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**REVISION PAPER 2017-18**

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**Class IX**

**M. Marks: 80**

**Subject: Mathematics**

**Duration: 3hrs.**

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General Instructions:-

This question paper contains 30 Questions and 4 printed sides.

Section – A comprises of 6 questions of 1 mark each.

Section – B comprises of 6 questions of 2 marks each.

Section – C comprises of 10 questions of 3 marks each.

Section – D comprises of 8 questions of 4 marks each.

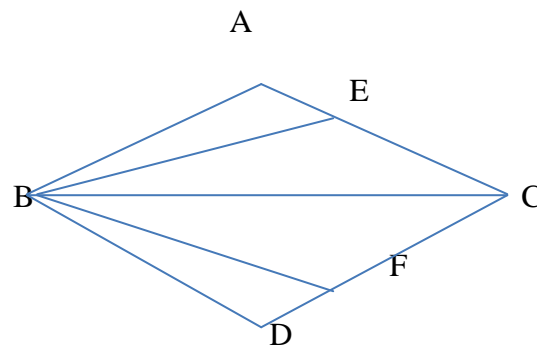
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SECTION A

1. Express the rational number  $.2\overline{85}$  in the form  $p/q$ , where  $p$  and  $q$  are integers and  $q \neq 0$ .
2. Using appropriate identity factorize  $4x^2 - \frac{y^2}{9}$ .
3. Two angles measure  $(55^\circ + 3a)$  and  $(115^\circ - 2a)$ . If each is supplementary of the other, then calculate the value of  $a$ .
4. The area of a parallelogram of altitude 12cm is  $108 \text{ cm}^2$ . Find the base of the parallelogram.
5. Write the co-ordinates of points on axes which are at distances 2 units from the origin.
6. Following observation have been written in ascending order. If median of the data is 22, then find the value of  $x$  from the following.

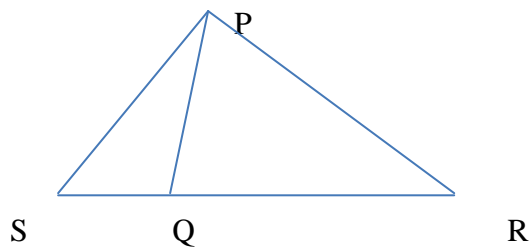
SECTION B

7.



In the given figure , we have  $\angle ABE = \angle DBF$ ,  $\angle EBC = \angle FBC$ . Using Euclid Geometry prove that  $\angle ABC = \angle DBC$ .

8. In the given figure  $PQ = PR$ . Show that  $PS > PQ$ .



9. Two parallel lines  $l$  and  $m$  are intersected by a transversal  $x$ . Show that the quadrilateral formed by bisectors of interior angles is a rectangle.  
 10. Find the area of a rhombus whose perimeter is 200m and one of the diagonal is 80 m.  
 11. Three coins are tossed simultaneously with the following frequencies of different outcomes.

Number of tails	0	1	2	3
Frequency	25	30	32	63

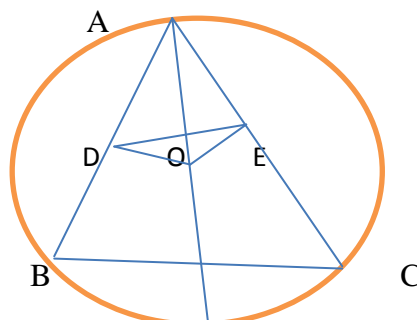
Compute the probability of getting i) atmost 2 tails ii)at least one tail

12. Prove that  $\left(\frac{x^{a^2}}{x^{b^2}}\right)^{1/a+b} \times \left(\frac{x^{b^2}}{x^{c^2}}\right)^{1/b+c} \times \left(\frac{x^{c^2}}{x^{a^2}}\right)^{1/a+c} = 1$

### SECTION C

13. Represent  $\sqrt{6.5}$  on the number line.  
 14. Simplify:  

$$\frac{(a^2 - b^2)^3 + (b^2 - c^2)^3 + (c^2 - a^2)^3}{(a - b)^3 + (b - c)^3 + (c - a)^3}$$
  
 15. Determine the point on the graph of the linear equation  $x+y = 6$ , whose ordinate is 2 times its abscissa.  
 16. Plot the points on a graph paper and join them in order.  
 $(-5,3), (-3,-2), (3,-2), (1,3)$ .  
 Name the figure so obtained and identify it.  
 17. Find the area of isosceles triangle whose one side is 10 cm greater than its equal side and the perimeter is 100 cm. ( take  $\sqrt{5} = 2.23$ )  
 18. In the given figure ,  $AB$  and  $AC$  are two chords of a circle with center  $O$ . If  $OD$  and  $OE$  are perpendiculars on  $AB$  and  $AC$  respectively.  $AO$  bisects angle  $DAE$ . Prove that  $\triangle ADE$  is an isosceles triangle and  $\angle ABC = \angle ACB$ .



