ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

Released Item Booklet

Geometry
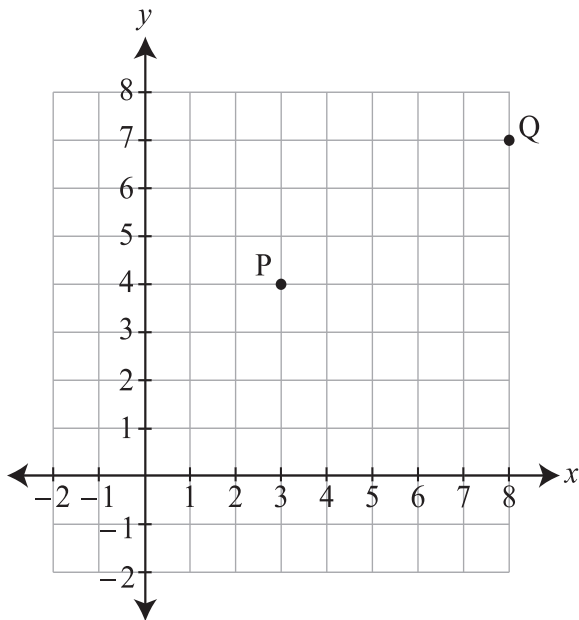## End-of-Course Examination

April 2010 Administration

Arkansas Department of Education
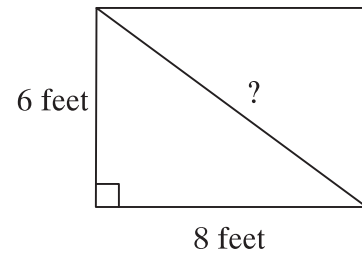
1. What is the distance from P to Q? Round your answer to the nearest tenth.

A.   3.0 units

B.   3.4 units

C.   5.0 units

*D.   5.8 units

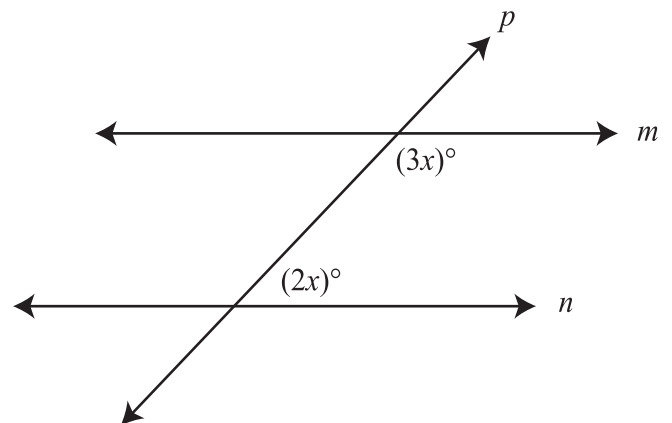**Use the figure below to answer question 2.**

6 feet

?

8 feet

(Not drawn to scale.)

2. Patty is building a 6 feet by 8 feet rectangular platform as shown above. All corners form 90° angles. What is the length of the diagonal of the platform?

A. $\sqrt{14}$ feet

B. $\sqrt{28}$ feet

*C.   10 feet
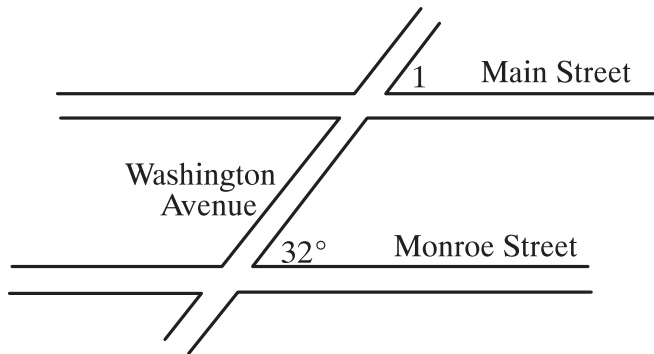
D.   14 feet

3. In the figure below, $m \parallel n$.

What is the value of x?

*A.   36

B.   72

C.   108

D.   180

**Use the figure below to answer question 4.**

(Not drawn to scale.)

