

INDIAN SCHOOL SALALAH
ANNUAL EXAMINATION, 2018-19

Subject: Mathematics

Max.Marks: 80

Class: IX

Time Allowed: 3 Hours

GENERAL INSTRUCTIONS:

- a) All questions are compulsory
- b) The question paper consists of 30 questions divided into four sections A,B,C and D
- c) Section A contains 6 questions of 1 mark each
Section B contains 6 questions of 2 marks each
Section C contains 10 questions of 3 marks each
Section D contains 8 questions of 4 marks each
- d) There is no overall choice. However, an internal choice has been provided in two questions of section A, two questions of section B, four questions of section C and three questions of section D.
You have to attempt only one of the alternatives in all such questions.
- e) Use of calculator is not permitted

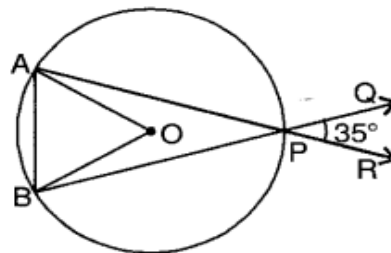
SECTION A (1 Mark each)

- 1 Find the value of $\frac{1}{\sqrt{10}}$ when $\sqrt{10} = 3.162$
- 2 If the radius of a sphere is $2r$, then what is its volume ?
(Give the answer in terms of π)

OR

A hollow sphere in which a circus motor cyclist performs his stunts, has a diameter of 7 metre. Find the area available to the motor cyclist for riding.

- 3 In the figure, O is the centre of the circle with chords AP and BP being produced to R and Q respectively.
If $\angle QPR = 35^\circ$ find the measure of $\angle AOB$



- 4 Amal has a cubical block with one word of the following statement written on each face.

"COME TO LEARN GO TO SERVE"

If this block is thrown, what is the probability of getting the word

- a) **TO** b) **STUDY**

5 In $\triangle ABC$ if $\angle A = 80^\circ, \angle B = 70^\circ$
then identify the longest and the shortest side of the triangle.

6 If $x + y = 3, x^2 + y^2 = 5$ then find xy

OR

Without actually calculating the cubes, find the value of $3^3 + 5^3 + (-8)^3$

SECTION B (2 Marks each)

7 If the point (3,4) lies on the graph of $3y = ax + 7$, then find the value of a .

8 Expand using suitable identity: $(5p - 3q)^3$

9 Write the coordinates of the vertices of a rectangle whose length and breadth are 5 and 3 units respectively, one vertex at the origin, one of the longer side lies on the x axis and one of the vertices lies in the third quadrant.

10 Angel had to make a model of a cylindrical kaleidoscope for her science project. She wanted to use chart paper to make the curved surface area of the kaleidoscope. What would be the area of chart paper required by her, if she wanted to make a kaleidoscope of length 25 cm with a 3.5 cm radius ?

11 Calculate the median and range of 103, 134, 109, 112, 121, 148, 134, 163.

OR

Two dice were thrown 10 times. For each throw their scores were added together and recorded. Find the arithmetic mean and mode for this data.

7, 5, 2, 7, 6, 12, 10, 4, 8, 9

12 Find the measure of an angle which is 26° more than its complement.

OR

If the supplement of an angle is 4 times of its complement, find the angle.

SECTION C (3 Marks each)

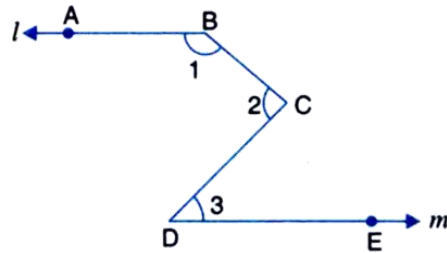
13 If $p(x) = ax^3 + 4x^2 + 3x - 4$ and $q(x) = x^3 - 4x + a$ leave the same remainder when divided by $(x - 3)$, find the value of a .

14 Find the value of $x^3 + y^3 + 15xy - 125$ when $x + y = 5$

15 The length, breadth and height of a room are 7m, 6m and 4m respectively.
Find the cost of white washing the walls and the ceiling at the rate of Rs 20 per m^2 .

16 In the figure, l is parallel to m .

Show that $\angle 1 + \angle 2 - \angle 3 = 180^\circ$

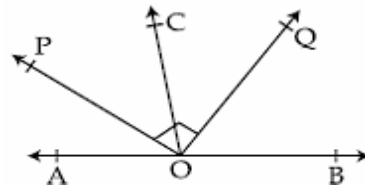


OR

In the figure, OP bisects $\angle AOC$

OQ bisects $\angle BOC$ and $OP \perp OQ$

Show that the points A , O and B are collinear.