19. Construct a  $\triangle ABC$  in which  $BC = 5$  cm,  $\angle B = 75^\circ$ ,  $AC - AB = 2$  cm.
20. The radius and height of a right circular cone are in the ratio 5:12. If its volume is  $314$   $\text{cm}^3$ , find its slant height and curved surface area. ( $\pi = 3.14$ )
21. An insurance company selected 2000 drivers at random in a particular city to find a relationship between age and accident. The data obtained are given in the following table.

Age of drivers	Accidents				
In years	0	1	2	3	Over 3
18- 29	440	160	110	61	35
30- 50	505	125	60	22	18
Above 50	360	45	35	15	9

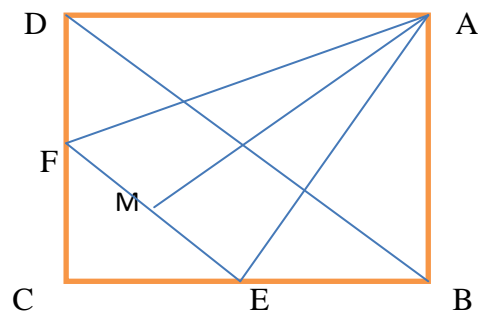
Find the probabilities of the following events for a driver chosen at random from the city

- being 18-29 years of age and having exactly 2 accidents in one year.
  - being 30-50 years of age and having one or more accidents in one year.
  - having no accident in one year.
22. In  $\triangle ABC$ , E is the mid point of median AD. Show that  $\text{ar}(\triangle BED) = \frac{1}{4} \text{ar}(\triangle ABC)$

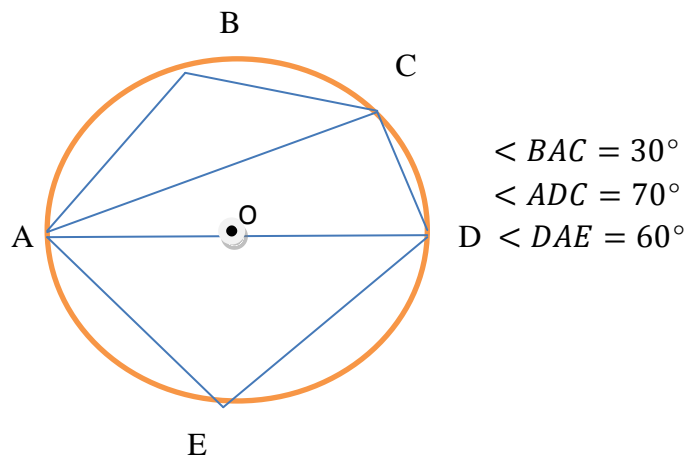
#### SECTION D

23. Prove that the angle subtended by an arc of a circle at the center is double the angle subtended by it at any point on the remaining part of the circle.
24. The auto rickshaw fare in a city is charged Rs 10 for first km and Rs 4 /km for subsequent distance covered. Write the linear equation to express the above statement. Draw the graph of the linear equation. From the graph, find the total fare for a total distance covered 2 km.
25. Factorize :  $x^3 - 12x^2 + 47x - 60$ .
26. The capacity of a closed cylindrical vessel of height 1 m is 15.4 litres. How much  $\text{m}^2$  of metal sheet is needed to make it ?
27. In the figure, ABCD is a square. EF is parallel to diagonal BD and  $EM = FM$ . Prove that

- $DF = BE$
- AM bisects  $\angle BAD$



28. Find the angles  $\angle ABC$  ,  $\angle ADE$  ,  $\angle BCD$  in the adjacent figure, where O is the center of the circle.



29. Draw histogram and frequency polygon to represent the following grouped frequency .

Age in years	5-9	10-14	15-19	20-24	25-29	30-34	35-39
No of persons	10	28	32	48	50	35	12

30. Find the values of a and b if

$$\frac{\sqrt{2}+1}{\sqrt{2}-1} - \frac{\sqrt{2}-1}{\sqrt{2}+1} = a + \sqrt{2}b.$$