

End-of-Course Practice Test A

1. Points K and L lie in plane P , and point N does not lie in plane P . What is the intersection of plane P and the plane that contains points K , L , and N ?

A \overleftrightarrow{KL}

B \overleftrightarrow{KN}

C \overleftrightarrow{LN}

D The planes do not intersect.

2. Points A , B , and C are contained in an infinite number of planes. Which of the following statements is true?

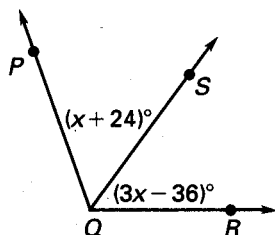
A A , B , and C are collinear.

B A , B , and C are not collinear.

C \overline{AB} and \overline{AC} are perpendicular.

D \overline{AB} and \overline{BC} are perpendicular.

3. In the figure below, \overrightarrow{QS} bisects $\angle PQR$. What is $m\angle PQS$?



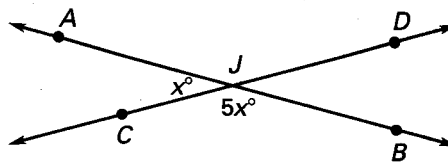
A 30°

B 36°

C 54°

D 108°

4. In the figure, what is $m\angle BJD$?



A 30°

B 60°

C 100°

D 150°

5. $\angle P$ and $\angle Q$ are complementary angles. If $m\angle P = 75^\circ$, what is $m\angle Q$?

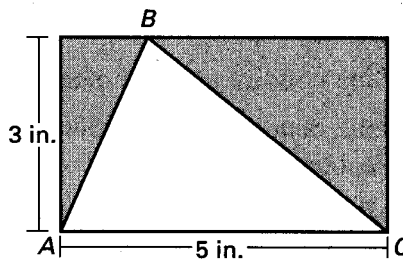
A 15°

B 25°

C 90°

D 105°

6. A rectangular card is cut along \overline{AB} and \overline{BC} as shown below. What is the area of $\triangle ABC$?



A 5.83 in.^2

B 7.5 in.^2

C 8 in.^2

D 15 in.^2

End-of-Course Practice Test A *continued*

7. What is the contrapositive of the following statement?

If two angles are not complementary, then the sum of their measures does not equal 90° .

- A** If two angles are complementary, then the sum of their measures equals 90° .
- B** If two angles are not complementary, then the sum of their measures equals 90° .
- C** If the sum of the measures of two angles equals 90° , then the angles are complementary.
- D** If the sum of the measures of two angles equals 90° , then the angles are not complementary.

8. Given the statement below, which of the related statements are true?

If the sum of the measures of two angles is 180° , then the angles are supplementary.

- A** only the conditional statement
- B** only the conditional statement and its contrapositive
- C** only the conditional statement, its converse, and its inverse
- D** the conditional statement, its converse, its inverse, and its contrapositive

9. If $m\angle 1$ is 35° , $\angle 1$ and $\angle 2$ are complementary, $m\angle 2 = m\angle 3$, and $m\angle 3 = m\angle 4$, what is $m\angle 4$?

- A** 35°
- B** 55°
- C** 90°
- D** 145°

10. What can you conclude if you know $m\angle P + m\angle Q = m\angle R + m\angle Q$?

- A** $m\angle P = m\angle Q$
- B** $m\angle P = m\angle R$
- C** $m\angle Q = m\angle R$
- D** $\angle P$ and $\angle R$ are supplementary.

11. Point Q is the midpoint of \overline{PR} .
 $PQ = 2x + 1$ and $QR = 3x - 6$.
What is PR ?

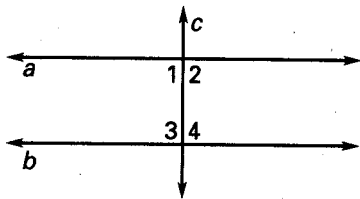
- A** 7
- B** 14
- C** 15
- D** 30

12. $\angle AXB$ and $\angle BXC$ are adjacent, complementary angles, and $\angle BXC$ and $\angle CXD$ are adjacent, supplementary angles. Which statement is true?

