Give exact answer. Do not use decimal approximations for radicals and \( \pi \). Fractions and radicals must be in the simplified form.

1. Find the number of vertices of a polyhedron that has 12 faces and 30 edges.

2. The length of the apothem of a regular hexagon is \( 5\sqrt{3} \) cm. Find the area of the hexagon.

3. A circular pizza has diameter 20 inches. A slice making a central angle having measure 30\(^\circ\) is cut from this pizza. What is the area of this slice?

4. The lengths of the sides of a triangle are 77, 36, and 85 cm. Find its area.

5. A 5 ft. tall woman is standing 12 ft away from a 20 ft. tall street light. How long is her shadow?

6. Find the area of the circumscribed circle of an equilateral triangle whose altitude has length \( 9\sqrt{3} \) cm.

7. Find the surface area of a right circular cylinder with top and bottom whose radius is 10 cm and height is 6 cm.

8. If the area of a circle of radius \( R = 3 \) cm. is equal to the area of a square of diagonal \( D \) cm. what is \( D \)?

9. What is the degree measure of each interior angle of a regular pentagon?

10. The hypotenuse of a 30\(^\circ\) – 60\(^\circ\) – 90\(^\circ\) has length 30 in. Find its area.

11. A cube is inscribed in a sphere with radius 6 in. Find the volume of the cube.

12. Find the area of the circle passing through the points (0, 0), (-3, -3) and (3, -3).

13. Find the volume of a right square pyramid if the edge of the square base is 9 in and the height of the pyramid is 5 in.