MATHEMATICS

PRESENTATION BY
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$5 \times 9 = 45$

πr^2

∞

$a^2 + b^2 =$

$2 \times 2 = 4$

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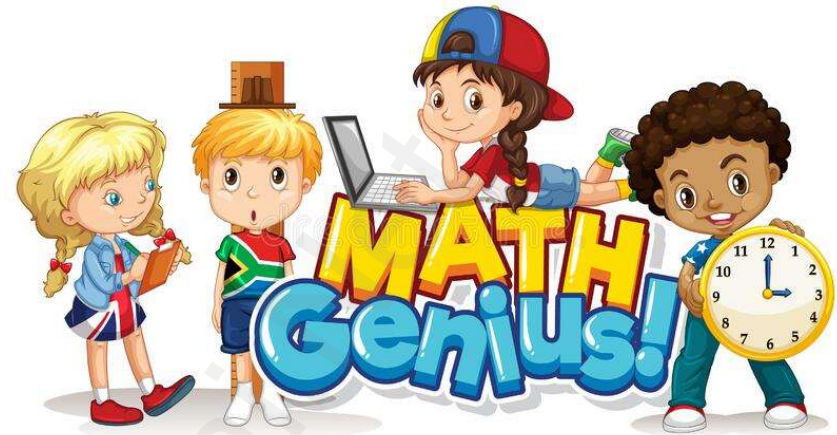
How to Develop Student's Interest in Mathematics

$40 \div 2 = ?$

$x - y =$

$\sin \alpha \cos \beta = 1$

$2x - 6y =$

$E = mc^2$

$\pi = 3.1415$

$\dfrac{6}{7}$

MATH Genius!

MATH
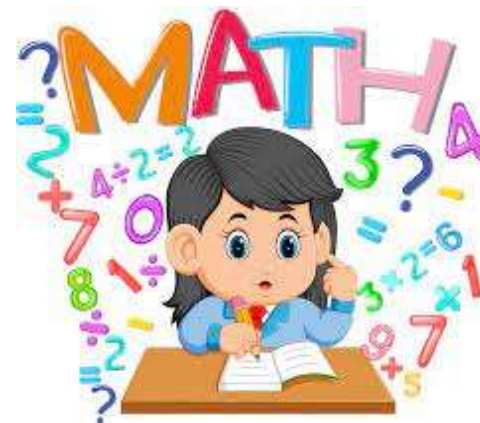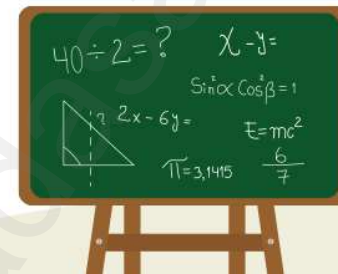
TEST NO : 1   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.
STD : X   EXERCISES 2.6 – 2.7 (with Examples)   Marks : 50

I) Answer the following question : (Any 10)   10 x 5 = 50

1) Determine the general term of an A.P., whose 7th term is -1 and 16th term is 17.

2) If l^{th}, m^{th} and n^{th}, terms of an A.P are x, y, z respectively. Then show that,   i) x(m-n) + y(n-l) +z(l-m) = 0.   ii) (x-y)n + (y -z)l +(z-x)m = 0.

3) If an A.P sum of four consecutive terms is 28 and their sum of their squares is 276. Find the four numbers.

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

5) The ratio of 6th and 8th term of an A.P. is 7 : 9. Find the ratio of 9th term to 13th term.

6) Priya earned Rs.15,000 in the first month. There after her salary increased by Rs.1500 per year. Her expenses are Rs.13,000 during the first year and the expenses increases by Rs.900 per year. How long will it take for her to save Rs.20,000 per month.

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

8) The sum of first n, 2n and 3n term of an A.P are S1, S2 and S3 respectively. Prove that $S_3 = 3 (S_2 – S_1)$.

9) Find the Sum of all natural numbers between 602 and 902, Which are not divisible by 4.