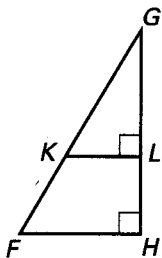
- A** $\angle AXB$ and $\angle BXC$ are vertical angles.
- B** $\angle AXB$ and $\angle CXD$ are vertical angles.
- C** $\angle CXD$ and $\angle DXA$ are supplementary.
- D** $\angle DXA$ and $\angle AXB$ are supplementary.

End-of-Course Practice Test A *continued*

13. What do you need to know to conclude that $m\angle 1 = m\angle 4$?



- A Line a is parallel to line b .
 B Line a is parallel to line c .
 C Line a is perpendicular to line c .
 D Line b is perpendicular to line c .
14. Lines j , k , m , and n lie in a plane. You know line j is perpendicular to line n , line m is perpendicular to line n , and line k is parallel to line m . What can you conclude?
- A Line n is parallel to line k .
 B Line j is perpendicular to line m .
 C Line k is perpendicular to line j .
 D Line j is parallel to line k .
15. If $m\angle F = 60^\circ$, what is $m\angle FKL$?



- A 30°
 B 60°
 C 120°
 D 150°

16. Which of the following is an equation of a line parallel to the line with the equation $3y = -\frac{5}{2}x + 4$?

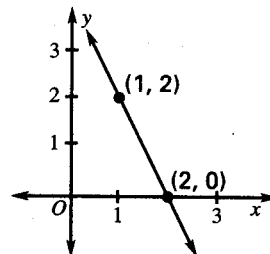
A $y = -\frac{5}{2}x + 7$

B $3y = -\frac{2}{5}x + 4$

C $y = -\frac{5}{6}x + 7$

D $4y = -\frac{5}{6}x + 3$

17. Which of the following is an equation of a line parallel to the one shown?



A $2x - 2y = 3$

B $-3x + y = 2$

C $x - y = -3$

D $-2x - y = -9$

18. Which of the following is an equation of a line perpendicular to the line with equation $2y = -x + \frac{2}{3}$?

A $2y = x + \frac{2}{3}$

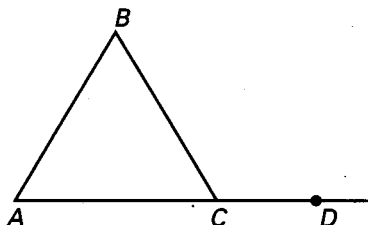
B $y = 2x - 6$

C $y = x - 3$

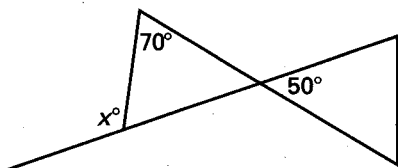
D $6y = 3x + 2$

End-of-Course Practice Test A *continued*

19. If $m\angle A = 60^\circ$ and $m\angle B = 60^\circ$, what is the measure of $\angle BCD$?

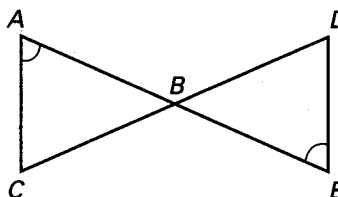


- A 60°
 - B 90°
 - C 120°
 - D 180°
20. In the figure, what is the value of x ?

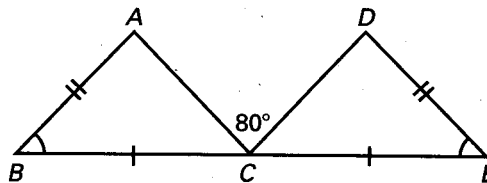


- A 170
 - B 140
 - C 120
 - D 110
21. Suppose $\triangle PQR \cong \triangle ZYX$. Which statement can you conclude?
- A $\angle P \cong \angle Q$
 - B $PR = XZ$
 - C $\angle R \cong \angle Z$
 - D $PQ = XY$

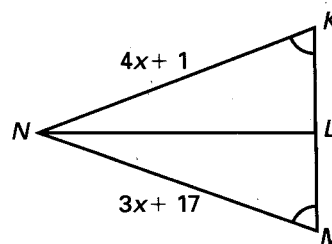
22. In the figure below, B is the midpoint of \overline{AE} , and $m\angle A = m\angle E$. Which of the following *cannot* be proven without more information?



