

All answers must be exact (i.e., they may contain π , radicals, or fractions) and *not* decimal approximations. Radicals must be in simplest radical form and fractions in simplest form, or lowest terms.

1. _____ Find the length of the hypotenuse of a right triangle with legs of lengths 10 in and 24 in.

2. _____ Find the length of the diagonal of a cube whose edge is 5 cm.

3. _____ The hypotenuse of an isosceles right triangle measures $6\sqrt{2}$ in. Find the area of the triangle.

4. _____ Find the altitude of a trapezoid having area 105 cm^2 if the bases are 14 cm and 16 cm.

5. _____ How many distinct lines of reflectional symmetry does a regular decagon have?

6. _____ What is the measure of each interior (vertex) angle of a regular octagon?

7. _____ A circle is inscribed in a square of area 121 in^2 . What is the circumference of the circle?

8. _____ The measure of an angle is four times that of its complement. What is the measure of the angle?

9. _____ How many sides does a regular polygon have if each central angle is 30° ?

10. _____ What is the volume of a right square pyramid if the edge of the square base is 7 m and the height of the pyramid is 6 m?

11. _____ What is the smallest angle of rotational symmetry for a regular pentagon?
12. _____ Two parallel lines are intersected by a transversal. What is the sum of the measures of the interior angles on the same side of the transversal?
13. _____ A square is circumscribed by a circle. If the radius of the circle is 10 cm, find the area of the square.
14. _____ The area of a circle is four-ninths of the area of another circle. What is the ratio of the circumference of the smaller circle to the circumference of the larger circle?
15. _____ The lengths of the sides of a pentagon are 4, 7, 6, 8, and 15 mm. If the longest side of a similar pentagon has a length of 45 mm, find the perimeter of the larger pentagon.
16. _____ Find the surface area of a right circular cylinder if the diameter of the base is 14 in and the height is 27 in.
17. _____ What is the measure of the supplementary angle to an angle of measure 75° ?
18. _____ A triangle may be positioned in the rectangular coordinate system so that its vertices have coordinates $(0, 0)$, $(0, 9)$, and $(8, 0)$. Find the equation of the line containing the median that joins the vertex at the origin to the opposite side of the triangle.
19. _____ How many vertices does an icosahedron have?
20. _____ An equilateral triangle is inscribed in a circle of radius 14 cm. Calculate the area of the circle that is not within the triangle.