10) If S$_1$, S$_2$, S$_3$ .... Sm are the sums of n terms of M A.P's whose first terms are 1, 2, 3................ m and whose common difference are 1, 3, 5 .... (2m-1) respectively, then Show that   S$_1$+S$_2$+S$_3$+............+SM = ½ Mn (Mn + 1).

11) Find the sum $\left[\frac{a-b}{a+b} + \frac{3a-2b}{a+b} + \frac{5a-3b}{a+b} + \cdots to\ 12\right]$

12) The product of three consecutive terms of a Geometric Progression is 343 and their sum is 91/3. Find the three terms.

13) The present value of a machine is Rs.40,000 and its value depreciates each year by 10%. Find the estimated value of the machine in the 6th year.

14) In a G.P. the product of three consecutive terms is 27 and the sum of the product of two terms taken at a time is 57/2. Find the three terms.

15) If a, b, c are three consecutive terms of an A.P and x,y,z are three consecutive terms of a G.P. Then Prove that x^{b-c} x y^{c-a} x z^{a-b} = 1.

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TEST NO : 2   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.
STD : X   EXERCISES 2.8 – 2.9 (with Examples)   Marks : 50

I) Answer the following question :   **10 x 5 = 50**

1) Find the least positive integer n such that $1 + 6 + 6^2 + \ldots + 6^n > 500$.

2) A person saved money every years, half as much as he could in the previous year. If he had totally saved Rs.7875 in 6 years then how much did he save in the first year.

3) Find the sum to n terms of the series 0.4 + 0.44 + 0.444 + …… to n terms.

4) Find the sum of the Geometric series 3 + 6 + 12 + ……. + 1536.

5) If $S_n = (x+y) + (x^2+xy+y^2) + (x^3+x^2y+y^3) + \ldots$ + n terms, then prove

that $(x-y)$ $S_n = \left[\dfrac{x^2(x^n-1)}{x-1} - \dfrac{y^2(y^n-1)}{y-1} \right]$

6) Find the sum of the series $10^3 + 11^3 + 12^3 + \ldots + 20^3$.

7) How many terms of the series $1^3 + 2^3 + 3^3 + \ldots$ should be taken to get the sum 14,400?

8) The sum of the cubes of the first **'n'** natural numbers is 2025, then find the value of **n**.

9) Reka has 15 square colour papers of sizes 10cm, 11cm, 12cm ……. 24cm. How much area can be decorate with these colour papers.

10) Find the sum of the series $(2^3-1^3) + (4^3-3^3) + (6^3 - 15^3) + \ldots$ to

   i) 'n' terms   ii) 8 terms

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TEST NO : 3   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.
STD : X   EXERCISES 3.2, 3.6, 3.8, 3.13 (with Examples)   Marks : 50

I) Answer the following question :   **10 x 5 = 50**

1) Find the G.C.D of $3x^4 + 6x^3 - 12x^2 - 24x$ and $4x^4 + 14x^3 + 8x^2 - 8x$.

2) Find the G.C.D of $6x^3 - 30x^2 + 60x - 48$ and $3x^3 - 12x^2 + 21x - 18$.

3) If $A = \dfrac{2x+1}{2x-1}$, $B = \dfrac{2x-1}{2x+1}$, find $\dfrac{1}{A-B} - \dfrac{2B}{A^2-B^2}$.

4) If $A = \dfrac{x}{x+1}$, $B = \dfrac{1}{x+1}$, prove that $\dfrac{(A+B)^2+(A-B)^2}{A \div B} = \dfrac{2(x^2+1)}{x(x+1)^2}$.

5) If $9x^3 + 12x^3 + 28x^2 + ax + b$ is a perfect square, find the value of **'a'** and **'b'**.

6) Find the value of 'a' and 'b' $ax^4 + bx^3 + 361x^2 + 220x + 100$.

7) Find the value of 'm' and 'n' $x^4 - 8x^3 + mx^2 + nx + 16$.

