

SUMMATIVE ASSESSMENT – II

MATHEMATICS Class – IX

Time allowed : 3 hours

Maximum Marks : 90

General Instructions :

- (i) All questions are compulsory.
- (ii) The question paper consists of 31 questions divided into five sections A, B, C, D and E. Section-A comprises of 4 questions of 1 mark each, Section-B comprises of 6 questions of 2 marks each, Section-C comprises of 8 questions of 3 marks each and Section-D comprises of 10 questions of 4 marks each. Section E comprises of two questions of 3 marks each and 1 question of 4 marks from Open Text theme.
- (iii) There is no overall choice.
- (iv) Use of calculator is not permitted.

SECTION-A

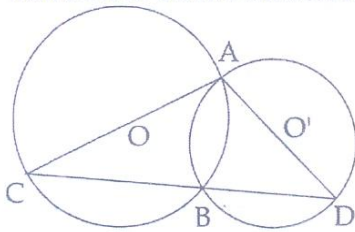
Question numbers 1 to 4 carry one mark each.

- 1 Square ABCD and $\triangle APB$ lie on same base AB. If area of square is 16 cm^2 , find ar ($\triangle ABP$), where P is a point on side CD. 1
- 2 Find the volume of a cone whose radius is 3.5 cm and height is 5 cm. 1
- 3 Find the mean of first 5 multiples of 3. 1
- 4 In a frequency distribution, the mid point of a class - interval is 20 and the width of the class is 8. Find the lower limit of the class - interval. 1

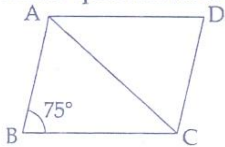
SECTION-B

Question numbers 5 to 10 carry two marks each.

- 5 In the given figure, two circles with centres O and O' intersect at A and B. AC and AD are respectively the diameters of the two circles. Prove that the points C, B and D are collinear. 2



- 6 Draw any acute angle. Name as $\angle XYZ$. Bisect it using compass. 2
- 7 In the quadrilateral ABCD of the given figure, $AB \parallel DC$ and $AB = DC$. If $\angle B = 75^\circ$, find the measures of other angles. 2



- 8 The total surface area of a solid right circular cylinder is 231 cm^2 . Its curved surface area is two thirds of the total surface area. Find the radius and height of the cylinder. 2
- 9 The blood groups of some students of Class IX were surveyed and recorded as below : 2

Blood group	A	B	AB	O
No. of students	12	9	7	6

If a student is chosen at random, find the probability that he/she has blood group A or B.

- 10 Following is the data about the months of birth of 40 students in class IX : 2

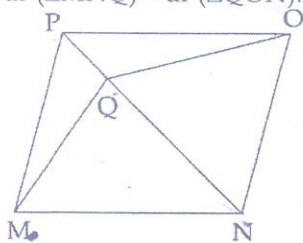
Feb, Jan, July, June, March, Feb, Feb, Feb, Nov, Jan, Jan, Dec, May, June, June, July, June, Nov, Dec, June, July, June, August, Dec, June, March, July, July, June, Dec, Sep, March, Jan, Dec, June, Dec, Sep, March, Jan, Nov.

One student is chosen at random. Find the probability that the student chosen :

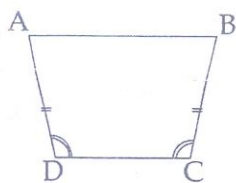
- (a) Was not born in the month of June.

Question numbers 11 to 18 carry three marks each.

- 11 The mean monthly salary of 10 members of a group is Rs. 1,445, one more member whose monthly salary is Rs. 1,500 has joined the group. Find the mean monthly salary of 11 members of the group. 3
- 12 The following number of goals were scored by a team in a series of 10 matches : 2, 3, 4, 5, 0, 1, 3, 3, 4, 3
Find the mean, median and mode of these scores. 3
- 13 MNOP is a parallelogram. Q is any point on diagonal PN. Show that $ar(\triangle MNQ) = ar(\triangle QON)$. 3



- 14 AB and CD are two parallel chords of a circle lying on the opposite sides of the centre such that $AB=24$ cm and $CD=10$ cm. If the chord AB is at a distance of 5 cm from the centre, find the distance of chord CD from the centre of the circle. 3
- 15 Draw an angle of 70° with the help of protractor. Now construct angles of (i) 35° (ii) 140° , using compass. 3
- 16 $\triangle XYZ$ is right angled at Y. P and Q are mid-points of sides XY and XZ respectively. If $XY=9$ cm and $PQ=6$ cm, then find the length of XZ. 3
- 17 In the given figure, ABCD is a quadrilateral in which $AD=BC$ and $\angle ADC=\angle BCD$. Show that A, B, C and D are concyclic. 3



- 18 How many square metres of canvas is required for a conical tent, whose height is 3.5 m the radius of whose base is 12 m. 3

SECTION-D

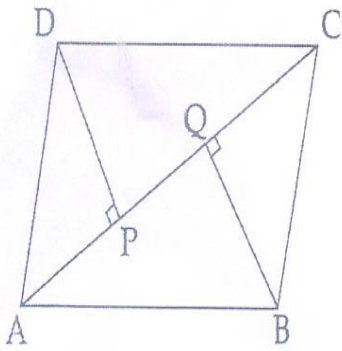
Question numbers 19 to 28 carry four marks each.