4. Main Street and Monroe Street are parallel. Washington Avenue will be built as a straight street intersecting both streets. It will form a 32° angle with Monroe Street shown in the figure above. What will be the measure of ∠1?
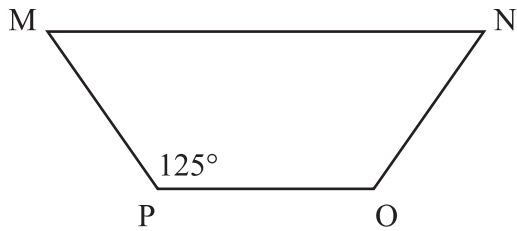
*A.   32°

B.   58°

C.   122°

D.   158°

5. Simone and Josh designed the target below for the water balloon toss at the school carnival. Assuming the water balloon hits the target, what is the probability that it will hit the 2-point area?

A. $\dfrac{2}{5}$

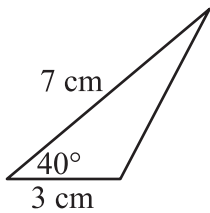B. $\dfrac{3}{5}$
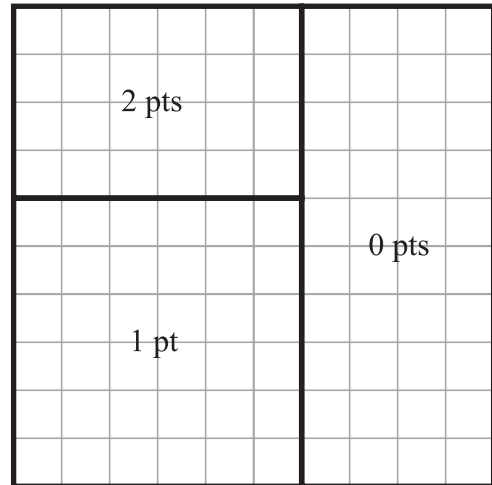
*C. $\dfrac{6}{25}$

D. $\dfrac{9}{25}$

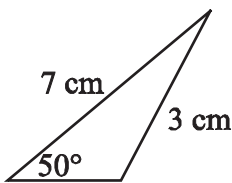**6.**   Quadrilateral MNOP is an isosceles trapezoid.
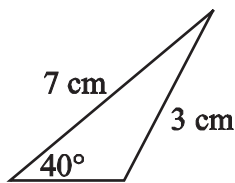

What is m∠N?

   A.   35°
*B.   55°
   C.   125°
   D.   145°

7.   Which triangle must be similar to the triangle shown below?

A.

B.

C.

*D.

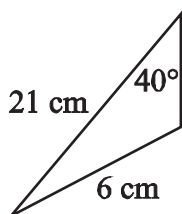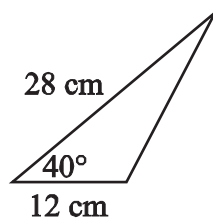**8.**   Theo, Amy, Lance, and Kaitlin live in four different states: Montana, Colorado, Virginia, and Arizona.
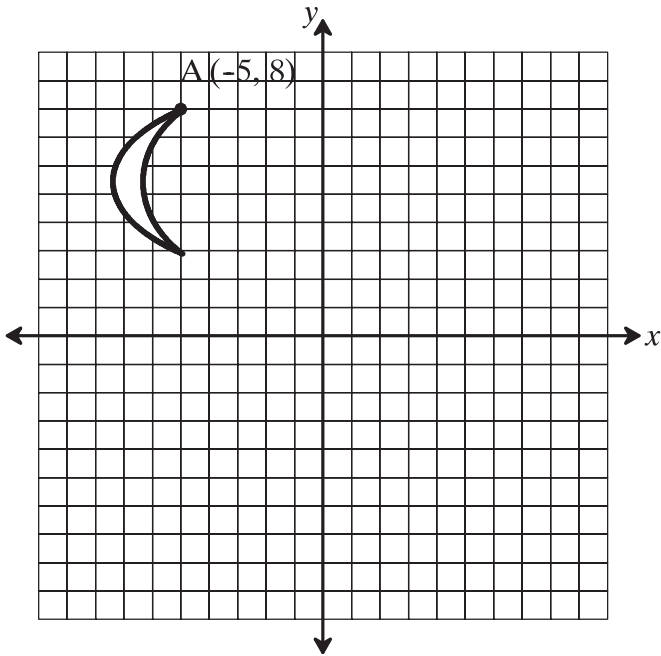
   • Theo lives in a state that is spelled with an "i."
   • Amy lives in a state that is spelled with an even number of letters.
   • Lance does not live in a state that is spelled with more than one "a."

