INDEX

KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 3: PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

NAME : -_____ SEC_____ ROLL NO____

	SECTION – A (MCQ – 1 MARK EACH)
Q.1	The pair of linear equations $2x$ =5y+6 and 15y=6x -8 represents two lines which are (a)Intersecting (b)Parallel (c)coincident (d)either Intersecting or Parallel
Q.2	If the pair of linear equations x-y=1, x+ky=5 has a unique solution x=2, y=1 then the value of k is (a)-2 (b)-3 (c)3 (d) 4
Q.3	The pair of linear equations $3x$ + 5y = 3 and $6x$ + ky = 8 do not have a solution if k (a) = 5 (b) = 10 (c) ≠10 (d) ≠ 5
Q.4	If the system of equations $3x$ +y =1 and (2k-1)x +(k-1)y =2k+1 is inconsistent, then k is (a) -1 (b) 0 (c) 1 (d) 2
Q.5	The pair of the equations x = a as well as y = b graphically shows lines that are (a) parallel (b) intersecting at (b, a) (c) coincident (d) intersecting at (a, b)
	SECTION – B (2 MARKS EACH)
Q.6	Find the solutions of the pair of linear equations $5x$ + 10y – 50 = 0 and x + 8y = 10 , hence find the value of m if y = mx + 5.

Q.7	₹ 2450 were divided among 65 children. If each girl gets ₹ 50 and each boy gets ₹ 30 then find the number of girls.
SECTION – C (3 MARKS EACH)	
Q.8	4 chairs and 3 tables cost ₹ 2100 and 5 chairs and 2 tables cost ₹ 1750. Find the cost of one chair and one table separately.
Q.9	Find the value of k for which the equations $3x$ +y= 1 and (2k - 1)x + (k – 1)y = 2k+1 has no solution.

SECTION – D (4 MARKS EACH)	
Q.10	Two schools *P* and *Q* decided to award prizes to their students for two games of Hockey ₹x per student and cricket ₹y per student. School P decided to award a total of ₹ 9500 for two games to 5 and 4 students respectively; while school Q decided to award ₹ 7370 for the two games to 4 and 3 students respectively. Based on the above information answer the following questions: i) Represent the above information algebraically (in terms of x and y) ii) What is the prize amount for hockey? iii) Prize amount on which game is more and by how much? iv) What will be the total prize amount if there are 2 students each from two games?
	Rough Work

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CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 3: PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

NAME : -_____ SEC_____ ROLL NO_____

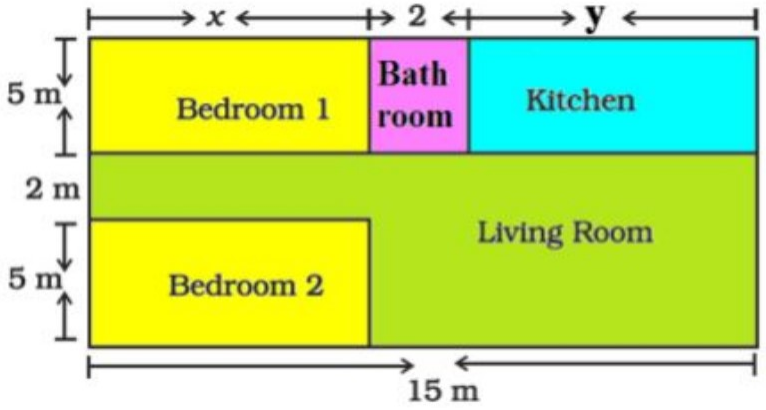
	SECTION – A (MCQ – 1 MARK EACH)
Q.1	Graphically, the pair of equations $6x - 3y + 10 = 0$, $2x - y + 9 = 0$ are represented by two lines that are (a)Intersecting (b)Parallel (c)coincident (d)either Intersecting or Parallel
Q.2	What is the value of p if, if the following pair of the equations $2x + 3y - 5 = 0$, $px - 6y - 8 = 0$ has a unique solution. (a) $p \neq -4$ (b) p=-4 (c) p=4 (d) p=-1
Q.3	The pair of the equations $x + 2y + 5 = 0$, $-3x - 6y + 1 = 0$ has (a) unique solution (b) exactly two solutions (c) infinitely many solutions (d) no solution
Q.4	If the lines $3x + 2ky - 2 = 0$ and $2x + 5y + 1 = 0$ are parallel, then what is the value of k? (a) $\frac{4}{15}$ (b) $\frac{15}{4}$ (c) $\frac{4}{5}$ (d) $\frac{5}{4}$
Q.5	The graph of $y = 4x$ is a line (a) parallel to x -axis (b) parallel to y-axis (c) perpendicular to y-axis (d) passing through the origin
	SECTION – B (2 MARKS EACH)
Q.6	Solve the following pair of linear equations: $99x + 101y = 499$ $101x + 99y = 501$

Q.7	Find the values of k for which the pair of linear equations kx + y = k^2 and x+ ky = 1 have infinitely many solutions.
SECTION – C (3 MARKS EACH)	
Q.8	Solve the following pair of linear equations graphically x + 3y = 6, 2x-3y = 12
Q.9	Find the value of k such that the following pair of linear equations has unique solution. Solve the equations. 4 x+ky+8=0 , 2x+3y+7=0

SECTION – D (4 MARKS EACH)

Q.10

Amit is planning to buy a house and the layout is given below. The design and the measurement have been made such that areas of two bedrooms and kitchen together is 95sq.m.



Based on the above information, answer the following questions:

1. Form the pair of linear equations in two variables from this situation.

2. Find the area of each bedroom and kitchen in the layout.

3. Find the area of living room in the layout.

4. Find the cost of laying tiles in kitchen at the rate of Rs. 50 per sq.m.

Rough Work

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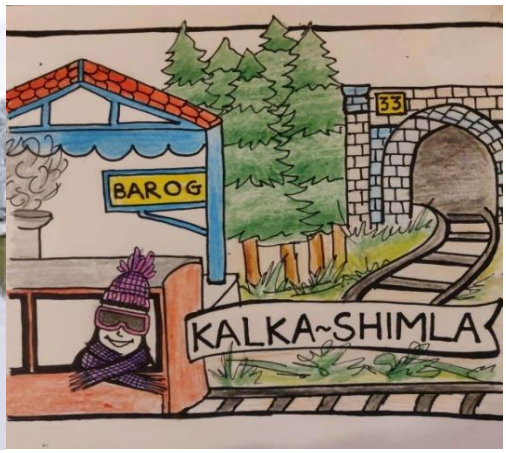
CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 4: QUADRATIC EQUATIONS

NAME : -_____ SEC_____ ROLL NO_____

	Multiple choice questions
Q1	Which one of the following is not a quadratic equation? (a) $(x+2)^2 = 2(x+3)$ (b) $x^2 + 3x = (-1)(1-3x)^2$ (c) $(x+2)(x-1) = x^2 - 2x - 3$ (d) $x^3 - x^2 + 2x + 1 = (x+1)^3$
Q2	Which of the following equations has – 1 as a root? (a) $x^2 + 3x - 10 = 0$ (b) $x^2 - x - 12 = 0$ (c) $3x^2 - 2x - 5 = 0$ (d) $9x^2 + 24x + 16 = 0$
Q3	If the difference of roots of the quadratic equation $x^2+kx+12=0$ is 1, the positive value of k is (a) – 7 (b) 7 (c) 4 (d) 8
Q4	Which of the following are the roots of $3x^2+2x-1=0$ (a) $x=-1$ (b) $x=1/3$ (c) $x=-1/2$ (d) $x=2$
	Short answer type questions
Q 5	If one of the roots of $x^2 + px - 4 = 0$ is – 4, then find the product of its roots and the value of p.
Q 6	Find discriminant of the quadratic equation $3x^2 + 4x - 5 = 0$. What type of roots does the given quadratic equation have?

	Long answer type questions
Q 7	In a rectangular park of dimensions 50 m × 40 m, a rectangular pond is constructed so that the area of grass strip of uniform width surrounding the pond would be 1184 m^2. Find the length and breadth of the pond.
Q 12	Zahlen and Zeba together have 25 balloons to blow air in. Both of them lost 5 balloons each due to bursting and the product of the number of balloons they now have, is 54. Find out how many balloons they had to start with?
Q 5	**Case study based Questions** A Hill Station: In the last summer, I enjoyed a tour to a hill station at Shimla. I was accompanied by my five friends and enjoyed the natural beauties of mountains, rivers, streams, forests etc. The beginning of the tour was the most adventurous itself! How amazingly my group win the bet! Actually, the story is that my two friends along with me preferred train to go to Shimla, but other three were forcing for a car or a bus. At last the consensus was reached and we were divided ourselves in two groups of 3 each and started for Shimla at the same time. It was decided that the group who reach the destination first,

	would be declared as the winner, and runner up the group have to bear the expenses of the tour. I named my group, 'Group A' while the second group was named as 'Group B'. Luckily we reached Shimla 1 hour before the Group-B and enjoyed the trip for absolutely FREE!! How thrilling it was the tour!  
(i)	An express train takes 1 hour less than a passenger train to travel 132 km between Delhi and Shimla (without taking into consideration the time they stop at intermediate stations). If the average speed of the express train is 11 km/hr more than that of the passenger train .What is the average speed of train?
(ii)	An express train makes a run of 240 km at a certain speed. Another train whose speed is 12 km/hr less takes an hour longer to make the same trip. What is the speed of express train?
(iii)	A deluxe bus takes 3 hours less than a ordinary bus for a journey of 600 km. If the speed of the ordinary bus is 10 km/hr less than that of the deluxe bus, the speeds of the two buses will be .

