Class : 9th   **Paper for exams march 2015**   **Mob : 99-1515-1771**
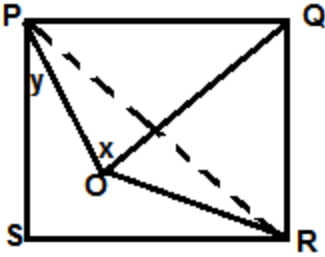
SECTION – A {10 x 1=10}

1. The cost of 5 tables exceeds the cost of 5 chairs by Rs. 150. Write a linear equation in two variables to represent the statement. Also find the cost of one table if the cost of one chair is Rs 240.
2. ABCD is a parallelogram & X is the mid-point of AB. If ar AXCD = 24 cm^2. Find ar ABC.
3. Two equal circles of radius r intersect such that each passes through the centre of the other Find the length of the common chord.
4. Write 4 solutions of 2x+y=7. How many solutions can be formed for equation.
5. A Δ & a rhombus are on the same base & between the same parallels. Find the ratio of areas of Δ to rhombus.
6. The condition that the equation ax+by+c=0 represents a linear equation in two variables is (i) a≠0, b=0 (ii) b≠0, a=0 (iii) a=0 b=0 (iv) a≠0, b≠0.
7. A is the centre of the circle. ABCD is a parallelogram & CDE is a straight line Find $\angle BCD$: $\angle ABE$
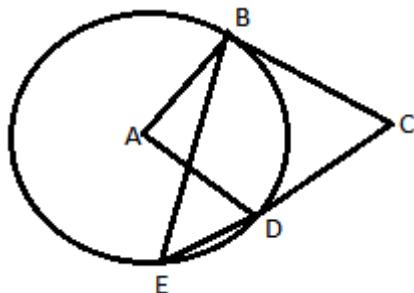

8. 500 persons took a dip in a rectangular tank which is 80 m long & 50 m broad. What is the rise in the level of water in the tank, If the average displacement of water by a person is 4 m^3.
9. What is the fig. formed by joining the mid points of adjacent sides of square.
10. The relation connecting mean, median & mode is
    (i)   Mean – Median = Mode.
    (ii)   Mode = 3 Median + 2Mean
    (iii)   Mean + Median = Mode
    (iv)   Mode = 3 Median – 2 Mean.

SECTION – B {8 x 2=16}

11. PQRS is a square & QOP is an equilateral Δ. Find the value of x & y.

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12. The medians BE & CF of a Δ ABC intersect at G. Prove that arΔGBC=arquad.AFGE
13. Prove that line segment joining mid points of diagonals of trapezium is parallel to each of the parallel sides. & is equal to half the difference of the sides.
14. A three-wheeler charges ₹ 15 for two kilometers & ₹ 8 for each subsequent km. For a distance of x km, an amount of ₹ y is paid. Write a linear equation representing the above information.
15. A pharmacist needs to strengthen a 15% alcohol solution to one of 32% alcohol. How much pure alcohol should be added to 800ml of 15 % solution?
16. PQRS is a trapezium, in which PQ || SR. LM is the line joining mid-points of PS & QR respectively. Prove that

$$LM = \frac{1}{2}(PQ + SR).$$

17. ABCD is a parallelogram & L is the mid-point of DC. If ar ABCL is 72 cm^2. Find the area Δ ADC.
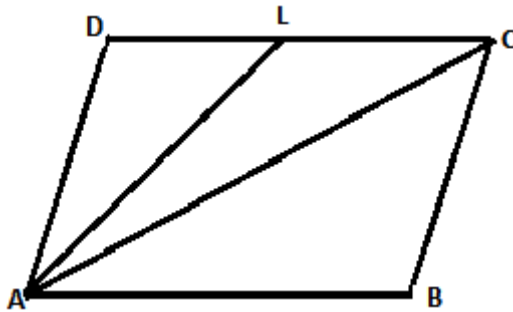
18. BC is a chord with centre O. A is a point on an arc BC. Prove that

   (i) $\angle BAC + \angle OBC = 90^0$ if A is point on the major arc.

   (ii) $\angle BAC - \angle OBC = 90^0$ if A is point on the minor arc.
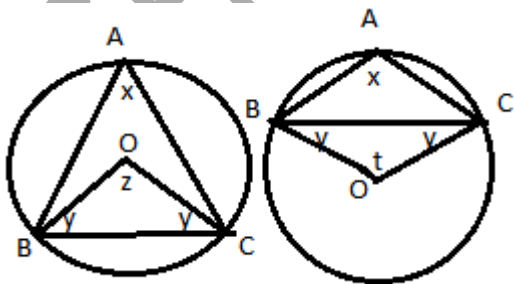
SECTION – C {10 x 3=30}

19. Mr. R tells his daughter Aarushi, " seven years ago, I was seven times as old as you were then. Also, three years from now, I shall be three times as old as you will be". If present ages of Mr. R & Aarushi are x & y years respectively, represent this situation algebraically & graphically.

20. The sum of length, breadth & height of the cuboid is 25 cm& the length of the diagonal is 15 cm. Find the surface area of the cuboid also find the cost of painting the outer surface @ Rs 2 per cm^2.

