RAVI MATHS TUITION CENTER , CHENNAI - 82. WHATSAPP - 8056206308

SLOW LEARNERS STUDY MATERIALS

10th Standard

Maths

50 x 2 = 100

1) If A = {1,3,5} and B = {2,3} then
   (i) find A x B and B x A
   (ii) Is A x B = B x A? If not why?
   (iii) Show that n(A x B) = n(B x A) = n(A) x n(B)

2) If A x B = {(3,2), (3, 4), (5,2), (5, 4)} then find A and B.

3) Find A x B, A x A and B x A
   A = {2, -2, 3} and B = {1,-4}

4) A Relation R is given by the set {(x,y) / y = x + 3, x ∈ {0, 1, 2, 3, 4, 5}}. Determine its domain and range.

5) Let X = {1, 2, 3, 4} and Y = {2, 4, 6, 8,10} and R = {(1, 2),(2, 4),(3, 6),(4, 8)} Show that R is a function and find its domain, co-domain and range?

6) A relation 'f' $X \to Y$ is defined by f(x) = x^2 - 2 where x ∈ {-2, -1, 0, 3} and Y = R
   (i) List the elements of f
   (ii) Is f a function?

7) Let f be a function f : N ⟶ N be defined by f(x) = 3x + 2, x ∈ N
   (i) Find the images of 1, 2, 3
   (ii) Find the pre-images of 29, 53
   (iii) Identify the type of function

8) Represent the function f = {(1,2),(2,2),(3,2),(4,3),(5,4)} through
   (i) an arrow diagram
   (ii) a table form
   (iii) a graph

9) ' a ' and ' b ' are two positive integers such that a^b x b^a = 800. Find ' a ' and ' b'

10) The general term of a sequence is defined as

$$a_n = \begin{cases} n(n+3); n \in N \quad is \quad odd \\ n^2+1; n \in N \quad is \quad even \end{cases}$$

Find the eleventh and eighteenth terms.

11) Find the first five terms of the following sequence,
$a_1 = 1$, $a_2 = 1$, $a_n = \frac{a_{n-1}}{a_{n-2}+3}; n \geq 3, n \in N$

12) Find a_8 and a_{15} whose n^{th} term is

$$a_n = \begin{cases} \frac{n^2-1}{n+3}; n \quad is \quad even, \quad n \epsilon N \\ \\ \frac{n^2}{2n+1}, n \quad is \quad odd, \quad n \epsilon N \end{cases}$$

13) Find the 19^{th} term of an A.P. -11, -15, -19,....

14) Which term of an A.P. 16,11,6,1,... is -54?

15) Find the middle term(s) of an A.P 9, 15, 21, 27,.....,183.

16) If nine times ninth term is equal to the fifteen times fifteenth term, show that six times twenty fourth term is zero.

17) If 3 + k, 18 - k, 5k + 1 are in A.P. then find k.

18) Find the 8^{th} term of the G.P 9,3,1,....

19) Find the number of terms in the following G.P.
4, 8,16,...,8192

20) Find the sum of 8 terms of the G.P. 1, -3, 9, -27....

21) Find the sum $3 + 1 + \frac{1}{3} + ...\infty$

22) Find the value of
$1 + 2 + 3 + ...+ 50$

23) Find the sum of
$1 + 3 + 5 +..+$ to 40 terms

24) Find the sum of
$1^2 + 2^2 +...+ 19^2$

25) Find the sum of
$1^3 + 2^3 + 3^3 +..+ 16^3$

26) If $1+ 2 + 3 +...+ n = 666$ then find n.

27) Find the sum of the following series
$1 + 2 + 3 +...+ 60$

28) Find the sum of the following series
$3 + 6 + 9...+ 96$

29) Write down the quadratic equation in general form for which sum and product of the roots are given below.
9, 14

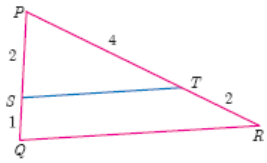
30) Find the sum and product of the roots for each of the following quadratic equations:
$x^2 + 8x - 65 = 0$

31) Solve $2m^2+ 19m + 30 = 0$

32) Find the square root of the following expressions
$\frac{144a^8b^{12}c^{16}}{81f^{12}g^4h^{14}}$

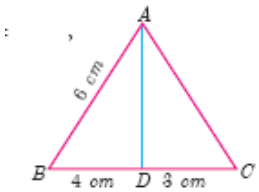
33) Find the square root of the following polynomials by division method $16x^4 + 8x^2 + 1$

34) Show that △ PST~△ PQR



35) If △ABC is similar to△DEF such that BC = 3 cm, EF = 4 cm and area of △ABC = 54 cm^2. Find the area of △DEF.