8) If the roots of $(a - b) x^2 + (b - c)x + (c - a) = 0$ are real and equal, then prove that b, a, c are in A.P.

9) If a, b are real then show that the roots of the equation $(a - b) x^2 - 6 (a + b) x - 9 (a - b) = 0$ are real and unequal.

10) If the roots of the equation $(c^2 - ab)x^2 - 2 (a^2 - bc) x + b^2 - ac = 0$ are real and equal P.T either a = 0, (or) $a^3 + b^3 + c^3 = 3abc$.

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TEST NO : 4   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.

EXERCISES 3.17, 3.18 and 3.19 (with Examples)

STD : X   **Marks : 50**

I) Answer the following question :   **10 x 2= 20**

1) Construct a 3 x 3 matrix whose elements are given by $a_{ij} = \left(\frac{(i+j)^3}{3}\right)$.

2) If $A = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}, B = \begin{pmatrix} 1 & 7 & 0 \\ 1 & 3 & 1 \\ 2 & 4 & 0 \end{pmatrix}$ find A + B.

3) If $A = \begin{pmatrix} 5 & 4 & -2 \\ \frac{1}{2} & \frac{3}{4} & \sqrt{2} \\ 1 & 9 & 4 \end{pmatrix}, B = \begin{pmatrix} -7 & 4 & -3 \\ \frac{1}{4} & \frac{7}{2} & 3 \\ 5 & -6 & 9 \end{pmatrix}$, find 4A – 3B.

4) Find x and y if $x \begin{pmatrix} 4 \\ -3 \end{pmatrix} + y \begin{pmatrix} -2 \\ 3 \end{pmatrix} = \begin{pmatrix} 4 \\ 6 \end{pmatrix}$.

5) If $A = \begin{pmatrix} 0 & 4 & 9 \\ 8 & 3 & 7 \end{pmatrix}, B = \begin{pmatrix} 7 & 3 & 8 \\ 1 & 4 & 9 \end{pmatrix}$ find the value of 3A- 9B.

6) If $A = \begin{pmatrix} 1 & 2 & 0 \\ 3 & 1 & 5 \end{pmatrix}, B = \begin{pmatrix} 8 & 3 & 1 \\ 2 & 4 & 1 \\ 5 & 3 & 1 \end{pmatrix}$ find AB.

7) Solve $\begin{pmatrix} 2 & 1 \\ 1 & 2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} B = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$.

8) If $A = \begin{pmatrix} Cos\,\theta & Sin\theta \\ -Sin\theta & Cos\theta \end{pmatrix}$ prove that $AA^T = I$.

9) Verify that $A^2 = I$ when $A = \begin{pmatrix} 5 & -4 \\ 6 & -5 \end{pmatrix}$.

10) Find the value of a, b, c, d from the following matrix equation

$\begin{pmatrix} d & 8 \\ 3b & a \end{pmatrix} + \begin{pmatrix} 3 & a \\ -2 & -4 \end{pmatrix} = \begin{pmatrix} 2 & 2a \\ b & 4a \end{pmatrix} + \begin{pmatrix} 0 & 1 \\ -5 & 0 \end{pmatrix}$.

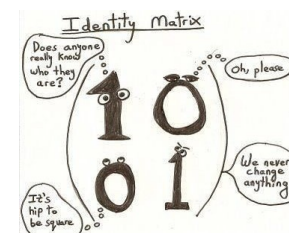**II) Answer the following question : (Any 6)**   **6 x 5 = 30**

11) If $A = \begin{bmatrix} 1 & 8 & 3 \\ 3 & 5 & 0 \\ 8 & 7 & 6 \end{bmatrix}, B = \begin{bmatrix} 8 & -6 & -4 \\ 2 & 11 & -3 \\ 0 & 1 & 5 \end{bmatrix}, C = \begin{bmatrix} 5 & 3 & 0 \\ -1 & -7 & 2 \\ 1 & 4 & 3 \end{bmatrix}$ then

find 3A + 2B – C.