- A B is the midpoint of \overline{CD} .
 - B $m\angle C = m\angle D$
 - C $AB = BD$
 - D $\triangle ABC \cong \triangle EBD$
23. In the figure below, C is the midpoint of \overline{BE} , $m\angle B = m\angle E$, and $AB = DE$. What is the measure of $\angle ACB$?



- A 40°
 - B 50°
 - C 80°
 - D 100°
24. In the figure below, $\angle K \cong \angle M$. What is the length of NK ?



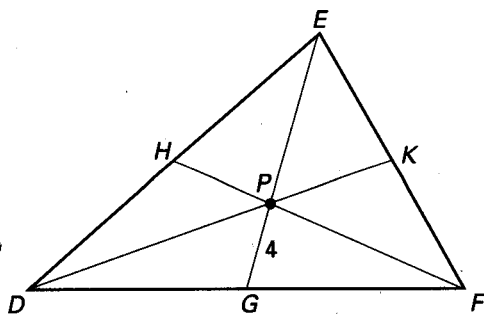
- A 65
- B 51
- C 21
- D 16

End-of-Course Practice Test A *continued*

25. Points C and D are on the perpendicular bisector of \overline{AB} . Which statement can you conclude?

A $AB = CD$
 B $AC = AD$
 C $CB = DB$
 D $AC = CB$

26. In the figure below, P is the centroid of $\triangle DEF$, and $PG = 4$. What is EG ?



- A 8
 B 12
 C 16
 D EG cannot be determined.
27. A triangle has a perimeter of 24 inches. What is the perimeter of the triangle formed by its midsegments?
- A 6 in.
 B 8 in.
 C 12 in.
 D 24 in.

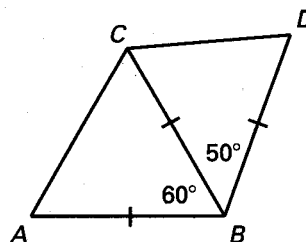
28. In $\triangle ABC$, $AB < BC$ and $BC < AC$. Which of the following is true?

A $m\angle A < m\angle C$ and $m\angle B < m\angle C$
 B $m\angle A < m\angle C$ and $m\angle B < m\angle A$
 C $m\angle A < m\angle B$ and $m\angle C < m\angle A$
 D $m\angle A < m\angle B$ and $m\angle A < m\angle C$

29. In $\triangle ABC$, $AB = x + 3$, $AC = x + 2$, and $BC = 23$. Which of the following is a possible value of x ?

A 7
 B 8
 C 9
 D 10

30. $\angle ABC$ and $\angle CBD$ are adjacent angles, $m\angle ABC = 60^\circ$, and $m\angle CBD = 50^\circ$. Also, $BA = BC = BD$. Which statement is true?



A $AC > AB$
 B $AC > BD$
 C $AC > CD$
 D $AC > DA$

End-of-Course Practice Test A *continued*

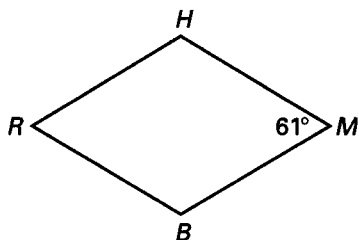
31. A quadrilateral has interior angles with measures x° , $2x^\circ$, $3x^\circ$, and $4x^\circ$. What is the value of x ?

