
B 60

C 120

D 180

10 Which is the graph of $y = k$, where $k > 0$?

10 _____



11 Which expression is equivalent to $(x^2 + 8x - 2) + (4x^2 - 5)$?

11 _____

A $5x^2 + 8x + 3$

B $4x^4 - 40x - 2$

C $13x - 7$

D $5x^2 + 8x - 7$



Sample Test (continued)



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 12** Which statement about supplementary angles is always true?

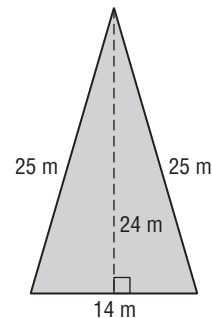
12 _____

- F** The sum of their measures is 180.
- G** The sum of their measures is 90.
- H** Their measures are equal.
- J** One of the angles is a right angle.

- 13** What is the area of the triangle shown in the figure at the right?

13 _____

- A** 88 m²
- B** 168 m²
- C** 336 m²
- D** 350 m²



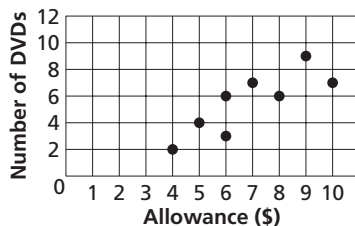
- 14** A bowl contains 3 oranges, 4 pears, and 2 peaches. If one piece of fruit is chosen at random, what is the probability that it is a peach?

14 _____

- F** $\frac{1}{9}$
- G** $\frac{2}{9}$
- H** $\frac{1}{3}$
- J** $\frac{4}{9}$

- 15** The scatterplot shows the relationship between the number of DVDs students own and the amount of their weekly allowance. Which statement is true?

15 _____



- A** In general, the number of DVDs owned increases as the weekly allowance increases.
- B** In general, the number of DVDs owned decreases as the weekly allowance increases.
- C** In general, the number of DVDs owned remains constant as the weekly allowance increases.
- D** There is no relationship between the number of DVDs owned and the weekly allowance.

Go on 

Sample Test (continued)



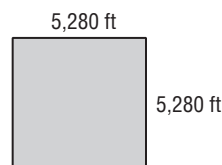
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 16** The table gives the winning time in the women's 100-meters race at three Olympic Games. Which time would be a reasonable winning time in the women's 100-meters race at the Olympic Games scheduled for 2020? **16** _____

Year	Name	Country	Time (s)
1928	Betty Robinson	USA	12.2
1960	Wilma Rudolph	USA	11.0
2000	Marion Jones	USA	10.75

- F** 11.8 s **G** 10.7 s
H 10.2 s **J** 8.5 s

- 17** John wants to find the number of square feet in 1 square mile. He multiplied 5,280 by 5,280 on his calculator, which displayed the answer as 2.78784E7. How many square feet is this? **17** _____



- A** 278,784 ft²
B 2,787,840 ft²
C 27,878,400 ft²
D 278,784,000 ft²

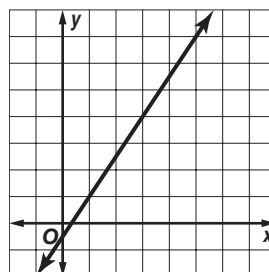
- 18** What is the rate of change of the line shown in this graph? **18** _____

F $-\frac{3}{2}$

G $-\frac{2}{3}$

H $\frac{2}{3}$

J $\frac{3}{2}$



- 19** A bag of 6 apples costs \$1.99, a box of 1 dozen apples costs \$3.69, and a box of 2 dozen apples costs \$7.90. Which is the best buy? **19** _____

- A** the bag of 6 apples
B the box of 1 dozen apples
C the box of 2 dozen apples
D The boxes of 1 dozen and 2 dozen apples cost the same and both are a better buy than the bag of 6 apples.



Sample Test (continued)



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

Use the following information for Questions 20–22.

The table shows the number of pass completions and the number of passing yards for four quarterbacks during one week's games in 2003.

Name	Number of Completions	Number of Passing Yards
Manning	26	229
McNair	9	95
Pennington	25	236
Clausen	9	66

20 What is the mean number of completions? **20** _____

F 16 completions

G 17.25 completions

H 18 completions

J 18.5 completions

21 What is the median number of completions? **21** _____

A 17 passes

B 17.25 passes

C 18 passes

D 18.5 passes

22 What is the median number of passing yards? **22** _____

F 173.75 yd

G 170 yd

H 162 yd

J 156.5 yd

23 Which statement about the corresponding sides of similar triangles is always true? **23** _____

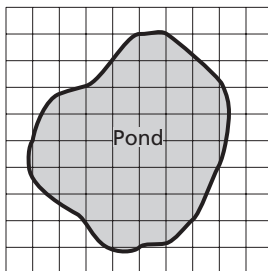
A They are congruent.

