

Government of Karnataka



District Administration and Zilla Panchayath
and
Deputy Director, Department of School Education
Kolar District, Kolar

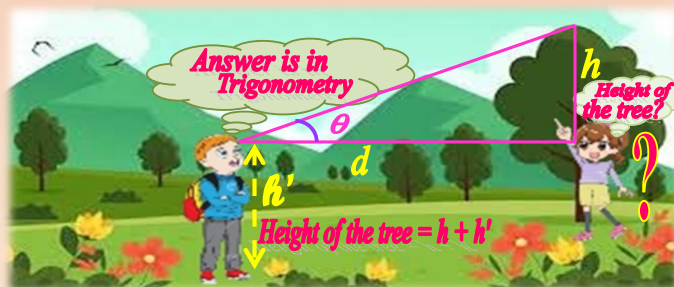
2024-25

MATHEMATICS (81E)



WORK SHEETS

10TH STANDARD



1. REAL NUMBERS

I) Multiple Choice Questions

1	Among the following, an example for the terminating decimal expansion is A) $\frac{10}{3}$ B) $\frac{22}{7}$ C) $\frac{3}{5}$ D) $\frac{1}{7}$
2	LCM of 18 and 45 is A)9 B) 90 C)63 D)810
3	$(7 \times 11 \times 13 + 13)$ is a A) prime number B) composite number C) complex number D) co-prime numbers

II) One Mark Questions

1) Write the statement of the Fundamental Theorem of Arithmetic.	2) Write the H.C.F. of any two prime numbers.
3) Express 90 as the product of its prime factors.	

III) Two Marks Questions

1) Prove that $5 - \sqrt{3}$ is an irrational number.

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

3) Find HCF of 404 and 96 by prime factorization method.

IV) Three Marks Questions

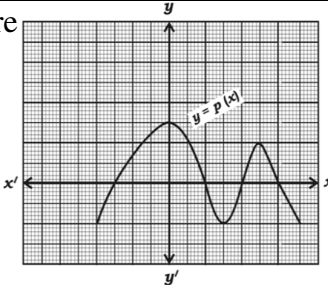
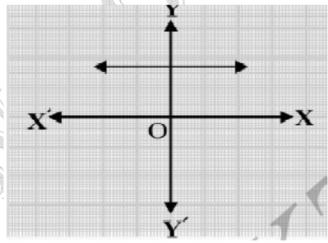
1) Prove that $\sqrt{2}$ is an irrational number.

2) Prove that $\sqrt{3}$ is an irrational number.

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2.POLYNOMIALS

I) Multiple Choice Questions

1	<p>In the given graph, the number of zeroes of a polynomial $p(x)$ are</p> <p>A) 3 B) 5 C) 4 D) 2</p>	
2	<p>In the given graph, the number of zeroes of a polynomial $p(x)$ are</p> <p>A) 2 B) 1 C) 3 D) 0</p>	
3	<p>The degree of the polynomial $g(x) = 4x^5 - 6x^3 + 2x^2 + 5$ is</p> <p>A) 3 B) 5 C) 2 D) 4</p>	
4	<p>The degree of a linear polynomial is</p> <p>A) 0 B) 1 C) 2 D) 3</p>	
5	<p>The sum of zeroes of a polynomial $p(x) = 3x^2 - 2x - 8$ is</p> <p>A) $\frac{2}{3}$ B) $-\frac{2}{3}$ C) $\frac{8}{3}$ D) $\frac{3}{2}$</p>	
7	<p>The maximum number of zeroes that a quadratic equation can have is/are</p> <p>A) 3 B) 1 C) 0 D) 2</p>	
8	<p>The zero of the polynomial $5x + 7$ is</p> <p>A) 7 B) $\frac{7}{5}$ C) $-\frac{7}{5}$ D) $-\frac{5}{7}$</p>	
9	<p>The product of the zeroes of the polynomial $p(x) = x^2 - 5x + 6$ is</p> <p>A) 6 B) 30 C) 5 D) -30</p>	

II) One Mark Questions

<p>1) Find the sum of zeroes of the polynomial $x^2 - 9$.</p>	<p>2) Find the zeroes of the polynomial $p(x) = x^2 - 3$.</p>
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III) Two Mark Questions

1) Find the quadratic polynomial having zeroes -1 and 5 .	2) Find the quadratic polynomial if, sum and product of its zeroes are 4 and 1 respectively.
3) Find the zeroes of the polynomial $x^2 - 2x - 8$.	4) If α and β are the zeroes of the quadratic polynomial $p(x) = ax^2 + bx + c$, then evaluate $\alpha^2\beta + \alpha\beta^2$.

IV) Three Mark Questions

- 1) Find the quadratic polynomial whose sum and product of zeroes are $2 + \sqrt{3}$ and $2 - \sqrt{3}$ respectively.

3. PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

I) Multiple choice questions

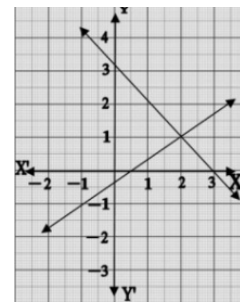
1	A pair of linear equations $a_1x + b_1y + c_1 = 0$, $a_2x + b_2y + c_2 = 0$ is said to be inconsistent if A) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ B) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ C) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ D) $\frac{a_1}{a_2} = \frac{c_2}{c_1}$
2	The pair of linear equations $x + 2y = 6$ and $3x - 6y = 18$ have A) No solution B) Infinitely many solutions C) Exactly one solution D) Two solutions
3	If two lines representing the pair of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ intersect at a point, then the correct relation among the following is A) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ B) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ C) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ D) $\frac{a_1}{a_2} = \frac{b_2}{b_1}$
4	Pair of linear equations $2x + 3y - 9 = 0$ and $4x + 6y - 18 = 0$ represent A) intersecting lines B) perpendicular lines C) parallel lines D) coincident line
5	The pair of linear equations $2x + y = 5$ and $4x + 5y = 13$ are A) inconsistent B) consistent C) dependent and consistent D) parallel lines

II) One Mark questions

1) Write the general form of the pair of linear equations in two variables 'x' and 'y'

2) In the pair of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$, if $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$, then write the number of solutions these equations have.