12) Find x and y, If $x + y = \begin{pmatrix} 7 & 0 \\ 3 & 5 \end{pmatrix}$ and $x - y = \begin{pmatrix} 3 & 0 \\ 0 & 4 \end{pmatrix}$.

13) If $A = \begin{pmatrix} 1 & 1 \\ -1 & 3 \end{pmatrix}, B = \begin{pmatrix} 1 & 2 \\ -4 & 2 \end{pmatrix}, C = \begin{pmatrix} -7 & 6 \\ 3 & 2 \end{pmatrix}$ verify that

A (B+C) = AB + AC.

14) If $A = \begin{pmatrix} 3 & 1 \\ -1 & 2 \end{pmatrix}$ Show that $A^2 - 5A + 7I_2 = 0$.

15) If $A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$ and $I = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ Show that $A^2 - (a + d) A = (bc - ad) - I^2$.

16) Let $A = \begin{pmatrix} 1 & 2 \\ 1 & 3 \end{pmatrix}, B = \begin{pmatrix} 4 & 0 \\ 1 & 5 \end{pmatrix}, C = \begin{pmatrix} 2 & 0 \\ 1 & 2 \end{pmatrix}$ Show that $(A - B)^T = A^T - B^T$.

17) If $A = \begin{pmatrix} 5 & 2 & 9 \\ 1 & 2 & 8 \end{pmatrix}, B = \begin{pmatrix} 1 & 7 \\ 1 & 2 \\ 5 & -1 \end{pmatrix}$ verify that $(AB)^T = B^T A^T$.

18) If $A = \begin{pmatrix} 1 & 3 \\ 5 & -1 \end{pmatrix}, B = \begin{pmatrix} 1 & -1 & 2 \\ 3 & 5 & 2 \end{pmatrix}, C = \begin{pmatrix} 1 & 3 & 2 \\ -4 & 1 & 3 \end{pmatrix}$ verify that

A(B+C) = AB + BC.

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TEST No : 5   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.

STD : X   Exercise – 5.1 & 5.2   Marks : 50

I) Answer the following questions :   **10 x 5 = 50**

1) Show that the given points form a Parallelogram. A(2.5, 3.5), B(10, - 4), C (2.5, - 2.5) and D(-5, 5).

2) If the points A(2, 2), B(-2, - 3), C (1, -3) and D(x, y) form a parallelogram then find the value of x and y.

3) Let A(3, -4), B(9, - 4), C (5, -7) and D(7, -7) Show that ABCD is a trapezium.

4) A quadrilateral has vertices at A(-4, -2), B(5, -1), C(6, 5) and D(-7, 6). Show that the mid points of its sides form a parallelogram.

5) Prove analytically that the line segment joining the mid - points of two sides of a triangle is parallel to the third side and is equal to half of its length.

6) If the points A(-3, 9), B(a, b), and C) (4, -5) segment are collinear and if a+b=1, then find **"a"** and **"b"**.

7) Find the value of Ka. If the area of a quadrilateral is 28 Sq. unit. Whose vertices are (-4, -2) (-3, k), (3, -2) and (2, 3).

8) Find the area of the quadrilateral (-9, 0), (-8, 6), (-1, -2) and (-6, -3).

9) Find the value of "a" for which the given points are collinear (a, 2-2a), (-a+1, 2a) and (-4-a, 6-2a).

10) 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"**.

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TEST No : 6   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.

STD : X   Exercise – 5.3 & 5.4   Marks : 50

I) Answer the following questions :   **10 x 5 = 50**

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

2) A mobile phone is put to use when the battery power is 100 %. The percent of battery power "y" (in decimal) remaining after using the mobile phone for x hours is assumed as y = -0.25x+1.

   i) Find the number of hours elapsed if the battery power is 40 %.

   ii) How much time does it take so that the battery has no power?

