CHINMAYA VIDYALAYA, TAYLORS ROAD

SUMMATIVE ASSESSMENT - II

2016-17

MATHEMATICS

Time : 3 hrs **Class IX** **Date: 15/03/17**

Max Marks 90

This question paper consists of 31 questions.
All Questions are compulsory.
Please note : Q 1 to 4 are 1 mark each; Q 5 to 10 are 2 marks each;
Q 11 to 19 are 3 marks each and Q 20 to 28 are 4 marks each.
Q 29, 30 and 31 belong to OTBA section (3 + 3 + 4 marks)

Section A (1 x 4 = 4 marks)

1) Find the ratio of new curved surface area of a cylinder when radius is doubled and height is halved to the original.

2) In fig (1), ABCD is a parallelogram

If area (AOD) = 12 cm^2, then find area (ABCD)

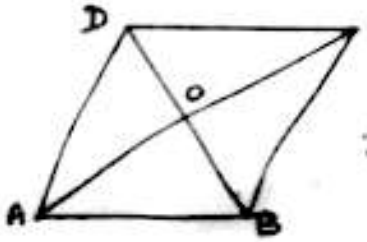


fig (1)

3) Cost of a Book exceeds twice the cost of Pen by Rs 10. Write this statement as a linear equation in 2 variables where Cost of Book is 'x' and Cost of Pen is 'y'

4) In fig.2 $\angle CAO = 30°$ and $\angle ACB = 70°$.

Find $\angle BOC$

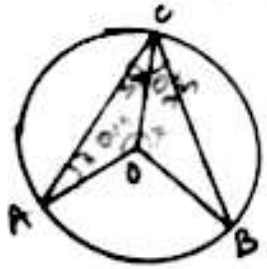


fig (2)

Section B (2 x 6 = 12 marks)

5) Find the mean of first seven prime numbers.

6) In a survey of 200 men, it was found that along with breakfast, 65 men take coffee, 35 take tea, 25 drink juice and the rest don't take any beverage in the morning. Find the probability that a man selected at random

(a) takes coffee (b) doesn't take tea

7) Fig 3 shows a trapezium ABCD where AB is parallel to CD

Show that ar (ΔAOD) = ar (ΔBOC)

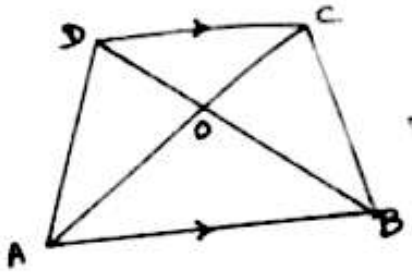


fig 3

8) In fig. 4, O is the centre of the circle OL = 4 cm, AB = 6 cm, OM = 3 cm

Find CD.

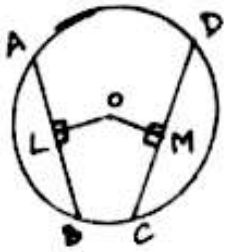


fig (4)

9) What is the radius of a cone made from a quadrant of a circle of radius 28 cm?

10) Solve $\frac{x}{3} + 2 - 2x - 3$ and represent it Geometrically

(a) on a Number line (b) on a Cartesian plane

Section C

(3 x 9 = 27 marks)

11) In fig. 5 the vertex of ABC is joined to a point D on BC.

E is the mid-point of AD.

Prove that ar (ΔBEC) = $\frac{1}{2}$ ar (ΔABC)

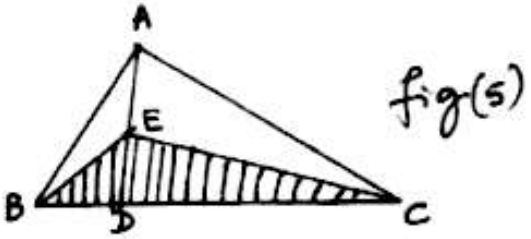


fig (5)

12) Construct a Δ ABC, where BC = 8 cm. ∠ B = 45°, AB AC = 3.5 cm.

13) The radius and height of a right circular cone are in the ratio 5 : 12. If its volume is 314 cm^3, find slant height and curved surface area (use Π = 3 14)

14) A hemispherical bowl of internal and external diameter 6 cm and 10 cm is melted and formed into a solid cylinder of diameter 14 cm. Find the height of the cylinder.