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CHAPTER 4. QUADRATIC EQUATION

NAME : -_____ SEC_____ ROLL NO____

Q 1	**Multiple choice questions** The two consecutive odd positive integers, sum of whose squares is 290 are (a) 13, 15 (b) 11, 13 (c) 7, 9 (d) 5, 7
Q 2	Find the value of k for which $m=1/\sqrt{3}$ is a root of the equation $km^2+(\sqrt{3}-\sqrt{2})m-1=0$. (a) $\sqrt{2}$ (b) 2 (c) $\sqrt{6}$ (d) 5
Q 3	If the equation $x^2-kx+9=0$ does not possess real roots, then (a) $-6< k <6$ (b) $k>6$ (c) $k<-6$ (d) $k=\pm 6$
Q 4	If $p^2x^2 - q^2 = 0$, then x= _____. (a) $\pm q/p$ (b) $\pm p/q$ (c) p (d) q
Q5	The quadratic equation whose one rational root is $3+\sqrt{2}$ is (a) $x^2 - 7x + 5$ (b) $x^2 + 7x + 6 = 0$ (c) $x^2 - 7x + 6$ (d) $x^2 - 6x + 7 = 0$
Q 6	**Short answer type questions** Find discriminant of the quadratic equation $3x^2 + 4x - 5 = 0$. What type of roots does the given quadratic equation have?

Q 8	The area of a rectangular plot is 428 sq m. The length of the plot (in metres) is two more than twice its breadth. Find the length and breadth of the plot.
Q 9	The sides of two square plots are $(2x - 1)$m and $(5x+4)$m. The area of the second square plot is 9 times the area of the first square plot. Find the side of the larger plot.
Q 10	**Long answer type questions** In a class test, the sum of Gagan's marks in Mathematics and English is 45. If he had 1 more mark in Mathematics and 1 less in English, the product of marks would have been 500. Find the original marks obtained by Gagan in Mathematics and English separately.

Q.11	**Case study based Questions** Seven years ago, Surya's age was five times the square of Tara's age. Three years hence, Tara's age will be two-fifth of Surya's age.  The quadratic equation related to the given problem is . What is Present age of Surya ? When Tara's will be 10 years old, at that time Surya's age will be
	Rough Work

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CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 5 : ARITHMETIC PROGRESSION

NAME : -_____ SEC_____ ROLL NO____

QUE	SECTION A (Multiple Choice Questions)
1	The sum of first five multiples of 3 is _____ (a) 45 (b) 55 (c) 65 (d) 75
2	If the first term of an AP is –5 and the common difference is 2, then the sum of the first 6 terms is _____ (a) 0 (b) 5 (c) 6 (d) 15
3	If the common difference of an AP is 5, then what is $a_{18} - a_{13}$? (a) 5 (b) 20 (c) 25 (d) 30
4	The 4^{th} term from the end of the AP: –11, –8, –5, ... , 49 is (a) 37 (b) 40 (c) 43 (d) 58
5	If the 2^{nd} term of an AP is 13 and the 5^{th} term is 25, what is its 7^{th} term? (a) 30 (b) 33 (c) 37 (d) 38
6	The 10^{th} term of the AP: 5, 8, 11, 14, ….. is (a) 32 (b) 35 (c) 38 (d) 185
	SECTION B
7	If 7 times the 7^{th} term of an AP is equal to 11 times its 11^{th} term, then find its 18^{th} term.
8	Find the sum of all the 11 terms of an AP whose middle most term is 30.
9	Find the sum of first seven numbers which are multiples of 2 as well as of 9.

10	How many terms of the AP : 24, 21, 18, . . . must be taken so that their sum is 78?
12	Find the sum of the odd numbers between 0 and 50.
13	Aditya is celebrating his birthday. He invited his friends. He bought a packet of toffees/candies which contains 120 candies. He arranges the candies such that in the first row there are 3 candies, in second there are 5 candies, in third there are 7 candies and so on. On the basis of the above information, answer any four of the following questions: 1. Find the common difference of the AP. 2. Find the difference in number of candies placed in 7th and 3rd rows. 3. Find the total number of rows of candies OR Find the difference in number of candies placed in 9th and 4th rows.

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CHAPTER 5 : ARITHMETIC PROGRESSION

NAME : -_____ SEC_____ ROLL NO____

	SCETION – A Multiple Choice Questions
1	The list of numbers –10, – 6, –2, 2, ... is (a) an AP with d = –16 (b) an AP with d = 4 (c) an AP with d = – 4 (d) not an AP
2	If the common difference of an AP is 3, then a20 – a15 is (a) 5 (b) 3 (c) 15 (d) 20
3	How many terms will give the sum 636, in an AP: 9, 17, 25……. (a) 10 (b) 12 (c) 14 (d) 16
4	The 18^{th} term of an AP given by $a_n = 3 + 4n$ is. (a) 70 (b) 75 (c) 80 (d) 85
5	Which term of the AP: 21, 18, 15, …..is 0? (a) 6 (b) 7 (c) 8 (d) 9
6	If a = 5, d = 7 then a_{15} = _____? (a) 101 (b) 103 (c) 105 (d) 107
7	The sum of n terms of an AP is 5n2 – 3n. Find the AP and also its 10th term.
	SECTION B
8	In an AP, the sum of first ten terms is –150 and the sum of its next ten terms is –550. Find the AP.
9	If 5 times the 5th term of an AP is equal to 10 times the 10th term, show that its 15th term is zero.
	SECTION C
10	Find $a_{30} – a_{20}$ for an AP -9,-14,-19,-24…..

12	Which term of the AP : 21, 42, 63, 84, …..is 420?	
	SECTION D	
13	Your friend Veer wants to participate in a 200 m race. He can currently run that distance in 51seconds and with each day of practice it takes him 2 seconds less. He wants to do in 31 seconds. (a) Which of the following terms are in AP for the given situation (i) 51, 53, 55…. (ii) 51, 49, 47…. (iii) –51, –53, –55…. (iv) 51, 55, 59… (b) What is the minimum number of days he needs to practice till his goal is achieved (c) Which of the following term is not in the AP of the above given situation (i) 41 (ii) 30 (iii) 37 (iv) 39 (d) The value of x, for which 2x, x + 10, 3x + 2 are three consecutive terms of an AP	
	Rough Work	

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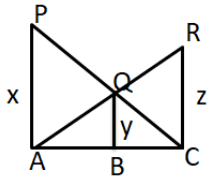
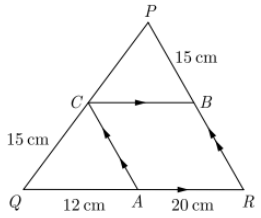
CHAPTER 6 : TRIANGLES

NAME : -_____ SEC_____ ROLL NO____

	SCETION – A Multiple Choice Questions
1	Sides of triangles are given below. Which of these is a right triangle ? (a) 7cm,5cm,24cm (b) 34cm,30cm,16cm (c) 4cm,3cm,7cm (d) 8cm, 12cm,14cm
2	If a ladder 10 m long reaches a window 8 m above the ground, then the distance of the foot of the ladder from the base of the wall is (a) 18 m (b) 8 m (c) 6 m (d) 4 m
3	A girl walks 200 towards East and the she walks 150m towards North. The distance of the girl from the starting point is (a) 350m (b) 250m (c) 300m (d) 225m
4	In Triangle ABC DE are the points of AB and AC, DE ll to BC if DC=4.5cm then DE is (a) 5cm (b) 1.5cm (c) 3cm (d) 2.25cm
5	All _____triangles are similar. (a) isosceles (b) equilateral (c) scalene (d) right angled
6	Two poles of height 6 m and 11 m stands vertically upright on a plane ground. If the distance between their foot is 12 m, the distance between their tops is_____ (a) 14 cm (b) 12 cm (c) 13 cm (d) 11 cm
	SECTION B
7	If ΔABC and ΔDEF are similar triangles such that $\angle A=47^0$ and $\angle E=83^0$, then find $\angle C$
8	In ABC, DE || AB, If CD = 3 cm, EC = 4 cm, BE = 6 cm, then find DA.
	SECTION C
9	In fig. PA, QB,RC are each perpendicular to AC prove that $\frac{1}{x}+\frac{1}{z}=\frac{1}{y}$ 

10	In triangle ABC , D & E are the points lying on AB and AC, DE ll BC AD = X + 3, BD = 3X + 19, AE = X, EC = 3X + 4. Find AE	
12	A vertical pole of length 6 m casts a shadow 4 m long on the ground and at the same time a tower casts a shadow 28 m long. Find the height of the tower.	
13	In the given figure, CB || QR and CA || PR. If AQ = 12 cm, AR = 20 cm, PB = = CQ 15 cm, calculate PC and BR.	