- A 40
- B 36
- C 20
- D 18

32. In parallelogram $QRST$, $QS = 4y - 3$ and $RT = 2y + 6$, and $RT = 2(QS)$. What is QS ?

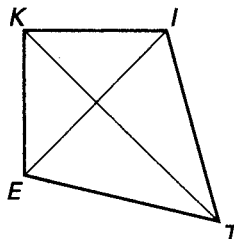
- A 2
- B 5
- C 10
- D 12

33. In the figure, $RHMB$ is a rhombus. What is $m\angle B$?



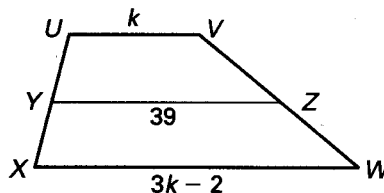
- A 151°
- B 122°
- C 119°
- D 110°

34. Quadrilateral $KITE$ is a kite. If $m\angle KTI = 22^\circ$, what is $m\angle ITE$?



- A 22°
- B 44°
- C 48°
- D 66°

35. $UVWX$ is a trapezoid with midsegment YZ . What is the length of UV ?



- A 25
- B 20
- C 18
- D 12

36. A rhombus has diagonals of length 20 centimeters and 40 centimeters. What is the area of the rhombus?

- A 800 cm^2
- B 600 cm^2
- C 400 cm^2
- D More information is needed to determine the area.

End-of-Course Practice Test A *continued*

37. $\triangle PQR$ is transformed by an isometry to $\triangle P'Q'R'$. What statement is always true?

A $PP' = QQ'$
 B $m\angle PQR = m\angle P'Q'R'$
 C $\triangle PQR \cong \triangle R'Q'P'$
 D $P = P'$

38. What are the coordinates of the images of $A(2, -7)$ and $B(-5, 4)$ after a reflection in the y -axis?

A $A'(-7, 2), B'(4, -5)$
 B $A'(-2, 7), B'(5, -4)$
 C $A'(-2, -7), B'(5, 4)$
 D $A'(2, 7), B'(-5, -4)$

39. Lines j and k intersect at point P to form angles measuring 45° and 135° . $\triangle ABC$ is reflected in line j and the image $\triangle A'B'C'$ is reflected in line k to create $\triangle A''B''C''$. What transformation maps $\triangle ABC$ to $\triangle A''B''C''$?

A reflection in the line that bisects the 45° angles
 B reflection in the line that bisects the 135° angles
 C 22.5° rotation about P
 D 90° rotation about P

40. What is the coordinate notation for a translation 4 units down and 2 units to the left?

A $(x, y) \rightarrow (x - 4, y - 2)$
 B $(x, y) \rightarrow (x - 2, y - 4)$
 C $(x, y) \rightarrow (4 - x, 2 - y)$
 D $(x, y) \rightarrow (2 - x, 4 - y)$

41. The vertices of $\triangle JKL$ are $J(2, 1)$, $K(6, 5)$, and $L(7, 0)$. What transformation does the matrix sum below represent?

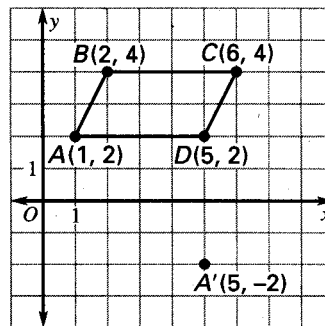
$$\begin{bmatrix} 2 & 6 & 7 \\ 1 & 5 & 0 \end{bmatrix} + \begin{bmatrix} 3 & 3 & 3 \\ 0 & 0 & 0 \end{bmatrix}$$

A reflection in $x = 3$
 B 30° rotation
 C translation 3 units to the right
 D dilation with scale factor 3

42. Quadrilateral $ABCD$ undergoes the glide reflection described below. What are the coordinates of B' , C' , and D' ?

Translation: $(x, y) \rightarrow (x + 4, y)$

Reflection: in the x -axis



A $B'(6, 0), C'(10, 0), D'(9, -2)$
 B $B'(6, -4), C'(10, -4), D'(9, -2)$
 C $B'(4, -4), C'(8, -4), D'(9, -2)$
 D $B'(4, 0), C'(8, 0), D'(9, -2)$

