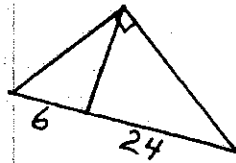


1. Find the numerical sum of the perimeter and area of this right triangle with lengths shown. (Round answer to the nearest hundredth.)

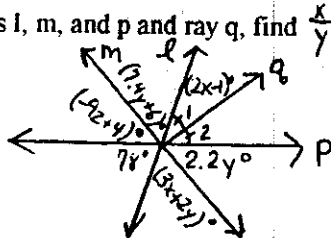


2. Find the first number in the 100th row:

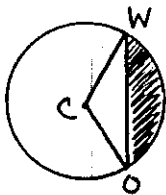
1	2	3			
4	5	6	7		
8	9	10	11	12	
13	14	15	16	17	18

3. Points  $P(2, 6)$ ,  $Q(4, -3)$ , and  $R(-2, -1)$  are the vertices of a triangle. Find the area of triangle PQR.

4. Given lines  $l$ ,  $m$ , and  $p$  and ray  $q$ , find  $\frac{x}{y} + z$



5. A sphere has a volume of  $972\pi$ . Find the surface area.
6. Find the exact area between the inscribed and circumscribed circles of a regular hexagon with a side of 8.
7. Given circle C,  $CO = 6$ , and  $m\angle WCO = 120^\circ$ , find the area of the shaded region.



8. Which of the following are true for a rhombus:

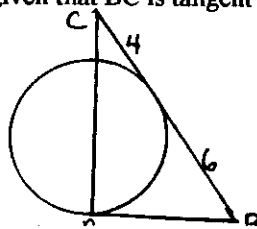
- I. The diagonals bisect each other.
- II. The diagonals are perpendicular.
- III. The diagonals bisect opposite angles.
- IV. The diagonals are congruent.

- A) I and II only    B) I and III only    C) II and III only    D) II and IV only  
E) I, II, and III only    F) II, III, and IV only    G) I, II, III, and IV

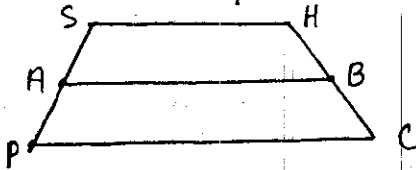
9. Determine the length of a diagonal of a cube having a volume of  $512 \text{ cm}^3$ .

10. The area of a circle is numerically  $175\pi$  units greater than its circumference. Find the diameter.

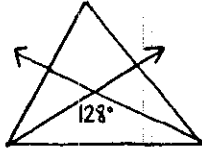
11. Find the diameter of the circle, given that  $\overline{BC}$  is tangent to the circle,  $\angle A$  measures 90 degrees, and segment AC goes through the center of the circle.



12. Quadrilateral  $PCSH$  is a trapezoid with median  $\overline{AB}$ . If  $AB = 2j + 5$  and  $PC = 20 - j$ ,  $HS = ?$  (in terms of  $j$ ).



13. The bisectors of two angles of a triangle form a  $128^\circ$  angle (as shown). What is the measure of the third angle of the triangle?



14. The lengths of the sides of a triangle are 4, 6, and 8. Each side is trisected and the points of division are joined to form a hexagon. What is the perimeter of the hexagon?
15. The base angles of an isosceles triangle have measures  $x^2 - 30$  and  $3x + 10$ . What is the measure of the vertex angle?

### Answers to Geometry Team

1. 250.25
2. 5149
3. 25
4. 0
5.  $324\pi \approx 1017.88$
6.  $16\pi$
7.  $12\pi - 9\sqrt{3} \approx 22.11$
8. E.
9.  $8\sqrt{3} \approx 13.86$
10.  $2 + 8\sqrt{11} \approx 28.53$
11. 6
12.  $5j - 10$
13.  $76^\circ$
14. 12
15.  $112^\circ$