In which state does Kaitlin live?

*A.   Montana
   B.   Colorado
   C.   Virginia
   D.   Arizona

5

Use the graph below to answer question 9.

9.   Josh is designing a cover for a paperback book. He is going to use the graphic shown above. He plans to reflect the graphic over the *y*-axis. What will be the coordinates of the reflection of point A?

A.   (−5,−8)

*B.   (5, 8)

C.   (5,−8)

D.   (8, 5)

10.   A cylindrical satellite, shown below, will be covered entirely in gold foil to reflect sunlight.
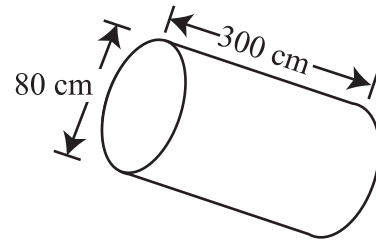
Approximately how many square centimeters of foil will be required to cover the entire surface area of the satellite?

A.   10053 cm^2

B.   75398 cm^2

C.   80425 cm^2

*D.   85451 cm^2

11. The city's zoning department has regulations
    to determine clear vehicle sight lines—called
    a Clear View Triangle—at all its intersections,
    as shown below.
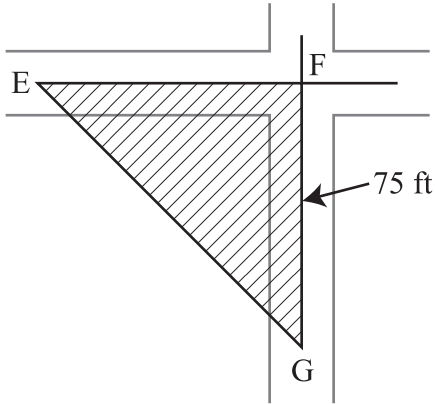
If m∠F = 90°, m∠G = 45°, and FG = 75 feet,
what is EG?

A. $\dfrac{75}{\sqrt{3}}$ ft

B. $\dfrac{75}{\sqrt{2}}$ ft

*C. $75\sqrt{2}$ ft

D. $75\sqrt{3}$ ft

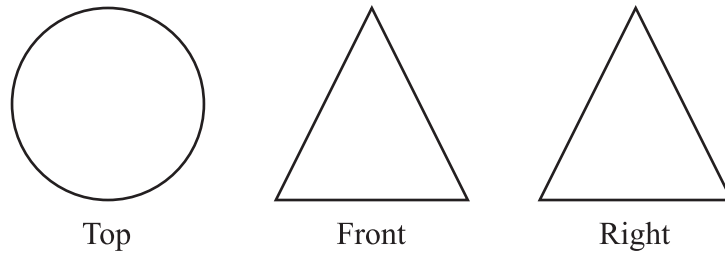**12.**   The top, front, and right views of a three-dimensional figure are shown below.

Top   Front   Right

What is the name for this figure?

*A.   cone
 B.   sphere
 C.   cylinder
 D.   triangular pyramid

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13.   In the figure below, $\overline{QM} \parallel \overline{ST} \parallel \overline{PN}$.
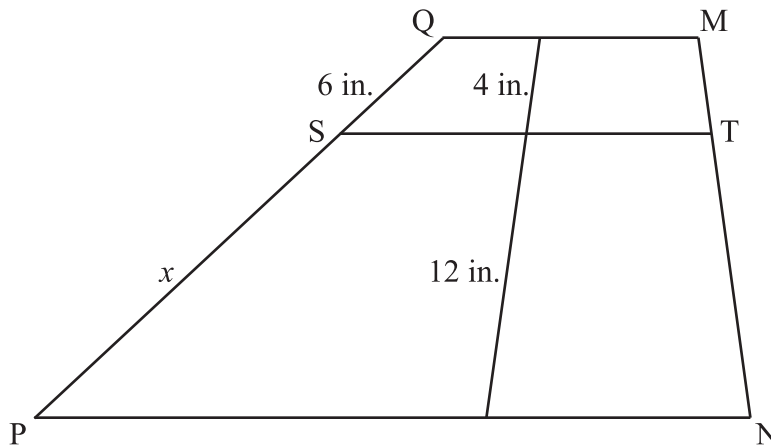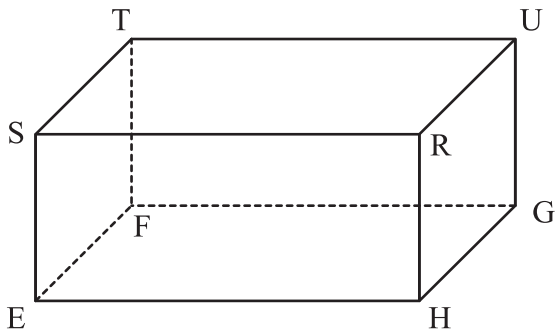

What is the value of *x*?