3) The graph represents the pair of linear equations in 'x' and 'y'. Write the solution for this pair of equations.



III) Two Marks questions

1) Solve the pair of linear equations by elimination method:

$$x + y = 8 \text{ and } 2x - y = 7$$

2) Solve the given pair of linear equations by the substitution method.

$$x + y = 5 \text{ and } 2x + 3y = 12$$

IV) Three Marks questions

1) The sum of two numbers is 50 and their difference is 22. Find the numbers.

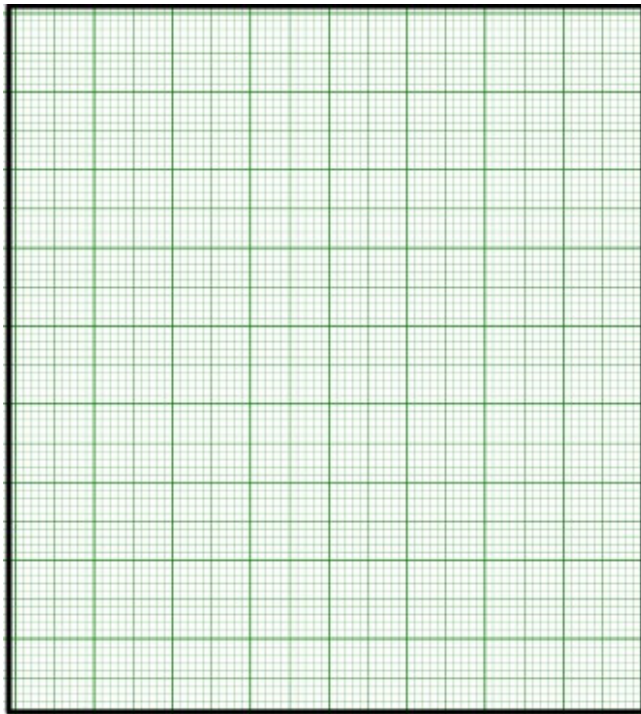
2) If twice the age of the son is added to age of the father the sum is 56. But if twice the age of the father is added to the age of the son, then the sum is 82. Find the present ages of the father and the son.

