MATHS

BOOKS - KUMAR PRAKASHAN

QUESTION PAPER-2

Section A

1. What will be the graph for the equation $6x - 2x^2 + 7$?

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2. State the roots of quadratic equation $ax^2 + bx + c = 0$ if $b^2 - 4ac > 0$

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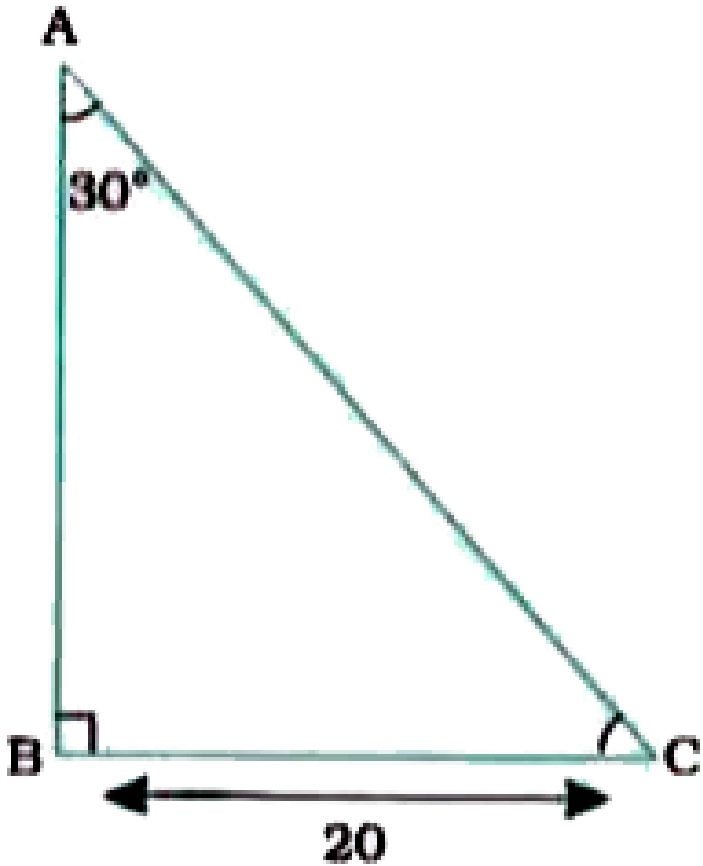**3.** 2k+1, 13, 5k-3 are three consecutive terms of an A.P, then k=

A. 9

B. 4

C. 17

D. 13

Answer: B

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4. For the given figure BC=20cm and $\angle A = 30^0$ then AB=.......cm and

AC=.....cm.

A. $20\sqrt{3}$, 40

B. 40, $20\sqrt{3}$

C. $\dfrac{20}{\sqrt{3}}$, 40

D. 40, $\dfrac{20}{\sqrt{3}}$

Answer: A

5. Mode -Mean=....(Median-Mean)

A. 2

B. 4

C. 3

D. 6

Answer: C

6. From the given rational numbers ......will have non-terminating recurring decimal.

A. $\dfrac{17}{32}$

B. $\dfrac{17}{248}$

C. $\dfrac{17}{160}$

D. $\dfrac{17}{64}$

Answer: A::B::D

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Section A Fill Up The Blanks

1. LCM of 23, 35, 46 is.....

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2. If $13x + 19y = 90$ and $19x + 13y = 70$, then $x + y = \ldots\ldots$

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3. The present age of father is x years and the total age of his two sons is y years, then the sum of their ages 5 years hence will be ..... years.

Section A Short

1. If A $\left(\dfrac{m}{2}, 5\right)$ is the midpoint of the line segment joining Q(-6, 7) and R(-2, 3), then find the value of m.

2. If $\sin A = \dfrac{1}{3}$ then find the value of $9\cot^2 A + 9$

3. Find the area of a square inscribed in a circle of radius 8 cm.

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4. If the ratio of the volume of two spheres is 64:27, then find the ratio of their surface area.

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Section A True False

1. The perpendicular at a point of contact to the tangent to a circle passes through the centre.

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2. If P (A) is the probability for any event A. then $P(A) < P(\overline{A})$.

3. The probability of having 53 Mondays in the year 2020 is $\frac{3}{7}$.

Section B

1.

Marks scored	20	25	28	29	33	38	42	43
No. of students	6	20	24	28	15	4	2	1

(i) Find the probability of the students getting more than 40 marks.

(2) Find the probability of the students getting less than 30 marks.

