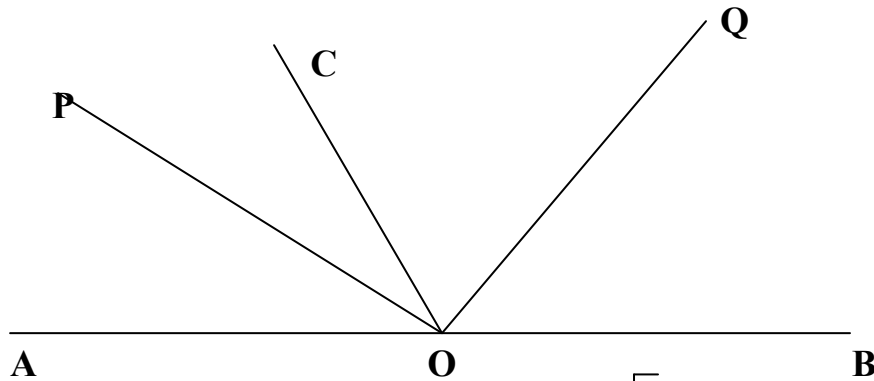


**MATHS**  
**IX**  
**SECTION A 3 MARKS EACH**

1. Simplify

$$\frac{\sqrt{3} - 1}{\sqrt{3} + 1}$$

2. The marked price of the table is 1350/-. It is sold at 1118/- after allowing the discount. Find the discount percent?
3. In the figure below, OP bisects  $\angle AOC$  and OQ bisects  $\angle BOC$  and OP is perpendicular to OQ, show that A, O and B are collinear.



4. The volume of the right equilateral prism is  $250\sqrt{3}$ . If the height is 10 cm, find the lateral and the whole surface area?
5. solve:
- multiply  $a^2 + b^2 + c^2 + ab + ac + bc$  by  $a - b - c$
  - Factorize  $27x^3 + 64y^3$ .
6. If  $\sin(A + B) = 1$  and  $\cos(A - B) = \frac{\sqrt{3}}{2}$  then find A and B?
7. Find the area of the quadrant of the circle whose circumference is 22 cm?
8. A sum of money amounts to 13230/- in one year and 13891.50 in one and a half year compounded annually. Find the sum and the rate?
9. What must be added to 2:5 so that the new ratio is 5:6?
10. Construct the triangle ABC in which  $BC = 4.6$  cm,  $\angle B = 45^\circ$  and  $AB + CA = 8.2$  cm.

**SECTION B 4 MARKS EACH**

11. A shopkeeper allows the discount of 20% on the marked price. He still makes the profit of 25%. Find the cost if the marked price is 500/-?

12. In a triangle ABC, M and N are the points on AB and AC respectively such that

$$AM = \frac{1}{4} AB \text{ and } AN = \frac{1}{4} AC, \text{ prove that } MN = \frac{1}{4} BC$$

13. In a triangle ABC, medians AD, BE and CF intersect at G. Show that  $4(AD + BE + CF) > 3(AB + BC + CA)$

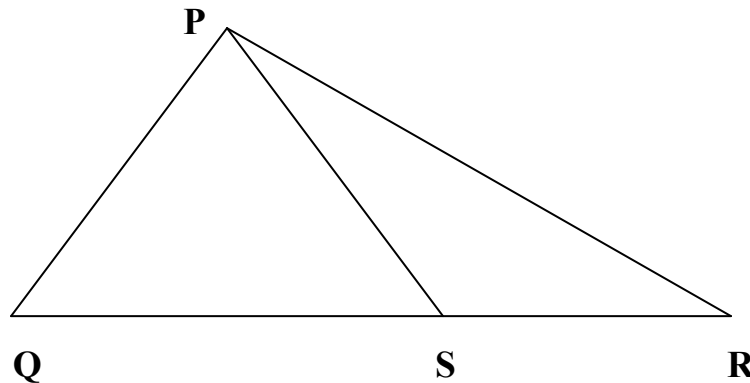
14. Read the page of the pass book below.

<u>MONTH</u>	<u>DEPOSIT</u>	<u>WITHDRAWL</u>	<u>BALANCE</u>
Jan 1			2630.500
Feb 20	1050		3680.50
Feb 25		200	3480.50
May 14	2000	1000	5480.50
June 17	1700		7180.50
June 21		5102	2078.50

If account is closed on June 28 find amount if rate is 5%?