Four Marks questions

1) Solve graphically: $x + y = 5$ and
 $x - y = 1$

x		
y		

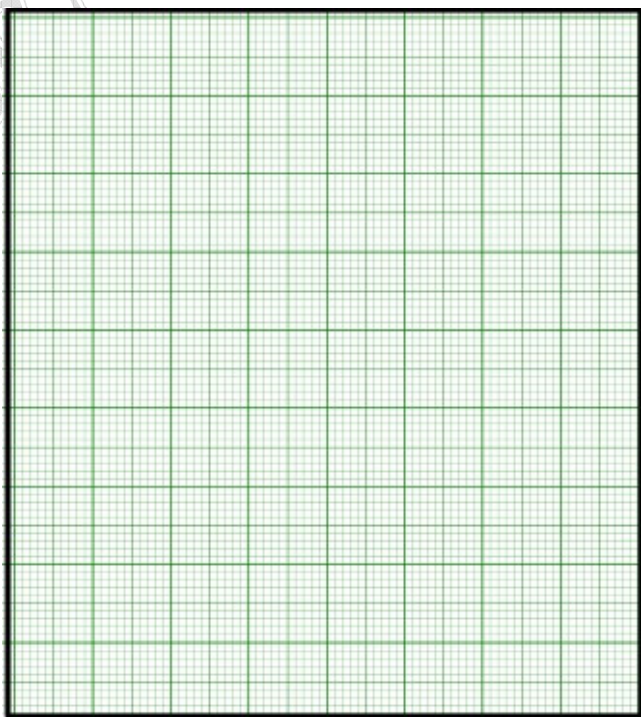
x		
y		



2) Solve graphically: $2x + y = 4$ and
 $x + y = 3$

x		
y		

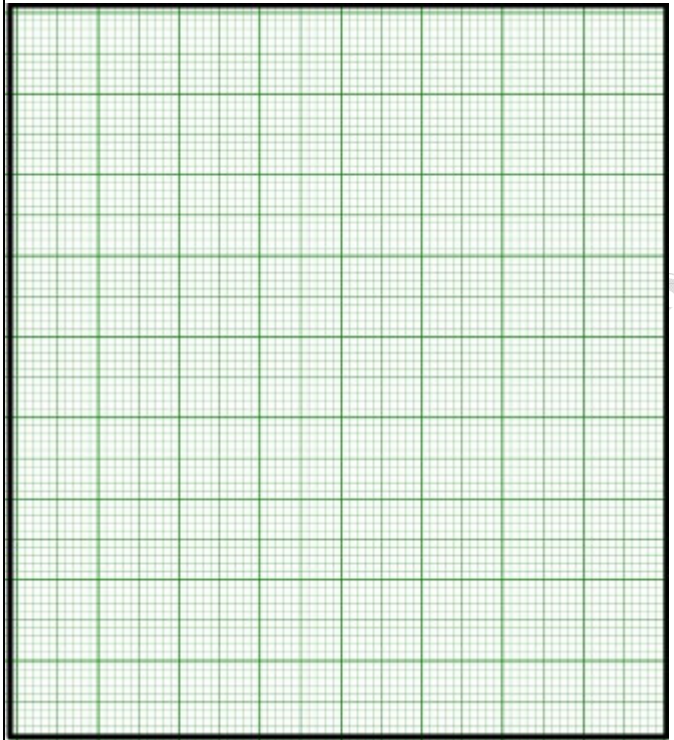
x		
y		



3) Solve graphically: $x + 2y = 6$ and $x - y = 3$

x		
y		

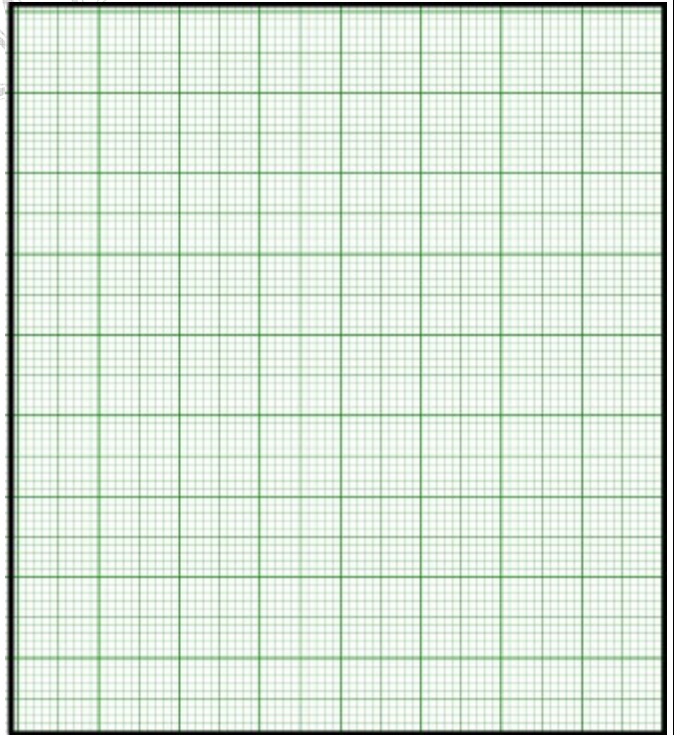
x		
y		



4) Solve graphically: $3x + y = 6$ and $x + y = 4$

x		
y		

x		
y		



4. QUADRATIC EQUATIONS

I) Multiple Choice Questions

1	The roots of the equation $(x + 5)(x - 3) = 0$ are A) - 5, - 3 B) - 5, 3 C) 5, - 3 D) 5, 3
2	The maximum number of roots, that the quadratic equation can have is A) 1 B) 2 C) 3 D) 4
3	If one of the root of the equation $2x^2 + ax + 8 = 0$ is 2, then the value of 'a' is A) 8 B) $\frac{8}{2}$ C) - 8 D) $-\frac{8}{2}$
4	If $x(x + 1) = 30$ is expressed in the standard form, then we get A) $x^2 + x - 30 = 0$ B) $x^2 - x = 30$ C) $x^2 - x + 30 = 0$ D) $x^2 + x + 30 = 0$

II) One Mark Questions

1) Write the discriminant of the quadratic equation $ax^2 + bx + c = 0$.	2) Write the formula to find the roots of the equation $ax^2 + bx + c = 0$.
3) If $x^2 - 100 = 0$, then write the value of 'x'.	4) If the value of discriminant of a quadratic equation is 25, then write the nature of its roots.

III) Two Marks Questions

1) Find the roots of $x^2 + 5x + 6 = 0$ by factorisation method.	2) Find the discriminant of the quadratic equation $x^2 + 4x + 4 = 0$.
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3) Solve by using quadratic formula

$$x^2 - 7x + 6 = 0.$$

4) Solve by using quadratic formula

$$x^2 - 3x + 1 = 0.$$

5) If the roots of the equation $x^2 - kx + 4 = 0$ are equal then find the value of 'k'.

6) Find the nature of the roots of the equation $2x^2 - 5x - 1 = 0$.

IV) Three Marks Questions

1) A girl is twice as old as her sister. Four years hence, the product of their ages (in years) will be 160. Find their present ages.

2) The altitude of a right triangle is 7 cm less than its base. If the hypotenuse is 13 cm , then find the other two sides.

V) Four Marks Questions

1) An express train takes 1 hour less than a passenger train to travel 132 km between Mysore and Bangalore (without taking into consideration the time they stop at intermediate stations). If the average speed of the express train is 11 km/h more than that of the passenger train, then find the average speed of the two trains.

2) A person on tour has Rs 4200 for his expenses. If he extends his tour for 3 days, he has to cut down his daily expenses by Rs 70. Find the original duration of the tour.

3) The diagonal of a rectangular field is 60 m more than the shorter side. If the longer side is 30 m more than the shorter side, then find the sides of the field.

5. ARITHMETIC PROGRESSION

I) Multiple Choice Questions

1	The n^{th} term of an Arithmetic Progression with first term ' a ' and common difference ' d ' is A) $a_n = a + (n - 1) d$ B) $a_n = a - (n - 1) d$ C) $a_n = a - (n + 1) d$ D) $a_n = a + (n + 1) d$
2	If the n^{th} term of an Arithmetic Progression is $3n - 2$, then its 9^{th} term is A) 11 B) 15 C) 25 D) 29
3	Among the following the Arithmetic Progression with common difference -3 is A) 0,3,6,9,----- B) 1,3,5,7,----- C) 10,7,4,1,----- D) -4, -6, -8, -10,-----
4	If 7, x , 13 are in Arithmetic Progression, then the value of ' x ' is A) 6 B) 10 C) 20 D) 91
5	The sum of first 20 natural numbers is A) 210 B) 220 C) 200 D) 180

II) One Mark Questions.

