1. Find the sum of the measures of the interior angles in the figure.

2. A regular pentagon has five congruent interior angles. What is the measure of each angle?

3. The sum of the measures of the interior angles of a convex quadrilateral is _____.

   [A] 540°
   [B] 360°
   [C] 270°
   [D] 180°

4. The base of a gazebo is a regular 20-gon with 6-foot sides. Find its apothem, $a$, to the nearest tenth of a foot.

5. Find the number of sides of a regular polygon with each interior angle equal to 120°.

6. Find the area of a regular dodecagon with radius 3 cm.

7. The perimeter of an equilateral triangle is 18. Find its area.

8. Two similar trapezoids have areas 75 cm² and 12 cm². Find the ratio of similarity.

9. The ratio of the side lengths of two regular hexagons is 4 to 9. If the area of the smaller hexagon is 16 square units, then the area of the larger hexagon is _____.

   [A] $\frac{256}{81}$ sq. units
   [B] 36 sq. units
   [C] $\frac{64}{9}$ sq. units
   [D] 81 sq. units

10. Leila needs to make a poster that is 2.5 m by 5 m for the big game. The cost of the paper is $3.25. Later she needs another poster with dimensions 1.25 m by 2.5 m. What is the paper for this poster likely to cost?

11. Find the circumference of a circle with radius 7 cm. Use $\pi \approx 3.14$.

12. For a circle of radius 8 feet, find the arc length of a central angle of 24°. Leave your answer in terms of $\pi$.

13. Circle $O$ has a radius of 7.39. If $\angle AOB$ is 112°, then find the length of $\widehat{AB}$ to one decimal place.

14. An automobile has 20-inch diameter wheels. If the wheels revolved three times after the brakes were applied, the stopping distance was approximately _____.

15. Find the area of the shaded region.

16. Each circle is tangent to the other two. If the diameter of the large circle is 12, the area of the shaded region is ______.

17. Find the area of the shaded region. Use $\pi \approx 3.14$.

18. Find the area of the circle with radius 2 cm. Use $3.14$ for $\pi$.

19. The figures are similar. Find the missing values.

20. In this figure, each circle has a radius of 4 inches. What is the area of the portion outside the circles but inside the square? Express your answer in terms of $\pi$.

21. The figure below represents the overhead view of a deck surrounding a hot tub. What is the area of the deck? Use $\pi \approx 3.14$. 

[A] 256 – 64$\pi$

[B] 32 – 64$\pi$

[C] 256 – 16$\pi$

[D] 32 – 16$\pi$
22. Find the probability that a point chosen at random on $\overline{AL}$ is on $\overline{AB}$.

23. If a point is selected at random, what is the probability that it will lie within the shaded rectangular region rather than the unshaded rectangular region?

24. $\overline{AB}$ is tangent to $\odot O$ at $A$ (not drawn to scale). Find the length of the radius $r$, to the nearest tenth.

25. Find the value of $x$.

26. Find the diameter of the circle. $BC = 13$, and $DC = 17$. Round your answer to the nearest tenth.

27. Find the measure of $\angle 1$.

28. Given: $m \widehat{AB} = 82^\circ$, $m \widehat{CD} = 30^\circ$ Find $m \angle DOC$.

[A] $52^\circ$
[B] $56^\circ$
29. Find the measure of \( \angle 1 \).

30. Find the measure of \( \angle 1 \).

31. Solve the right triangle: \( \alpha = 35^\circ \) and \( a = 13 \); find \( \beta \), \( b \), and \( c \)

32. Given \( J(7, -5) \) and \( K(4, 3) \), find the magnitude of \( JK \) to the nearest tenth.

33. Write the ratio of legs to hypotenuse in a 45°-45°-90° triangle, and a 30°-60°-90° triangle.

34. Give the scale factor for the dilation of the square shown.

35. Find the value of \( x \) to one decimal place.
38. Suppose the points on the graph are translated using translation vector \( \overrightarrow{PQ} \). Find the image of:
A. \( S \)
B. \( (5, 4) \)
C. \( ST \)


Reference: [11.1.1.7] [3] [B]

Reference: [11.2.2.30] [4] 18.9 ft


Reference: [11.2.2.24] [6] 27 cm²

Reference: [11.2.1.22] [7] 9√3 sq. units

Reference: [11.3.1.32] [8] 5 : 2

Reference: [11.3.1.35] [9] [D]

Reference: [11.3.2.37] [10] $0.81$

Reference: [11.4.1.39] [11] 43.96 cm

Reference: [11.4.1.44] [12] \(\frac{16}{15}\pi\) feet

Reference: [11.4.1.46] [13] 14.4 units

Reference: [11.4.2.51] [14] [C]

Reference: [11.5.1.62] [15] 96\(\pi\) – 144√3

Reference: [11.5.2.71] [16] [B]

Reference: [11.5.1.63] [17] 22.33 cm²

Reference: [11.5.1.58] [18] 12.56 cm²

Reference: [11.3.1.31] [19] A = 720, P = 54

Reference: [11.5.2.65] [20] [A]

Reference: [11.5.2.66] [21] 50.7738 m²

Reference: [11.6.1.75] [22] \(\frac{4}{9}\)

Reference: [11.6.1.76] [23] \(\frac{9}{11}\)
Reference: [10.1.2.19] [24] 3.8

Reference: [10.5.1.78] [25] 27 \( \frac{7}{9} \)

Reference: [10.5.2.79] [26] [A]

Reference: [10.4.2.74] [27] 68°

Reference: [10.4.2.69] [28] [D]

Reference: [10.4.2.68] [29] 32°

Reference: [10.4.1.62] [30] 70°

Reference: [9.6.1.83] [31] \( \beta = 55° \)

\[ b = 18.57 \]

\[ c = 22.66 \]

Reference: [9.7.1.94] [32] 8.5

Reference: [9.4.1.44c] [33] \( 1:1:\sqrt{2} \)

\( 1:\sqrt{3} :2 \)

Reference: [8.7.1.96] [34] 3