



**INDIAN SCHOOL SOHAR**  
**FINAL EXAMINATION (2017-18)**  
**MATHEMATICS**

**CLASS: IX**  
**DATE: 08.03.18**

**MAX. MARKS: 80**  
**TIME: 3 Hours**

**GENERAL INSTRUCTIONS:**

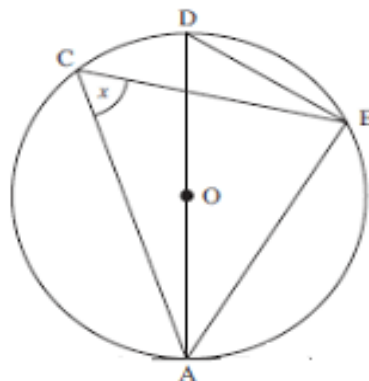
- All questions are compulsory.
- The question paper consists of **30** questions divided into 4 sections A, B, C, D. Section A comprises of **6** questions of **1 mark** each, section B comprises of **6** questions of **2 marks** each, section C comprises **10** questions of **3 marks** each and section D comprises of **8** questions of **4 marks** each.
- Use of calculators not permitted.

**SECTION A**

1. Express  $0.\bar{6}$  in the form of  $\frac{p}{q}$ , where  $p$  and  $q$  are integers and  $q \neq 0$ .
2. What is the degree of a non-zero constant polynomial?
3. In an isosceles triangle, if the vertical angle is twice the sum of the base angles, then find the measurement of the vertical angle.
4. How many lines can pass through two distinct points?
5. The area of an equilateral triangle is  $27\sqrt{3} \text{ cm}^2$ . Find its perimeter.
6. In a football match, John makes 4 goals from 10 penalty kicks. What is the probability of missing penalty kicks?

**SECTION B**

7. Factorise  $64x^3 + 125y^3$
8. Two adjacent angles of a rhombus are  $3x - 40^\circ$  and  $2x + 20^\circ$ . Find the measurement of the greater angle.
9. ABCD is a square and P is the midpoint of AD. BP and CP are joined. Prove that  $\angle PCB = \angle PBC$ .
10. In the figure, O is the centre of a circle and  $\angle DAE = 40^\circ$ . Find the value of  $x$ .



11. If  $V$  and  $S$  represents the volume and surface area of a cuboid of length  $l$ , breadth  $b$  and height  $h$ , then show that  $\frac{1}{V} = \frac{2}{S} \left( \frac{1}{l} + \frac{1}{b} + \frac{1}{h} \right)$ .
12. Mean of 50 observations was found to be 80.4. But later on, it was discovered that 96 was misread as 69 at one place. Find the correct mean.

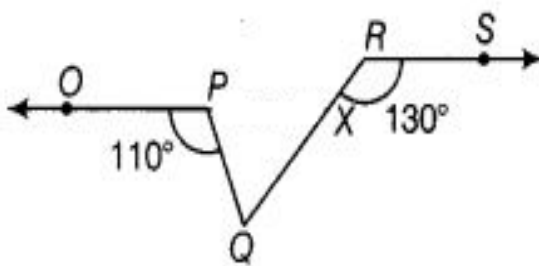
### SECTION C

13. Find the values of 'a' and 'b' so that polynomial  $x^3 + 10x^2 + ax + b$  has  $(x-1)$  and  $(x+2)$  as factors.

**OR**

Factorise  $4(x^2+1)^2 + 13(x^2+1) - 12$ .

14. If  $5^{2x-1} - 5^{2(x-1)} = 2500$ , then find the value of x?
15. Find the value of 'a' for which (4, 3) lies on the graph of the equation  $3x - ay = 6$ . Without plotting the graph check whether: (i) (-2, -6) is the solution of the obtained equation.  
(ii) the line passes through the origin .
16. In the figure given below OP is parallel to RS and  $\angle OPQ = 110^\circ$  and  $\angle QRS = 130^\circ$  then determine  $\angle PQR$ .



17. In a box there are 9 red, 8 white and 3 black balls. One ball is taken out of the bag. Find the probability that it is
- (i) White
  - (ii) Blue
  - (iii) Not red
18. A triangle and a parallelogram have the same base and same area. If the sides of the triangle are 26cm, 28cm and 30cm and the parallelogram stands on the base 28cm, find the height of the parallelogram.
19. A solid sphere of radius 3cm is melted and then casted into small spherical balls each of diameter 0.6cm. Find the number of balls thus obtained.