B They are perpendicular.

C They are parallel.

D They are proportional.

24 What is a reasonable estimate of the area in square units of the pond shown in this figure? **24** _____



F 42 square units

G 50 square units

H 58 square units

J 66 square units



Sample Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

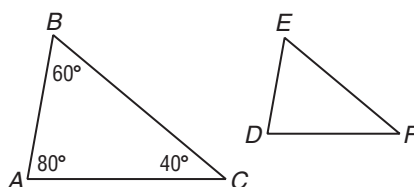
- 25** There are 10 girls and 12 boys in an eighth grade English class. What is the ratio of boys to total students in the class? **25** _____

A $\frac{5}{11}$
C $\frac{5}{6}$

B $\frac{6}{11}$
D $\frac{6}{5}$

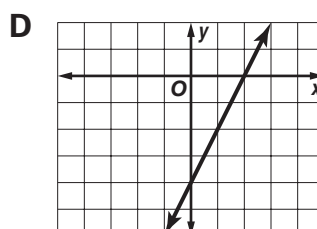
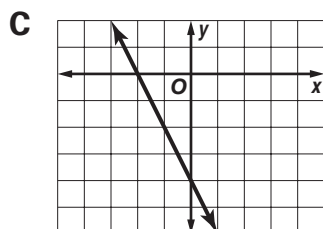
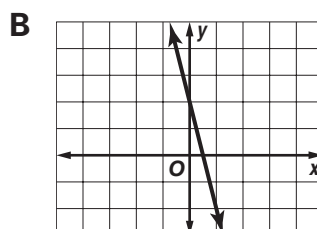
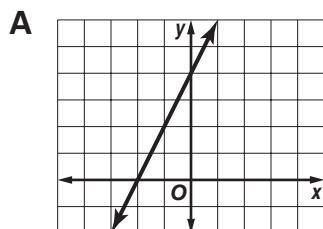
- 26** In the figure, $\triangle ABC$ is similar to $\triangle DEF$. What is the measure of $\angle E$?

F 120
G 80
H 60
J 40

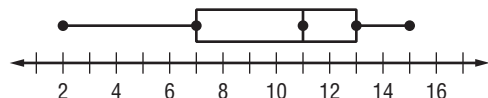


26 _____

- 27** Which is the graph of $y = 2x - 4$? **27** _____



- 28** This box-and-whisker plot shows the number of books read during the summer by a group of eighth graders. One of these students, Alita, read 14 books. Which statement is true?



- F** Alita read more books than any other student in the group.
G The number of books Alita read is in the lower quartile.
H The number of books Alita read is the median.
J The number of books Alita read is in the upper quartile.

28 _____



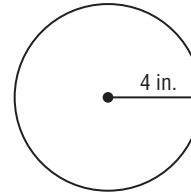
Sample Test (continued)



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 29** The figure represents a circular doily. How many inches of lace are needed to decorate the edge of this doily?

A 4π in.
B 8π in.
C 16π in.
D 64π in.



29 _____

- 30** Gloria predicted that there were more visitors to the Great Smoky Mountains National Park from Tennessee than from any other state. Which sample should she use to test this hypothesis?

F randomly chosen people staying at a hotel in Gatlinburg
G randomly chosen people staying at a motel in Knoxville
H randomly chosen persons at the Visitors Centers
J randomly chosen climbers at the summit of Clingmans Dome

30 _____

- 31** If $b = -2$ and $c = 5$, what is the value of the expression $bc + c$?

A 15
B 8
C -5
D -12

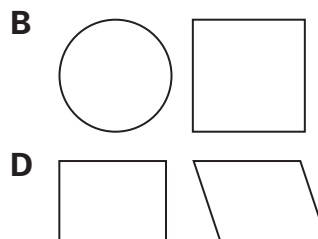
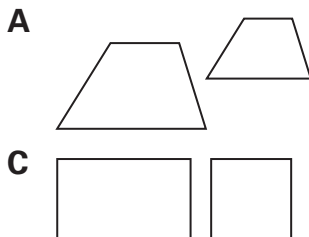
31 _____

- 32** What is the square root of 144?

F 8
G 12
H 16
J 72

32 _____

- 33** Which pair of figures are similar?