3) Find the equation of the straight line.

   i) Passing through (1, -4) and has intercepts which are in the ratio 2 : 5.

   ii) Passing through (-8, 4) and making equal intercepts on the coordinate axes.

4) Find the intercepts made by the following lines on the coordinate axes.

   i) 3x-2y-6 = 0   ii) 4x+3y+12 = 0

5) You are downloading a song the percent y (in decimal) of mega bytes remaining to get downloaded in x seconds is given by y = -01.x+1.

   i) Find the total MB of the song.

   ii) After how many seconds will 75 % of the song gets downloaded.

   iii) After how many seconds the song will be downloaded completed?

6) Find the equation of a straight line parallel to y axis and passing through the point of intersection of the line 4x+5g=13 and x-8y+9=0.

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

8) Find the equation of the straight lien through the intersection of lines 5x-6y=2, 3x+2y=10 and perpendicular to the line 4x-7y+13=0.

9) Find the equation of the straight line joining the points of intersection of 3x+y+2=0 and x-2y-4 = 0 to the point of intersection of 7x-3y=12 and 2y=x+3.

10) Find the equation of straight line through the points of intersection of the line 8x+3y=18, 4x+5y=9 and bisecting the line segment joining the points (5, -4) and (-7, 6).

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TEST No : 7   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.

STD : X	Exercise – 8.1& 8.2	Marks : 20

I) Answer the following questions : (2 Marks)   **10 x 2 = 20**

1) Find the range and CO-efficient of range 25, 67, 48, 53, 18, 39, 44.

2) Find the S.D of first 21 Natural Numbers.

3) If n = 5, x = 6, $\sum x^2$ = 765, then calculate the Co-efficient of variation.

4) The S.D and meen of the data is 6.5 and 12.5 respectively. Find the Co - efficient of variation.

5) The range of a set of data is 13.67 and the largest value is 0.08. Find the smaller value.

6) **Calculate the following range** :

Income	400 – 450	450 – 500	500 – 550	550 – 60	600 – 650
No. of Workers	8	12	30	21	6

7) The men and C.V of a data are 15 ad 48 respectively. Find the Standard deviation.

8) The S.D and C.V of a data are 1.2 and 25.6 respectively. Find the value of Meen.

9) If the range and the smallest value of a set of data are 36.8 and 13.4 respectively then find the largest value.

10) IF the S.D of data is 3.6 and each value of the data is divided by 3, then find the new variance and new S.D.

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TEST No : 8   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.

STD : X	Exercise – 8.3 & 8.4	Marks : 20

I) Answer the following questions : (2 Marks)   **10 x 2 = 20**

1) In a two a children family, find the probability that there is at least one girl in a family.

2) If P(A) = 0.37, P(B) = 042, P(A ∩ B) = 0.09 then find P(A U B).

3) What is the probability of drawing either a king (or) a queen in a single draw from a well shuffled pack of 52 cards?

4) If P(A) = 2/3, P(B) = 2/5, P(AUB) = 1/3 then find the P(A ∩ B).

5) If A and B are two mutually exclusive events of a random experiment and P(not A) = 0.45, P(AUB) = 0.65 then find P(B)?

6) A coin is tossed thrice. What is the probability of getting two consecutive tails?

7) Write the sample space for tossing three coins using the diagram.

8) What is the probability that a leap year selected at random will contain 53 Saturday.

9) Two coins are tossed together. What is the probability of getting different face on the coins?

10) A die is rolled and a coin is tossed simultaneously. Find the probability that the die show an odd number and the coin shows a head.

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Kindly send me your questions and answerkeys to us : Padasalai.Net@gmail.com

TEST NO : 9   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.
STD : X   EXERCISES 2.1 – 2.5   Marks : 50

I) Answer the following question : (Any 10)   10 x 5 = 50

1) Find the H.C.F of 396, 504, 636.

2) Prove that two consecutive positive integers are always Co prime.

3) If d is the height common factor of 32 and 60, find x and y satisfying d = 32x+60y.