21. If the medians of Δ ABC intersect at G, Show that $ar\Delta AGB = ar\Delta AGC = ar\Delta BGC = \frac{1}{3} ar\Delta ABC$

22. Construct an isosceles Δ ABC in which base BC = 4 cm, sum of the $\perp$ from A to BC & side AB = 6.5 cm.

23. The mean marks of 25 students of section A of class 10th is 47. That of 35 students of section B is 51. & that of 30 students of section C is 53. Find the combined mean of marks of students of 3 sections of class X.

24. In a small unit of a factory where there are 10 employees : a manager, a supervisor & 8 labourers. The labourers draw a salary of Rs 4500 each, the supervisor draws a salary of Rs 8000 while the manager gets Rs 15000. Calculate the mean, median & mode of the salaries of this unit of the factory.

25. Points A & B are on the same side of the line ℓ AD & BE are the perpendiculars to ℓ, meeting ℓ at D & E respectively. C is the mid-point of AB. Prove that CD = CE.
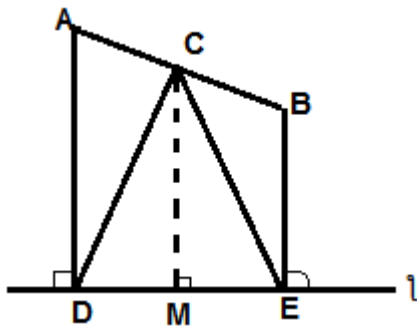
26. The ratio of CSA to the TSA of the cylinder is 1 : 3. Find the volume of cylinder id the T.S.,A is 1848 cm^2.

27. Prove that of the two chords which is nearer the centre of the circle is greater.

28. ABCD is a square E, F, G & H are the points on AB, BC, CD & DA respectively. Such that AE = BF = CG = DH. Prove that EFGH is a square.

SECTION – D {11 x 4=44}

29. The supply 'x' of certain commodity is directly proportional to its demand 'y'. This information can be expressed as linear equation.

30. When 5 times the larger of the two numbers is divided by the smaller, the quotient & remainder are 2 & 9 respectively. Form a linear equation in two variables for above & its two solutions.

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31. PQ & PR are two chords of a circle of radius 'r' If the perpendiculars are drawn from the centre of the circle to

    these chords are of lengths a & b. PQ=2PR, Prove that $b^2 = \dfrac{a^2}{4} + \dfrac{3r^2}{4}$

32. ABCD is a parallelogram in which E & F are the mid-points of AB & CD respectively. If PQ is a line segment that cuts AD, EF & BC at P, M & Q respectively. Prove that PM = QM.
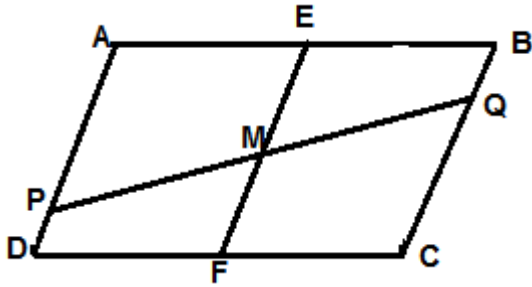
33. ABCD is a trapezium in which AB || DC & P, Q are the mid-points of AD & BC respectively. DQ & AB when produced meet at E. Also AC & PQ intersect at R. Prove that (i) DQ = QE (ii) PR || AB (iii) AR = RC.
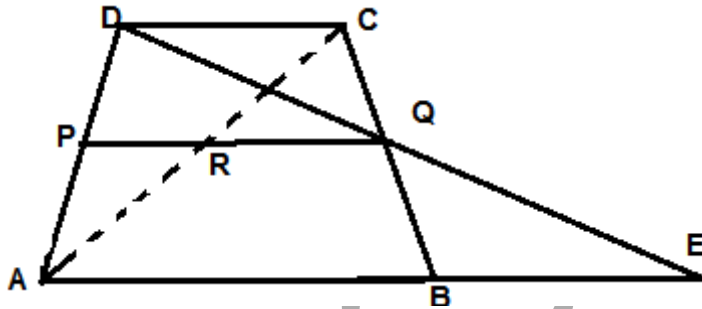
34. Construct an isosceles Δ whose perimeter is 10 cm & altitude is 3 cm.

35.   Two steel sheets each of length a_1 & breadth a_2 are used to prepare the surface of two right circular

    cylinders – one having volume V_1 & height a_2 & other having volume V_2 & height a_1.

    Prove that $a_2 V_1 = a_1 V_2$.

36. If h, c, V are respectively the height, the C.S.A & the volume of a cone, prove that $3\pi V h^3 - C^2 h^2 + 9V^2 = 0$

37. If the radius of the base of the cone is halved, keeping the height same, what is the ratio of the volume of the reduced cone to that of the original cone.

38. The sums of deviations of a set of n values x1, x2, x3, ...xn measured from 15 & -3 are -90 & 54 respectively. Find the value of n & mean. {Ans : 8, 15/4}

39. A cone of height 24 cm has a curved surface area 550 cm². Find the volume.

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