# Geometry Assessment

Number of questions: 50
Time: 60 minutes

1. An old picture has dimensions 33 inches by 24 inches. What one length must be cut from each dimension so that the ratio of the shorter side to the longer side is ²/₃ ?

    A. 4 ½ inches

    B. 9 inches

    C. 6 inches

    D. 10 ½ inches

    E. 3 inches

2. The greatest area that a rectangle whose perimeter is 52 m can have is

    A. $12\ m^2$

    B. $169\ m^2$

    C. $172\ m^2$

    D. $168\ m^2$

    E. $52\ m^2$

3. Given the measure of angle A is 33°. Find the sum of the measures of the complementary angle and supplementary angle of A.

    A. 257

    B. 204

    C. 114

    D. 180

    E. 450

4. In the following figure. O is the center of the circle. If arc ABC has length 2π, what is the area of the circle?
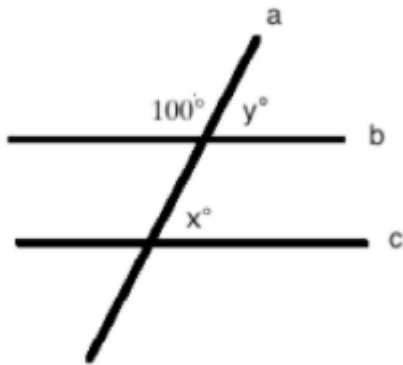

    A. $3\ \pi$

    B. $6\ \pi$

    C. $9\ \pi$

    D. $12\ \pi$
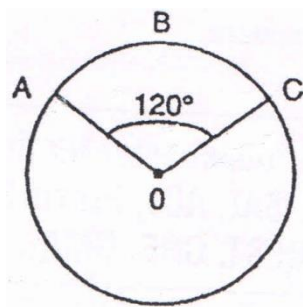
    E. $15\ \pi$

5. If the area of a rectangle is 120 and the perimeter is 44, then the length is

    A. 30

    B. 20

    C. 15

    D. 12

    E. 10

6. In the following diagram, lines B and C are parallel to each other. What is the value of x?

    A. 30
    B. 80
    C. 60
    D. 100

7. A rectangular piece of metal has an area of 35 m^2 and a perimeter of 24 m. Which of the following are possible dimensions of the piece?

    A. $35/2$ m × 2 m

    B. 5 m × 7 m

    C. 35 m × 1 m

    D. 6 m × 6 m

    E. 8 m × 4 m

8. A rectangle is divided into three squares, as shown in the diagram. If the long side of the rectangle is equal to 12 cm, what is the area of one of the squares?
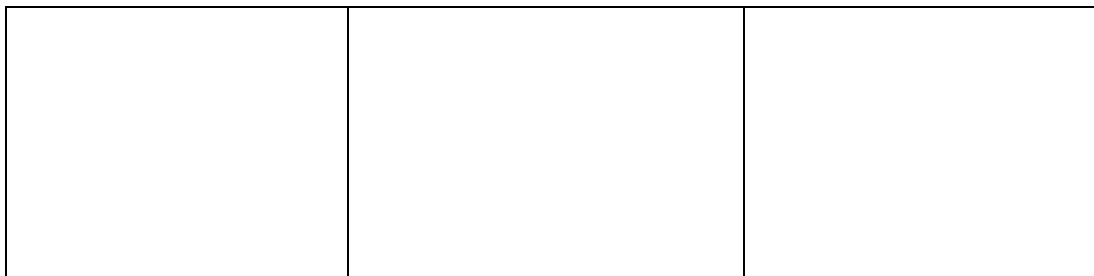
A. $8\ cm^2$

B. $16\ cm^2$

C. $32\ cm^2$

D. $48\ cm^2$

E. $64\ cm^2$

9. If the quadrilateral ABCD has angle A= 35° , angle B= 85°, and angle C= 120°, then the measure of the angle D in degrees is:
   A. 85
   B. 90
   C. 100
   D. 120
   E. 180

10. The perimeter of rectangle is 36m. Length is 12m. Find area of rectangle.
    A. 36
    B. 48
    C. 72
    D. 100
    E. 74

11. If a triangle of base 6 units has the same area as a circle of radius 6 units, what is the altitude of the triangle?
    A. π
    B. $3\,\pi$
    C. $6\,\pi$
    D. $12\,\pi$
    E. $36\,\pi$