 A.   2 in.
 B.   8 in.
 C.   10 in.
*D.   18 in.

14. In the figure below, which pair of points is coplanar with $\overline{TR}$?

   A.   points G and H

   *B.   points F and H

   C.   points H and U

   D.   points H and S

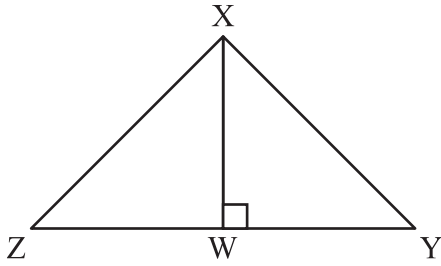**15.** What are the equations of the lines that form the diagonals of the rhombus shown below?
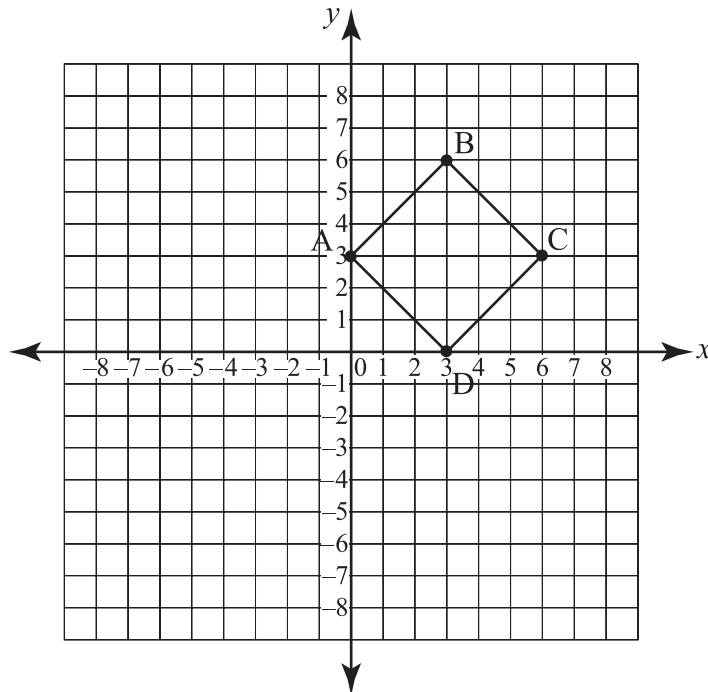
   A. $y = -x + 3,\ y = -x + 9$

   B. $x = 3,\ y = -3$

   *C. $x = 3,\ y = 3$
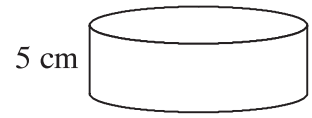
   D. $y = x + 3,\ y = x - 3$

16. In the figure below, $\overline{XW}$ bisects $\overline{YZ}$.

Which statement must be true?

A. $\overline{XW} \cong \overline{XY}$

B. $\overline{XW} \cong \overline{YW}$

C. $\angle ZXW \cong \angle XYW$

*D. $\angle ZXW \cong \angle YXW$

17. The equation of a circle is
$(x - 5)^2 + (y - 7)^2 = 9.$
What is the radius of the circle?

*A.   3

B.   5

C.   7

D.   9

Use the figure below to answer question 18.


5 cm

Diameter = 10 cm

(Not drawn to scale.)

18. A company doubles the height of the can shown above. The radius is made smaller so that the volume stays the same. What is the radius, to the nearest hundredth cm, of the new can? Use $\pi = 3.14$.