15) 20 children were asked about the number of hours they watched TV programmes in the previous week. The results were found as follows:

1	6	2	3	5	12	5	8	4	8
10	3	4	12	2	8	15	1	17	6

Make a grouped frequency table for this data taking class width 5 and one of the class intervals as 5 – 10. How many children watched television for more than 10 hours a week?

16) The heights of children in a class is recorded as given in the Table below

Height in inches	60	61	62	63	64
No. of Children	2	3	5	8	7

Find the probability, that a student selected at random has a height

(a) More than 62 inches

(b) less than 60 inches

(c) more than 60 and less than 63

17) The Auto rickshaw fare in a city is charged Rs. 15 for the first km and Rs 5 per km for subsequent distance covered. Write the linear equation to express the above statement. Draw the graph of the linear equation.

18) Prove that the angle subtended by an arc at the centre of a circle is twice the angle subtended by it at any point on the remaining part of the circle.

19) In the figure 6, O is the centre of a circle, QR is its chord and P is any point on the circle. If $\angle QPR = x$ and $\angle OQR = y$, find $x + y$

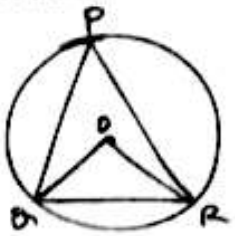
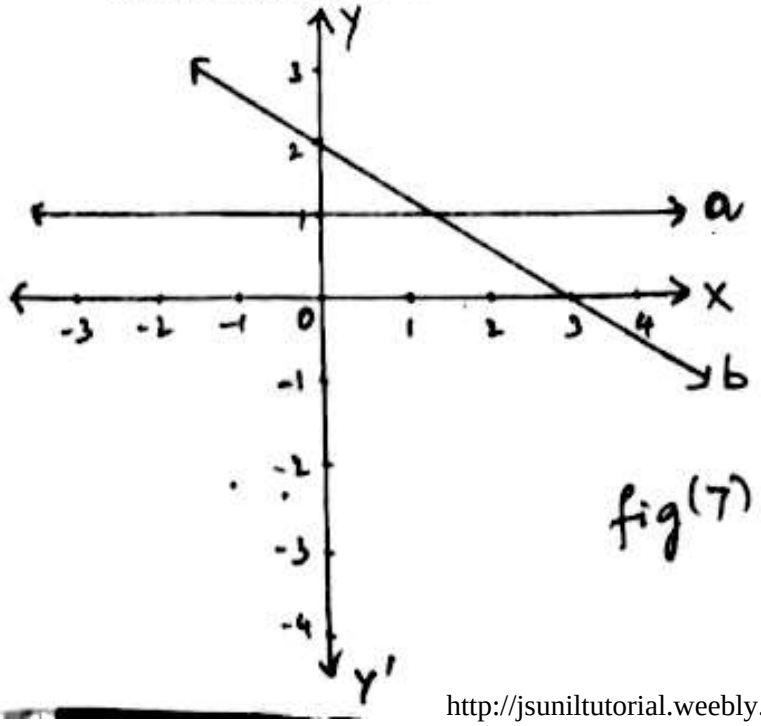


fig (6)

Section D **(4 x 9 = 36 marks)**

20) Construct a triangle XYZ in which $\angle Y = 60^\circ$, $\angle Z = 45^\circ$ and XY + YZ + ZX = 12 cm

21) A student wrote the equation of line 'b' drawn in the following graph(figure 7) as $2x + 3y = 6$. Determine if it was correct. Write the equation of line 'a' Write the co-ordinates of the points of intersection of the 2 lines as shown in the graph. Also, find the area enclosed between these lines and Y-axis.



fig(7)

22) A cylindrical tent has a conical top with dimension, radius = 8 m and height of conical portion of tent is 6 m. If total height of tent is 20 m, Calculate the total cost of the canvas required to make the tent, if the cost of canvas is Rs.50/- per sq.m.

23) At a Community Fair, a stall-keeper keeps Orange Juice in a large cuboidal vessel of cubical base of side 15 cm filled up to a height of 22 cms. The Juice is filled in small cylindrical glasses of radius 3 cm, height 7 cm and is distributed to visitors, free of cost. If the entire quantity of Juice is distributed, find the number of visitors he serves. What social value you observe from the act of the stall-keeper.