12. Find the area of a circle with circumference $32\,\pi$.
    A. $228\,\pi$
    B. $256\,\pi$
    C. $16\,\pi$
    D. 16
    E. None of the above

13. A cube consists of 96 square feet. What is the volume of the cube in cubic feet?
    A. 16
    B. 36
    C. 64
    D. 96
    E. 216

14. If the angles of a triangle *ABC* are in the ratio of 3: 5: 7, then the triangle is:
    A. acute
    B. right
    C. isosceles
    D. obtuse
    E. equilateral

15. If the measures of the three angles of a triangle are $(3x + 15)°$, $(5x - 15)°$ and $(2x + 30)°$, what is the measure of each angle?
    A. 75°
    B. 60°
    C. 45°
    D. 25°
    E. 15°

16. A boy is mowing a rectangular lawn 40 ft. long and 20 ft. wide. He has cut all of it except for a rectangle that is 10 ft. long and 15 ft. wide. What fractional part of the lawn remains uncut?
   A. 1/4
    B. 5/24
    C. 12/25
    D. 3/16
    E. 2/5

17. The circle is centered at the origin and passes through point P (0, -4). Which of the following point does it also pass through?
    A. (-4, -4)
    B. (4, 4)
    C. (-4, 0)
    D. (0, 0)
    E. (2, 2)

18. Find the area of a right triangle with hypotenuse 15 in. and altitude 12 in. (to the hypotenuse).
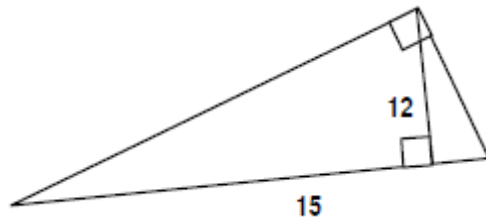
    A. 90
    B. 50
    C. 45
    D. 180
    E. 75

19. Given A(0, 2), B(5, 5), and C(7, 2). Reflect triangle ABC over the x-axis. Give the coordinates of the vertices of the new triangle formed.
    A. A'(0, 2) B'(-5, 5) C'(-7, 2)
    B. A'(-2, 0) B'(-5, 5) C'(-2, 7)
    C. A'(0, -2) B'(5, -5) C'(7, -2)
    D. A'(2, 0) B'(5, 5) C'(2, 7)
    E. None of the above

20. In the figure, O is both the center of the circle with radius 4 and a vertex of the square OPRS. What is the length of diagonal PS?
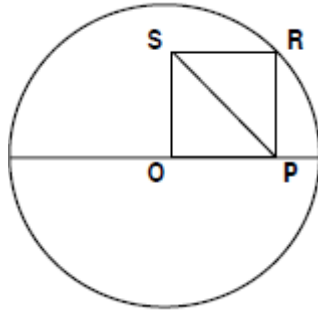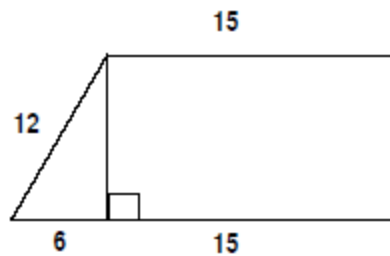

A. 2
B. 3
C. 4
D. 5
E. 6

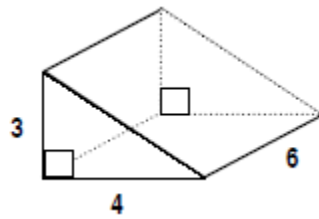21. If line $l, m,$ and n intersect at point P, express $x + y$ in terms of a.
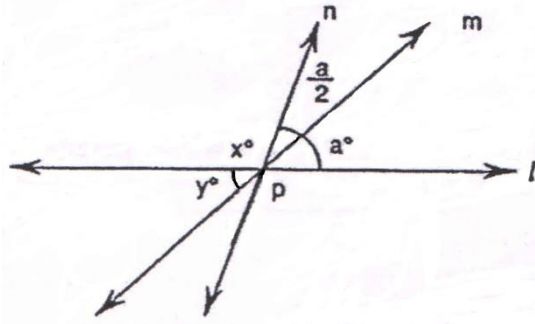
A. $180 - a/2$