36) In the figure, AD is the bisector of ∠A. If BD = 4 cm, DC = 3 cm and AB = 6 cm, find AC.



37) Find the area of the triangle formed by the points (1, –1), (–4, 6) and (–3, –5)

38) Vertices of given triangles are taken in order and their areas are provided aside. In each case, find the value of 'p'?

S.No	Vertices	Area (sq.units)
(i)	(0, 0), (p, 8), (6, 2)	20
(ii)	(p, p), (5, 6), (5, -2)	32

39) Find the slope of a line joining the given points (- 6, 1) and (-3, 2)

40) The line r passes through the points (–2, 2) and (5, 8) and the line s passes through the points (–8, 7) and (–2, 0). Is the line r perpendicular to s ?

41) The line p passes through the points (3, - 2), (12, 4) and the line q passes through the points (6, -2) and (12, 2). Is parallel to q ?

42) Show that the points (-2, 5), (6, -1) and (2, 2) are collinear

43) Calculate the slope and y intercept of the straight line 8x − 7y + 6 = 0

44) Find the equation of a line passing through the point (3, - 4) and having slope $\frac{-5}{7}$

45) Find the equation of a straight line passing through (5, - 3) and (7, - 4).

46) Find the equation of a line which passes through (5, 7) and makes intercepts on the axes equal in magnitude but opposite in sign.

47) Find the intercepts made by the line 4x − 9y + 36 = 0 on the coordinate axes.

48) Show that the straight lines 2x + 3y - 8 = 0 and 4x + 6y + 18 = 0 are parallel.

49) Show that the straight lines x - 2y + 3 = 0 and 6x + 3y + 8 = 0 are perpendicular.

50) Find the equation of a straight line whose Inclination is 45^0 and y intercept is 11

40 x 5 = 200

51) Let A = {x ∈ N| 1 < x < 4}, B = {x ∈ W| 0 ≤ x < 2) and C = {x ∈ N| x < 3} Then verify that

(i) A x (B U C) = (A x B) U (A x C)
(ii) A x (B ∩ C) = (A x B) ∩ (A x C)

52) If A = {5,6}, B = {4,5,6}, C = {5,6,7}, Show that A x A = (B x B) ∩ (C x C)

53) Given A = {1,2,3}, B = {2,3,5}, C = {3,4} and D = {1,3,5}, check if (A ∩ C) x (B ∩ D) = (A x B) ∩ (C x D) is true?

54) Let A = {x ∈ W | x < 2}, B = {x ∈ N | 1 < x ≤ 4} and C = (3,5). Verify that
A x (B U C) = (A x B) U (A x C)

55) Let A = The set of all natural numbers less than 8, B = The set of all prime numbers less than 8, C = The set of even prime number. Verify that
(A ∩ B) x C = (A x C) ∩ (B x C)

56) Let A = {1,2,3,4} and B = { 2, 5, 8, 11,14} be two sets. Let f: A ⟶ B be a function given by f(x) = 3x − 1. Represent this function
(i) by arrow diagram
(ii) in a table form
(iii) as a set of ordered pairs
(iv) in a graphical form

57) If the function f: R⟶ R defined by

$$f(x) = \begin{cases} 2x+7, x < -2 \\ x^2 - 2, -2 \le x < 3 \\ 3x - 2, x \ge 3 \end{cases}$$

(i) f(4)
(ii) f(-2)
(iii) f(4) + 2f(1)
(iv) $\frac{f(1)-3f(4)}{f(-3)}$

58) Let f: A ⟶ B be a function defined by f(x) = $\frac{x}{2}$-1, where A = {2, 4 , 6, 10, 12}, B = {0, 1, 2, 4, 5, 9}, Represent f by
(i) set of ordered pairs
(ii) a table
(iii) an arrow diagram
(iv) a graph

59) A function f: [-5,9] ⟶ R is defined as follows:

$$f(x) = \begin{cases} 6x+1 & \text{if } -5 \le x < 2 \\ 5x^2 - 1 & \text{if } 2 \le x < 6 \\ 3x - 4 & \text{if } 6 \le x \le 9 \end{cases}$$

Find
i) f(-3) + f(2)
ii) f(7) - f(1)
iii) 2f(4) + f(8)
iv) $\frac{2f(-2)-f(6)}{f(4)+f(-2)}$

60) In an A.P., sum of four consecutive terms is 28 and their sum of their squares is 276. Find the four numbers.