End-of-Course Practice Test A *continued*

43. What ratio does $\frac{15 \text{ in.}}{5 \text{ yd.}}$ equal?

- A 3 to 1
- B 1 to 1
- C 5 to 12
- D 1 to 12

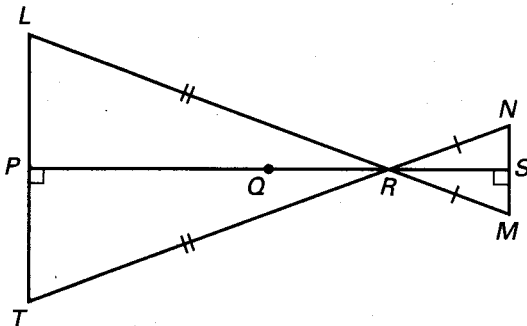
44. Which pair of numbers has a geometric mean of 30?

- A 2, 450
- B 4, 120
- C 6, 54
- D 10, 3

45. A rectangle has sides in the ratio 3 : 5. What is the width of a similar rectangle if its length is 11?

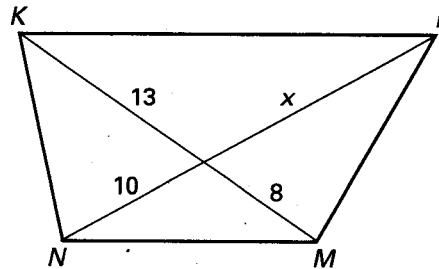
- A 5.1
- B 6
- C 6.6
- D 9

46. In the figure below, $LT = 12$, $MN = 4$, and $NR = 6$. What is TR ?



- A 12
- B 15
- C 18
- D Not enough information is given.

47. In trapezoid $KLMN$, what is the value of x ?



- A 21
- B 16.25
- C 11
- D 10.4

48. The matrix expression below represents the image when a triangle with vertices $(3, 0)$, $(3, 5)$, and $(6, 5)$ is transformed by a dilation centered at the origin with a scale factor of 4.

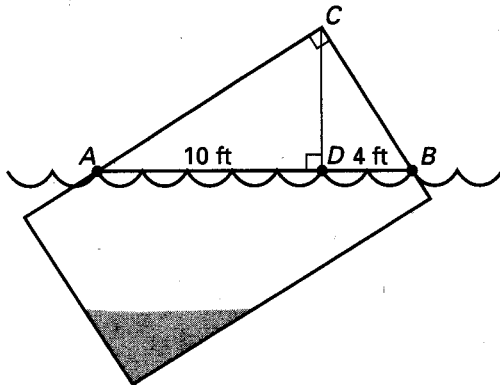
$$4 \cdot \begin{bmatrix} 3 & 3 & 6 \\ 0 & 5 & 5 \end{bmatrix}$$

What is the image matrix?

- A $\begin{bmatrix} 7 & 7 & 10 \\ 4 & 9 & 9 \end{bmatrix}$
- B $\begin{bmatrix} 6 & 6 & 12 \\ 0 & 10 & 10 \end{bmatrix}$
- C $\begin{bmatrix} 12 & 12 & 24 \\ 0 & 20 & 20 \end{bmatrix}$
- D $\begin{bmatrix} 12 & 3 & 6 \\ 0 & 5 & 5 \end{bmatrix}$

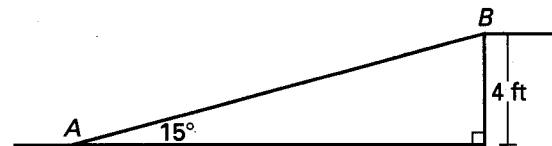
End-of-Course Practice Test A *continued*