B. $a/2 - 180$

C. $90 - a/2$
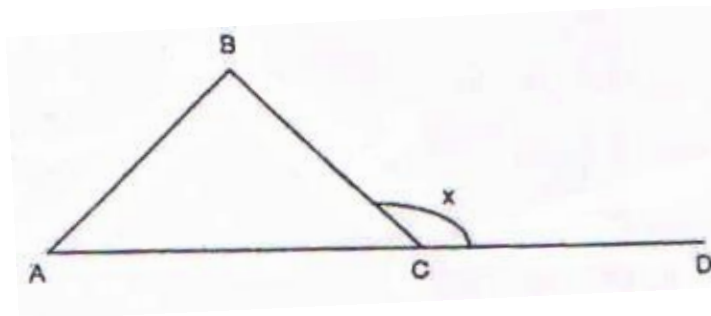D. $a - 180$

E. $180 - a$

22. Find the area of the trapezoid.

A. 432
B. $6\sqrt{3}$
C. $126\sqrt{3}$
D. $108\sqrt{3}$
E. $150\sqrt{3}$

23. Find the volume of prism

A. 13
B. 84
C. 30
D. 72
E. 36

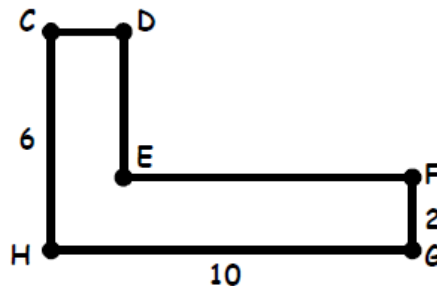**24.** If the triangle ABC has angle $A = 35°$ and angle $B = 85°$, then the measure of the angle x in degrees is:

A. 85
B. 90
C. 100
D. 120
E. 180

25. What is the measure of the exterior angle of a regular hexagon?
A. 60
B. 120
C. 30
D. 90

26. Find the perimeter of hexagon *CDEFGH*.

A. 30
B. 32
C. 34
D. 36
E. 38

27. A room measures 13 feet by 26 feet. A rug which measures 12 feet by 18 feet is placed on the floor. What is the area of the uncovered portion of the floor?
  A. 554 sq. ft.
  B. 216 sq. ft.
  C. 100 sq. ft.
  D. 122 sq. ft.
  E. 338 sq. ft.

28. The diagram shows a pasture which is fenced in. All but 1 section of fence run straight north-south or east-west. Consecutive fence posts are 10 feet apart except for the 1 diagonal section. Which of the following statements best describes P, the perimeter of the pasture, in feet?
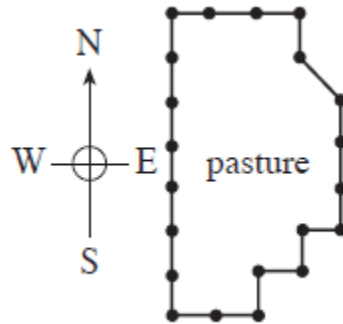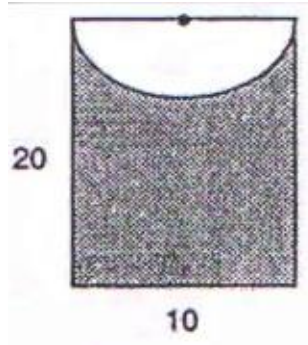

  A. $P > 210$
  B. $P = 210$
  C. $P < 210$
  D. $P > 230$
  E. $P = 240$

29. In $\triangle ABC, AB = 6, BC = 4$ and $AC = 3$. What kind of a triangle is it?
  A. right and scalene
  B. obtuse and scalene
  C. acute and scalene
  D. right and isosceles
  E. obtuse and isosceles

30. What is the area of the shaded portion of the rectangle? The heavy dot represents the center of the semicircle.

20

10

A. $200 - 100\pi$
B. $200 - 25\pi$
C. $30 - \frac{25\pi}{2}$
D. $\frac{200 - 25\pi}{2}$
E. $\frac{400 - 25\pi}{2}$

31. What are the total number of diagonals in a pentagon?
A. 2
B. 3
C. 4
D. 5
E. 6

32. If the radius of a sphere becomes three times of itself, then the volume of the sphere becomes how many times of itself?
A. 3
B. 6
C. 9
D. 18
E. 27

