Class IX Maths Assignment Area, Circles & Constructions 2012

Topic: Linear equations in two variables

Q1. Determine the point on the graph of the linear equation x + y=6, whose ordinate is twice its abscissa.

Q2. How many solution(s) of the equation 3x+2=2x-3 are there on the

i) Number Line ii) Cartesian plane

Q3. Draw the graph of the equation represented by the straight line which is parallel to the x-axis and 3 units above it.

Q4. Find the solutions of the linear equation x+2y=8, which represents a point on i) x axis ii) y-axis

Q5. For what values of c, the linear equation 2x+cy=8 has equal values of x and y as its solution.

Q6. Give the geometrical interpretations of 5x+3=3x-7 as an equation

i) in one variable ii) In two variables

Q7. Draw the graph of the equation 3x+4y=6. At what points, the graph cut the x-axis and the y-axis.

Q8. At what point does the graph of equation 2x+3y=9 meet a line which is parallel to y -axis at a distance 4 units from the origin and on the right side of the y-axis.

Quadrilaterals

Q9. P is the mid point of side BC of parallelogram ABCD such that AP bisects angle A.

Prove that AD =2CD.

Q10. Prove that bisector of any two consecutive angles of parallelogram intersect at right angles.

Q11. E and F are respectively the midpoints of non parallel sides AD and BC of trapezium. Prove that EF is parallel to AB and EF=1/2(AB+CD).

Q12. ABCD is a rectangle in which diagonal BD bisects angle B. Show that ABCD is a Square.

Q13. Diagonals of Quadrilateral ABCD bisect each other. If angle A = 35 degree, determine angle B.

Q14. The bisectors of angle B and angle D of quadrilateral ABCD meet CD and AB, produced at point P and Q respectively. Prove that < P+ < Q = ½(< ABC+ < ADC).

Q15. In parallelogram ABCD, AB=10cm, AD= 6cm. The bisector of angle A meets DC in A. AE and BC produced meet at F. Find the length of CF.

Q16. Evaluate: (5x+1) (x+3)-8= 5(x+1) (x+2).

Unit- Area

Q-1: Prove that the diagonals of a parallelogram divide it into four triangles of equal areas.

Q-2: Prove that triangles on the same base and between same parallels are equal in areas.

Q-3: Prove that the three straight lines joining the mid-points of the sides of a triangle divide the triangle into four triangles of equal areas.

Q-4: ABCD is trapezium with AB parallel to DC. A line parallel AC intersects AB and BC at X and Y respectively. Show that area (triangle ADX) = area (triangle ACY).

Q-5: “parallelograms on the same base and between the same parallels are equal in area.” Prove it.

Q-6: Prove that the triangles with equal areas and equal bases have equal corresponding altitudes.

Q-7: A diagonal of a parallelogram divides it into two triangles of equal areas. Prove it.

Q-8:Show that the area of a parallelogram is equal to the product of any of its sides and the corresponding altitude.

Q-9: If a triangle and a parallelogram are on the same base and between the same parallels , the area of the triangle is equal to half that of the parallelogram.

Q-10: Show that median of a triangle divides it into two triangles of equal areas.

Unit: Circle

Q-1: Two circles with centres A and B of radii 5cm and 3cm touch each other internally . If the perpendicular bisector of segment AB meets the bigger circle in P and Q , find the length of PQ.

Q-2: In a circle of radius 5cm ,AB and AC are two chords such that AB=AC=6cm . Find the length of chord BC.

Q-3: Two circles of radii 10cm and 8cm intersect and the length of the common chord is 12cm . Find the distance between their centres.

Q-4: Prove that diameter is the greatest chord in the circle.

Q-5: A,B,C and D are four points on a circle such that AB=CD. Prove that AC=BD.

Q-6: Prove that all the chords of a circle through a given point within it, the least is one which is bisected at the point.

Q-7: Two circles intersect at A and B and AC and AD are respectively the diameters of the circles. Prove that C,B and D are collinear.

Q-8: O is the circumcentre of the triangle ABC and OD is perpendicular on BC. Prove that Angle BOD=Angle A.

Q-9: Circles are described on the sides of a triangle as diameters. Prove that the circles on any two sides intersect each other on the third side.

Q-10: “Angle subtended in the major segment is obtuse” Justify your answer

Unit: Construction

Q-1: Construct a triangle ABC with base BC=4.5cm, angle B =60^o and AB+AC=7.1cm.

Q-2: Construct a triangle ABC with its perimeter=11cm and base angles of 45^o and 60^o.

Q-3: Construct a triangle PQR with base PQ=4.2cm , angle P=45^o and PR-QR=1.4cm.

Q-4: Construct a triangle ABC with base AB=4cm , angle 45^o and AC+BC=7cm.

Q-5: Construct an triangle ABC with base BC=3.5cm , angle B =60^o and AB-AC=1.1cm.