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Grade : IX	Subject : Mathematics	Date :
Name :	Practice Worksheet – Empwer-I	Chapter No. 1, 2,3,5,6,7,12

SECTION A

1. On which axes do the given points lie?
   (a) (7, 0) (b) (0, -3) (c) (0, 6) (d) (-5, 0)

2. In which quadrants do the given points lie?
   (a) (4, -2) (b) (-3, 7) (c) (-1, -2) (d) (3, 6)

3. The area of triangle OAB with 0(0,0), A(4,0) & B(0,6) is
   (a) 8 sq. unit (b) 12 sq. units (c) 16 sq. units (d) 24 sq. units

4. The perpendicular distance of the point P(4,3) from the y axis is
   (a) 3 Units (b) 4 Units (c) 5 Units (d) 7 Units

5. The points (other than the origin) for which the abscissa is equal to the ordinate lie in
   (a) Quadrant I only (b) Quadrant I and II
   (c) Quadrant I & III (d) Quadrant II only.

6. If $a<0$ and $b<0$, then the point P(a,b) lies in
   (a) quadrant IV (b) quadrant II (c) quadrant III (d) quadrant I

7. In which quadrant points P(3,0), Q(6,0) , R (-7.0), S (0,-6), lie?

8. Is P (3, 2) & Q(2, 3) represent the same point?

9. Euclid stated that all right angles are equals to each other in the form of
   (a) an axiom (b) a definition (c) a postulate (d) a proof

10. Thales belongs to the country.
    (a) Babylonia (b) Egypt (c) Greece (d) Rome

11. Euclid divided his famous treatise "The Element" into
    (a) 13 chapters (b) 12 Chapters (c) 11 Chapters (d) 9 Chapters

12. Which of the following needs a proof:
    (a) Theorem (b) Axiom (c) Definition (d) Postulate

13. Euclid stated that if equals are subtracted from equals, the remainders are equals in the forms of
    (a) an axiom (b) a postulate (c) a definition (d) a proof

14. Angle of a triangle are in the ratio 2 : 4 : 3. The smallest angle of the triangle is
    (a) 600 (b) 400 (c) 800 (d) 200

15. An exterior angle of a triangle is 750 and its two interior opposite angles are equal. Each of these equal angles is

(a) 1050 (b) 50.50 (c) 520 (d) 37.50

16. The compliment of an angle 'm' is:
(a) m (b) 900+m (c) 900-m (d) m x 900

17. If one angle of a triangle is equal to the sum of the other two equal angles, then the triangle is
(a) an isosceles triangle (b) an obtuse triangle
(c) an equilateral triangle (d) a right triangle

18. In a , if AB=AC and BC is produced to D such that then
(a) 20 (b) 40 (c) 60 (d) 80

19. Which of the following is an irrational number?
(a) 3.14 (b)3.145 (c) 3.1456 (d) 3.14114….

20. The zeros of the polynomial are
(a) 2,3 (b) -2, 3 (c) 2,-3 (d) -2, -3

21. When is divided by the remainder is
(a) 0 (b) 1 (c) 30 (d) 31

22. The value of k, for which the polynomial has 3 as its zero, is
(a) -3 (b) 9 (c) -9 (d) 12

SECTION B

23. Draw the lines X'OX and YOY1 as the axes on the plane of a paper and plot the given points.
(i) A(5,3) (ii) B (-3, 2) (iii) C(-5, -4) (iv) D(2,-6)

24. State Euclid's any three postulates.

25. State Euclid's any three axioms.

26. Find the area of an equilateral triangle with side 10 cm.

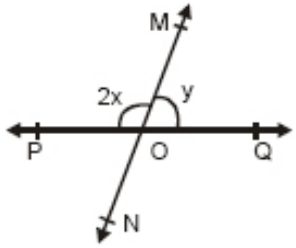
27. The diagonal of a square is $9\sqrt{2}$ cm .What is the side?

28. If a point R lies between two points P and Q such that PR=QR, then prove that PR=1/2PQ.

29. If B and C are two points between A and D such that AC=BD, then prove that AB=CD.

30. ΔABC is right angled at A and AL $\perp$ BC. Prove that $\angle BAL = \angle ACD$.