33. Which of the following statements will prove that a quadrilateral is a rhombus?
A. The opposite sides are parallel and congruent.
B. The diagonals are congruent and perpendicular.
C. Both pairs of opposite sides are congruent and the adjacent sides are perpendicular.
D. The diagonals are perpendicular and bisect each other.
E. Angles are 90 degree each.
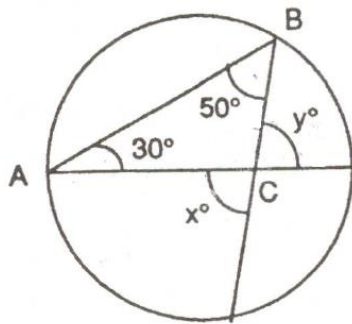
34. DE || CB and BE = 9. If CD : DA = 3 : 5. Find AB
A. 20
B. 21
C. 22
D. 23
E. 24

35. Quadrilaterals $ABCD$ and $AFED$ are squares with sides of length 10 cm. Arc BD and arc DF are quarter circles. What is the area of the shaded region?
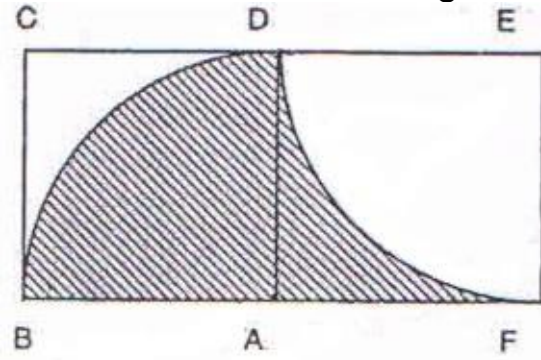
    A. 50 sq. cm
    B. 100 sq. cm
    C. 80 sq. cm
    D. 40 sq. cm
    E. 10 sq. cm

36.

In the figure, two chords of the circle intersect, making the angles shown. Find x + y.
    A. 140
    B. 160
    C. 180
    D. 200
    E. 220

37. If the hypotenuse of a right triangle is $x + 1$ and one of the legs is x, then the other leg is
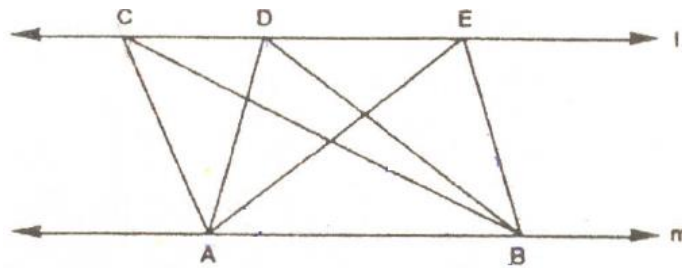   **A.** $\sqrt{2x + 1}$
    B. $\sqrt{2x} + 1$
    C. $\sqrt{x^2 + (x + 1)^2}$
    D. 1
    E. $2x + 1$

38. The measures of the lengths of two sides of an isosceles triangle are x and $2x + 1$. Then, the perimeter of the triangle is
    A. $4x$
    B. $4x + 1$
    C. $5x + 1$
   **D.** $5x + 2$

E. None of the above

39.

Line l || line m. Area of triangle ADB is equal to 50 sq.cm. What is the area of triangle ACB?
    A. Less than 50 sq.cm.
    B. More than 50 sq.cm.
    C. Equal to 50 sq.cm.
    D. The length of segment AC times 50 sq.cm.
    E. Cannot be determined

40. In $\triangle ABC$, $m\angle A = 35°$ and $m\angle B = 65°$. **Which choice is accurate as to the lengths of the sides of the triangle?**
    A. AB < BC < AC
    B. AB < AC < BC
    C. AB > AC > BC
    D. BC < AB < AC
    E. BC > AB > AC

41. $m\ (\angle A) + m\ (\angle C) =$
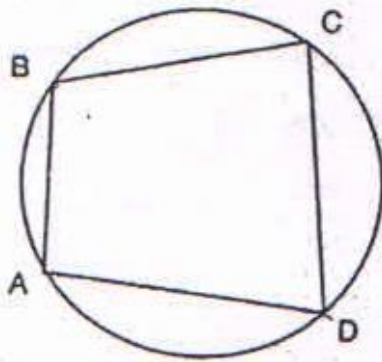
    A. 160°
    B. 180°
    C. 190°
    D. 195°
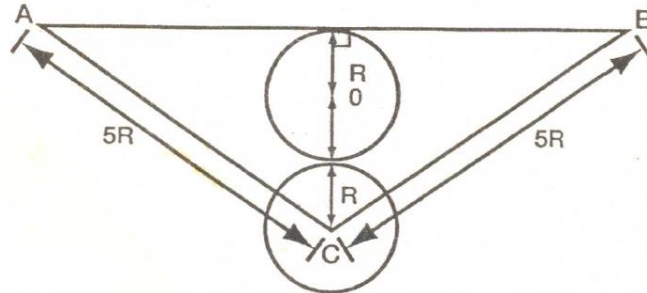   **E.** 200°

