UNIVERSAL EDUCATION CENTRE
JAYANT SHARMA (94145-37474)
MATHS 9TH

**Time: 3hours**   **Max. Marks 90**

General Instructions

    1. All questions are compulsory.

    2. Draw neat labeled diagram wherever necessary to explain your answer.

    3. Q.No. 1 to 8 are of objective type questions, carrying 1 mark each.

    4. Q.No.9 to 14 are of short answer type questions, carrying 2 marks each.

    5. Q. No. 15 to 24 carry 3 marks each. Q. No. 25 to 34 carry 4 marks each.

1. Abscissa of all the points on the x-axis is

    (A) 0   (B) 1   (C) 2   (D) any number

2. In Δ ABC, BC = AB and $\angle$B = 80°. Then $\angle$A is equal to

    (A) 80°   (B) 40°   (C) 50°   (D) 100°

3. AD is a diameter of a circle and AB is a chord. If AD = 34 cm, AB = 30 cm, the distance of AB from the centre of the circle is :

    (A) 17 cm   (B) 15 cm   (C) 4 cm   (D) 8 cm

4. The equation 2x + 5y = 7 has a unique solution, if x, y are :

    (A) Natural numbers   (B) Positive real numbers   (C) Real numbers   (D) Rational numbers

5. The marks obtained by 17 students in a mathematics test (out of 100) are given below :

    91, 82, 100, 100, 96, 65, 82, 76, 79, 90, 46, 64, 72, 68, 66, 48, 49.   The range of the data is :

    (A) 46   (B) 54   (C) 90   (D) 100

6. In a cylinder, radius is doubled and height is halved, curved surface area will be

    (A) halved   (B) doubled   (C) same   (D) four times

7. Two coins are tossed 1000 times and the outcomes are recorded as below :

Number of heads	2	1	0
Frequency	200	550	250

    Based on this information, the probability for at most one head is

    (A)/15   (B)1/4   (C)4/5   (D)3/4

8. The number of planks of dimensions (4 m × 50 cm × 20 cm) that can be stored in a pit which is 16 m long, 12m wide and 4 m deep is

    (A) 1900   (B) 1920   (C) 1800   (D) 1840

9. AD and BC are equal perpendiculars to a line segment AB (See the given figure). Show that CD bisects AB.
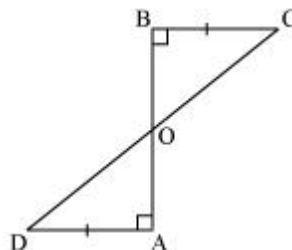
10. Find the volume of the right circular cone with (i) radius 6 cm, height 7 cm (ii) radius 3.5 cm, height 12 cm

11. The heights of 50 students, measured to the nearest centimeters, have been found to be as follows:

161	150	154	165	168	161	154	162	150	151
162	164	171	165	158	154	156	172	160	170
153	159	161	170	162	165	166	168	165	164
154	152	153	156	158	162	160	161	173	166
161	159	162	167	168	159	158	153	154	159

(i) Represent the data given above by a grouped frequency distribution table, taking the class intervals as 160 - 165, 165 170, etc.
(ii) What can you conclude bout their heights from the table?

12.

Blood group	Number of students
A	9
B	6
AB	3
O	12
Total	30

The above frequency distribution table represents the blood groups of 30 students of a class. Use this table to determine the probability that a student of this class, selected at random, has blood group AB.

13. Two circles intersect at two points B and C. Through B, two line segments ABD and PBQ are drawn to intersect the circles at A, D and P, Q respectively (see the given figure). Prove that $\angle ACP = \angle QCD$.
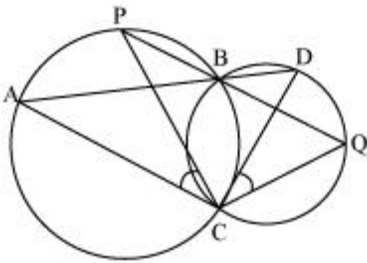
14. Three coins were tossed 30 times simultaneously. Each time the number of heads occurring was noted down as follows:

| 0	1	2	2	1	2	3	1	3	0
1	3	1	1	2	2	0	1	2	1
3	0	0	1	1	2	3	2	2	0

Prepare a frequency distribution table for the data given above.

