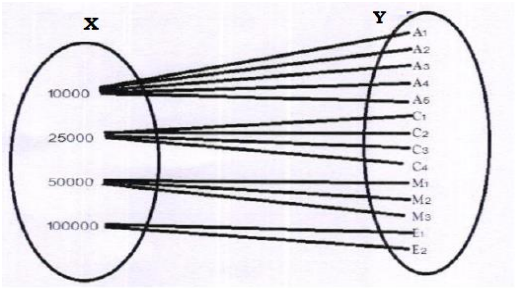
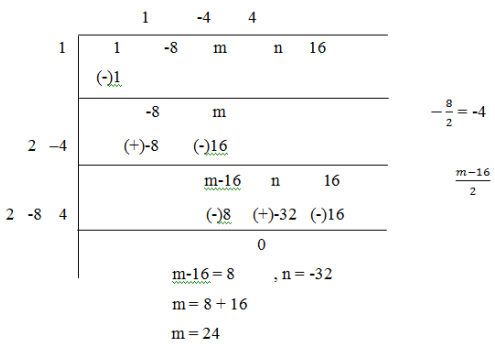
DEPARTMENT OF SCHOOL EDUCATION – Vellore dist
FIRST REVISION TEST 2022
Xth Std - MATHEMATICS - ANSWER KEY

	PART - I	
1	(A)(A x C) ⊂(B x D)	1
2	(C) {4, 9, 25,49,121}	1
3	(C) 2^{mn} -1	1
4	If attend Give Marks	1
5	(C) $0 \leq r < b$	1
6	(D) 11	1
7	(C) 31 m	1
8	(D) 21	1
9	(B) 5	1
10	(B) $\left[y+\frac{1}{y}\right]^2$	1
11	(B) G.P	1
12	(C) Parabola	1
13	(D) $x^2-5x+6=0$	1
14	(A) (x – 5) (x – 3)	1
	PART - II	
15	A = {3, 5} B={2, 4}	1 1
16	A x B ={ } B x A ={ } A x A = {(m, m), (m, n), (n, m), (n, n)}	1 1
17	A x B = {(1,3), (1,0), (1,-1), (1,7), (2,3), (2,0), (2,-1), (2,7), (3,3), (3,0), (3,-1), (3, 7), (7,3), (7,0), (7,-1), (7,7)} R is a relation from A to B	1 1
18	Domain = {1,2,3,4,5} Range = {1,3,5,7,9}	1 1
19	$x^2 = (2k+1)^2$ $= 4k^2 + 4k + 1$ $= 4k(k+1) + 1$ $= 4q + 1$. Where $q = k(k+1)$ is some integer	1 1
20	$t_n = a+(n-1)d$ a = -11; d = -15+11 = -4; n=19 $t_{19} = -11 + 18(-4) = -83$	1 1
21	$a_3 = 3$ $a_4 = 7$ $a_5 = 17$ $a_6 = 41$	1 1
22	$108 = 2^2 \times 3^3$ a = 2 , b = 3 , a + b = 5	1 1
23	$9a^3b^2 = 3^2 \times a^3 \times b^2$, $12a^2b^2c = 2^2 \times 3 \times a^2 \times b^2 \times c$ ∴ L.C.M = $36a^3b^2c$	1 1
24	$8x = 0 \Rightarrow x = 0$ ∴ x = 0, Hence the excluded value is 0	1 1
25	$\frac{x^3}{x-y} + \frac{y^3}{y-x} = \frac{x^3-y^3}{x-y}$	1 1

	$= \frac{(x^2+xy+y^2)(x-y)}{(x-y)} = x^2 + xy + y^2$	
26	$\Delta = b^2 - 4ac = (-1)^2 - 4(1)(-1) = 5 > 0$ $\therefore \Delta > 0$ So, the equation will have real and unequal roots	1 1
27	$\sqrt{\frac{144\,a^8b^{12}c^{16}}{81f^{12}g^4h^{14}}} = \frac{4}{3}\left\lvert\frac{a^4b^6c^8}{f^6g^2h^7}\right\rvert$	2
28	$\propto + \beta = 14, \propto \beta = 46$ $x^2 - 14x + 46 = 0$	1 1
	PART - II	
29	A = {0,1}, B = {2, 3, 4}, C = { 3, 5} , B∪C = {2, 3, 4, 5} A x (B∪C) ={(0,2), (0,3), (0,4), (0,5), (1,2), (1,3), (1,4), (1,5)} A x B = {(0,2), (0,3), (0,4), (1,2), (1,3), (1,4)} A x C = {(0,3), (0,5), (1,3), (1,5)} (A x B)∪(A x C)={(0,2), (0,3), (0,4), (0,5), (1,2), (1,3), (1,4), (1,5)}	1 1 1 1 1