*A.   3.54 cm

B.   6.25 cm

C.   7.07 cm

D.   12.50 cm

19. Roberto is standing 150 feet away from a pine tree, as shown below. The angle of elevation of his line of sight to the top of the tree is 50°. Roberto's eyes are 5 feet above the ground.
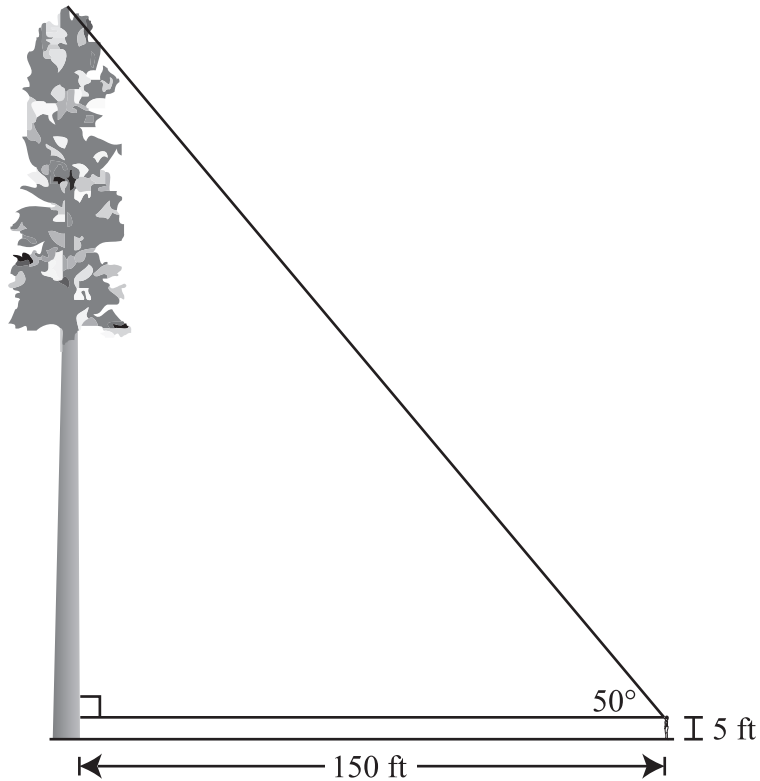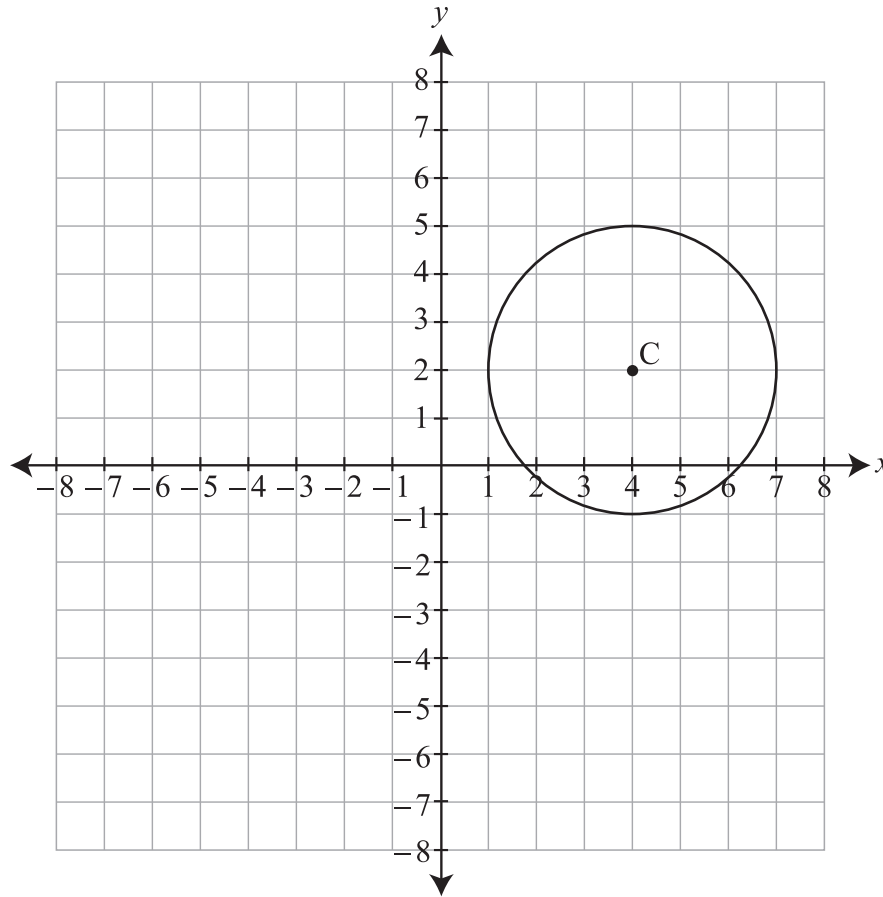

How tall is the tree? Round your answer to the nearest whole number.