49. A box weighted with sand in one corner is floating in water, as shown. To the nearest tenth of a foot, what is CD ?

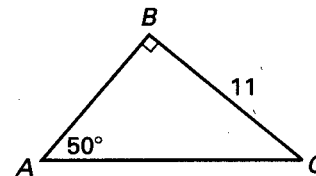


- A 7.0 ft
 B 6.3 ft
 C 6.0 ft
 D 5.7 ft
50. $\triangle ABC$ is isosceles, with $AB = BC$ and altitude BD . If $AD = 5$ and $BD = 12$, what is the perimeter of $\triangle ABC$?
- A 17
 B 36
 C 60
 D 169
51. An equilateral triangle has vertices $(-3, 0)$ and $(3, 0)$. The third vertex lies above the x -axis. Which ordered pair is closest to the third vertex?
- A $(0, 6.0)$
 B $(0, 5.2)$
 C $(0, 4.2)$
 D $(0, 3.0)$

52. A ramp leading to a loading dock forms a 15° angle with the ground. The height of the loading dock is 4 feet. To the nearest tenth of a foot, what is AB ?



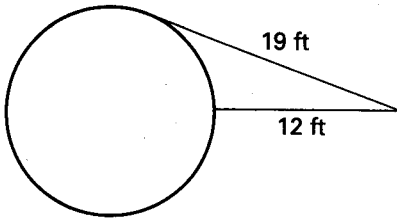
- A 4.1 ft
 B 14.9 ft
 C 15.5 ft
 D 26.7 ft
53. To the nearest hundredth, what is AB ?



- A 5.50
 B 8.43
 C 9.23
 D 14.36
54. A right triangle has legs of length 13 inches and 17 inches. What are the approximate measures of the acute angles of the triangle?
- A 37.41° and 52.59°
 B 39° and 51°
 C 40.12° and 49.88°
 D 45° and 45°

End-of-Course Practice Test A *continued*

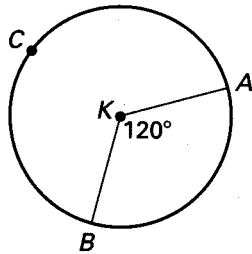
55. You are standing 12 feet from a circular tent. The distance from you to a point of tangency of the tent is 19 feet. To the nearest tenth of a foot, what is the radius of the tent?



- A 7.6 ft
- B 9.0 ft
- C 15.2 ft
- D 18.0 ft

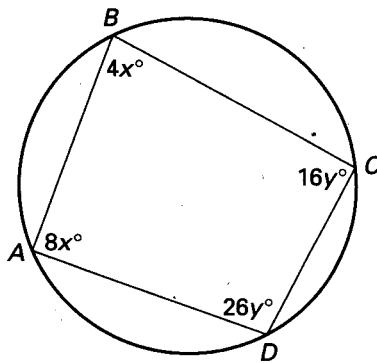
56. What is the measure of \widehat{ACB} of the circle with center K ?

- A 60°
- B 120°
- C 180°
- D 240°



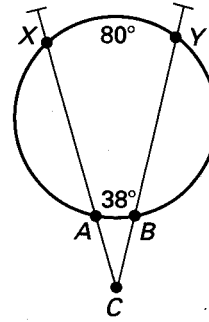
57. What is the measure of $\angle ADC$?

- A 130°
- B 135°
- C 140°
- D 145°



Not drawn to scale

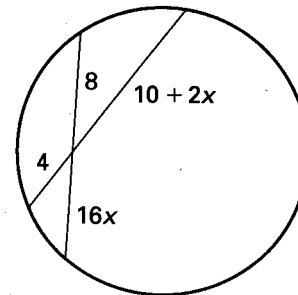
58. Two nails are driven through a round post until the tips meet at point C . You know that $m\widehat{AB} = 38^\circ$ and $m\widehat{XY} = 80^\circ$. What is the measure of $\angle ACB$?



- A 19°
- B 21°
- C 38°
- D 42°

59. What is the value of x ?

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



60. An equation of a circle is $(x + 7)^2 + (y + 2)^2 = 16$. Which ordered pair represents a point inside the circle?

- A (7, 1)
- B (-7, 3)
- C (-7, -5)
- D (-3, -1)

End-of-Course Practice Test A *continued*

61. The angle measures of four exterior angles of a convex pentagon are 75° , 62° , 68° , and 81° . What is the measure of the fifth exterior angle?