30	A x A = {(5,5), (5,6), (6,5), (6,6)} B x B = {(4,4), (4,5), (4,6), (5,4), (5,5), (5,6), (6,4), (6,5), (6,6)} C x C = {(5,5), (5,6), (5,7), (6,5), (6,6), (6,7), (7,5), (7,6), (7,7)} (B x B) ∩ (C x C) = { (5,5), (5,6), (6,5), (6,6)}	1 1 1 2
31	**Ordered Pair**: {(10000, A_1),(10000,A_2),(10000,A_3), (10000,A_4), (10000,A_5), (25000,C_1), (25000, C_2), (25000, C_3), (25000, C_4), (50000, M_1), (50000, M_2), (50000, M_3), (100000, E_1), (100000, E_2)} **Arrow Diagram**  	2 3
32	Euclid's Division Lemma, a = bq + r 90 = 84x1+ 6 ⟹84 = 6 x14 + 0 ∴ H. C. F 84, 90 = 6. 120 = 6 x 20 + 0 ∴H.C.F of 84, 90,120 = 6	1 1 1 1 1
33	$113400 = 2^3 x3^4x5^2x7^1$ ∴ P_1 =2, P_2 =3, P_3 = 5, P_4 =7 x_1 =3, x_2 =4, x_3 =2, x_4 =1	3 1 1
34	a - d, a, a + d (a – d) + a + (a + d) = 207.⇒ a = 69 (a – d)a = 4623 (69 – d)69 = 4623 ; 69 – d = $\frac{4623}{69}$ = 67 . ∴ $d = 2$ ∴Amount `67,`69 and `71.	1 1 1 1 1

35	$x+2$ $x^3+x^2-5x+3 \;\big|\; x^4+3x^3+0+x-3$ $x^4+x^3-5x^2+3x$ (-) $2x^3+5x^2-4x-3$ $2x^3+2x^2-10x+6$ (-) $3x^2+6x-9$ $=3(x^2+2x-3)$ $x-1$ $x^2+2x-3 \;\big|\; x^3+x^2-5x+3$ x^3+2x^2-3x (-) $-x^2-2x+3$ $-x^2-2x+3$ (-) 0 $\therefore$ G.C.D of $(f(x), g(x)) = x^2+2x-3$	2 2 1
36	G.C.D $= (x+1)$ L.C.M $= (x+1)(x-1)(x^2+x+1)(x^2-x+1)$ $f(x) \times g(x) = (x+1)^2(x-1)(x^2+x+1)(x^2-x+1)$ L.C.M x G.C.D $= (x+1)^2(x-1)(x^2+x+1)(x^2-x+1)$ $\therefore f(x) \times g(x) =$ L.C.M x G.C.D	1 1 1 1 1
37	$\frac{b^2+3b-28}{b^2+4b+4} \div \frac{b^2-49}{b^2-5b-14} = \frac{b^2+3b-28}{b^2+4b+4} \times \frac{b^2-5b-14}{b^2-49}$ $= \frac{(b-4)(b+7)}{(b+2)(b+2)} \times \frac{(b-7)(b+2)}{(b+7)(b-7)}$ $= \frac{b-4}{b+2}$	1 3 1
38	 $-\frac{8}{2} = -4$ $\frac{m-16}{2}$ m-16 = 8 , n = -32 m = 8 + 16 m = 24	1 1 1 2