ROUGH WORK

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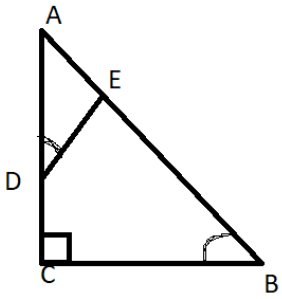
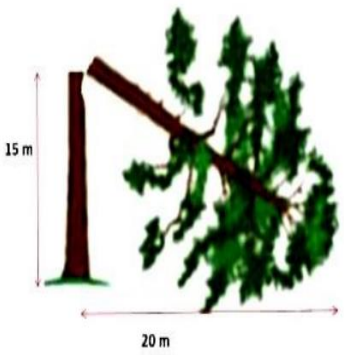
CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 6 : TRIANGLES

NAME : -_____ SEC_____ ROLL NO____

	SCETION – A Multiple Choice Questions
1	A vertical pole of length 20 m casts a shadow 10m long on the ground and at the same time a tower casts a shadow 50 m long, then the height of the tower. (a) 100 m (b) 120 m (c) 25m (d) none of these
2	If ΔABC and ΔDEF are similar such that 2AB = DE and BC = 8cm, then EF = _____. (a) 16 cm (b) 112 cm (c) 8cm (d) 4cm
3	In Δ ABC, DE ‖ BC and AD = 4cm, AB = 9cm, AC = 13.5cm then the value of EC is (a) 6 cm (b) 7.5 cm (c) 9 cm (d) none of these
4	If in triangle ABC and DEF, $\frac{AB}{DE} = \frac{BC}{FD}$, then they will be similar when (a) ∠B = ∠E (b) ∠A = ∠D (c) ∠B = ∠D (d) ∠A = ∠F
5	From the following which is not the similarity criterion for triangle. (a) AAA (b) SSS (c) SSA (d) SAS
6	If Δ ABC ~ Δ DEF, AB = 3cm,BC = 4cm, CA = 5 cm and DE = 4.5 cm then peri (Δ DEF) is (a) 15 cm (b) 18 cm (c) 21 cm (d) 24cm
	SCETION – B
7	P & Q are points on sides AB and AC of Δ ABC. If AP = 3cm PB = 6cm, AQ=5cm and QC=10cm show that BC = 3PQ
8	Find ∠B in Δ ABC, if AB = $6\sqrt{3}$ cm, AC = 12 cm and BC = 6 cm.
	SCETION - C
9	A 15 m high tower casts a shadow 24 m long at a certain time and at the same time, a telephone pole casts a shadow 16 m long. Find the height of the telephone pole.

10	In fig. ∠ADE = ∠B show that Δ ADE ~ Δ ABC If AD = 3.8cm, AE = 3.6cm BE = 2.1cm BC = 4.2 cm Find DE 	
12	Through the midpoint M of the side CD of a parallelogram ABCD, the line BM is drawn intersecting AC in L and AD produced in E. Prove that EL = 2 BL	
	SCETION - D	
13	Suresh is having a garden near Delhi. In the garden, there are different types of trees and flower plants. One day due to heavy rain and storm one of the trees got broken as shown in the figure. The height of the unbroken part is 15 m and the broken part of the tree has fallen at 20 m away from the base of the tree. (a) What is the length of the broken part? (b) What was the height of the full tree? (c) What is the area of the formed right angled triangle? (d) What is the perimeter of the formed triangle?	

Rough Work

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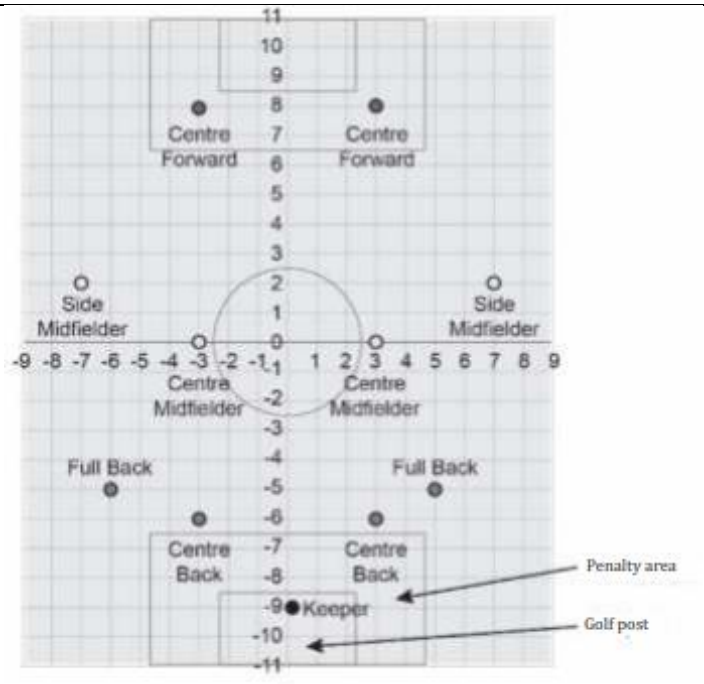
CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 7: COORDINATE GEOMETRY

NAME : -_____ SEC_____ ROLL NO_____

SECTION – A (1 MARKS EACH)MCQ [1×5=5]	
Q-1:	The distance of the point P (–6, 8) from the origin is (a) 8 units (b) 27 units (c) 6 units (d) 10 units
Q-2:	If the point C (k, 4) divides the join of the points A (2,6) and B(5, 1) in the ratio 2 : 3 then the value of k is (a) 16 (b) $\frac{28}{5}$ (c) $\frac{16}{5}$ (d) $\frac{8}{5}$
Q-3:	If the coordinates of one end of a diameter of a circle are (2, 3) and the coordinates of its centre are (–2, 5), then the coordinates of the other end of the diameter are (a) (–6, 7) (b) (6, –7) (c) (4, 2) (d) (5, 3)
Q-4:	If R (5,6) is the midpoint of the line segment AB joining the points A(6,5) and B(4, y) then y equals (a) 5 (b) 7 (c) 12 (d) 6
Q-5:	Assertion : The coordinates of the point which divides the line segment joining the points (3,4) and (-5,-7) internally in the ratio 2:3 is $(\frac{-1}{5}, \frac{-2}{5})$ Reason : The section formula is $(\frac{m1x2+m2x1}{m1+m2}, \frac{m1y2+m2y1}{m1+m2})$ (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.
SECTION – B (2 MARKS EACH) [2*2 = 4]	
Q-6:	Check whether points are collinear or not A(1-1), B(5,2) and C(9,5)

Q-7:	Find the point on x-axis which is equidistant from points A(–1, 0) and B(5, 0).
SECTION – C (3 MARKS EACH) [3*2 = 6]	
Q-8:	Point P divides the line segment joining the points A(2,1) and B(5,-8) such that AP : AB = 1: 3 If P lies on the line 2X + y + k = 0 , find the value of k
Q-9:	Find the coordinates of the points of trisection of the line segment joining the points A(7, -2) and B(1, –5).

SECTION – D (4 MARKS EACH) [4*1 = 4]	
Q-10:	Show that the points A (3 , 5), B (6,0), C (1,-3) and D (-2,2) are the vertices of a square ABCD.
CASE BASED QUESTION	
Q-11:	 Ronit is the captain of his school football team. He has decided to use 4-4-2-1 formation in the next match. The above figure shows the position of the players in 4-4-2-1 formation on a coordinate grid Q-1. Which of the following coordinates represents the position of the goalkeeper? [1] (a) (9, –9) (b) (0, 9) (c) (–9, 0) (d) (0, –9)

	Q-2. What is the distance between the two centre forward positions in Ronit's plan? [1] (a) 3 units (b) 6 units (c)$5\sqrt{3}$ units (d) 16 units Q-3. Mention two positions which are not equidistant from any axis. (1) Q-4. Which two positions are on the line $2.5y - x - 11 = 0$? (2)
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CHAPTER 7: COORDINATE GEOMETRY

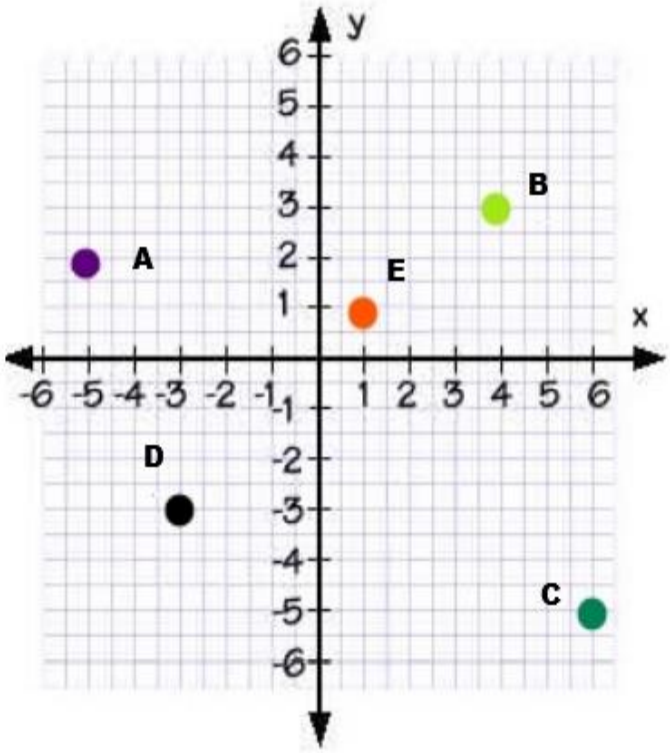
NAME : -_____ SEC_____ ROLL NO_____

	MCQ [1×5=5]
Q-1:	ABCD is a rectangle whose three vertices are B (4, 0), C(4, 3) and D(0, 3). The length of one of its diagonals is (a) 5 (b) 4 (c) 3 (d) 25
Q-2:	If the coordinates one point on the circle is (-2, 3) and its radius is 3 unit the coordinates of its centre are (a , 3), then a = _____ (a) 1 OR 5 (b) -1 OR -5 (c) -1 OR 4 (d) 1 OR -5
Q-3:	The point P which divides the line segment joining the points A(2, –5) and B(5, 2) in the ratio 2 : 3 lies in the quadrant (a) I (b) II (c) III (d) IV
Q-4:	If P (–1, 1) is the midpoint of the line segment joining A(–3, b) and B (1,b+4) then b = _____ ? (a) 1 (b) –1 (c) 2 (d) 0
Q-5:	If A(1, 3), B(–1, 2), C(2, 5) and D(x, 4) are the vertices of a||gm ABCD then the value of x is (a) 3 (b) 4 (c) 0 (d) $\frac{3}{2}$
	SECTION – B (2 MARKS EACH) [2*2 = 4]
Q-6:	In what ratio is the line segment joining the points A (-2, -3) and B(3,7) divided by the y-axis? Also, find the coordinates of the point of division
Q-7:	If the point P (k-1 ,2) is equidistant from the points A (3, k) and B(k, 5) find the values of k.