31. In the given figure :(a) Determine y, when x = 60°. (b) Determine x, when y = 40°.

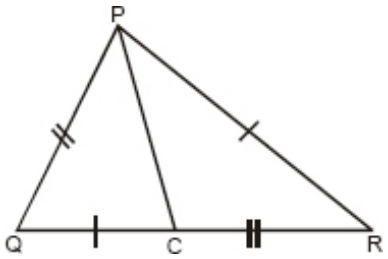


32. The exterior angles obtained on producing the base of a triangle both ways are 100° and 120°. Find all the angles.

33. Prove that angles opposite to equal sides of an isosceles triangle are equal.

34. In ΔABC and ΔADC, AB = AD and BC = CD. Prove that ∠ABC ≅ ΔADC.

35. In the given figure, triangles PQC and PRC are such that QC = PR and PQ = CR. Prove that ∠PCQ = ∠CPR.



36. Find the value of k, if (x – 1) is a factor of $4x^3 + 3x^2 – 4x + k$

SECTION C

37. If C is called a mid point of line segment AB. Prove that every line segment has one and only one mid point.

38. Find the height of a trapezium in which parallel sides are 25 cm 77 cm and non-parallel sides and 26 cm and 60 cm. Given the area of the trapezium as 1644 cm^2.

39. The length of a rectangular plot of land is twice its breadth. If the perimeter of the plot be 180 metres, then find its area.

40. Of the three angles of a triangle, one is double the smallest and another is thrice times the smaller. Find the angles.

41. Sides QP and RQ of triangle PQR are produced to point S and T respectively. If angle SPR= 35° and angle PQT=70°find angle SQR and angle PRQ.

42. In a triangle ABC, E and F respectively are mid-points of equal sides AB and AC of ΔABC. Show that BF = CE.

43. AD is an altitude of an isosceles ΔABC in which AB = AC. Show that AD bisects BC.

44. D is a point on side BC of ΔABC such that AD = AC. Show that AB > AD.

45. In a right angled triangle, one acute angle is double the other. Prove that the hypotenuse is double the smallest side.

46. Determine rational numbers p and q if

$$\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = p - 7\sqrt{5}\,q.$$

47. If a + b + c = 15 and $a^2 + b^2 + c^2 = 83$, find the value of $a^3 + b^3 + c^3 – 3abc$.

SECTION D

48. Find the coordinates of point which are equidistant from these two points P(3,0) and Q(-3,0). How many points are possible satisfying this condition?

49. Draw a quadrilateral with vertices A(2,2) B(2,-2) C(-2,-2), D(-2,2). Classify the quadrilateral and also find its area.

50. Draw a triangle with vertices 0(0,0) A(3,0) B(3,4). Classify the triangle and also find its area.

51. Parul has a piece of land which is in the shape of a rhombus. She wants her daughter and son to work on the land and produce different crops. She divided the land in two equal parts. If the perimeter of the land is 400 m and one of the diagonal is 160 m, how much area each of them will get for their crops?

52. ABC is a triangle in which AB = AC. X and Y are points on AB and AC such that AX = AY. Prove that $\Delta ABY \cong \Delta ACX$.

53. Prove that the angle formed by the bisector of interior angle A and the bisector of exterior angle B of a triangle ABC is half of angle C.

54. In ΔABC, AB = AC and the bisector of angles B and C intersect at point O. Prove that BO = CO and AO bisects $\angle BAC$.

55. Show that a median of a triangle divides it into two triangles of equal areas.

56. Show that: $\frac{x^{-1}+y^{-1}}{x^{-1}}+\frac{x^{-1}-y^{-1}}{x^{-1}}=\frac{x^2+y^2}{xy}$

57. If $x=\frac{2-\sqrt{5}}{2+\sqrt{5}}$ and $y=\frac{2+\sqrt{5}}{2-\sqrt{5}}$, find the value of $x^2 - y^2$.

58. Show that: $\frac{1}{3-\sqrt{8}}-\frac{1}{\sqrt{8}-\sqrt{7}}+\frac{1}{\sqrt{7}-\sqrt{6}}-\frac{1}{\sqrt{6}-\sqrt{5}}+\frac{1}{\sqrt{5}-2}=5$

59. Using factor theorem, factorize each of the following polynomials:

    (i) $x^3 - 6x^2 + 3x + 10$

    (ii) $2y^3 - 5y^2 - 19y + 42$

60. Represent $\sqrt{9.3}$ on the number line .