1) Define Arithmetic progression.	2) Write the formula used to find the sum of first ' n ' terms of an Arithmetic Progression whose first term is ' a ' and common difference is ' d '.
3) Write the 10th term of an Arithmetic Progression with first term ' m ' and common difference ' p '.	4) Write the general form of an Arithmetic Progression with first term ' a ' and common difference ' d '.

III) Two Marks Questions

1) Find the 12th term of the Arithmetic Progression 2, 5, 8, 11 ----- using suitable formula.

2) Find the sum of $3 + 5 + 7 + \dots$ up to 20 terms using appropriate formula.

3) Verify whether 154 is a term of the Arithmetic Progression 4, 9, 14, 19, -----.

4) The 8th term of an Arithmetic Progression is 50. If the common difference is 6, then find its first term.

5) Find the value of 'p' if x , $2x + p$ and $3x + 6$ are in Arithmetic Progression.

6) Find the 15th term of the Arithmetic Progression 1, 6, 11, 16-----,101 starting from the last term.

IV) Three Marks Questions

1) In an arithmetic progression, if the 3rd term is 3 and 5th term is -11 , then find its 50th term.

2) Find the sum of multiples of 4 between 1 and 201.

3) In an Arithmetic Progression the 7th term is four times the second term and 12th term is 2 more than the thrice of 4th term. Find the Arithmetic Progression.

4) A child wishes to build up a triangular pile of toy bricks so as to have 1 brick in the top row, 2 in the second, 3 in the third and so on. If the child uses 120 bricks to build, then find how many rows can be completed?

V) Four/ Five Marks Questions

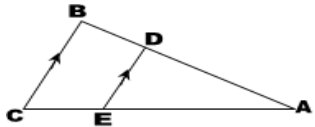
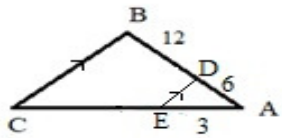
1) In an Arithmetic Progression the sum of 4th and 8th term is 24. The sum of 6th and 10th term is 44. Find the first 3 terms of the Arithmetic Progression.

2) The length (l), breadth (b) and height(h) of a cuboid are in Arithmetic Progression. The volume of cuboid is 80 cubic units and the sum of length, breadth and height is 15 units. Find the dimensions of the cuboid.

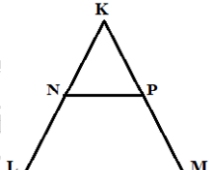
3) A sum of Rs 2650 is to be paid to give Ten cash prizes to the students of a school for their overall academic performance. If the cost of each prize is 30 less than its preceding prize. Then, find the value of each prize.

6. TRIANGLES

I) Multiple Choice Questions

1	In the given figure, $DE \parallel BC$, then $\frac{AD}{DB} =$ A) $\frac{BD}{AD}$ B) $\frac{BC}{DE}$ C) $\frac{CE}{AE}$ D) $\frac{AE}{EC}$	
2	In the given figure, in $\triangle ABC$, $DE \parallel BC$, if $AD = 6\text{cm}$, $BD = 12\text{cm}$ and $AE = 3\text{cm}$, then the measure of CE is A) 5 B) 3 C) 6 D) 10	

II) One Mark Questions.

1) Write the statement of Thales' theorem.	2) In $\triangle KLM$, $NP \parallel LM$, write any one ratio correspondingly equal to $\frac{KN}{KL}$
	

III) Two Marks Questions

1) A vertical pole of height 12 m casts a shadow of length 8 m on the plane ground. At the same time a tower casts a shadow of length 40 m on the plane ground. Find the height of the tower.
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V) Four/Five Marks Questions

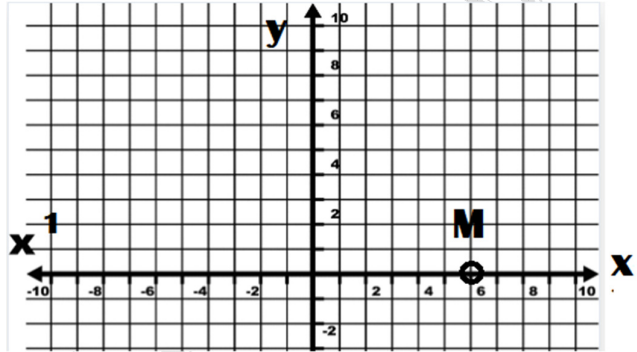
1) State and prove Basic proportionality theorem (Thales' theorem).	2) Prove that "If in two triangles, corresponding angles are equal, then their corresponding sides are in the same ratio (or proportion) and hence the two triangles are similar."
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Note: Prove the theorems given above in separate sheets.

7. COORDINATE GEOMETRY

I) Multiple Choice Questions

1	The distance of the point (3, 4) from the origin is A) 4 units B) 3 units C) 5 units D) 7 units
2	The perpendicular distance of the point P (5, 2) from the y –axis is A) 7 units B) 2 units C) 3 units D) 5 units
3	Coordinates of M in the given graph is (A) (6, 1) (B) (6, 0) (C) (1, 6) (D) (0, 6)
4	The point (5, -7) lies in the (A) First quadrant (B) Second quadrant (C) Third quadrant (D) Fourth quadrant



II) One Mark Questions.

1) Write the coordinates of the origin.	2) Write the ordinate of any point on y-axis.
3) Write the perpendicular distance of the point P (3, 7) from x-axis.	

III) Two Marks Questions

1) Find the distance between the points $(2, 3)$ and $(-1, 7)$ using distance formula.

2) Find the coordinates of the mid-point of the line segment joining the points $(2, 3)$ and $(4, 7)$.