15. In the triangle prove that the sum of the three altitudes is less than the sum of the three sides.

16. In the figure below, prove that  $PQ + QR + RP > 2PS$



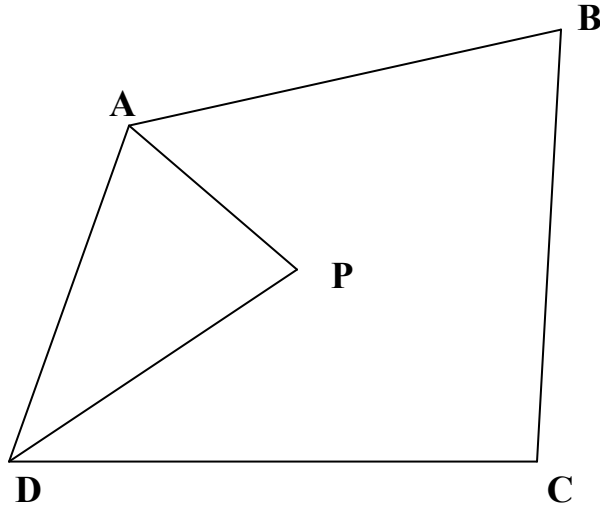
17. In a triangle prove that the sum of the two sides is greater than the twice the median on the third side.

18. Two adjacent sides of the parallelogram are 5 cm and 3.5 cm. If the diagonal AC is 6.5 cm find the area?

19. Factorize

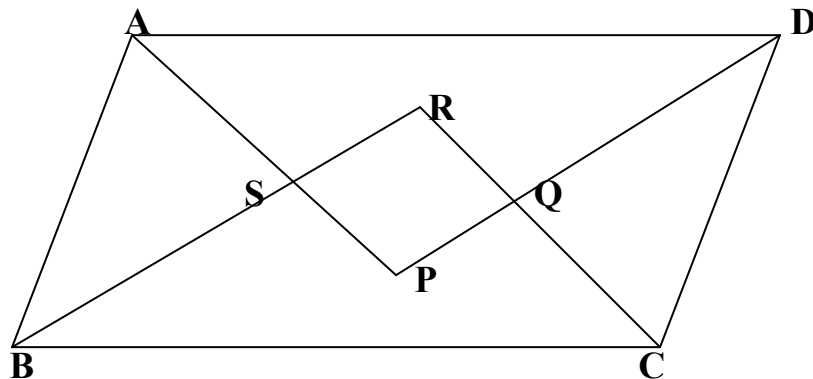
- a.  $x^3 + 3x^2y + 3xy^2 + y^3 - 8$ .  
 b.  $x^2 + y^2 + z^2 - 2xy + 2xz - 2yz$

20. In the figure if AP and DP are the angle bisectors then prove that  $2\angle APD = \angle B + \angle C$ .



**SECTION C 6 MARKS EACH**

21. In the figure if ABCD is a parallelogram and AP, BR, RC, DP are the angle bisectors then prove that SPQR is a rectangle.



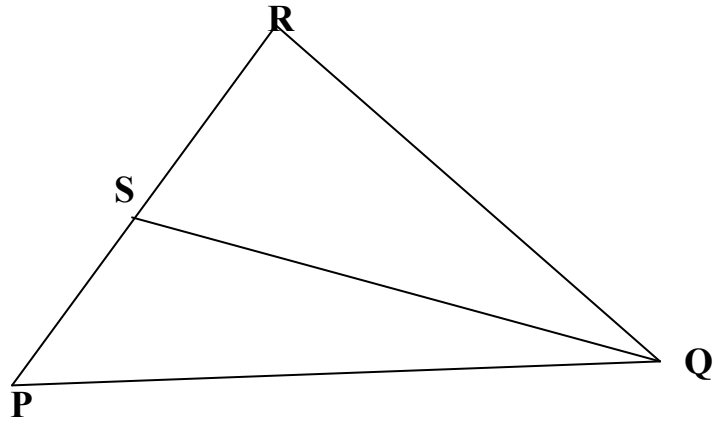
22. Prove in a triangle that the sum of the three sides is greater than the sum of the three medians.

23. In a quadrilateral PQRS if the diagonals intersect at O prove that

- a)  $PQ + QR + RS + SP > PR + QS$   
 b)  $PQ + QR + RS + SP < 2(PR + QS)$

24.

in the figure below if  $PQ = PR$ , prove that  $RS < QS$



25. In the figure below OPQR is a rhombus and O is the centre of the circle. If the area of rhombus is  $32\sqrt{3}$  find the radius of the circle?