**OR**

The volume of metallic cylindrical pipe of length 14cm is  $748 \text{ cm}^3$ . If its external radius is 9 cm then find the thickness of the pipe.

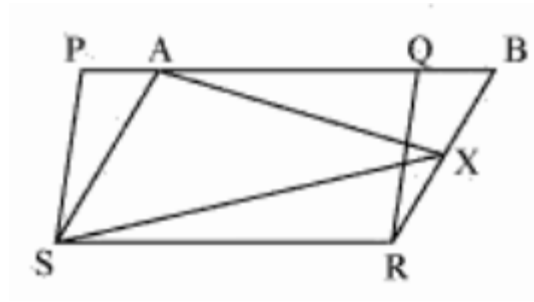
20. Show that in a right angled triangle, the hypotenuse is the longest side.

**OR**

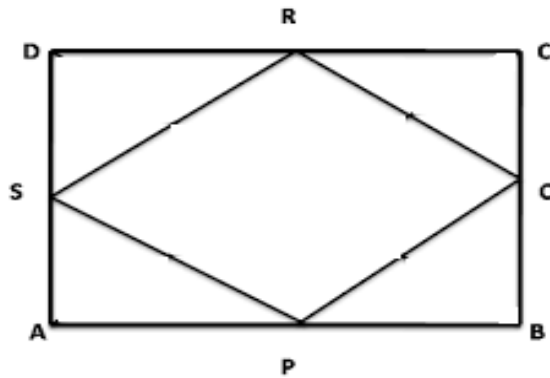
AB and CD are the smallest and longest side of quadrilateral ABCD. Prove that  $\angle A > \angle C$ .

21. In the figure, PQRS and ABRS are two parallelogram and X is any point on side BR. Show that

$$\text{ar}(\text{AXS}) = \frac{1}{2} \text{ar}(\text{PQRS})$$

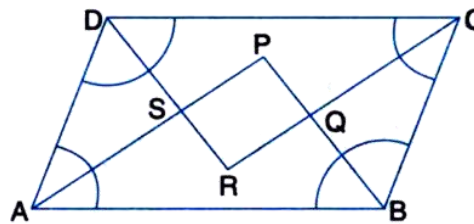


22. ABCD is a rectangle and P, Q, R and S are mid-points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rhombus.



OR

Show that the bisectors of angles of a parallelogram form a rectangle PQRS.



### SECTION D

23. A survey was conducted to know the number of literate females in a village. The outcome of the survey is presented in the following table.

Age(in years)	10-20	20-30	30-40	40-50	50-60
% of literate females	75	80	60	50	40

(a) Draw a frequency polygon to represent above data.

(b) Give one suggestion to achieve 100% female literacy in village.

24. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle.

**OR**

If diagonals of a cyclic quadrilateral are longest chords of the circle through the vertices of the quadrilateral, prove that it is a rectangle.

25. A solid cylinder has total surface area of  $462\text{cm}^2$ . Its curved surface area is one third of its total surface area. Find the volume of the cylinder.
26. Construct a triangle ABC in which  $BC=8\text{cm}$ ,  $\angle B=45^\circ$  and  $AB-AC=3.5\text{cm}$ .
27. Solve for x and draw the graph of obtained equation.

$$3x+11+\frac{x}{2} = \frac{-7}{2} +18$$

**OR**

Half the perimeter of a rectangular garden is 36m. Write a linear equation which satisfies this data.

Draw the graph for the same.

28. Factorise:  $2x^3-3x^2-17x+30$ .

29. Prove that:

$$\frac{1}{(1+\sqrt{2})} + \frac{1}{(\sqrt{2}+\sqrt{3})} + \frac{1}{(\sqrt{3}+\sqrt{4})} + \dots + \frac{1}{(\sqrt{7}+\sqrt{8})} + \frac{1}{(\sqrt{8}+\sqrt{9})} = 2$$

**OR**

Locate  $\sqrt{4.5}$  on the number line.

30. Write the co-ordinates of the point:

- (i) Whose ordinate is -4 and which lies on y-axis
- (ii) Which is at a distance of 7 units from the y-axis and 2 units from the x-axis
- (ii) Which lies on x and y axes both.
- (iv) Whose abscissa is 5 and which lies on x-axis.

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