3) Find the ratio in which x -axis divides the line segment joining the points $(0, 3)$ and $(4, -1)$.

4) If the distance between the points $(5, p)$ and $(2, 0)$ is 5 units, then find the value of ' p '.

III Three Marks Questions

1) Find the value of ' m ' if the point $A(0, 2)$ is equidistant from $P(3, m)$ and $Q(m, 3)$.

2) If two vertices of equilateral triangle are $(0, 0)$ and $(3, 0)$, then find the third vertex.

IV Four/Five Marks Questions.

1) Show that the points $A(-4, -1)$, $B(-2, -4)$, $C(4, 0)$ and $D(2, 3)$ are the vertices of a rectangle.

2) Show that $A(2, 5)$, $B(2, 1)$ and $C(5, 1)$ are vertices of a right-angled triangle. Also find the length of the median from the vertex C .

8. INTRODUCTION TO TRIGONOMETRY

I. Multiple Choice Questions

1	The value of $(1 + \cos\theta)(1 - \cos\theta) =$ A) $\sin^2\theta$ B) $\tan^2\theta$ C) 1 D) 0
2	If $2\cos\theta = 1$ and θ is an acute angle then the value of ' θ ' is A) 0° B) 30° C) 45° D) 60°
3	If $\sin\theta = \frac{3}{5}$, then the value of $\operatorname{cosec}\theta$ is A) $\frac{4}{5}$ B) $\frac{5}{3}$ C) $\frac{4}{3}$ D) $\frac{5}{4}$

II. One Mark Questions

1) Find the value of $(\tan\theta \times \cot\theta)$.	2) If $\sqrt{3}\sec A = 2$, then find the value of the acute angle A.
3) If $\sin\theta = \frac{2}{\sqrt{3}}$ and $\cos\theta = \frac{3}{\sqrt{3}}$, then write the value of $\tan\theta$.	4) Write the value of $\frac{1 - \tan 45^\circ}{1 + \tan 45^\circ}$.

III. Two Marks Questions

1) Prove that $\frac{\sin\theta}{1-\cos\theta} = \operatorname{cosec}\theta + \cot\theta$.

2) If $A = 60^\circ$, $B = 30^\circ$, then show that
 $\tan(A - B) = \frac{\tan A - \tan B}{1 + \tan A \tan B}$.

IV. Three Marks Questions

1) Prove that $\sqrt{\frac{1+\sin A}{1-\sin A}} = \sec A + \tan A$.

2) Prove that $\frac{1-\cos\theta}{1+\cos\theta} = (\operatorname{cosec}\theta - \cot\theta)^2$.

3. $x = (a \sec \theta + b \tan \theta)$ and
 $y = (a \tan \theta + b \sec \theta)$ then prove that
 $x^2 - y^2 = a^2 - b^2$.

4. Prove that
 $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$.

V. Four Marks Questions

1) Prove that $\frac{\operatorname{cosec} A + 1}{\operatorname{cosec} A - 1} = (\sec A + \tan A)^2$.

2) Prove that $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \tan \theta + \cot \theta$.

3) Prove that $\left(\frac{1+\sin\theta-\cos\theta}{1+\sin\theta+\cos\theta}\right)^2 = \frac{1-\cos\theta}{1+\cos\theta}$.

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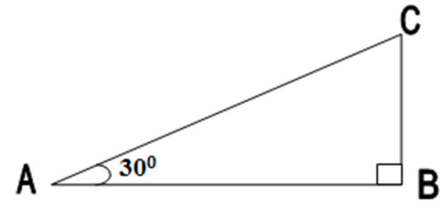
Teacher's Signature

Head Master's Signature

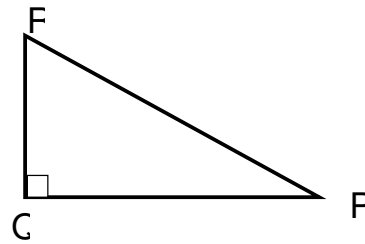
9. SOME APPLICATIONS OF TRIGONOMETRY

I) Two Marks Questions

1) The top of a building is observed from a point on the ground $100\sqrt{3}ft$ away from its base. If the angle of elevation is 30° , then find the height of the building.

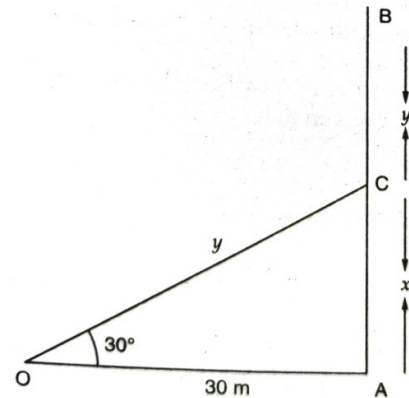


2) A kite flying at a height of $50\sqrt{3}m$ above the ground is tied to a point on the ground by a thread of 100m length without any slack. Find the angle formed by the thread with the ground.

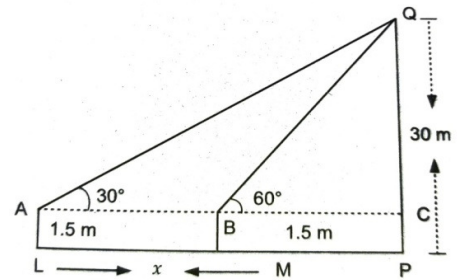


II) Three or Four Marks Questions

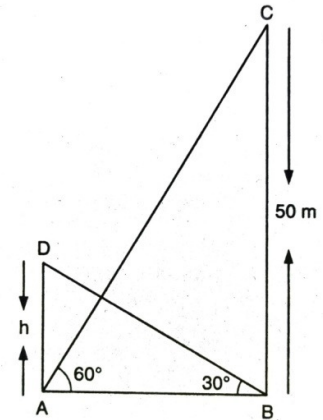
1) A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground making an angle 30° with it. The distance between the foot of the tree to the point where the top touches the ground is 30 m . Find the height of the tree.