2. Prove that $\sqrt{7}$ is an irrational number.

3. The sum of the squares of two consecutive odd positive integers is 650. Find the number.

4. Solve the pairs of equation: $\dfrac{2}{\sqrt{x}} + \dfrac{3}{\sqrt{y}} = 2, \dfrac{4}{\sqrt{x}} - \dfrac{9}{\sqrt{y}} = -1$

5. Find the value of k for the following equations having infinetely many solution 3x-(k+1)y=20 and (k+2) x-10y=40.

6. Prove : $\dfrac{2\sin\theta\cos\theta - \cos\theta}{1 - \sin\theta + \sin^2\theta - \cos^2\theta} = \cot\theta$

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7. Evalutate :

$4\left(\sin^4 30° + \cos^4 60°\right) - \dfrac{2}{3}\left(\sin^2 60° - \cos^2 45°\right) + \dfrac{1}{2}\tan^2 60°$

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8. Evaluate :

$$\dfrac{\left(\sec^2 27° - \cot^2 63°\right) + \left(\sin^2 52° + \sin^2 38°\right)}{\left(\cos ec^2 34° - \tan^2 56°\right) + \tan 10°.\tan 20°.\tan 30°.\tan 70°.\tan 80°}$$

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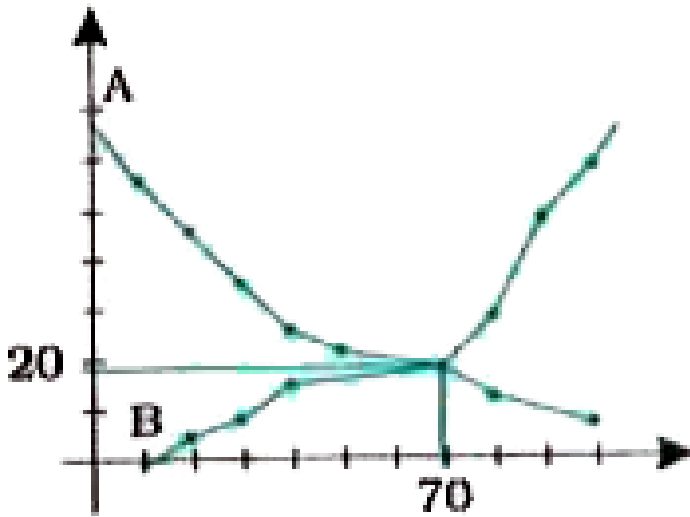**9.** Two cocentric circles are of radii 7cm and 25cm. Find the length of the chord of the larger circle which touches the smaller circle.

10. Prove that the parallelogram circumscribing a circle is a rhombus.
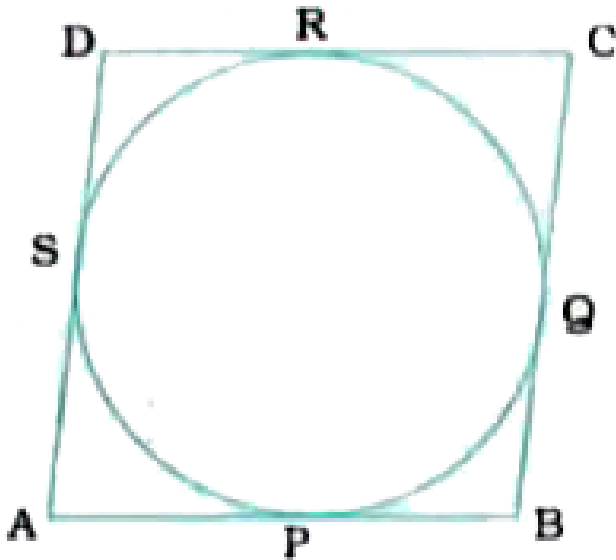
11.

(i) Find the median of the data from the above graph.

(ii) State the type for curve A and curve B.

12. A man of height 156cm stands under a semicircular arc at a distance of 36cm from one end such that his head touches the arc. Find the width of the arc.

13. Find the roots by factorisation : $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$

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14. Find the roots : $3x^2 - 4\sqrt{3}x + 4 = 0$

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Section C

1. On dividing $x^3 - 3x^2 + x + 2$ by a polynomial $g(x) = x^2 - x + 1$, then quotient and remainder.

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2. The sum and the difference of the reciprocals of the ages of Aishwarya and her daughter Aaradhya is $\dfrac{5}{40}$ and $\dfrac{3}{40}$ respectively. Find their ages.

3. Under a project of "one child one tree undertaken by a school students plant the trees in a pattern of first row three plants, second row 5 plants and 3rd row 7 plants and so on. The last row has 37 plants. Find the number of students in the school.