17 If $2^a = 3^b = 6^c$ then show that $c = \frac{ab}{a+b}$

OR

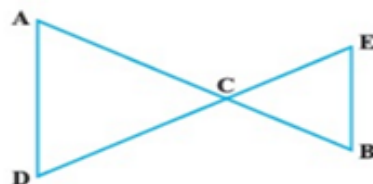
If $y = 2 + 3\sqrt{2}$ then find the value of $y + \frac{14}{y}$

18 Abdullah has a piece of land which is in the shape of a rhombus. He wants his daughter and son to work on the land and produce different crops. He divided the land into two equal parts. If the perimeter of the land is 400 metre and one of the diagonal is 160 metre, how much area each of them will get for their crops ?

19 In the figure we have $AC = DC$ and $CB = CE$.

Show that $AB = DE$.

State the Euclid's axiom used for proving it.



20 A recent survey found that the ages of workers in a factory is distributed as follows.

Age in years	20 - 29	30 - 39	40 - 49	50 - 59	60 and above
No. of workers	38	27	86	46	3

If a person is selected at random, find the probability that the person is

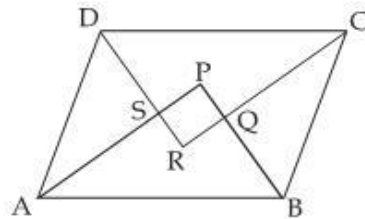
- Under 40 years
- Under 60 but over 39 years
- Having age from 30 to 39 years

21 Show that a median of a triangle divides it into two triangles of equal area.

OR

Show that the line segments joining the mid points of the opposite sides of a quadrilateral bisect each other.

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



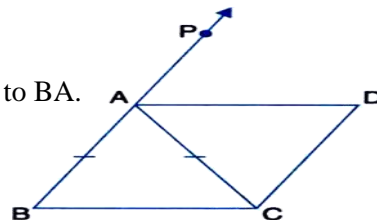
OR

ABC is an isosceles triangle in which $AB = AC$.

AD bisects exterior angle PAC and CD is parallel to BA.

Show that 1) $\angle DAC = \angle BCA$

2) ABCD is a parallelogram.



SECTION D (4 Marks each)

23 Draw the graphs of the linear equations $x + y = 0$ and $x - y = 0$ on the same cartesian plane. What do you observe ?

24 How many square metres of canvas is required for a conical tent whose height is 3.5 m and the radius of the base is 12 m ?

OR

The radius of the base and height of a right circular cone are 7 cm and 24 cm respectively. Find the volume and total surface area of the cone.

25 If the non parallel sides of a trapezium are equal, prove that it is cyclic.

OR

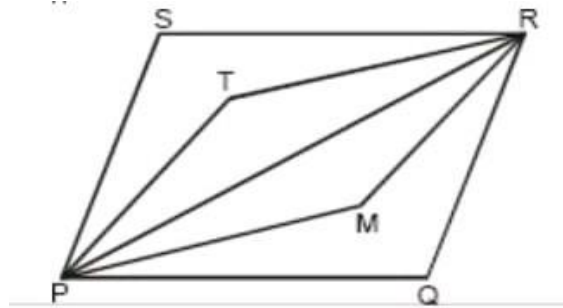
If two equal chords of a circle intersect within a circle, prove that the line segment joining the point of intersection to the centre makes equal angles with the chords.

26 Using factor theorem factorize: $2x^3 - 5x^2 - 19x + 42$

27 If $\frac{\sqrt{2} + \sqrt{3}}{3\sqrt{2} - 2\sqrt{3}} = a - b\sqrt{6}$ find the value of a and b.

28 Construct a right triangle ABC in which $\angle B = 60^\circ$, $\angle C = 90^\circ$ and $AB + BC + CA = 12.8$ cm. Also find length of the hypotenuse AB.

29 In the given figure,
T and M are two points inside a parallelogram PQRS such that $PT = MR$ and $PT \parallel MR$



Then prove that

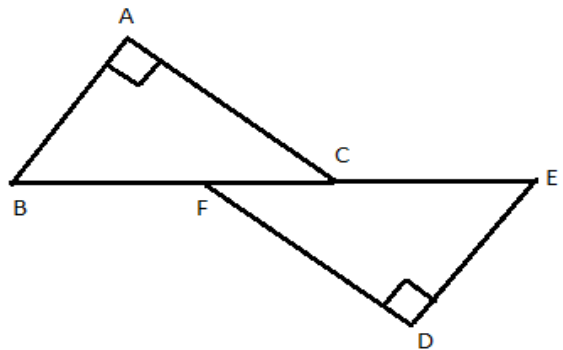
- a) $\triangle PTR \cong \triangle RMP$
- b) $RT \parallel PM$ and $RT = PM$.

OR

In the figure $BA \perp AC$ and $DE \perp DF$

such that $BA = DE$ and $BF = EC$.

Show that $\triangle ABC \cong \triangle DEF$



30 Draw a frequency polygon imposed on the histogram for the following frequency distribution.

Class interval	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80
Frequency	4	6	8	10	12	9	6