SECTION – C [3*2 = 6]	
Q-8:	If the coordinates of points A and B are (–2, –2) and (2, –4) respectively, find the coordinates of the point P such that AP $= \frac{3}{7} AB$, where P lies on the line segment AB.
Q-9:	If three consecutive vertices of a parallelogram ABCD are A(1,-2), B(3,6) and C (5,10), find its fourth vertex D.
SECTION – D [4*1 = 4]	
Q-10:	Points A (-1 ,y) and B(5, 7) lie on a circle with centre O (2 , -3y). Find the values of y. Hence, find the radius of the circle.

CASE BASED QUESTION

Q-11:



A group of students named Ria, Emma, Anna, Krish and Sahil are gathered around in the school library, in their library period. The coloured plot points on the coordinate plane shown in the above image indicates the dots where each book is available. Considering point O as the origin. The books with respect to points are: Science guide – A(-5,2), Maths guide – B(4,3), English guide – D(-3,-3), History guide - E (1,1)and Sanskrit guide – C(6,-5).

Q-1: How much distance does Emma has to walk to get the Science guide, if her starting point is (0,2) ? [1]

Q-2: How far apart are the English and Sanskrit guide ? (1)

Q-3: The distance between the location of History guide and Sahil's starting point (which is at origin) is ..... [2]

(a) less than 2 units (b) greater than 2 units
(c) less than 5 units (d) greater than 5 units

OR

What type of triangle ADE is?
(a) Right triangle (b) Scalene triangle
(c) Isosceles triangle (d) Equilateral triangle

Rough Work

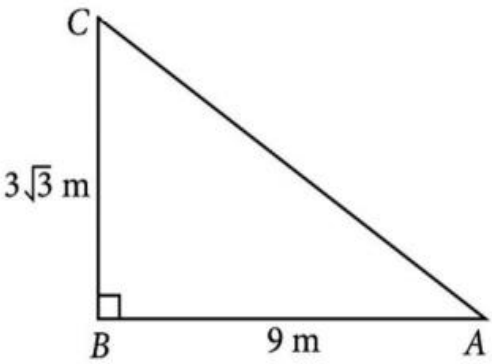
KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 8: INTRODUCTION TO TRIGONOMETRY

NAME : -_____ SEC_____ ROLL NO____

	SECTION – A (MCQ)
Q.1	In Δ ABC, right-angled at B, AB = 24 cm, BC = 7 cm. The value of tan C is: (a) 12/7 (b) 24/7 (c) 20/7 (d) 7/24
Q.2	If y sin 45° cos 45° = $\tan^2 45° - \cos^2 30°$, then y = (a) –1/2 (b) ½ (c) -2 (d) 2
Q.3	$1 - \text{Sin}^2\text{A}$ is equal to: (a) Cos^2A (b) $\tan^2\text{A}$ (c) $1 - \sin^2\text{A}$ (d) $\sec^2\text{A}$
Q.4	If x = a cos θ and y = b sin θ, then $b^2x^2 + a^2y^2$ = (a) ab (b) $b^2 + a^2$ (c) a^2b^2 (d) a^4b^4
Q.5	If ΔABC is right angled at C, then the value of cos(A+B) is (a) 0 (b) 1 (c) ½ (d) √3/2
	SECTION – B
Q.6	If √3sinθ - cosθ = 0 and $0° < \theta < 90°$, find value of θ
Q.7	Prove that sec A (1 – sin A)(sec A + tan A) = 1.
	SECTION – C
Q.8	Evaluate $\frac{\sin 30° + \tan 45° - \text{cosec} 60°}{\sec 30° + \cos 60° + \cot 45°}$

Q.9	Prove that: $\sqrt{\frac{1-SinA}{1++SinA}}$ =secA+tanA
	SECTION – D
Q.10	Three friends Montu, Pintu & chhotu are playing hide and seek in a park. Montu, Pintu hide in the shrubs and chhotu have to find both of them. If the positions of three friends are at A, B and C respectively as shown in the figure and forms a right-angled triangle, such that AB =9 m, BC= 3√3 m and $\angle B$ =90°.Now answer the following questions.  
(i)	Find out the measure of $\angle A$ is
(ii)	Find out the length of AC
(iii)	Find out the measure of cos 2A

SPACE FOR ROUGH WORK

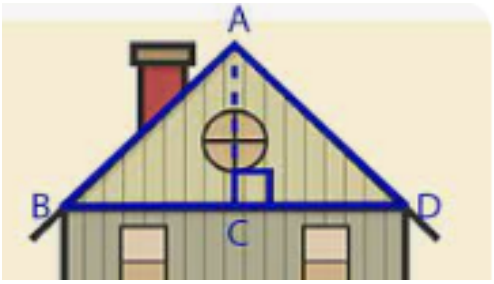
KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 8: INTRODUCTION TO TRIGONOMETRY

NAME : -_____ SEC_____ ROLL NO_____

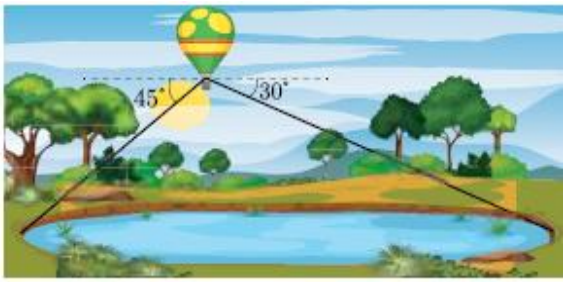
	SECTION – A (MCQ)
Q.1	The two legs AB and BC of right triangle ABC are in the ratio 1:3.What will be the value of sinC? **(a)** $\sqrt{10}$ **(b)** $\frac{1}{\sqrt{10}}$ **(c)** $\frac{3}{\sqrt{10}}$ **(d)** $\frac{1}{2}$
Q.2	If β = 30°, prove that 3sin β - 4 $\sin^3\beta$. (a) -1 (b) ½ (c) 2 (d) 1
Q.3	If 5tan θ = 4, then value of is : $\frac{(5\sin\theta - 3\cos\theta)}{(5\sin\theta + 3\cos\theta}$): (a)1/3 (b) 1/7 (c)4/5 (d) 2/3
Q.4	If cos X = a/b, then sin X is equal to: (a) $(b^2-a^2)/b$ (b) (b-a)/b (c) $\sqrt{(b^2-a^2)}/b$ (d) √(b-a)/b
Q.5	The value of (sin 45° + cos 45°) is (a)$\frac{1}{\sqrt{2}}$ (b)$\sqrt{2}$ (c) √3/2 (d) 1
	SECTION – B
Q.6	If sin (x + y) = 1 and cos (x - y) = √3/2 find x and y.
Q.7	Prove that: $(\text{cosec}\,\theta - \cot\theta)^2 = \frac{1-\cos\theta}{1+\cos\theta}$
	SECTION – C
Q.8	Evaluate: $\frac{5\cos^2 60° + 4\sec^2 30° - \tan^2 45°}{\sin^2 30° + \cos^2 30°}$

Q.9	Prove that: $\frac{\tan\theta}{1-\cot\theta}+\frac{\cot\theta}{1-\tan\theta}=1+\sec\theta\,\text{cosec}\,\theta$
	SECTION – D
Q.10	Aanya and her father go to meet her friend Juhi for a party. When they reached to Juhi 's place, Aanya saw the roof of the house, which is triangular in shape. If she imagined the dimensions of the roof as given in the figure is as under, then answer the following questions. BD=12m,AB=AD=$6\sqrt{2}$m 
(i)	If C is the midpoint of BD, then find the AC
(ii)	Find out Measure of $\angle B$
(iii)	Find the value of sinA + cosC.
SPACE FOR ROUGH WORK	

KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION
CLASS: X SUB: MATHEMATICS TIME: 30 MIN
CHAPTER 9: SOME APPLICATIONS OF TRIGONOMETRY.
NAME : -_____ SEC_____ ROLL NO____

	Section A Multiple choice-based questions:
Q1	If a kite is flying at a height of $40\sqrt{3}$ m from the level ground, attached to a string inclined at 6^0 to the horizontal then the length of string is (a)80 (b)$60\sqrt{3}$ (c)$80\sqrt{3}$ (d)120
Q2	The angle of elevation of the top of the building from the foot of the tower is 30^o. And, the angle of elevation of the top of the tower from the foot of the building is 60^o.What will be the height of the building if the height of the tower is 50/3 m. (a)50/9 (b)$50\sqrt{3}$ (c)50/2 (d)120
Q3	What will be the angle of elevation of the sun, when the length of the shadow of tree is $\sqrt{3}$ times the length of the tree (a)30^0 (b) 45^0 (c) 60^0 (d) 90^0
Q4	On the same side of a tower, two objects are located. When observed from the top of the tower, their angles of depression are 45^o and 60^o. If the height of the tower is 150 m, fine the distance between the objects. (a)63.5m (b)76.9m (c)86.7m (d)90m
Q 5	The angle of depression of a point situated at a distance of 70 metres from the base of a tower is 45° The height of the tower is (a)70√3 m (b)70m (c)70√2 (d)140
	Section B
Q.6	From a point 375 meters away from the foot of a tower, the top of the tower is observed at an angle of elevation of 45°, What will be the height of the tower?
Q.7	On the level ground, the angle of elevation of the top of a tower is 30°.on moving 20 meters nearer, the angle of elevation is 45°. What will be the height of the tower?

