MATHS

BOOKS - VK GLOBAL PUBLICATION MATHS (HINGLISH)

MODEL QUESTION PAPER 3[UNSOLVED]

Section A

1. What is the HCF of the smallest composite number and the smallest prime number?

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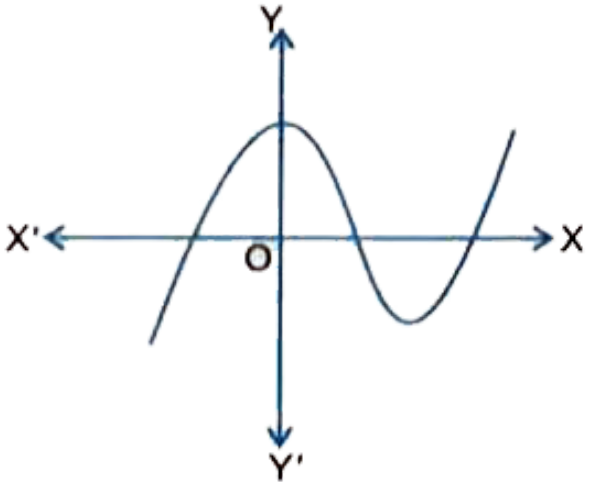
2. The graph of y=f(x) is given in figure 1. What is the number of zeros of f(x) ?



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3. Write the next of the AP $\sqrt{2}, \sqrt{8}, \sqrt{18}, \ldots$

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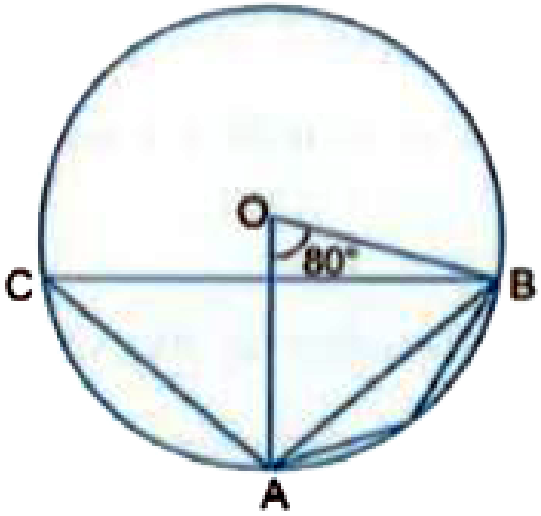
4. 'O' is the centre of the circle. Find $\angle(ADB)$



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5. Do the equations 3x + 6y = 2 and 6x + 12y = 4 represent a pair of consistent lines ?

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6. A die it thrown once. What is the probability of getting a prime number?

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Section B

1. Given the HCF (54,336) = 6. Find LCM (54,336)

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2. Find a quadratic polynomial whose zeros are 1 and -3. Verify the relation between the coefficients and zeros of the polynomial.

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3. If 2 is a root of the equation $x^2 + kx + 12 = 0$ and the equation $x^2 + kx + q = 0$ has equal roots, find the value of q.

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4. If A, B and C are interior angles of a triangle ABC, then show that $\sin\left(\frac{B+C}{2}\right) = \frac{\cos A}{2}$.

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5. Dind θ; if $\sin(\theta + 36^\circ) = \cos\theta$; where $\theta + 36$ is an acute angle.

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6. In the given figure, are shown two arcs PAQ and PBQ. Arc PAQ is a part of circle with centre O and

radius OP while are PBQ is a semi-circle drawn on PQ as diameter with centre M. OP=PQ=10 cm show that area of shaded region is $25\left(\sqrt{3}-\frac{\pi}{6}\right)cm^2$

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Section C

1. Show that $2+\sqrt{5}$ is an irrational number.

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2. Find all zeroes of the polynomial $2x^4 - 9x^3 + 5x^2 + 3x - 1$ if two of its zeroes are $2 + \sqrt{3}$ and $2 - \sqrt{3}$

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3. Solve the following system of equations:

$$\frac{5}{x-1} + \frac{1}{y-2} = 2, \quad \frac{6}{x-1} - \frac{3}{y-2} = 1$$

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4. The first and the last terms of an A.P. are 4 and 81 respectively . If the common difference is 7, how many terms are there in the A.P. and what is their sum?

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5. Show that A(3, 2), B(0, 5), C(-3, 2) and D(0, -1) are the vertices of a square.

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6. Find the area of the quadrilateral whose vertices are A (0, 0), B (6, 0), C (4, 3) and D (0, 3).