- 19 The following are the scores of two groups of class IV students in a test of reading ability. 4

Scores	Group A	Group B
50 - 52	4	2
47 - 49	10	3
44 - 46	15	4
41 - 43	18	8
38 - 40	20	12
35 - 37	12	17
32 - 34	13	22
Total	92	68

Construct a frequency polygon for each of these two groups on the same axes.

- 20 In $\triangle PQR$, X, Y and Z are mid-points of sides QR, PR and PQ respectively. Show that $ar(ZYXQ) = \frac{1}{2} ar(\triangle PQR)$. 4
- 21 A pair of opposite sides of a cyclic quadrilateral is equal. Prove that the other pair is parallel and its diagonals are also equal. 4
- 22 Construct a $\triangle STU$, in which $\angle T=150^\circ$, $TU=3$ cm and $ST+US=8$ cm. 4
- 23 In the figure, ABCD is a parallelogram in which $DP \perp AC$ and $BQ \perp AC$. Prove that : 4
- (i) $\triangle AQB \cong \triangle CPD$
- (ii) $\triangle APD \cong \triangle CQB$



- 24 Shikha wants to serve kheer to her two children and their friend Salma. She has three bowls. 4
 First one is a cubical vessel with length of the edge measuring $2r$ units.
 Second one is cylindrical vessel with height $2r/3$ units and radius of r units.
 Third one is a hemispherical bowl with radius r units.
- (a) Find the capacity of each bowl.
 (b) She serves Salma in the cubical bowl. What values does the act of her indicate ?
- 25 Calculate the curved surface area and total surface area of a cone, whose radius of the base and height are in the ratio $5 : 12$ and its volume is 2512 cu.cm. ($\pi = 3.14$) 4
- 26 The ratio of dimensions of a cuboidal box is $2 : 3 : 4$. The difference between the cost of wrapping the box at the rate of Rs. 4 per square metre and Rs. 4.50 per square metre is Rs. 416. Find the dimensions of the cuboidal box. 4
- 27 The difference between outside and inside curved surface areas of a cylindrical metallic pipe 28 cm long is 88 cm^2 . If the pipe is made of 198 cm^3 of metal, find the thickness of the pipe. 4
- 28 A tyre manufacturing company kept a record of the distance covered before a tyre was replaced. The record is as shown below : 4

Distance (in km)	More than 1500	1100-1500	700-1100	300-700	Less than 300
No. of tyres	250	150	120	200	80.

If you buy a tyre of this company, what is the probability that :

- (i) it will need a replacement before it has covered 700 km ?
 (ii) it will last more than 1100 km ?
 (iii) it will need to be replaced between 300 km to 1500 km ?
 (iv) it will need to be replaced, after 1500 km ?

SECTION-E
(Open Text)

Sample questions

1. Read the statement of Oonkar and write the relation between the lines joining the mid-point of two sides with the third side of the triangle. State the theorem to justify your answer. Why are the areas of the two fields is in the ratio of 1:3 exactly. [3marks]

Oonkar	My farm was a big three sided field. One side was common with Dorjee's and Jeevan's field and the other was common with Dhoondoop and Uttapa's field. I used to divide the field along the rope joining the mid points of these sides to obtain two parts whose areas were in the ratio 1:3
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2. Listening to Dhoondoop's Statement, Roshni concluded that his farm might be a Rhombus or a kite in shape. Do you agree with her opinion? Justify.

Give other properties of a Rhombus. What is the shape of quadrilateral formed by joining the mid- points of the adjacent sides of a Rhombus. [4marks]

Dhondoop	One side of my farm was along the boundary but the lengths of the ropes joining opposite corners were not equal. But, the ropes at the point of intersection made exact "L" shape.
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3. Listening to Laxminarayan's Statement, Roshni concluded that his farm might be a square in shape. Do you agree with her opinion? Justify.

Give other properties of square. State any three properties of a square. [3 marks]

Laxminarayan	We are five brothers working on the same field and have a big field with <u>equal sides</u> . I used to divide the field in five parts by joining the mid points of the adjacent sides of the field. The <u>lengths of ropes</u> required to join the <u>midpoints of the adjacent sides</u> were also equal.
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