61) The sum of three consecutive terms that are in A.P. is 27 and their product is 288. Find the three terms.

62) Find the sum of all natural numbers between 300 and 600 which are divisible by 7.

63) Find the sum of all natural numbers between 602 and 902 which are not divisible by 4.

64) Find the sum to n terms of the series 5 + 55 + 555 +...

65) Find the sum of
$15^2 + 16^2 + 17^2 + ..+ 28^2$

66) Find the sum of
$9^3 + 10^3 + ...+ 21^3$

67) Find the square root of $289x^4 - 612x^3 + 970x^2 - 684x + 361$

68) Find the square root of the following expressions
$16x^2 + 9y^2 - 24xy + 24x - 18y + 9$

69) Find the square root of $64x^4 - 16x^3 + 17x^2 - 2x + 1$

70) Find the square root of the expression $\frac{4x^2}{y^2} + \frac{20x}{y} + 13 - \frac{30y}{x} + \frac{9y^2}{x^2}$

71) If $9x^4 + 12x^3 + 28x^2 + ax + b$ is a perfect square, find the values of a and b.

72) Find the square root of the following polynomials by division method
$x^4 - 12x^3 + 42x^2 - 36x + 9$

73) Find the square root of the expression $\frac{x^2}{y^2} - \frac{10x}{y} + 27 - \frac{10y}{x} + \frac{y^2}{x^2}$

74) Find the values of a and b if the following polynomials are perfect squares
$4x^4 - 12x^3 + 37x^2 + bx + a$

75) Find the values of m and n if the following expressions are perfect sqaures
$\frac{1}{x^4} - \frac{6}{x^3} + \frac{13}{x^2} + \frac{m}{x} + n$

76) Basic Proportionality Theorem (BPT) or Thales theorem?

77) State the Pythagoras Theorem

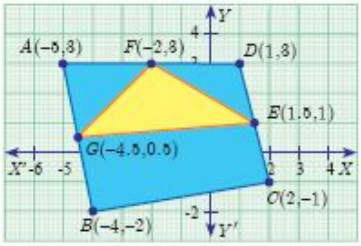
78) Angle Bisector Theorem

79) If the area of the triangle formed by the vertices A(-1, 2) , B(k, -2) and C(7, 4) (taken in order) is 22 sq. units, find the value of k.

80) If the points P(-1, -4), Q (b, c) and R(5, -1) are collinear and if 2b + c = 4, then find the values of b and c.

81) Find the area of the quadrilateral formed by the points (8, 6), (5, 11), (-5, 12) and (-4, 3).

82) In the figure, find the area of triangle AGF



83) A(1, -2) , B(6, -2), C(5, 1) and D(2, 1) be four points Find the slope of the line segment (a) AB (b) CD

84) A line makes positive intercepts on coordinate axes whose sum is 7 and it passes through (-3,8). Find its equation

85) Find the equation of a straight line Passing through (1, -4) and has intercepts which are in the ratio 2:5

86) A(-3, 0) B(10, - 2) and C(12, 3) are the vertices of ΔABC. Find the equation of the altitude through A and B.

87) Find the equation of the perpendicular bisector of the line joining the points A(-4, 2) and B(6, -4).

88) Find the equation of a straight line through the intersection of lines 7x + 3y = 10, 5x − 4y = 1 and parallel to the line 13x + 5y + 12 = 0

89) Find the equation of a straight line through the intersection of lines 5x − 6y = 2, 3x + 2y = 10 and perpendicular to the line 4x − 7y + 13 = 0

90) If vertices of quadrilateral are at A(-5, 7), B(-4, k) , C(-1, -6) and D(4, 5) and its area is 72 sq.units. Find the value of k.

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