33 _____



Sample Test (continued)



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

34 What does $6\frac{3}{4} + 3\frac{3}{5}$ equal? **34** _____

F $9\frac{7}{20}$

G $9\frac{2}{3}$

H $10\frac{3}{10}$

J $10\frac{7}{20}$

35 Which statement is true? **35** _____

A A square has four congruent sides.

B A parallelogram has congruent diagonals.

C Every trapezoid is isosceles.

D All rhombuses have four right angles.

36 The average life span of an adult male mosquito is about 10 days. How many hours is this? **36** _____

F 120 h

G 240 h

H 360 h

J 480 h

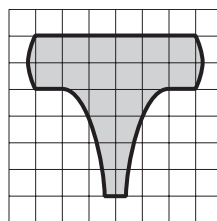
37 What is a reasonable estimate of the area of the figure shown? **37** _____

A 30 square units

B 25 square units

C 20 square units

D 15 square units



38 A plane flew from Memphis, Tennessee, to Columbus, Ohio, a distance of 597 miles, at an average rate of 200 miles per hour. To the nearest hour, how long did the trip take? **38** _____

F 5 h

G 4 h

H 3 h

J 2 h

39 A stretch of Interstate 24 in Tennessee has a 7% grade, meaning the roadway rises an amount equal to 7% of the horizontal distance over which it passes. How many feet does this stretch of highway rise over a horizontal distance of 1,000 feet? **39** _____

A 7 ft

B 70 ft

C 700 ft

D 7,000 ft



Sample Test (continued)



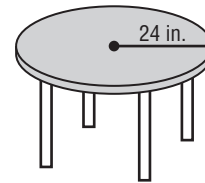
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 40** Percy took a friend to the zoo. If the admission price was \$5 per person, tickets to the dolphin show were \$3.50 per person, and he bought her a souvenir book for \$10.75, how much did he spend? **40** _____
- F** \$19.25 **G** \$24.25
H \$27.75 **J** \$38.50

- 41** What is the solution set of the inequality $y - \frac{3}{4} > -\frac{1}{2}$? **41** _____
- A** $y > \frac{1}{4}$ **B** $y < \frac{1}{4}$
C $y > -\frac{5}{4}$ **D** $y < -\frac{5}{4}$

- 42** Suppose a baby weighs 8 pounds when she is born and gains $\frac{1}{2}$ pound per week for the first several weeks. Which equation gives her weight w after x weeks? **42** _____
- F** $w = 8.5x$ **G** $w = 8\frac{1}{2} + x$
H $w = 8x + \frac{1}{2}$ **J** $w = \frac{1}{2}x + 8$

- 43** What is the area of the top of the circular table shown in the figure? **43** _____
- A** $24\pi \text{ in}^2$
B $48\pi \text{ in}^2$
C $144\pi \text{ in}^2$
D $576\pi \text{ in}^2$



- 44** Yao is painting his bedroom. There is a rectangular window 48 inches wide and 30 inches high on one wall. How much tape does Yao need to put around the edges of this window to protect the window's woodwork from paint? **44** _____
- F** 1,440 in. **G** 312 in.
H 156 in. **J** 78 in.

- 45** Which equation or inequality expresses the relationship that y is 10 less than x ? **45** _____
- A** $y + 10 < x$ **B** $y - 10 = x$
C $y = x - 10$ **D** $y = 10 - x$



Sample Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

46 What is the solution of $2x - 3 = 11$? **46** _____

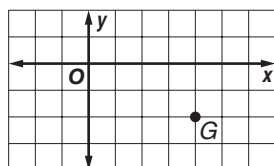
F 28

G 12

H 7

J 4

47 What are the coordinates of point G on the graph shown? **47** _____



A $(-2, -4)$

B $(4, 2)$

C $(-4, 2)$

D $(4, -2)$

48 Where would $-\frac{1}{2}$ be located on a number line? **48** _____

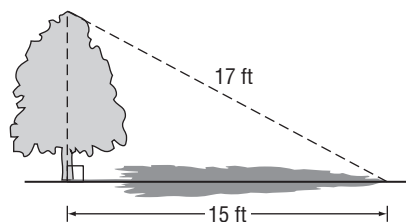
F between -2 and -1

G between -1 and 0

H between 0 and 1

J between 1 and 2

49 The shadow of an elm tree is 15 feet long. If the distance from the top of the tree to the tip of its shadow is 17 feet, as shown in the figure, how tall is the tree? **49** _____



A 2 ft

B 4 ft

C 8 ft

D 10 ft

50 Alyssa needs to find the volume of a cylindrical flour canister. Which unit of measure would be appropriate to express the volume? **50** _____

F cubic inches

G cubic yards

H square inches

J square meters