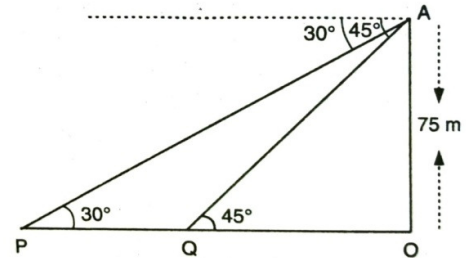
2) A 1.5 m tall boy is standing at some distance from a 30 m tall building. The angle of elevation from his eyes to the top of the building increases from 30° to 60° as he walks towards the building. Find the distance he walked towards the building.



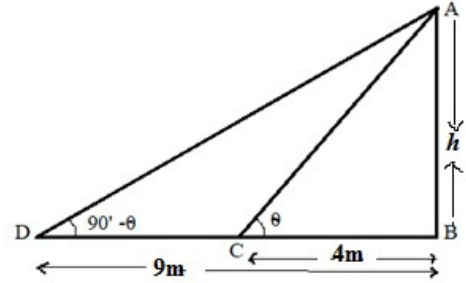
3) The angle of elevation of the top of the building from the foot of the tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 60° . If the tower is 50 m high find the height of the building.



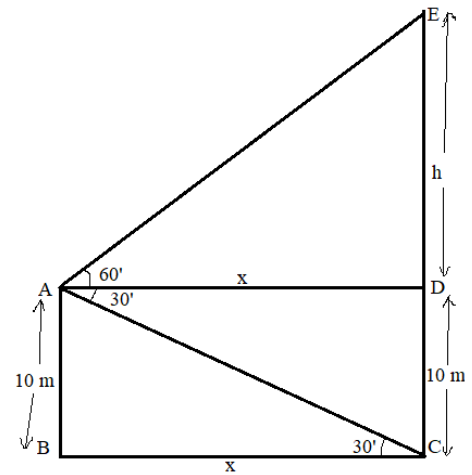
4) As observed from the top of a 75 m high lighthouse from the sea-level, the angles of depression of two ships are 30° and 45° . If one ship is exactly behind the other on the same side of the lighthouse, find the distance between the two ships.



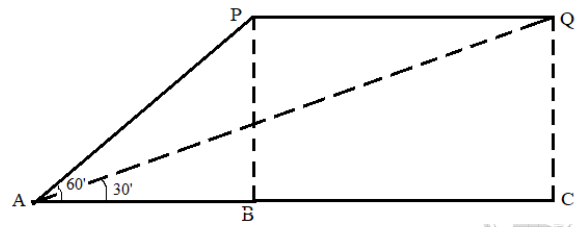
5) The angles of elevation of the top of a tower from two points at a distance of 4 m and 9 m from the base of the tower and in the same straight line with it are complementary. Prove that the height of the tower is 6 m .



6) The deck of a ship is 10 m high from the level of water. A man standing on it observes the top of a hill with an angle of elevation 60° and from the same point, he observes the base of the same hill at an angle of depression 30° . Then find the distance of the ship from the hill and also the height of the hill.



7) The angle of elevation of a jet plane from a point 'A' on the ground is 60° . After a flight of 30 seconds, the angle of elevation changes to 30° from the same point. If the jet plane is flying at a constant height of $3600\sqrt{3}m$, then find the speed of the plane.

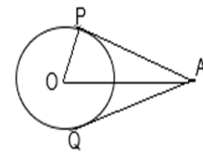
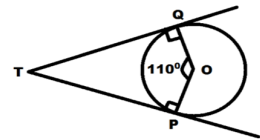


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10. CIRCLES

I) Multiple Choice Questions

1	The tangents drawn at the ends of a diameter of a circle are A) perpendicular to each other B) parallel to each other C) intersecting D) coinciding
2	A straight line which intersects a circle at two distinct points is A) tangent B) chord C) secant D) diameter
3	Maximum number of tangents that can be drawn to a circle from an external point is A) 2 B) 3 C) 4 D) 5
4	In the figure, TP and TQ are the tangents drawn to a circle with centre O. If $\angle POQ = 110^\circ$, then the measure of $\angle PTQ$ is A) 70° B) 80° C) 60° D) 140°
5	In a circle with centre 'O'. AP and AQ are tangents from an external point A. If $\angle PAQ = 80^\circ$, then $\angle AOP$ is A) 50° B) 90° C) 100° D) 160°

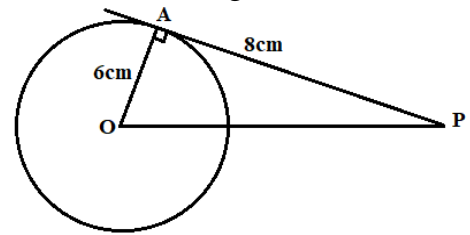


II) One Mark Questions.

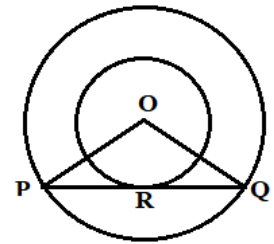
1) What is the measure of the angle between radius and tangent at the point of contact?	2) Define secant of a Circle.
3) Define tangent of a circle.	

III) Two Marks Questions

1) In the figure, 'O' is the centre of the circle. By the given data calculate the length of OP.



2) In the given figure two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.



III) Three Marks Questions

1) Prove that “the length of tangents drawn from an external point to a circle are equal.”

2) Prove that “the tangent at any point of a circle is perpendicular to the radius through the point of contact.”