Q.8	The horizontal distance between two towers is 90 m. The angular depression of the top of the first as seen from the top of the second which is 180 m high is 45^0.What will be the height of the first tower?
	Section C
Q.9	An observer 1.4 m tall is $10\sqrt{3}$ away from a tower. The angle of elevation from his eye to the top of the tower is 60°. Find the heights of the tower.
Q.10	The heights of two towers are 90 meters and 45 meters. The line joining their tops make an angle 45^0 with the horizontal. Find the distance between the two towers.

	Section D
Q.11	Observe the figure given below The angle of depression to one side of a lake, measured from a balloon 300 meter above the lake as shown in the accompanying figure, is 45^0 . The angle of depression to the opposite side of the lake is 30^0.  .
	(i) Find the width of the lake.
	(ii) Find the ground distance of balloon from sides of lake
	(iii) Find the distance from a point to balloon where it makes 45^0 angle of depression
SPACE FOR ROUGH WORK	

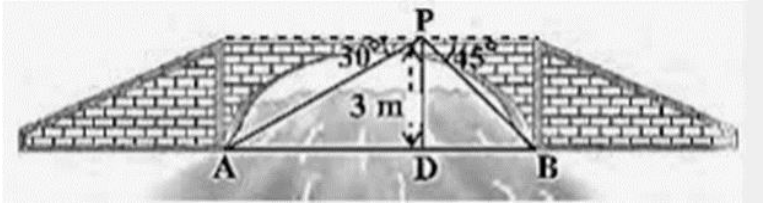
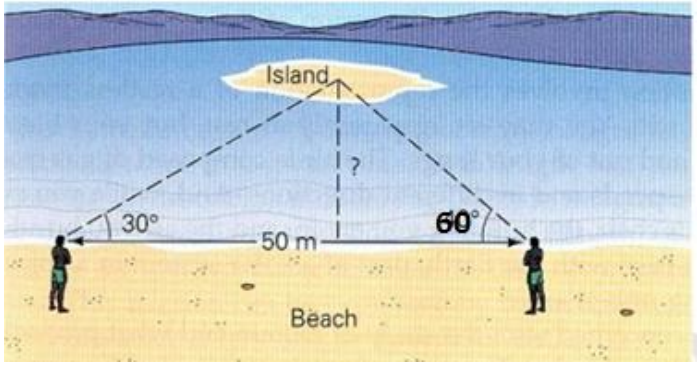
KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 9: SOME APPLICATIONS OF TRIGONOMETRY.

NAME : -_____ SEC_____ ROLL NO_____

	SECTION – A (MCQ)
Q.1	A pole 6m high casts a shadow $2\sqrt{3}$ m long on the ground, then the Sun's elevation is (a) 60^0 (b) 45^0 (c) 30^0 (d) 90^0
Q.2	The formed by the line of sight with the horizontal when the point is below the horizontal level is called angle of: (a) elevation (b) depression (c)incident (d) None
Q.3	A ladder makes an angle of 60° with the ground, when placed along a wall. If the foot of ladder is 8 m away from the wall, the length of ladder is (a) 4 m (b) 8 m (c) $8\sqrt{3}$ m (d) 16 m
Q.4	If the height and length of a shadow of a tower are the same, then the angle of elevation of Sun is (a) 30° (b) 60° (c) 45° (d) 15°
Q.5	The angle of depression of an object on the ground, from the top of a 25 m high tower is 30°. The distance of the object from the base of tower is (a) $25\sqrt{3}$ m (b) $50\sqrt{3}$ m (c) $75\sqrt{3}$ m (d) 50 m
	SECTION – B
Q.6	If the ratio of height of the tower and the length of its shadow is $\sqrt{3}$:1. What is the angle of elevation?
Q.7	If the angles of elevation of the top of a tower from two points at the distance of 4 m and 9 m from the base of tower and in the same straight line with it are complementary, then find the height of the tower.

SECTION – C	
Q.8	From the point on a bridge across a river, the angles of depressions of the banks on opposite sides of the river are 30◦ and 45◦, respectively. If the bridge is at a height of 3 m from the banks, find the width of the river. 
Q.9	A tree breaks due to a storm and the broken part bends so that the top of the tree touches the ground making an angle of 30° with the ground. The distance between the foot of the tree to the point where the top touches the ground is 8 m. Find the height of the tree.
SECTION – D	
Q.10	Mohan and Sohan went on a vacation to a seaside. They spotted an island at a certain distance from the sea shore. The two friends planned to stand at a distance of 50 m from each other such that the angle of elevation from Mohan to the island is 30°while that from Sohan is 60°as shown in the figure below. 

	(i) What is the distance of the island from Mohan from the point where he is standing?
	(ii) What is the distance of the island from Sohan from the point where he is standing?
	(iii) What is the perpendicular distance of the island from the line joining Mohan and Sohan?

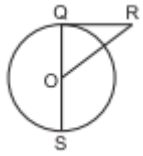
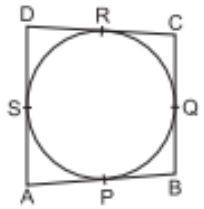
SPACE FOR ROUGH WORK

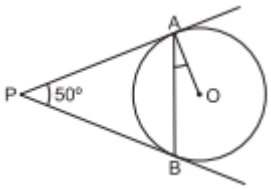
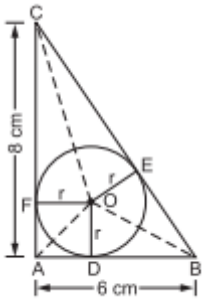
KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

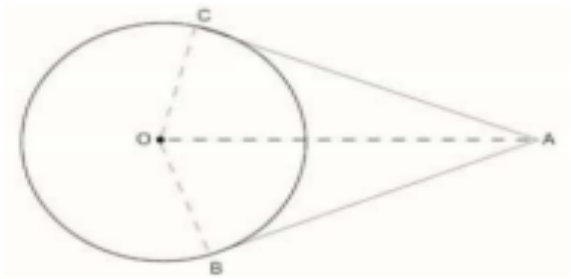
CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 10: CIRCLE

NAME : -_____ SEC_____ ROLL NO_____

	SECTION – A (1 MARKS EACH)MCQ [1×5=5]
Q-1:	PQ is a tangent to a circle with centre O at the point P. If △OPQ is an isosceles triangle, then ∠OQP is equal to (a) 30° (b) 45° (c) 60° (d) 90°
Q-2:	If PT is a tangent to the circle with centre O. If OT = 6 cm and OP = 10 cm, then the length of tangent PT is (a) 8 cm (b) 10 cm (c) 12 cm (d) 16 cm
Q-3:	Which of the following pairs of lines in a circle cannot be parallel? (a) Two chords (b) A chord and a tangent (c) Two tangents (d) Two diameters
Q-4:	 In the given figure, RQ is a tangent to the circle with centre O. If SQ = 6 cm and QR = 4 cm, then OR is equal to (a) 2.5 cm (b) 3 cm (c) 5 cm (d) 8 cm
Q-5:	Assertion (A): At a point P of a circle with centre O and radius 12 cm, a tangent PQ of length 16 cm is drawn. Then, OQ = 20 cm. Reason (R): The tangent at any point of a circle is perpendicular to the radius through the point of contact. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A). (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A). (c) Assertion (A) is true and Reason (R) is false. (d) Assertion (A) is false and Reason (R) is true
	SECTION – B (2 MARKS EACH)
Q-6:	In the given figure, a quadrilateral ABCD is drawn to circumscribe a circle such that its sides AB, BC, CD and AD touch the circle at P, Q, R and S respectively. If AB = x cm BC = 7cm CR = 3 cm and AS = 5 cm, find x. 