42. Which of the following triangles are always similar?
    A. Equilateral triangles
    B. Isosceles triangles
    C. Scalene triangles
    D. Right angled triangles
    E. Obtuse triangles

43. Find the length of sum of two parallel sides of the trapezoid if height and area are 5cm and 60 sq.cm.
- A. 27cm
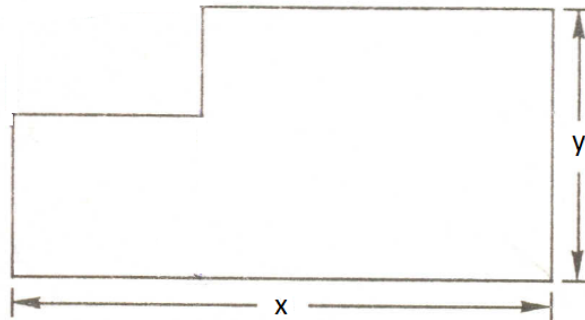- B. 24cm
- C. 30cm
- D. 35cm
- E. 37cm

44.

Radius of both circles is R. Find perimeter of triangle ABC.
- A. 8R
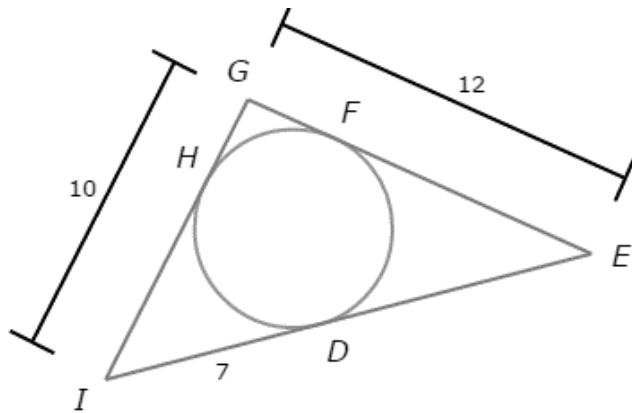- B. 10R
- C. 12R
- D. 18R
- E. 20R

45.

For the given figure, find perimeter.
- A. x + y
- B. 2x + y
- C. x + 2y
- D. 2x + 2y
- E. 2x – 2y

46.
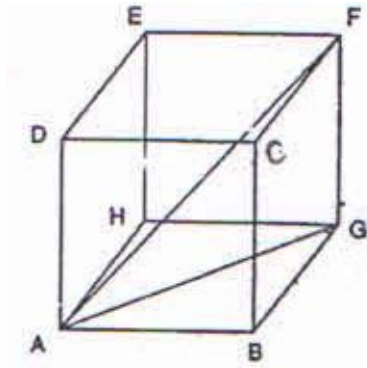

Find IE.
    A. 13
    B. 14
    C. 15
    D. 16
    E. 17

47. In the cube $ABCDEFGH$ with side $AB = 2$, what is the length of diagonal AF?
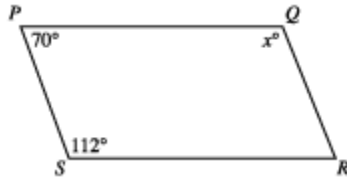

    A. 2
    B. $2\sqrt{2}$
    C. $2\sqrt{3}$
    D. 4
    E. $2\sqrt{5}$

48. Find the total surface area of the cuboid of dimension 8cm x 9cm x 10 cm.
    A. 121
    B. 242
    C. 484
    D. 720
    E. 360

49. In quadrilateral PQRS below, sides PS and QR are parallel for what value of x?

A. 120
B. 158
C. 132
D. 70
E. 110

50. What is the degree measure of the acute angle formed by the hands of a 12-hour clock that reads exactly 2pm?

A. 15
B. 60
C. 30
D. 45
E. 75