15. Give the equations of two lines passing through (2, 14). How many more such lines are there, and why?
16. The angles of quadrilateral are in the ratio 3: 5: 9: 13. Find all the angles of the quadrilateral.
17. Construct a triangle XYZ in which $\angle Y = 30°$, $\angle Z = 90°$ and XY + YZ + ZX = 11 cm.
18. A conical pit of top diameter 3.5 m is 12 m deep. What is its capacity in kilolitres?
19. Given below are the seats won by different political parties in the polling outcome of a state assembly elections:

Political Party	A	B	C	D	E	F
Seats Won	75	55	37	29	10	37

(i) Draw a bar graph to represent the polling results.
(ii) Which political party won the maximum number of seats?
20. If the work done by a body on application of a constant force is directly proportional to the distance travelled by the body, express this in the form of an equation in two variables and draw the graph of the same by taking the constant force as 5 units. Also read from the graph the work done when the distance travelled by the body is
(i) 2 units   (ii) 0 units
21. Find the volume of a sphere whose radius is   (i) 7 cm   (ii) 0.63 m
22. In parallelogram ABCD, two points P and Q are taken on diagonal BD such that DP = BQ (see the given figure). Show that: (i) ∆APD ≅ ∆CQB (ii) AP = CQ   (iii) ∆AQB ≅ ∆CPD   (iv) AQ = CP   (v) APCQ is a parallelogram
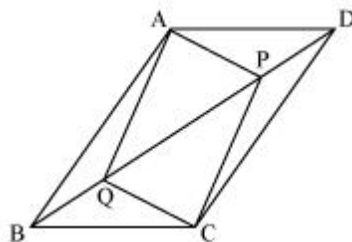
23. ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD (See the given figure). Show that   (i) ∆APB ≅ ∆CQD   (ii) AP = CQ

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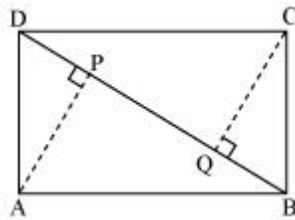
24. The length of 40 leaves of a plant are measured correct to one millimetre, and the obtained data is represented in the following table:

Length (in mm)	Number of leaves
118 – 126	3
127 – 135	5
136 – 144	9
145 – 153	12
154 – 162	5
163 – 171	4
172 – 180	2

    (i) Draw a histogram to represent the given data.

    (ii) Is there any other suitable graphical representation for the same data?

    (iii) Is it correct to conclude that the maximum number of leaves are 153 mm long? Why?

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

26. Construct an equilateral triangle, given its side and justify the construction

27. Give the geometric representations of $2x + 9 = 0$ as an equation   (1) in one variable (2) in two variables

28. The diameter of a metallic ball is 4.2 cm. What is the mass of the ball, if the density of the metal is 8.9 g per cm3?

29. Prove that the circle drawn with any side of a rhombus as diameter passes through the point of intersection of its diagonals.

30. In a parallelogram ABCD, E and F are the mid-points of sides AB and CD respectively (see the given figure). Show that the line segments AF and EC trisect the diagonal BD.
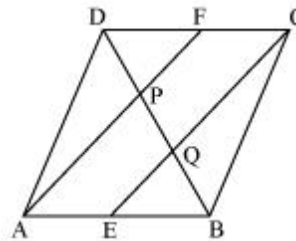
31. In a mathematics test given to 15 students, the following marks (out of 100) are recorded:

    41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60

    Find the mean, median and mode of this data.

32. AC and BD are chords of a circle which bisect each other. Prove that (i) AC and BD are diameters; (ii) ABCD is a rectangle.

33. Twenty seven solid iron spheres, each of radius r and surface area S are melted to form a sphere with surface area S'. Find the   (i) radius r' of the new sphere,   (ii) ratio of S and S'.

34. Find the mode of 14, 25, 14, 28, 18, 17, 18, 14, 23, 22, 14, 18.

ALL THE BEST