Q-7:	In the given figure, PA and PB are two tangents to the circle with centre O. If ∠APB = 50 then what is the measure of ∠OAB. 
SECTION – C (4 MARKS EACH)	
Q-8:	In the given figure, ABC is a right-angled triangle with AB = 6 cm and AC = 8 cm. A circle with centre O has been inscribed inside the triangle. Calculate the value of r, the radius of the inscribed circle. 
Q-9:	A Circle is touching the side BC of triangle ABC at P and touching AB and AC produced at Q and R respectively. Prove that AQ = ½ (Perimeter of Triangle ABC)

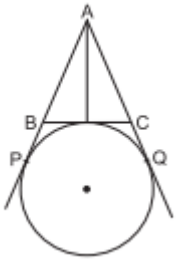
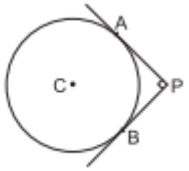
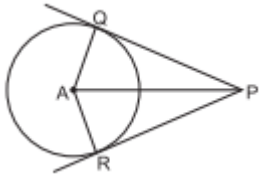
SECTION – D (5 MARKS EACH)	
Q-10	Prove that the opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.
CASE BASED QUESTION	
Q-11	Given below is the diagram of a pair of pulleys.  The length of AC is 12 cm. Q-1: In the given figure, ∠CAB = 20°. What is the measure of ∠AOC? [1] Q-2: what is the perimeter of triangle ABO if the radius of circle is 5cm. [2] Q.3 Can you draw parallel lines passing through points CB. If yes / No Why? [1]
	Rough Work

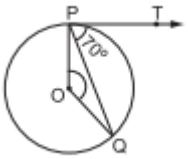
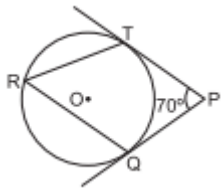
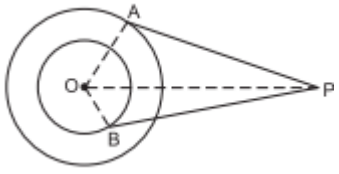
KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

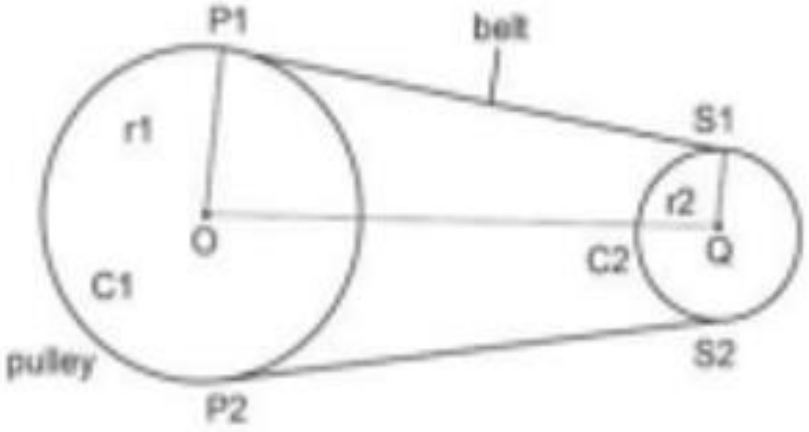
CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 10: CIRCLE

NAME : -_____ SEC_____ ROLL NO____

SECTION –A (MCQ-1 MARK EACH)	
Q-1:	In the given figure, AP, AQ and BC are tangents to the circle. If AB = cm AC = 6 cm , and BC = 4 cm then the length of AP is (a) 15 cm (b) 10 cm (c) 9 cm (d) 7.5 cm 
Q-2:	In the given figure, PA and PB are two tangents drawn from an external point P to a circle with centre C and radius 4 cm. If PA ⊥ PB, then the length of each tangent is (a) 3 cm (b) 4 cm (c) 5 cm (d) 6 cm 
Q-3:	In the given figure, PQ and PR are tangents to a circle with centre A. If ∠QPA = 27 then ∠QAR equals (a) 63° (b) 117° (c) 126° (d) 153° 
Q-4:	The number of tangents that can be drawn from an external point to a circle is (a) 1 (b) 2 (c) 3 (d) 4
Q-5:	In a circle of radius 7 cm, tangent PT is drawn from a point P such that PT = 24 cm. If O is the centre of the circle, then length OP = ? (a) 30 cm (b) 28 cm (c) 25 cm (d) 18 cm

SECTION – B (2 MARKS EACH)	
Q-6:	If PT is a tangent to a circle with centre O and PQ is a chord of the circle such that ∠QPT = 70, then find the measure of ∠POQ. 
Q-7:	In the given figure, O is the centre of a circle. PT and PQ are tangents to the circle from an external point P. If ∠TPQ = 70, find ∠TRQ. 
SECTION – C (3 MARKS EACH)	
Q-8:	Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle (in cm) which touches the smaller circle.
Q-9:	In the given figure, O is the centre of two concentric circles of radii 4 cm and 6 cm respectively. PA and PB are tangents to the outer and inner circle respectively. If PA = 10 cm, find the length of PB up to one place of decimal. 

SECTION – D (4 MARKS EACH) [4*1 = 4]	
Q-10:	A quadrilateral is drawn to circumscribe a circle. Prove that the sums of opposite sides are equal.
CASE BASED QUESTION	
Q-11:	 Given is the diagram of a pair of pulleys. C1 and C2 are two pulleys attached with a belt. P1 and P2 are position of contact, where the belt meets C1. S1 and S2 are point of contact, where belt meets C2. O and Q are the centres of C1 and C2, respectively Q-1: Identify the common tangents to the two circles (pulleys)? [1]

Q-2: Ankit joins the centre of the two pulleys and observes line segments P1S1 and P2S2 when extended meet at a point X. What is the length of OX when the diameter of C1 is 30cm, diameter of C2 is 10cm and length of OQ is 100cm. [2]

(a) 33.3cm (b) 133.3cm (c) 150cm (d) 250cm

Q-3: Which line segment is equal to the length of P1S1? [2]

(a) OQ (b) QX (c) XS2 (d) P2S2

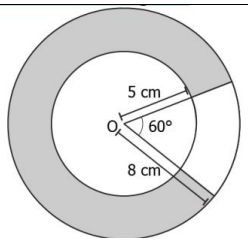
Rough WORK

KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 11: AREA RELATED TO CIRCLE

NAME : -_____ SEC_____ ROLL NO_____

Sr	**Section A (Multiple Choice Questions)**			
1	If the area of a semi-circular field is 15400 sq m, then perimeter of the field is:			
	(a) $160\sqrt{2}$ m	(b) $260\sqrt{2}$ m	(c) $360\sqrt{2}$ m	(d) $460\sqrt{2}$ m
2	A race track is in the form of a ring whose inner and outer circumference are 437 m and 503 m respectively. The area of the track is			
	(a) 66 sq. cm	(b) 4935 sq. cm.	(c) 9870 sq. cm	(d) None
3	If the circumference of a circle increases from 4π to 8π , then its area is			
	(a) halved	(b) doubled	(c) tripled	(d) quadrupled
4	If the perimeter of a semi-circular protractor is 36 cm, then its diameter is			
	(a) 10 cm	(b) 12 cm	(c) 14 cm	(d) 16 cm
5	If the sector of a circle of diameter 12 cm subtends an angle of 120^0 at the centre, then the length of the arc of the sector is			
	(a) 2π	(b) 3π	(c) 4π	(d) 5π
	Section B			
6	A circular garden, of circumference 88 m is surrounded by a pathway of width 3.5 m. Ajay wants to put fence around the pathway. What is the cost of fencing the pathway at the rate of ₹70 per metre?			
7	Two concentric circles of radius 8 cm and 5 cm are shown below, and a sector forms an angle of 60° at the centre O. What is the area of the shaded region?			

Section C

8 The above right sided figure depicts a racing track whose left and right ends are semi-circular. The distance between the two inner parallel line segments is 60 m and they are each 106 m long. If the track is 10 m wide, find:

a) the distance around the track along its inner edge

b) the area of the track.

9 A horse is tied to a peg at one corner of a square shaped grass field of side 15 m by means of a 5 m long rope.

Find

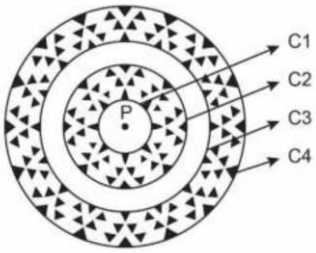
a) the area of that part of the field in which the horse can graze.

b) The increase in the grazing area if the rope were 10 m long instead of 5 m. (Use π = 3.14)

Section D

10 Jaya drew this rangoli design during a competition. Circles C1, C2, C3 and C4 have common centre P.The table given below shows the radii of circles in terms of the radius of circle C1.The radius of circle C1 is 6 cm

Radius of circle	Times of the radius of C1
C2	2
C3	2.5
C4	3.5



a) Find the area of the shaded region.

	b) Jaya want to outline the boundaries of circles C2 & C3 with ribbon. One roll of ribbon is 20 cm long. How many of rolls of ribbon would Jaya need? c) Jaya says "since the radius of C4 is 3.5 times the radius of C1, the area occupied by the circle C4 is also 3.5 times the area occupied by the circle C1. Is Jaya correct? Give reason.
	Rough Work

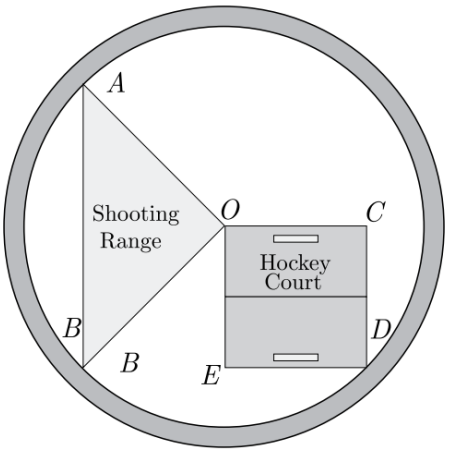
KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER11: AREA RELATED TO CIRCLE

NAME : -_____ SEC_____ ROLL NO____

Sr	**SECTION A (Multiple Choice Questions)**			
1	In a circle of diameter 42cm, if an arc subtends an angle of 60° at the centre then the length of arc is			
	(a) 11 cm	(b) 22 cm	(c) 33 cm	(d) 44 cm
2	Area of a sector of angle θ (in degrees) of a circle with radius r is			
	(a) $\frac{\theta}{360^0}\ 2\pi r$	(b) $\frac{\theta}{180^0}\ \pi r^2$	(c) $\frac{\theta}{360^0}\ \pi r^2$	(d) $\frac{\theta}{180^0}\ \pi r$
3	The number of revolutions made by a circular wheel of radius 0.7m in rolling a distance of 176m is			
	(a) 22	(b) 24	(c) 75	(d) 40
4	If the area of a circle is 154 cm^2, then its circumference is			
	(a) 11 cm	(b) 22 cm	(c) 44 cm	(d) 55 cm
5	It is proposed to build a single circular park equal in area to the sum of areas of two circular parks of diameters 16 m and 12 m in a locality. The radius of the new park would be			
	(a) 10 m	(b) 15 m	(c) 20 m	(d) 24 m
	SECTION B			
6	The length of the minute hand of a clock is 7 cm. Find the area swept by it when it moves from 7:05 p.m. to 7:15 p.m.			
7	Find the area of a sector of circle of radius 21 cm and central angle 120°			
	SECTION C			
8	A calf is tied with a rope of length 6 m at the corner of a square grassy lawn of side 20 m. If the length of the rope is increased by 5.5m, find the increase in area of the grassy lawn in which the calf can graze.			