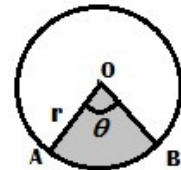
11. AREAS RELATED TO CIRCLES

I) Multiple Choice Questions

1	Length of the arc of a sector of an angle 90° with radius 4 cm is A) 2π cm B) 3π cm C) 6π cm D) 9π cm
2	The areas of two circles are 64cm^2 and 81cm^2 respectively. The ratio of circumference of two circles is A) 4:7 B) 64:81 C) 8:9 D) 6:8
3	If the radius of a semicircle is 14cm, then the length of its arc is A) 11cm B) 44cm C) 22cm D) 14cm

II) One Mark Questions

1) Write the formula to find the area of the shaded region in the given figure.



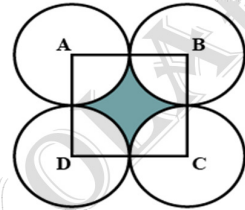
2) What is meant by a sector of the circle?

3) Define segment of a circle.

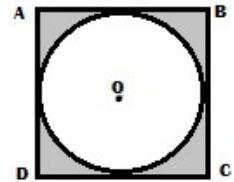
III) Two Marks Questions

1) In a circle of radius 35 cm an arc subtends an angle 90° at the centre of the circle. Find the length of the arc formed in the circle. (use $\pi = \frac{22}{7}$)

2) In the figure ABCD is a square of side 28 cm . With centre A, B, C & D four circles are drawn such that each circle touch externally two of the remaining three circles. Find the Area of the shaded region. (use $\pi = \frac{22}{7}$)

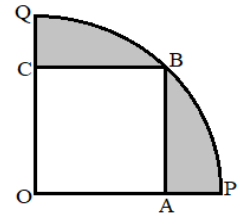


3) In the figure, a circle is inscribed in a square ABCD. If each side of the square is 42 cm , then find the area of shaded region. (use $\pi = \frac{22}{7}$)



IV) Three Marks Questions.

1) In the figure, OABC is a square inscribed in a quadrant OPBQ. If $OA = 20 \text{ cm}$, then find the area of shaded region. (use $\pi = 3.14$)



2) Area of a sector of a circle of radius 14 cm is 154 cm^2 . Find the length of the corresponding arc of the sector. (use $\pi = \frac{22}{7}$)

12. SURFACE AREAS AND VOLUMES

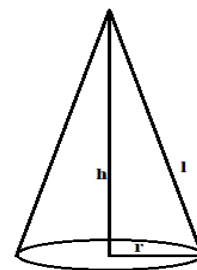
I) Multiple Choice Questions

1	If two solid hemispheres with same radii are joined together along their bases, then the curved surface area of the new solid formed is A) $3\pi r^2$ B) $4\pi r^2$ C) $5\pi r^2$ D) $6\pi r^2$
2	A cylinder and a cone are of same height the radii of their bases are also equal. If the volume of the cylinder is 924cm^3 then, the volume of the cone is A) 924 cm^3 B) 308 cm^3 C) 462 cm^3 D) 38 cm^3
3	While conversion of a solid from one shape to another, the volume of the new shape will A) increases B) decreases C) remain unaltered D) doubled
4	The surface area of a sphere of radius 7 cm is A) 308 cm^2 B) 154 cm^2 C) 616 cm^2 D) 462 cm^2
5	If <i>three cubes of edge 4 cm are joined end to end</i> , then the volume of the cuboid so formed is A) 162 cm^3 B) 172 cm^3 C) 182 cm^3 D) 192 cm^3

II) One Mark Questions.

1) Write the formula to find the volume of a sphere with radius ' r '.	2) Write the ratio of the total surface areas of a sphere and a solid hemisphere having equal radii.
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3) In the figure, a solid right circular cone is given, observe the figure and write the formula used to calculate its total surface area.



III) Two Marks Questions

1) Two cubes of edge 8 cm each are kept together joining their faces to form a cuboid. Find the total surface area of the cuboid.

2) A metal container is in the shape of a frustum of a cone of height 21 cm and radii of its circular ends are 8 cm and 20 cm . Find its capacity. (Use $\pi = \frac{22}{7}$)

3) Find the volume of the largest circular cone that can be carved out of a cube of edge 9 cm . (Use $\pi = \frac{22}{7}$)

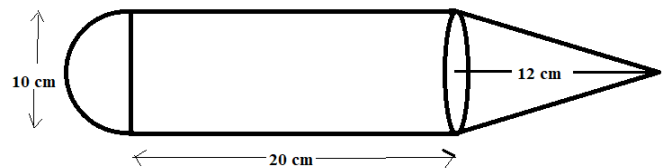
IV) Three Marks Questions

1) The diameter of a solid metallic sphere is 6 cm . It is melted and drawn into a wire having diameter of the uniform cross-section 0.2 cm . Find the length of the wire. (Use $\pi = \frac{22}{7}$)

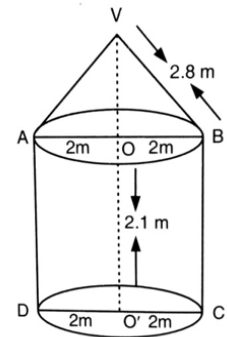
2) A big solid metal sphere of diameter 48 cm is melted and casted into small solid spheres of radius 3 cm . Find the number of small solid spheres so formed.

