

**DELHI PUBLIC SCHOOL
BOKARO STEEL CITY**

ASSIGNMENT FOR THE SESSION 2009-2010

Class : IX

Subject : Mathematics

Assign. No. 3

1. Prove that the angles bisectors of a parallelogram form a rectangle.
2. ABC is a right angled triangle at C. A line is drawn through the mid point M of hypotenuse AB and parallel to BC intersects AC at D. Show that (i) D is the mid point of AC (ii) $MD \perp AC$ (iii) $CM = AM = \frac{1}{2} AB$
3. X, Y, Z are mid points of the sides BC, CA, and AB of triangle ABC. Prove that AZXY is a parallelogram.
4. Prove that a parallelogram and a rectangle on the same base and between the same parallel lines are equal in area .
5. ABCD is a parallelogram X and Y are the mid points of BC and CD respectively . Prove that $ar(\text{triangle } AXY) = \frac{3}{8}$ of $ar(\text{//gm } ABCD)$
6. The perimeter of a triangle is 36m. If the altitudes of the triangle are in the ratio 1:2:3, then find the lengths of the corresponding sides of the triangle.
7. If two intersecting circles have a common chord of length 16cm, find the distance between their centres.
8. AB & AC are the two chords of the circle of radius r . If $AB = 2AC$ and the pprs. drawn from the centre on these chords are of lengths a and b . Prove that $4b^2 = a^2 + 3r^2$
9. Prove that the angle subtended by an arc of a circle at the centre is double the angle subtended by it at any point on the remaining part of the circle.
10. ABCD is a cyclic quadrilateral, whose diagonals intersect at a point E. If $\angle DBC = 70^\circ$, $\angle BAC = 30^\circ$ then find $\angle BCD$ further, if $AB = DC$, find $\angle ECD$.
11. Construct a triangle XYZ in which $\angle Y = 30^\circ$, $\angle Z = 90^\circ$ and sum of the three sides is 11cm .
12. Construct a triangle of given perimeter 10.8 cm and ratio of the sides is 3 : 2 : 4.
13. ABC is an isosceles triangle whose equal sides AB and AC are 10cm, each base BC = 8cm. $AD \perp BC$ and $\angle BPC = 90^\circ$. Find the sum of the area of triangle ABP & APC
14. A tank open at the top is made of iron sheet 4m wide. If the dimension of the tank are 12m x 8m x 6m, then find the cost of iron sheet at the rate of Rs17.50 per m^2 .
15. A roller 150 cm long has a diameter 70cm. To level a playground it takes 750 revolution s. Find the cost of leveling the playground at the rate of Rs 0.75 per m^2
16. A solid sphere of radius 6cm is melted into a hollow cylinder of uniform thickness. If the external radius of the base of the cylinder is 5cm and its height is 32cm, then find the thickness of the cylinder.
17. If h, c & v are the height, the curved surface and volume of a cone, then prove that $3\pi v h^3 - c^2 h^2 + 9 v^2 = 0$.
18. If the mean of the 15 students is 154. it is discovered later item 175cm was misread as 145cm . Find the correct mean height
19. Find the missing variable m if the mean is 31.87
x : 12 20 27 33 m 54
f : 8 16 48 90 30 8
20. Find the vale of p if the mean is 18
x : 13 15 17 19 20 + p 23
f : 8 2 3 4 5p 6
21. A bag contains 6 black 7 red & 2 white balls. A ball is drawn from the bag at random. Find the probability of getting (i) red (ii) black or white (iii) not black
22. Two coins are tossed simultaneously. Find the probability of getting (i) at least one head (ii) Two heads