9	The diameters of front and rear wheels of a tractor are 80 cm and 2 m respectively. Find the number of revolutions that rear wheel will make in covering a distance in which the front wheel makes 1400 revolutions.
10	**Case Study Based Question**
	Jawaharlal Nehru Stadium is conducting the annual sports competition soon. The curator of the stadium is tasked to figuring out the dimensions for carving out some areas allotted for a hockey court and a shooting range, as shown in the figure.
	The shapes of the hockey court and the shooting range are square and triangle respectively. Both of the courts have a common edge that touches the centre of stadium. The construction of the shooting range is such that the angle to centre is 90^0. The radius of the stadium is 180 metres. 
	a) What is the area allotted to shooting range? b) What is the area allotted to hockey court? c) If the team of the curators managing the stadium, likes to allot space for some more sports, how much area is available to them?

Rough Work

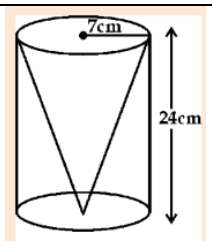
KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

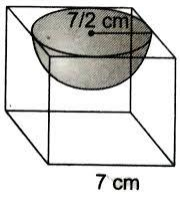
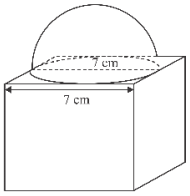
CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 12: (SURFACE AREA & VOLUMES)

NAME : -_____ SEC_____ ROLL NO____

Sr	**Section A (Multiple Choice Questions)**			
1	The circumference of the base of a right circular cylinder is 176 cm and it is 1 m high. Find the lateral surface area of the cylinder.			
	(a) 176 cm^2	(b) 1760 cm^2	(c) 17600 cm^2	(d) None
2	Two identical solid cubes of side k units are joined end to end. What is the volume, in cubic units, of the resulting cuboid?			
	(a) k^3	(b) $2k^3$	(c) $3k^3$	(d) $6k^3$
3	If the radii of the bases of a cylinder and a cone are in the ratio 3:4 and their heights are in the ratio 2:3, then the ratio their volumes is			
	(a) 9:8	(b) 7:6	(c) 5:4	(d) None
4	If a solid sphere with total surface area 48 cm^2 is bisected in to two hemispheres, then the total surface area of each hemisphere is			
	(a) 24 cm^2	(b) 36 cm^2	(c) 12 cm^2	(d) None
5	A right triangle with sides 3 cm, 4 cm and 5 cm is rotated about the side of 3 cm to form a cone. The volume of the cone so formed is			
	(a) 12π cm^2	(b) 14π cm^2	(c) 16π cm^2	(d) 18π cm^2
	S Section B			
6	A cuboidal tin open at the top has dimensions of 20 cm X 16 cm X 14 cm. What is the total area of a sheet of metal required to make 10 such tins?			
7	The diameter of a roller is 80 cm and its length is 126 cm. It takes 750 revolutions to level a playground. Find the area of the playground.			

	Section C
8	A circus tent is cylindrical up to a height of 4.2 m and conical above it. The common diameter of the base of cylindrical and conical parts is 6m. If the total height of the tent from the ground is 8.2m, find the cost of canvas needed to make the tent at the rate of Rs 160 per m^2.
9	From a solid cylinder of height 24cm and radius 7cm, a conical cavity of the same height and same radius is taken out. Find (i) the volume of remaining solid, and (ii) total surface area of the remaining solid. 

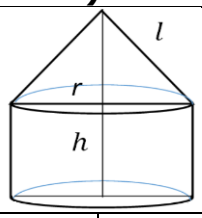
10	**Section D**
	There are two identical solid cubical boxes of side 7cm. From the top face of the first cube a hemisphere of diameter equal to the side of the cube is scooped out. This hemisphere is inverted and placed on the top of the second cube's surface to form a dome.
	 
	a) Find Total surface areas of each new solid. b) Find Volume of each new solid. c) Silky says that both solids have same total surface areas. Silvy says that both solids have same volumes. Who is correct?
	Rough Work

KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

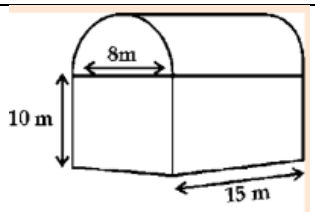
CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 12: SURFACE AREA AND VOLUME

NAME : -_____ SEC_____ ROLL NO_____

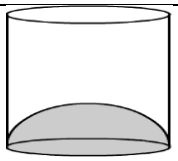
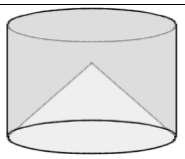
Sr	**Section A (Multiple Choice Questions)**			
1	Find the total surface area of the given solid figure.			
	(a) $\pi r(l+rh)$	(b) $\pi r(l+rh+r)$	(c) $\pi r(l+r)$	(d) None
2	What is the total surface area of a solid hemisphere of radius 7 cm?			
	(a) 447π cm^2	(b) 174π cm^2	(c) 239π cm^2	(d) 147π cm^2
3	The volume of the largest right circular cone that can be cut out from a cube of edge 4.2 cm is			
	(a) 9.7 cm^3	(b) 77.6 cm^3	(c) 58.2 cm^3	(d) 19.4 cm^3
4	Volumes of two spheres are in the ratio 64:27. The ratio of their surface areas is			
	(a) 3:4	(b) 4:3	(c) 9:16	(d) 16:9
5	Two identical cubes each of volume 64 cm^3 are joined together end to end. What is the surface area of the resulting cuboid?			
	(a) 512 cm^2	(b) 192 cm^2	(c) 160 cm^2	(d) 128 cm^2
	Section B			
6	A solid toy is in the form of a hemisphere surmounted by a right circular cone. The height of the cone is 4 cm and the diameter of the base is 8 cm. Find the volume of the toy.			
7	A heap of rice is in the form of a cone of diameter 9 m and height 3.5 m. How much canvas cloth is required to just cover the heap?			

	Section C
8	Volume of a right circular cone is 78848 cm3. Its radius is 28 cm. Find its (i) curved surface area and (ii) total surface area
9	A godown is in the shape of a cuboid surmounted by a half cylinder as shown in the figure. Find (i) its capacity and (ii) the cost of painting it inside at the rate of Rs. 50/m^2 (use = 3.14)



Section D

10 Isha is 10 years old girl. On the result day, Isha and her father Suresh were very happy as she got first position in the class. While coming back to their home, Isha asked for a treat from her father as a reward for her success. They went to a juice shop and asked for two glasses of juice.
Aisha, a juice seller, was serving juice to her customers in two types of glasses. Both the glasses had inner radius 3cm. The height of both the glasses was 10cm.

First type: A Glass with hemispherical raised bottom.		Second type: A glass with conical raised bottom of height 1.5 cm.	

a) Find the capacity of the first type glass.

b) Find the capacity of the second type glass.

c) Isha insisted to have the juice in first type of glass and her father decided to have the juice in second type of glass. Out of the two, Isha or her father Suresh, who got more quantity of juice to drink and by how much?

Rough work

KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 13: STATISTICS

NAME : -_____ SEC_____ ROLL NO_____

	SECTION A (Multiple choice questions)
Q 1	The class marks of a frequency distribution are given as follows : 15, 20, 25, ... The class corresponding to the class mark 20 is : a. 12.5 - 17.5 b. 17.5 - 22.5 c. 18.5 - 21.5 d. 19.5 - 20.5
Q 2	There are 50 numbers. Each number is subtracted from 53 and the mean of the numbers so obtained is found to be –3.5. The mean of the given numbers is : (A) 46.5 (B) 49.5 (C) 53.5 (D) 56.5
Q 3	The relationship between mean, median and mode for a moderately skewed distribution is a) mode = median – 2 mean (b) mode = 3 median – 2 mean (c) mode = 2 median – 3 mean (d) mode = median – mean
Q 4	A car travels from city A to city B, 120 km apart at an average speed of 50 km/h. It then makes a return trip at an average speed of 60 km/h. It covers another 120 km distance at an average speed of 40 km/h. The average speed over the entire 360 km will be (a)50km/h (b)120km/h (c) $\frac{1800}{37}$ km/h (d)None of these
	Section B
Q.6	The A.M of the following distribution is 47. Determine the value of P.

