

**RAVI MATHS TUITION CENTER , CHENNAI - 82. WHATSAPP - 8056206308****SLOW LEARNERS STUDY MATERIALS**

10th Standard

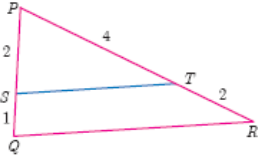
Maths

50 x 2 = 100

- 1) If  $A = \{1,3,5\}$  and  $B = \{2,3\}$  then
  - (i) find  $A \times B$  and  $B \times A$
  - (ii) Is  $A \times B = B \times A$ ? If not why?
  - (iii) Show that  $n(A \times B) = n(B \times A) = n(A) \times n(B)$
- 2) If  $A \times B = \{(3,2), (3, 4), (5,2), (5, 4)\}$  then find  $A$  and  $B$ .
- 3) Find  $A \times B$ ,  $A \times A$  and  $B \times A$   
 $A = \{2, -2, 3\}$  and  $B = \{1,-4\}$
- 4) A Relation  $R$  is given by the set  $\{(x,y) / y = x + 3, x \in \{0, 1, 2, 3, 4, 5\}\}$ . 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'  $X \rightarrow Y$  is defined by  $f(x) = x^2 - 2$  where  $x \in \{-2, -1, 0, 3\}$  and  $Y = R$ 
  - (i) List the elements of  $f$
  - (ii) Is  $f$  a function?
- 7) Let  $f$  be a function  $f : N \rightarrow N$  be defined by  $f(x) = 3x + 2, x \in N$ 
  - (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  $a^b \times b^a = 800$ . Find 'a' and 'b'
- 10) The general term of a sequence is defined as
 
$$a_n = \begin{cases} n(n+3); n \in N \text{ is odd} \\ n^2 + 1; n \in N \text{ is even} \end{cases}$$
 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  $n^{\text{th}}$  term is
 
$$a_n = \begin{cases} \frac{n^2-1}{n+3}; n \text{ is even, } n \in N \\ \frac{n^2}{2n+1}, n \text{ is odd, } n \in N \end{cases}$$

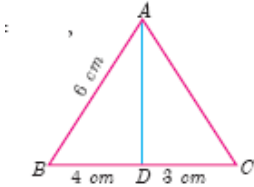
- 13) Find the 19<sup>th</sup> term of an A.P. -11, -15, -19,....
- 14) Which term of an A.P. 16,11,6,1,... is -54?
- 15) Find the middle term(s) of an A.P 9, 15, 21, 27,.....,183.
- 16) If nine times ninth term is equal to the fifteen times fifteenth term, show that six times twenty fourth term is zero.
- 17) If  $3 + k$ ,  $18 - k$ ,  $5k + 1$  are in A.P. then find  $k$ .
- 18) Find the 8<sup>th</sup> 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  $3 + 1 + \frac{1}{3} + \dots \infty$
- 22) Find the value of  
 $1 + 2 + 3 + \dots + 50$
- 23) Find the sum of  
 $1 + 3 + 5 + \dots$  to 40 terms
- 24) Find the sum of  
 $1^2 + 2^2 + \dots + 19^2$
- 25) Find the sum of  
 $1^3 + 2^3 + 3^3 + \dots + 16^3$
- 26) If  $1 + 2 + 3 + \dots + n = 666$  then find  $n$ .
- 27) Find the sum of the following series  
 $1 + 2 + 3 + \dots + 60$
- 28) Find the sum of the following series  
 $3 + 6 + 9 \dots + 96$
- 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  $\triangle PST \sim \triangle PQR$



35) If  $\triangle ABC$  is similar to  $\triangle DEF$  such that  $BC = 3$  cm,  $EF = 4$  cm and area of  $\triangle ABC = 54$   $\text{cm}^2$ . Find the area of  $\triangle DEF$ .

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



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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  $45^\circ$  and  $y$  intercept is 11

$$40 \times 5 = 200$$

51) Let  $A = \{x \in \mathbb{N} \mid 1 < x < 4\}$ ,  $B = \{x \in \mathbb{W} \mid 0 \leq x < 2\}$  and  $C = \{x \in \mathbb{N} \mid x < 3\}$  Then verify that

(i)  $A \times (B \cup C) = (A \times B) \cup (A \times C)$

(ii)  $A \times (B \cap C) = (A \times B) \cap (A \times C)$

52) If  $A = \{5,6\}$ ,  $B = \{4,5,6\}$ ,  $C = \{5,6,7\}$ , Show that  $A \times A = (B \times B) \cap (C \times C)$ 53) Given  $A = \{1,2,3\}$ ,  $B = \{2,3,5\}$ ,  $C = \{3,4\}$  and  $D = \{1,3,5\}$ , check if  $(A \cap C) \times (B \cap D) = (A \times B) \cap (C \times D)$  is true?54) Let  $A = \{x \in W \mid x < 2\}$ ,  $B = \{x \in N \mid 1 < x \leq 4\}$  and  $C = (3,5)$ . Verify that  $A \times (B \cup C) = (A \times B) \cup (A \times C)$ 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  $(A \cap B) \times C = (A \times C) \cap (B \times C)$ 56) Let  $A = \{1,2,3,4\}$  and  $B = \{2, 5, 8, 11,14\}$  be two sets. Let  $f: A \rightarrow B$  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  $f: R \rightarrow R$  defined by

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

(i)  $f(4)$ (ii)  $f(-2)$ (iii)  $f(4) + 2f(1)$ (iv)  $\frac{f(1)-3f(4)}{f(-3)}$ 58) Let  $f: A \rightarrow B$  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  $f: [-5,9] \rightarrow R$  is defined as follows:

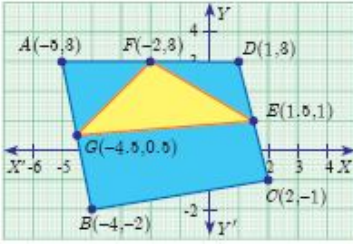
$$f(x) = \begin{cases} 6x + 1 & \text{if } -5 \leq x < 2 \\ 5x^2 - 1 & \text{if } 2 \leq x < 6 \\ 3x - 4 & \text{if } 6 \leq x \leq 9 \end{cases}$$

Find

i)  $f(-3) + f(2)$ ii)  $f(7) - f(1)$ iii)  $2f(4) + f(8)$ iv)  $\frac{2f(-2)-f(6)}{f(4)+f(-2)}$ **இதன் விடைகளை எனது YOUTUBE****(RAVI MATHS TUITION CENTER) ல் பார்க்கலாம்****WHATSAPP - 8056206308**

- 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  $5 + 55 + 555 + \dots$
- 65) Find the sum of  
 $15^2 + 16^2 + 17^2 + \dots + 28^2$
- 66) Find the sum of  
 $9^3 + 10^3 + \dots + 21^3$
- 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 squares  
 $\frac{1}{x^4} - \frac{6}{x^3} + \frac{13}{x^2} + \frac{m}{x} + n$
- 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  $\Delta ABC$ . 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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