4. find the 31st term of an A.P., whose 11th term is 88 and 16th term is 73. Which term of this series will be the 1st negative term?

5. The vertices of a quadrilateral are A(1,0), B(7,0), C(6,3) and D(2,3). Find it's area

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6. The following frequency distribution gives the monthly consumption of electricity of 68 consumers of a locality. The median of the given distribution is 137 units. Find the no. of consumers whose montly consumption is between 105-125 and also for 145-165.

Monthly consumption in units	65 – 85	85 – 105	105 – 125	125 – 145	145 – 165	165 – 185	185 – 205
No. of consumers	4	5	–	20	–	8	4

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7.

Lifetime (In hours)	0 – 200	200 – 400	400 – 600	600 – 800	800 – 1000	1000 – 1200
Frequency	9	35	50	61	38	32

The above data gives the informatioin on the observed lifetimes (in hours) of 225 electrical components. Find the mean.
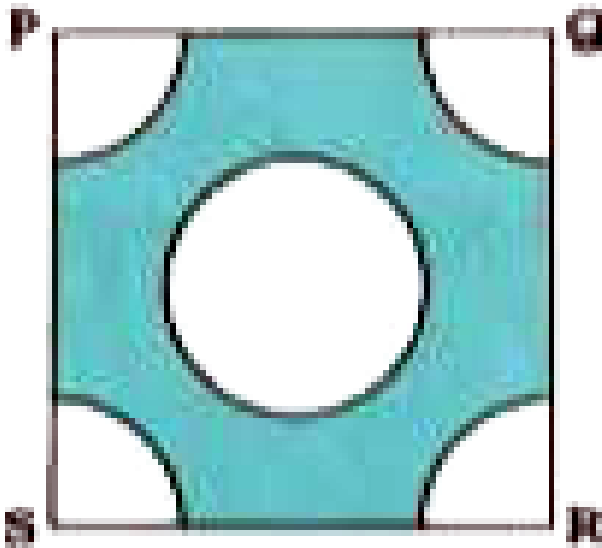
8. A quadrilateral ABCD is drawn to circumscribe a circle (see the given figure). Prove that AB+CD = AD+BC.
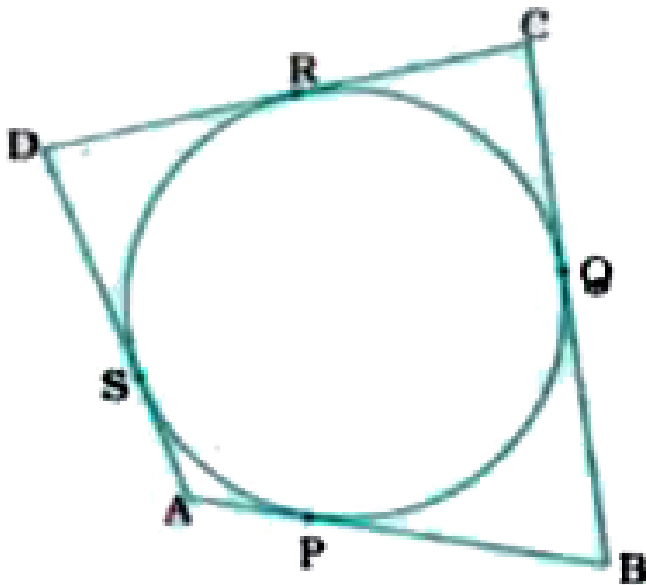
9. From each corner of a square of 4 cm quadrant of a circle of radius 1 cm is cut and also a circle of diameter 2 cm is cut as shown in fig. Find the area of the remaining portion of the square.

10. A platform with dimensions $22m \times 14m \times 2.5m$ is formed from the earth digging the well with diameter 7 m. Find the depth of the well.

11. A tent is in the slape of a cylinder surmounted by a conical top If the height and diameter of the cylindrical part are 2.1 m and 4 m respectively and the slant height of the top is 2.8 m. find the area of the canvas used for making the tent. Find the cost of the canvas of the tent at the rate of 500 per m^2.

12. Two water taps together can fill a tank in one hour and twelve minutes. The tap of smaller diameter takes 1 hour more than the larger one to fill the tank separately. Find the time in which each tap can separately fill the tank.

13. An observer spots a balloon moving with the wind in a horizontal line at a height of 105 m from the ground. The angle of elevation of the balloon after sometime reduces from 60% to 30%. Find the distance travelled by the balloon during the interval.

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14. A tank in shape of frustum of a cone having diameter of top and bottom are 6cm and 10m respectively. If the height is 3m then how many litres of oil can be filled in it? How many drums of 200l each can be filled?

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