



INDIAN SCHOOL SOHAR
FINAL EXAMINATION (2018-19)
MATHEMATICS

CLASS: IX
DATE: 14.03.19

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. If $a=2$ and $b=3$, find the value of $(\frac{1}{a} + \frac{1}{b})(\frac{1}{a} - \frac{1}{b})$

OR

If m and n are two natural numbers and $m^n = 32$ then find the value of n^m .

2. Find the coefficient of x^2 in $(3x^2-5)(4+4x^2)$.
3. If the perimeter of an equilateral triangle is 60 m, find its area.
4. Of the three angles of a triangle, one is twice the smallest angle and another is three times the smallest angle. Find the smallest angle.
5. How many lines can pass through a single point?
6. A machine generated these 10 codes:
(7A2,AAA,ABC,2B3,3B6,BB2,5AC,222,444,666).

A code is drawn at random to allot an employee. Find the probability that the code have atleast two digits.

OR

A die is thrown once. Find the probability of getting a prime number.

SECTION :B

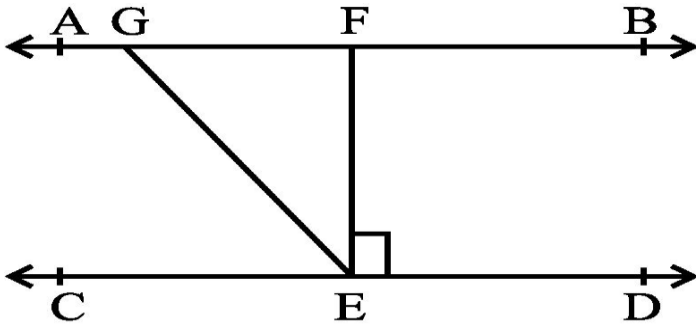
7. Simplify $(x+y+z)^2 - (x+y-z)^2$

OR

If $a+p=2$, prove that $a^3 + 6ap + p^3 - 8 = 0$

8. Prove if two lines intersect each other, then the vertically opposite angles are equal.
9. Two parallel chords of a circle whose diameter is 13 cm are respectively 5 cm and 12cm. Find the distance between them if they lie on opposite sides of centre.

10. In the figure, if $AB \parallel CD$, EF is perpendicular to CD and $\angle GED = 126^\circ$, find $\angle AGE$, $\angle GEF$ and $\angle FGE$.



11. A semi-circular sheet of metal of diameter 28 cm is bent into an open conical cup. Find the depth of the cup.

OR

The radius and height of a cylinder are in the ratio 2:3. If the volume of the cylinder is

1617 cm^3 , find its height. (use $\pi = \frac{22}{7}$)

12. Find the median and mode of following data:

41, 48, 39, 52, 41, 48, 36, 41, 37, 35, 36

SECTION: C

13. Factorise: $1 + a + b + c + ab + bc + ac + abc$

OR

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

14. Express $0.2353535\dots$ in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

15. A field in the form of a parallelogram has sides 60 m and 40 m and one of its diagonals is 80 m long. Find the area of the parallelogram.

OR

The perimeter of a triangular field is 450m and its sides are in the ratio 13:12:5. Find the area of the triangle.

16. Four sides of a quadrilateral are equal. Prove that its angles are bisected by its diagonals.

17. The following is the distribution of weights(in kg) of 50 persons :

Weights(in kg)	50-55	55-60	60-65	65-70	70-75
Number of persons	12	10	9	7	5

Draw a histogram for the above data.

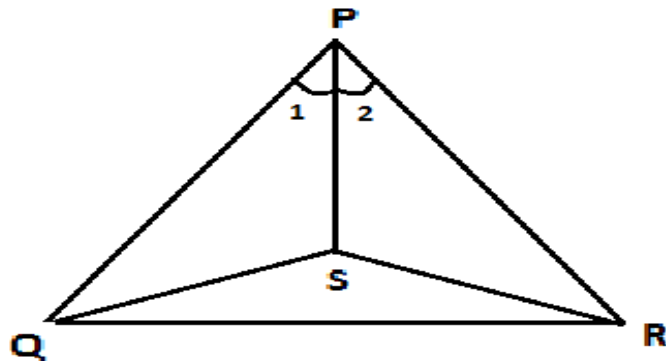
18. A wall of length 10m was to be built across an open ground. The height of the wall is 4m and thickness of the wall is 24 cm. If this wall is to be built up with bricks whose dimensions are 24cm x 10 cm x 8 cm, how many bricks would be required?

19. Prove parallelograms on the same base and between the same parallels are equal in area.

OR

Diagonals AC and BD of a quadrilateral ABCD intersect at O in such a way that $ar(\triangle AOD) = ar(\triangle BOC)$.
Prove that ABCD is a trapezium.

20. In $\triangle PQR$, if $PQ = PR$ and S is any point in the interior of $\triangle PQR$ such that $\angle 1 = \angle 2$ then prove that $\angle SQR = \angle SRQ$

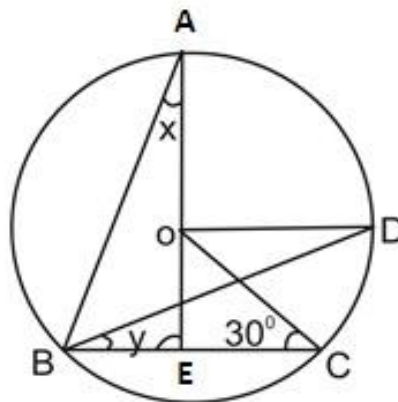


OR

In a $\triangle PQR$, $PR > PQ$ and PS is the bisector of $\angle QPR$. Prove that $\angle PSR > \angle PSQ$.

21. Find three solutions of the linear equation in two variables $2(x+3) = 3(y-1)$.

22. In the figure, O is the centre of circle, $\angle BCO = 30^\circ$ and $\angle AEB = 90^\circ$ and OD is parallel to BC. Find x and y.



SECTION: D

23. Show that the quadrilateral formed by joining the mid-points of the consecutive sides of a rectangle is a rhombus.

OR

If the diagonals of a parallelogram are equal then show that it is a rectangle.

24. Three coins are tossed simultaneously 100 times with the following frequencies of different outcomes:

Outcome	No head	One head	Two head	Three head
Frequency	14	38	36	12

For this random experiment, compute the probability of getting:

- (i) at most one head
 - (ii) One tail
 - (iii) No head
 - (iv) One head
25. A metallic sheet is of the rectangular shape with dimensions 48cm X 36cm. From each one of its corners, a square of 8cm is cut-off. An open box is made of the remaining sheet. Find the volume of the box.

OR

A hemispherical bowl of internal diameter 36cm contains a liquid. This liquid is to be filled in cylindrical bottles of radius 3cm and height 6cm. How many bottles are required to empty the bowl?.

26. Construct a triangle ABC in which $BC=6\text{cm}$, $\angle B = 60^\circ$ and $AC - AB = 2\text{cm}$.
27. Draw the graphs of the equations $3x - 2y = 12$ and $x + y - 3 = 0$ on the same coordinate axes.
28. Factorise: $x^3 - 6x^2 + 11x - 6$.

OR

The polynomial $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$ when divided by $(x - 1)$ and $(x + 1)$ leaves the remainders 5 and 19 respectively. Find the values of a and b.

29. Locate $\sqrt{7.4}$ on the number line and justify it.
30. Points A (5, 3), B (-2, 3) and D (5, -4) are three vertices of a square ABCD. Plot these points on a graph paper and hence find
- (i) the coordinates of the vertex C.
 - (ii) area of square ABCD

***** THE END *****