24) Draw histogram and frequency polygon for the following data:

Marks	10-15	15-20	20-25	25-30	30-35	35-40	40-45
No.of candidates	7	9	8	5	12	12	6

25) The weekly pocket expenses of students are given below:

Pocket Expenses, Rs.	45	50	60	75	80	95	100
No. of Students	10	8	6	12	3	5	6

Find the modal and mean weekly pocket expenses.

26) ABCE is a trapezium (fig 8) where AB is parallel to CE. OD is perpendicular to AC. Prove that BC = 2 (OD)
If $\angle ABC = 80°$,
find $\angle AEC$ and $\angle ECA$

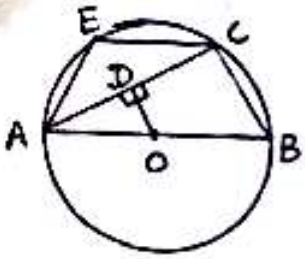


fig (8)

27) O, B, D and C are the vertices of a rhombus and A, B, D and C lie on the circle with centre O (fig 9).
Find $\angle BOC$, $\angle OBC$, $\angle BAC$ and $\angle BDC$

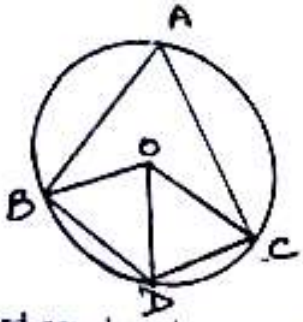


fig (9)

28) AB is a diameter of a circle (fig 10). CD is a chord equal to the radius of the circle. AC and BD when extended intersect at point E.
Prove that $\angle AEB = 60°$

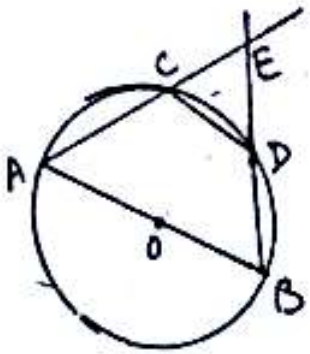


fig (10)

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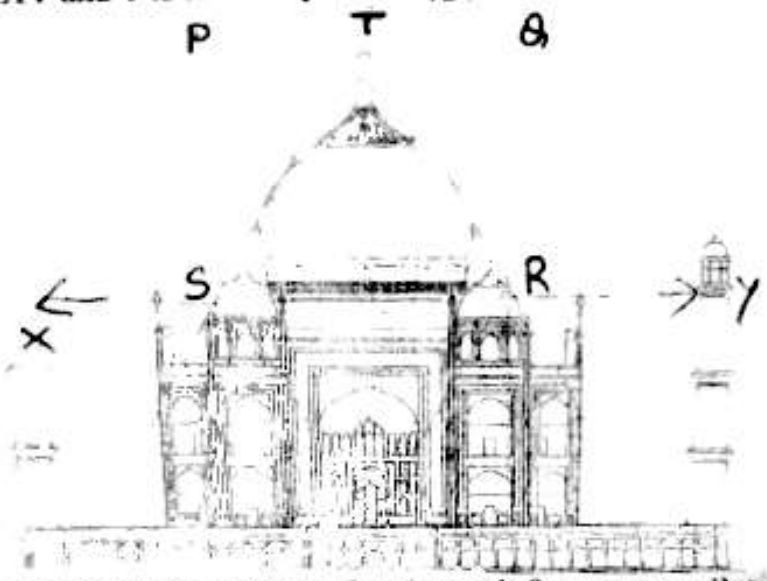
MATHEMATICS (041) CLASS – IX
THEME 2; 'Quadrilaterals in Architecture' WAH TAJ!

29. Points P,Q and R are the mid-points of the sides of triangle ABC. If the Perimeter of triangle ABC is equal to 28 cm. Find the perimeter of triangle PQR. State the theorem related to this problem.
(3marks)

30. In the given figure P and Q are two points which lie on the same side of line XY. PS⊥XY, QR ⊥XY and T is the mid-point of line segment PQ. Prove that TS=TR.
(3 marks)



31. *Triangle ABC* is drawn from the top of main tomb forms an equilateral triangle with base BC. Minerates D and F are mid-points of AB and AC respectively E is the mid-point of BC. Prove that Triangle ABC is divided into four congruent triangles
(4 marks)