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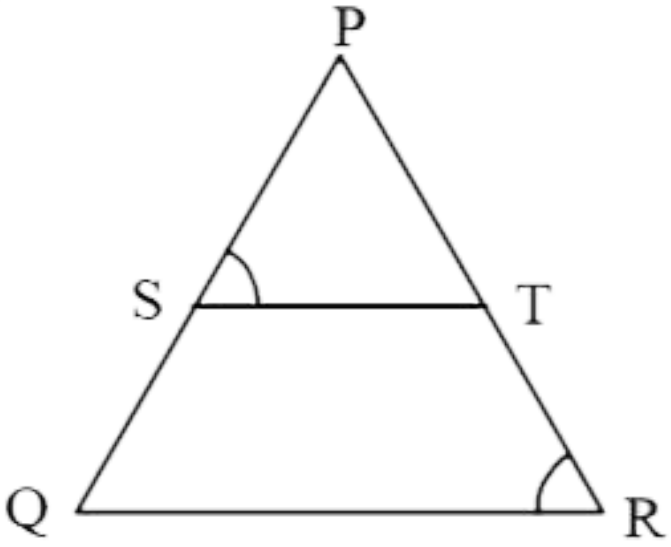
7. In the given figure $\frac{PS}{SQ} = \frac{PT}{TR}$ and $\angle PST = \angle PRQ$. Prove that

PQR is an isoscles triangle.



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8. Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line

segments joining the points of contact at the centre.

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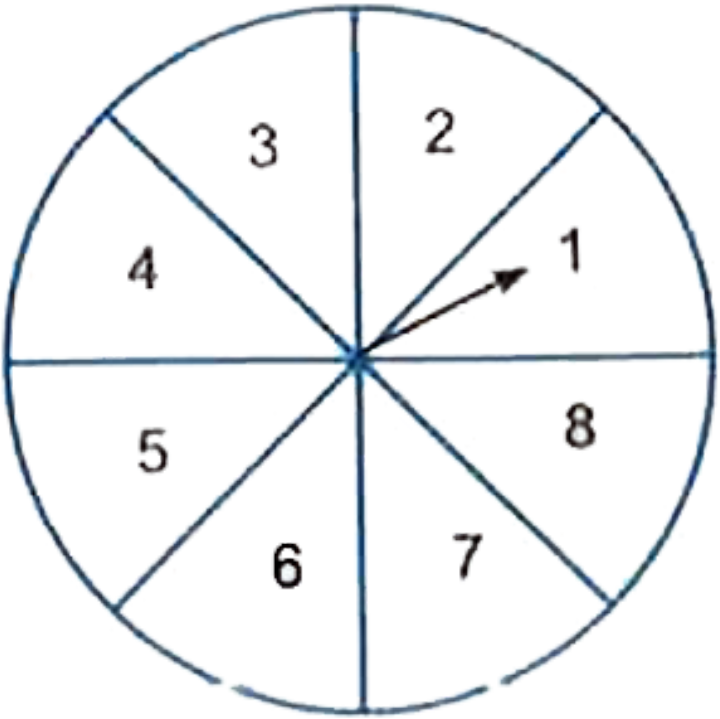
9. A game of chance consists of spinning an arrow on a circular board, divided into 8 equal parts, which comes to rest pointing at one of the numbers 1,2, 3, ..., 8 , which are equally likely outcomes. What is the probability that the arrow will point at (i) an odd numbei ? (ii) a number greater than 3? (Hi) a

number less than 9?



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10. The mean of the following frequency distribution is 25. Find the value of p.

Class	0–10	10–20	20–30	30–40	40–50
Frequency	2	3	5	3	p

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Section D

1. A shopkeeper buys a number of books for Rs 1200. If he had bought 10 more books for the same amount,each book would have cost him Rs20 less. How many books did he buy?

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2. Prove that in a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides. Using the above, solve the following: A ladder reaches a window which is 12 m above the ground on one side of the street. Keeping its foot at the same point, the ladder is turned to the other side of the street to reach a window 9m high. Find the width of the street if the length of the ladder is 15 m

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3. Draw a circle of radius 3 cm. Take two points P and Q on one of its extended diameter each at a distance of 7 cm from its centre. Draw tangents to the circle from these two points P and Q.

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4. Anjali in an electrician and she has to repair an electric fault on a pole of height 5 m. She needs to reach to a point on the pole of 1.3 m below the top of the pole to undertake the repair work. What should be the length of the ladder that she should use which, when inclined at angle of 60° from the

horizontal, would enable her to reach the required position? Further, how far from the foot of the pole should she place the foot of the ladder? What value is indicated from the question?

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5. Prove that

$$(\text{cosec}A - \sin A)(\sec A - \cos A) = \frac{1}{(\tan A + \cot A)}.$$

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6. An elastic belt is placed around the rim of a pulley of radius 5 cm (Fig.) From one point C on the belt, the elastic belt is pulled directly away from the centre O of the pulley until it is at P, 10 cm from the point O. Find the length of the belt that is still in contact with the pulley. Also, find the shaded area. [use $\pi = 3.14$ and $\sqrt{3} = 1.73$]

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7. A Right triangle whose sides are 15 cm and 20 cm; is made to revolve about its hypotenuse. Find the

volume and surface area of the double cone so formed.

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8. Find the mean of the following frequency distribution using assumed mean method:

Classes	2–8	8–14	14–20	20–26	26–32
Frequency (f)	6	3	12	11	8

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