4) If the H.C.F of 210 and 55 is expressible in the form 55x-325, then find x.

5) Find the largest number which divides 1230 and 1926 leading remainder 12 in each case.

6) Find the H.C.F of 252525 and 363636.

7) If 13824 = $2^a \times 3^b$ then find "a" and "b".

8) Find the L.C.M and H.C.F of 408 and 170 by applying the fundamental theorem of arithmetic.

9) Find the greatest number consisting of 6 digit which is exactly divisible by   24, 15, 36.

10) Find the H.C.F of 84, 90 and 120.

11) Find the least positive value of x such that $98 \equiv (x+4)$ (Mod 5).

12) Find the number of integer solution of 3x=1 (mod 15).

13) What is the time 100 hours after 7 am?

14) Today is Tuesday. My uncle will come after 45 days in which day my uncle will be coming.

15) Compute x, such that 10^4 = x(Mod 19).

16) The general term of a sequence s defined as

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

17) Find the first four terms of the sequence whose n^{th} terms are

an = $(-1)^{n+1}$ n(n+1).

18) Find the nth terms of the sequence 3, 8, 13, 18................

19) Find the indicated terms of the sequence whose n^{th} terms are given by

an = $\frac{5n}{n+2}$; a_6 and a_{13}.

20) If a_1 = 1 and a_n= $2a_{n+1}$ + a_{n-2} , n$\geq$3, then find the first six terms of the sequence.
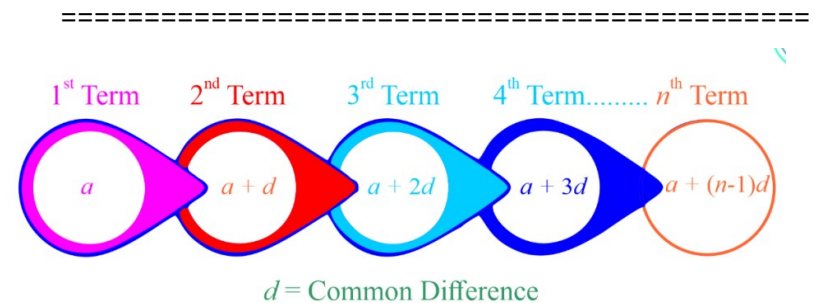
21) Find the number of terms in the A.P 3, 6, 9, 12 .... 111.

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

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

24) Find the 19th term of an A.P – 11, –15, –19..........

25) If nine times ninth term is equal to the fifteen times fifteenth term. Show that six times twenty fourth term is zero.

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1st Term   2nd Term   3rd Term   4th Term......... n^{th} Term

a   a + d   a + 2d   a + 3d   a + (n-1)d

d = Common Difference

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TEST No : 10   K.M.K.A. MATRIC. HR. SEC. SCHOOL,   THIRUTHANGAL.
STD : X   EXERCISES 2.6 – 2. 9   Marks 50

I) Answer the following question :   **25 x 2 = 50**

1) Find the sum of 3 + 6 + 9 + ... 96.

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

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

4) If 1 + 2 + 3 + ... + k = 325, then find $1^3 + 2^3 + 3^3 + ... + k^3$.

5) If the first term of an infinite G.P is 8 and its sum of infinity is $\frac{32}{3}$ then find the common ratio.

6) Find the rational form of the number of 0.123.

7) How many terms of the series 1 + 4 + 16 + ... make the sum 1365.

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

9) Find the first term of a G.P in which S_6 = 4095 and r = 4.

10) Find the sum of first six terms of the G.P 5, 15, 45 ....

11) In a G.P 729, 243, 81, ... Find t_7.

12) Find so that x+6, x+12 and x+15 are consecutive terms of a Geometric progression.

13) If a, b, c are in A.P then show that 3^a, 3^b, 3^c are in G.P.

14) Find the 10th term of a G.P whose 8th term is 768 and the common ratio is 2.

15) In a G.P the 9th term is 32805 and 6th term is 1215. Find the 12th term?