39 (i) (ii)	$\propto + \beta = -6$, $\propto \beta = -4$ Sum of the Roots $= \frac{2}{\propto} + \frac{2}{\beta} = \frac{2\propto + 2\beta}{\alpha\beta} = \frac{2(\propto + \beta)}{\alpha\beta} = \frac{2(-6)}{-4} = \frac{-12}{-4} = 3$ Product of the Roots $= \frac{2}{\propto} \times \frac{2}{\beta} = \frac{4}{\propto\beta} = \frac{4}{-4} = -1$ $\therefore \quad x^2 - 3x - 1 = 0$ Sum of the Roots $= \propto^2 \beta + \beta^2 \propto = \alpha\beta(\alpha + \beta) = (-4)(-6) = 24$ Product of the Roots $= (\propto^2 \beta)(\beta^2 \propto) = \propto^3 \beta^3 = (\alpha\beta)^3 = (-4)^3 = -64$ $\therefore \quad x^2 - 24x - 64 = 0$	1 1 1 1 1
40	a = a – b, b = b – c, c = c – a $b^2 - 4ac = 0$ $\Rightarrow (b-c)^2 - 4(a-b)(c-a) = 0$ $\Rightarrow (-2a+b+c)^2 = 0$ $\Rightarrow -2a+b+c = 0 \Rightarrow 2a = b+c$ $\therefore$ b, a ,c are in A.P.	1 1 1 1 1

41	$\frac{t_6}{t_8} = \frac{7}{9} \Rightarrow \frac{a+5d}{a+7d} = \frac{7}{9}$ $\Rightarrow$ 9a + 45d = 7a + 49d $\Rightarrow$ a = 2d $\frac{t_9}{t_{13}} = \frac{a+8d}{a+12d} = \frac{10d}{14d} = \frac{5}{7}$ $t_9 : t_{13}$ = 5 : 7	2 1 1 1
42	Base = (x + 4), Height = x Area of $\Delta = \frac{1}{2}$ Base x Height = **48** cm^2 **1 /2** (x + 4)x = 48 $x^2 + 4x - 98 = 0$ Height = **8**cm, Base = **12** cm	1 1 1 1 1
	PART - III	
43 a)	X x Y={(1,1), (1,3), (1,5), (1,7), (1,9), (2,1), (2,3), (2,5), (2,7), (2,9), (3,1), (3,3), (3,5), (3,7), (3,9), (4,1), (4,3), (4,5), (4,7), (4,9), (5,1), (5,3), (5,5), (5,7), (5,9)} i) (2,4) $\notin$ X x Y R_1 is not a relation from X to Y ii)$R_2 \subseteq$ X x Y R_2 is a relation from X to Y iii)$R_3 \subseteq$ X x Y R_3 is a relation from X to Y iv)$R_4 \subseteq$ X x Y R_4 is a relation from X to Y	4 1 1 1 1
b)	x + y + z = 12 --------- (1) 5x + 10y + 20z = 105 --------- (2) 10x + 5y + 20z = 125 --------- (3) From (1) , (2) $\Rightarrow$ -5y – 15z = - 45 From (1) , (3) $\Rightarrow$ y - 2z = -1 x = 7, y = 3, z = 2.	1 1 1 1 1 3
44 a)	Table, Points Graph (Scale -1, Axes – 1, Drawing -2) Result	3 4 1
b)	First Table, Points Second Table, Points Graph (Scale -1, Axes – 1, Drawing -2) Result	2 1 4 1