V) Four/ Five Marks Questions

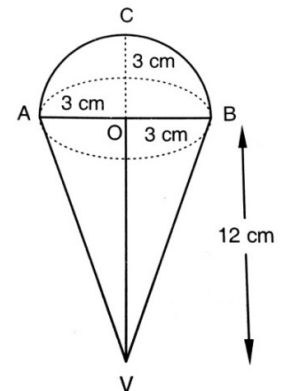
1) A Toy is made in the shape of a cylinder with one hemisphere stuck to one end and a cone to the other end. The length of the cylindrical part of the toy is 20 cm and its diameter is 10 cm . If the height of the cone is 12 cm , then find the surface area of the toy. (Use $\pi = \frac{22}{7}$)



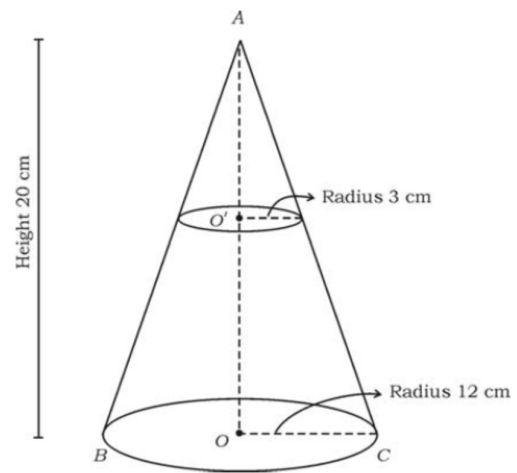
2) A tent is in the shape of a cylinder surmounted by a conical top of same diameter. If the height and diameter of cylindrical parts are 2.1 m and 4 m respectively and the slant height of conical part is 2.8 m . Find the area of the canvas used for making the tent. Also find the cost of canvas of the tent at the rate of Rs. 500 per m^2 . (Use $\pi = \frac{22}{7}$)



3) A container is shaped like a right circular cylinder having radius of the base 6 cm and height 15 cm is full of ice-cream. The ice-cream is to be filled into cones of height 12 cm and radius 3 cm , having a hemispherical shape of same radius on the top as in the figure. Find the number of such cones which can be filled with ice-cream. (Use $\pi = \frac{22}{7}$)



4) A cone is of the radius of its base 12 cm and height 20 cm . If the top of this cone is cut to form a small cone of radius of base 3 cm , then the remaining part of the solid cone becomes a frustum. Calculate the volume of the frustum of a cone so obtained. (Use $\pi = \frac{22}{7}$)



DD SCHOOL EDUCATION

13. STATISTICS

I) Multiple Choice Questions

1	The mean of 50, 20, 10, 15 and 5 is A) 15 B) 5 C) 10 D) 20
2	The median of 11, 6, 7, 3, 14, 13, 19 is A) 11 B) 19 C) 7 D) 13
3	The mode of 6, 7, 2, 4, 2, 8, 5, 2, 2, is A) 7 B) 6 C) 4 D) 2
4	The measure of central tendency that gives the middle most value of the data is A) midpoint B) mean C) median D) mode
5	If mean of 5, 8, 2, x and 3 is 4, then the value of x is A) 2 B) 3 C) 4 D) 1

II) One Mark Questions

1) Find the midpoint of the class interval 40-50.	2) Write the empirical relationship between the three measures of central tendency.
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III) Three Marks Questions

1) Find mean for the following frequency distribution by direct method.

Class Interval	0-10	10-20	20-30	30-40	40-50
Frequency	2	6	5	3	4

2) The following are the marks obtained by 40 boys in a class test. Find the mean marks scored in that test by assumed mean method.

Class interval	10-20	20-30	30-40	40-50	50-60
Frequency	7	10	6	8	9

3) Find mean for the following data by using step deviation method.

Class interval	200-250	250-300	300-350	350-400	400-450	450-500	500-550
Frequency	7	3	10	6	5	4	5

4) Find the Median of the following frequency distribution.

Class interval	0-10	10-20	20-30	30-40	40-50
Frequency	4	7	13	9	3

5) Find the median of the following data.

Class interval	10-15	15-20	20-25	25-30	35-40
Frequency	8	4	6	2	6

6) Find the mode of the following frequency distribution.

Class interval	30-40	40-50	50-60	60-70	70-80	80-90
Frequency	4	7	9	11	6	2

7) Find the mode of the following data.

Class interval	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	8	12	5	17	3	6

14.PROBABILITY

I) Multiple Choice Questions

1	In an experiment, if number of outcomes favourable to an event is equal to zero, then the event is called A) a sure event B) a complementary event C) an impossible event D) an elementary event
2	If the probability of getting rain on a particular day is 0.7, then the probability of 'not getting' rain on that day is A) 0.3 B) 0.7 C) 0 D) 0.03
3	Regarding the probability of occurrence of an event A, the correct among the following is A) $0 < P(A) \leq 1$ B) $0 \leq P(A) < 1$ C) $0 \leq P(A) \leq 1$ D) $0 < P(A) < 1$

II) One Mark questions

1) What is the probability of a 'sure event'?	2) What is the sum of probabilities of all the elementary events of an experiment?
3) A coin is tossed once. If the probability of getting the 'Tail' is $\frac{1}{2}$, then, what is the probability of 'not getting the Tail'?	

III) Two Marks questions

1) A box contains 4 red marbles, 8 green marbles and 5 white marbles. One marble is taken out at random. Find the probability of the marble taken out to be white.	2) A die, numbered from 1 to 6 on its each face is rolled once. Find the probability of getting an even number.
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3) 12 defective pens got mixed with 132 good ones. One pen is taken randomly from the lot. Find the probability of getting a defective pen.

4) A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, then find the probability that it bears a perfect square number.

III) Three Marks questions.

1) Two dice, numbered from 1 to 6 on their each face are together rolled once. Find the probability of getting the numbers whose sum is less than 7.

2) A bag contains 5 red balls and some blue balls. When a ball is drawn at random, if the probability of drawing a blue ball is double that of a red ball, find the number of blue balls in the bag.