

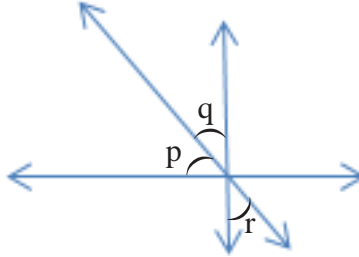
16. a) Write Euclid's fifth postulate.

b) If a point C lies between two points A and B such that $AC = BC$, then show that $AC = \frac{1}{2} AB$.

17. Construct a triangle ABC, in which $BC = 7.2\text{cm}$. and $\angle B = 45^\circ$ and $AB - AC = 3.4\text{ cm}$.

18. Prove that the line segment joining the midpoints of two sides of a triangle is parallel to the third side and equal to half of it.

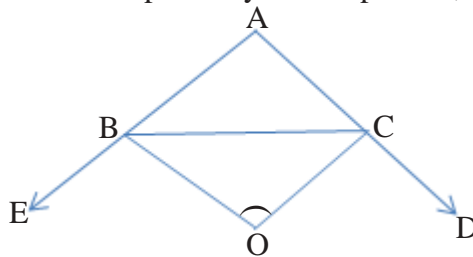
19. In the given figure, if $p : q = 4 : 5$, find the measures of p, q and r.



20. The surface area of a sphere of radius 5cm. is five times the area of the curved surface of a cone of radius 4cm, find the height and volume of the cone. ($\pi = \frac{22}{7}$)

21. D, E and F are respectively the midpoints of the sides BC, CA and AB of a ΔABC . Show that
 a) BDEF is a parallelogram. b) $\text{ar}(\text{DEF}) = \frac{1}{2} \text{ar}(\text{ABC})$. c) $\text{ar}(\text{DEF}) = \frac{1}{4} \text{ar}(\text{ABC})$.

22. In figure, the side AB and AC of ΔABC are produced to points E and D respectively. If bisectors BO and CO of $\angle CBE$ and $\angle BCD$ respectively meet at point O, then prove that $\angle BOC = 90 - \frac{1}{2} \angle BAC$.



SECTION - D

23. Verify that $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2} (x + y + z) [(x - y)^2 + (y - z)^2 + (z - x)^2]$.

24. A man hires an auto rickshaw to cover a certain distance. The fare is ₹ 10 for first kilometre and ₹ 5 for each subsequent kilometres. Taking total distance covered as x km and total fare as ₹ y, write a linear equation for this information and draw its graph.

25. Sides of a triangle are in the ratio 12:17:25 and its perimeter is 540cm. Find the area.

26. In a city, the weekly observations made in a study on the cost of living index are given in the following table.

Cost of living index	140 - 150	150 - 160	160 - 170	170 - 180	180 - 190	190 - 200
Number of weeks	5	10	20	9	6	2

Draw Frequency Polygon.

27. 50 students of class X planned a visit to an old age home and to spend the whole day with the inmates. Each one prepared a cylindrical flower base using cardboard to gift the inmates. The radius of cylinder is 4.2 cm and the height is 11.2 cm.

a) What is the amount spent for purchasing the cardboard at the rate of ₹ 20 per 100cm^2 ?

b) Which value is depicted by the students?

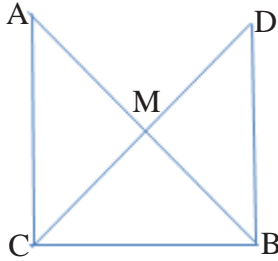
28. a) Find the mean weight.

Weight in Kg	59	60	62	65	64
Number of students	5	4	6	3	2

b) A football player scored the following number of goals in 10 matches 1, 3, 2, 5, 8, 6, 1, 4, 7, 9. Find the median.

29. In right triangle ABC, right angled at C, M is the midpoint of hypotenuse AB. C is joined to M and produced to a point D such that $DM = CM$. Point D is joined to point B. Show that

- a) $\triangle AMC \cong \triangle BMD$ b) $\angle DBC$ is a right angle c) $\triangle DBC \cong \triangle ACB$ d) $CM = \frac{1}{2} AB$



30. A circular park of radius 20m is situated in a colony. 3 boys Ankur, Shyam and Damu are sitting at equal distances on its boundary each having a toy telephone in his hands to talk to each other. Find the length of the string of each phone.