  A.   101 feet
  B.   119 feet
  C.   131 feet
 *D.   184 feet

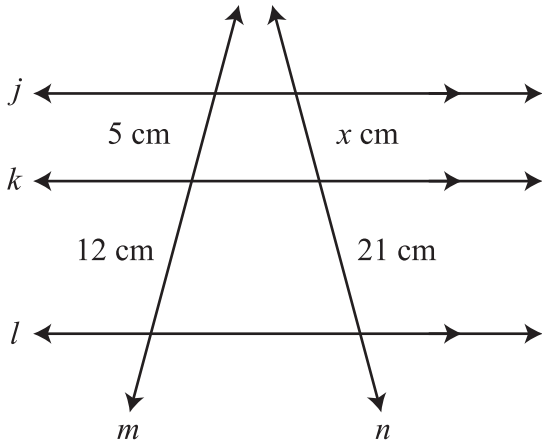**20.** Demetria graphs circle C, shown below.

Next, Demetria plans to reflect circle C across the *y*-axis, then translate the image down by 3 units. What will be the new coordinates of the center of circle C?

*A. $(-4, -1)$

B. $(-4, 2)$

C. $(4, -5)$

D. $(4, -1)$

21. What is the value of x in the figure below?

A.   7.86

*B.   8.75

C.   12.50

D.   14.00

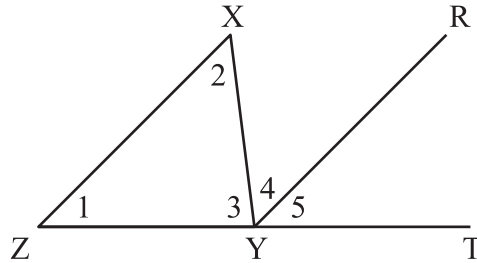**22.** Oscar is filling the cylindrical glass shown below with lemonade.
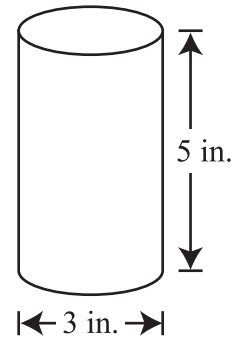
What is the maximum volume of lemonade the glass will hold? Round your answer to the nearest whole number.

A.   15 in.^{3}

*B.   35 in.^{3}

C.   47 in.^{3}

D.   61 in.^{3}

23.   Given: ΔXYZ and $\overline{XZ} \parallel \overline{YR}$

Prove: m∠1 + m∠2 + m∠3 = 180°

Statement	**Reason**
1. $\overline{XZ} \parallel \overline{YR}$	1. Given
2. ∠1 ≅ ∠5	2. ?
3. ∠2 ≅ ∠4	3. Alternate interior angles of parallel lines are congruent.
4. m∠3 + m∠4 + m∠5 = 180°	4. ∠ZYT is a straight angle.
5. m∠1 + m∠2 + m∠3 = 180°	5. Substitution

What is the reason in Step 2?

A.   Vertical angles are congruent.

B.   Complementary angles are congruent.

*C.   Corresponding angles of parallel lines are congruent.

D.   Alternate interior angles of parallel lines are congruent.

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24.   An object is cut to show a circular cross section. Which could **not** be the shape of the original object?
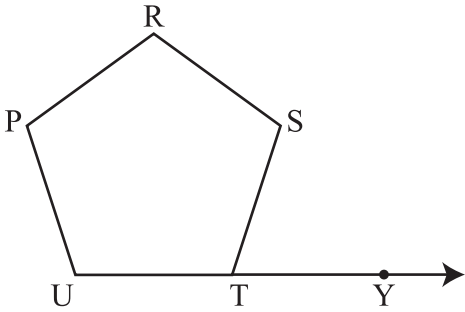
A.   cone

*B.   prism

C.   sphere

D.   cylinder

25.   Which set of side lengths could represent the sides of a triangle?

A.   3 cm, 5 cm, 9 cm

B.   4 cm, 7 cm, 12 cm

*C.   5 cm, 9 cm, 13 cm

D.   6 cm, 11 cm, 18 cm

26. In the figure below, PRSTU is a regular pentagon.

What is m∠STY?