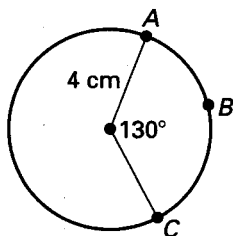
A 64°
 B 74°
 C 78°
 D 84°

62. A softball infield is a square with a side length of 60 feet. A baseball infield is a square with a side length of 90 feet. By what factor is the area of the baseball infield larger than the area of the softball infield?

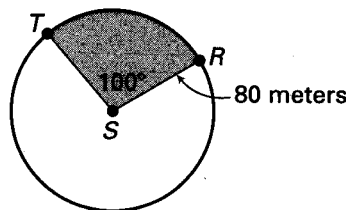
A 1.5
 B 2
 C 2.12
 D 2.25

63. To the nearest hundredth of a centimeter, what is the length of \overline{ABC} ?

A 4.53 cm
 B 9.07 cm
 C 16.05 cm
 D 18.15 cm



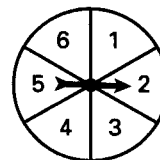
64. To the nearest square meter, what is the area of the shaded sector?



A 5585 m^2
 B $11,170 \text{ m}^2$
 C $14,521 \text{ m}^2$
 D $20,106 \text{ m}^2$

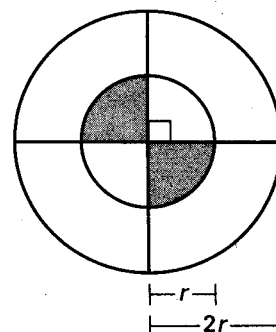
65. The sectors of the spinner are congruent. What is the probability the pointer will stop in a sector other than 1 or 4?

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



66. You throw a dart and it sticks in a random location on the target. What is the probability that it will *not* land in one of the shaded regions?

A $\frac{1}{8}$
 B $\frac{1}{4}$
 C $\frac{3}{4}$
 D $\frac{7}{8}$

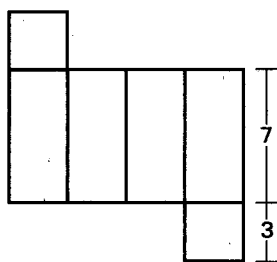


End-of-Course Practice Test A *continued*

67. A box printing company needs to wrap boxes that are 6 inches long, 6 inches wide, and 4 inches tall. What is the surface area of the box?

A 168 in.²
 B 144 in.²
 C 132 in.²
 D 84 in.²

68. The net shown consists of rectangles and squares. What is the volume of the prism formed by folding the net?



- A 10 units³
 B 21 units³
 C 49 units³
 D 63 units³
69. A cylindrical can of tomatoes contains 800 cubic centimeters in volume and is 11.5 centimeters in height. What are the dimensions of a rectangular label that will cover the curved surface with an overlap of less than 1 centimeter?
- A 60 cm width and 11.5 cm height
 B 30 cm width and 11.5 cm height
 C 10 cm width and 11.5 cm height
 D 6 cm width and 11.5 cm height

70. A cone-shaped funnel with a height of 30 centimeters and a radius of 20 centimeters is used to fill a container with liquid. The container is a cylinder with a height of 15 centimeters and a radius of 40 centimeters. How many times must the funnel be completely filled in order to fill the container?

A 2
 B 4
 C 6
 D 12

71. A sphere with radius 6 feet fits inside a cube whose edges are 12 feet long. To the nearest hundredth of a cubic foot, what is the volume of the space inside the cube and outside the sphere?

A 823.22 ft³
 B 904.78 ft³
 C 1049.42 ft³
 D 1728 ft³

72. A size 7 basketball has a circumference of 29.5 inches. A size 6 basketball has a circumference of 28.5 inches. To the nearest hundredth, what is the ratio of the volume of a size 7 basketball to the volume of a size 6 basketball?

A 1.00
 B 1.04
 C 1.07
 D 1.11