Classes	0-20	20-40	40-60	60-80	80-100
Frequency	8	15	20	P	5

Q.7 Find the median of the following data:

Marks	Frequency
Less than 10	0
Less than 30	10
Less than 50	25
Less than 70	43
Less than 90	65
Less than 110	87
Less than 130	96
Less than 150	100

Section C

Q.8 Following table shows the daily pocket allowances given to the children of a multi-story building. The mean of the pocket allowances is Rs. 18. Find out the missing frequency.

Class Interval	11-13	13-15	15-17	17-19	19-21	21-23	23-25
Frequency	3	6	9	13	?	5	4

Q.9 The percentage of marks obtained by 100 students in an examination are given below:

Marks	30-35	35-40	40-45	45-50	50-55	55-60	60-65
Frequency	14	16	18	23	18	8	3

Determine the median percentage of marks.

Section D

Q5 An electric scooter manufacturing company wants to declare the mileage of their electric scooters. For this, they recorded the mileage (km/ charge) of 50 scooters of the same model. Details of which are given in the following table.

Mileage (km/charge)	100-120	120-140	140-160	160-180
Number of scooters	7	12	18	13

Based on the above information, answer the following questions.

(i) What is the average mileage ?

(ii) What is the modal value of the given data ?

(iii) What is the median value of the given data ?

Rough Work

KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 13: STATISTICS

NAME : -_____ SEC_____ ROLL NO____

<table>
<tr><td></td><td>Section A (Multiple Choice Questions)</td></tr>
<tr><td>Q1</td><td>The median of set of 9 distinct observations is 20.5. If each of the largest 4 observations of the set is increased by 2, then the median of the new set
(a) is increased by 2
(b) is decreased by 2
(c) is two times of the original number
(d) Remains the same as that of the original set</td></tr>
<tr><td>Q2</td><td>If the difference of mode and median of a data is 24 than the difference of median and mean is
(a)12 (b) 24 (c) 8 (d) 36</td></tr>
<tr><td>Q4</td><td>The times, in seconds, taken by 150 athletes to run a 110 m hurdle race are tabulated below:
<table>
<tr><td>Class</td><td>13.8-14</td><td>14-14.2</td><td>14.2-14.4</td><td>14.4-14.6</td><td>14.6-14.8</td><td>14.8-15</td></tr>
<tr><td>F</td><td>2</td><td>4</td><td>5</td><td>71</td><td>48</td><td>20</td></tr>
</table>
The number of athletes who completed the race in less then 14.6 seconds is
(a)11 (b)71 (c)82 (d) 130</td></tr>
<tr><td>Q 5</td><td>In a frequency distribution, the mid value of a class is 10 and the width of the class is 6. The lower limit of the class is :
(A) 6 (B) 7 (C) 8 (D) 12</td></tr>
<tr><td></td><td>Section B</td></tr>
<tr><td>Q6</td><td>If the arithmetic mean of x, x + 3, x + 6, x + 9 and x + 12 is 10, then x = ?</td></tr>
</table>

Q7 Obtain the mean of the following distribution and also find the mode.

Marks obtained (out of 60)	*5*	*15*	*20*	*35*	*40*	*45*	*50*	*60*
No. of students	*7*	*10*	*6*	*8*	*12*	*3*	*5*	*4*

Section C

Q8 A survey regarding the heights (in cm) of 51 girls of Class X of a school was conducted and the following data were obtained:

Height (in cm)	Number of girls
Less than 140	4
Less than 145	11
Less than 150	29
Less than 155	40
Less than 160	46
Less than 165	51

Find the median height.

Q9 If the median of a distribution given below is 28.5 then, find the value of an x &y.

Class Interval	Frequency
0-10	5
10-20	X
20-30	20
30-40	15
40-50	Y
50-60	5
Total	60

Section D

Q.6 Transport department of a city wants to buy some Electric buses for the city. For which they wants to analyse the distance travelled by existing public transport buses in a day.

The following data shows the distance travelled by 60 existing public transport buses in a day.

Daily distance travelled (in km)	200-209	210-219	220-229	230-239	240-249
Number of buses	4	14	26	10	6

Based on the above information, answer the following questions.

(ii)	What is the median class?
(iii)	The median of the distance travelled is.
(iv)	If the mode of the distance travelled is 223.78 km, then mean of the distance travelled by the bus is
	Rough Work

KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 14: PROBABILITY

NAME: -_____ SEC_____ ROLL NO____

Sr	**Section A (Multiple Choice Questions)**			
1	An event is very unlikely to happen. Its probability is closest to			
	(a)0.0001	(b)0.001	(c)0.01	(d)0.1
2	If the probability of an event is p, the probability of its complementary event will be			
	(a)p-1	(b)p	(c) 1-p	(d)1-$\frac{1}{p}$
3	The probability of getting a bad egg in a lot of 400 is 0.035. The number of bad eggs in the lot is			
	(a)7	(b)14	(c)21	(d)28
4	The probability that a non leap year selected at random will contain 53 Sundays is			
	(a) $\frac{1}{7}$	(b) $\frac{2}{7}$	(c) $\frac{3}{7}$	(d)$\frac{5}{7}$
5	The probability expressed as a percentage of a particular occurrence can never be			
	(a)less than 100	(b)less than 0	(c)greater than 1	(d)anything but a whole number
	Section B			
6	Cards with numbers 2 to 101 are placed in a box. A card is selected at random. Find the probability that the card has (i) an even number (ii) a square number			
7	In a game the entry fee is Rs 5. The game consists of tossing a coin three times. If one or two heads show, Sweta gets her entry fee back. If she throws 3 heads, she receives double the entry fees. Otherwise she will lose. For tossing a coin three times, find the probability that she (i)loses the entry fee. (ii)gets double entry fee. (iii)just gets her entry fee.			

	Section C
8	A number x is selected at random from the numbers 1, 2, 3 and 4. Another number y is selected at random from the numbers 1, 4, 9 and 16. Find the probability that product of x and y is less than 16.
9	A child's game has 8 triangles of which 3 are blue and rest are red, and 10 squares of which 6 are blue and rest are red. One piece is lost at random. Find the probability that it is a (i) triangle (ii) square (iii) square of blue colour (iv) triangle of red colour. (v) neither a triangle of red colour nor a square of blue colour.

	Section D
10	Two friends were travelling in a bus. They were feeling bored, so they started playing a game with a pair of dice that one of them had. Each of them started rolling the pair of dice one by one, stating one condition before rolling. If the person gets the numbers according to the condition stated by him, he wins and gets a score. 
	a) First says," a doublet". What is the probability of his winning? b) Second friend says, "sum less than 9". What is the probability of his winning? c) First one says,"6 will come up either time". Find probability of his winning. OR Second one says, "sum is an even number". What is the probability of his losing?
	Rough work

KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

CLASS: X SUB: MATHEMATICS TIME: 30 MIN

CHAPTER 14: PROBABILITY

NAME: -_____ SEC_____ ROLL NO_____

Sr	**Section A (Multiple Choice Questions)**			
1	Which of the following cannot be the probability of an event?			
	(a)$\frac{1}{3}$	(b)0.1	(c)3%	(d)$\frac{17}{16}$
2	A girl calculates that the probability of her winning the first prize in a lottery is 0.08. If 6000 tickets are sold, how many tickets has she bought?			
	(a)40	(b)240	(c) 480	(d)750
3	A card is drawn from a deck of 52 cards. The event E is that card is not an ace of hearts. The number of outcomes favourable to E is			
	(a)4	(b)13	(c)48	(d)51
4	One ticket is drawn at random from a bag containing tickets numbered 1 to 40. The probability that the selected ticket has a number which is a multiple of 5 is			
	(a) $\frac{1}{5}$	(b) $\frac{3}{5}$	(c) $\frac{4}{5}$	(d)$\frac{1}{3}$
5	A school has five houses A,B,C,D and E. A class has 23 students, 4 from house A, 8 from house B, 5 from house C, 2 from house D and rest from house E. A single student is selected at random to be the class monitor. The probability that the selected student is not from house A,B and C is			
	(a) $\frac{4}{23}$	(b)$\frac{6}{23}$	(c) $\frac{8}{23}$	(d) $\frac{17}{23}$
	Section B			
6	A game consists of tossing a coin 3 times and noting the outcome each time. If getting the same result in all the tosses is a success, find the probability of losing the game.			
7	A bag contains 15 white and some black balls. If the probability of drawing a black ball from this bag is thrice that of a white ball, find the number of black balls in the bag.			

	Section C
8	Cards numbered 1 to 30 are put in a bag. A card is drawn at random from this bag. Find the probability that the number on the drawn card is: (i) not divisible by 3 (ii) a prime number greater than 7 (iii) not a perfect square number.
9	A die has its six faces marked 0,1,1,1,6,6. Two such dice are thrown together and the total score is recorded. (i) How many different scores are possible? (ii) What is the probability of getting a total of 7? (iii) What is the probability of getting a total of 12? (iv) what is the probability of getting a total of 2?

	Section D
10	A game of chance consists of spinning an arrow, which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7 and 8 and these numbers are equally likely outcomes. 
	a) What is the probability that the arrow will point at 8? b) What is the probability that arrow will point at an odd number? c) What is the probability that arrow will point at a number greater than 2? OR Find the probability that arrow will point at number less than 8.
	Rough work