  A.   36°

*B.   72°

  C.   90°

  D. 108°

27. Given the pattern of identical squares below, how many squares would appear in Figure 5?
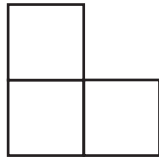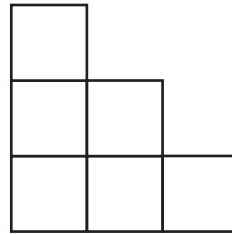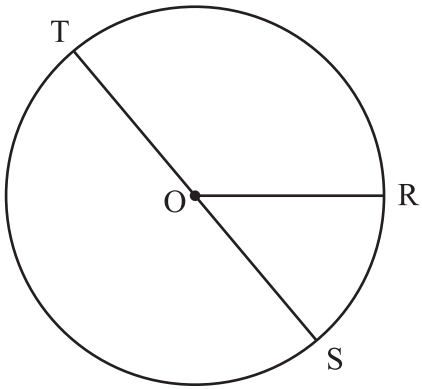

Figure 1   Figure 2   Figure 3

  A.   10

  B.   12

*C.   15

  D.   20

28. In the figure below, $\overline{TS}$ is a diameter of circle O, and $\text{m}\overset{\frown}{RS} = 50°$.


What is m∠TOR?

A.   50°

B.   65°

C.   100°

*D.   130°

29. Which is an equation of the line perpendicular to the line with equation $y = \dfrac{3}{2}x - 2$ and passing through point (1, 5)?

A. $y = \dfrac{3}{2}x + \dfrac{7}{2}$

B. $y = \dfrac{2}{3}x + \dfrac{13}{3}$

*C. $y = -\dfrac{2}{3}x + \dfrac{17}{3}$

D. $y = -\dfrac{3}{2}x + \dfrac{13}{2}$

30. In spherical geometry, a line is a great circle of a sphere. At how many points do any two lines in spherical geometry intersect?

A.   1

*B.   2

C.   3

D.   4

31. Jim is raising a flagpole. The angle between the pole and the ground is currently 37°.
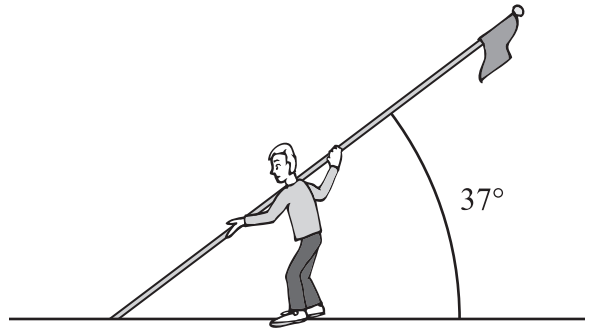
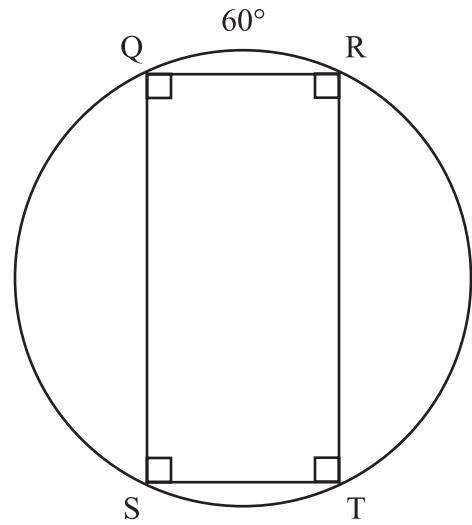How many more degrees must Jim rotate the flagpole to make it perpendicular to the ground?

A.   37°

*B.   53°

C.   90°

D.   143°

32. A 3-inch by 5-inch photograph is placed on a copier and enlarged. The enlarged copy measures 11 inches on its longest side. What is the measurement of the shorter side of the enlarged copy?

*A.   6.6 inches

B.   8.5 inches

C.   9.0 inches

D.   12.8 inches

33. What is m$\overset{\frown}{RT}$ in the figure below?

A.   30°

B.   60°

C.   90°

*D.   120°