16) Find the 8th term of G.P 9, 3, 1 ....

17) How many consecutive odd integers beginning with 5 will sum to 480.

18) Find the sum of the 102, 97, 92 .... upto 27 terms.

19) Find the sum of first 28 terms of an A.P whose n^{th} term is 4n – 3.

20) Find the sum of all odd positive integers less than 450.

21) Find the sum of first 15 terms of the A.P. 8, 7¼ , 6½,   5¾ ....

22) Find the sum of 0.40 + 0.43 + 0.46 + ... +1.

23) How many terms of the series 1 + 5 + 9 + ... must be taken so that their sum is 190

24) In an A.P the sum of first n terms is $\frac{5n^2}{2} + \frac{3n}{2}$. Find the 17th term.

25) The sum of first n terms of a certain series is given as $2n^2$ – 3n. Show that the series is an A.P.

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TEST No : 11   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.

STD : X   **Exercises 6.1 TO 6.4**   **Marks : 30**

I) Answer the following questions : (Any 15)   **15 x 2 = 30**

1) Prove that $\frac{Sin^3 A + Cos^3 A}{Sin A + Cos A} + \frac{Sin^3 A - Cos^3 A}{Sin A - Cos A} = 2$.

2) Prove that $\frac{1}{Cosec\ \theta - Sin\ \theta} = \tan\theta\sec\theta$.

3) Prove that $\frac{Sin\ A}{1 + Cos\ A} = Cosec\ A - Cot\ A$.

4) Prove that $\tan^2\theta - \sin^2\theta = \tan^2\theta\sin^2\theta$.

5) Show that $\sec\theta - \cos\theta = \tan\theta\sin\theta$.

6) $\tan60^0 \cos60^0 + \cot 60^0 \sin60^0$ is _____.

7) Prove that $\sqrt{\frac{1 + Sin\ \theta}{1 - Sin\ \theta}} = \sec\theta + \tan\ \theta$.

8) Prove that $\sqrt{\frac{1 + Sin\ A}{1 - Sin\ A}} + \sqrt{\frac{1 - Sin A}{1 + Sin}} = 2 \sec A$.

9) Prove that $\frac{1 + Sec\ A}{Sec\ A} = \frac{Sin^2 A}{1 - Cos\ A}$.

10) Prove that $\sqrt{\frac{1 + Cos\ \theta}{1 - Cos\ \theta}} = cosec\theta + \cot\theta$.

11) Prove that $\cot\ \theta + \tan\ \theta = \sec\theta\ cosec\theta$.

12) From the op of a building 12 m high the angle of depression of a car on the ground is observed to be 30^0. Find the distance of the car from the building.

13) Find the angle of elevation of the top of a tower from a point on the ground which is 30 m away from the foot of a tower of height $10\sqrt{3}$ m.

14) A tower stands vertically on the ground. From a point on the g[round] which is 48 m away from the foot of the tower, the angle of elev[ation] of the top of the tower is 30^0. Find the height of the tower.

15) From the top of a rock $50\sqrt{3}$ m high, the angle of depression of [a car] on the ground is observed to be 30^0. Find the distance of the car [from] the rock.

16) A Kite is flying at a height of 75 m above the ground the string att[ached] to the kite is temporarily tied to a point on the ground the incli[nation] of the string with the ground is 60^0. Find the length of the [string] assuming then there is no slack in the string.

17) A Player sitting on the top of a tower of height 20 m observe[s the] angles of depression of a ball lying on the ground as 60^0. Fin[d the] distance between the foot of the tower and the ball ($\sqrt{3}$ =1.732).

18) The horizontal distance between two building is 70 m. the an[gle of] depression of the top of the first building when seen from the [top of] the second building is 45^0. If the height of the second build[ing is] 120 m. Find the height of the first building.

19) Prove that $\frac{Sin\ A}{1 + Cos\ A} = \frac{1 - Cos\ A}{Sin\ A}$.

20) Prove that $\frac{Sec\ \theta}{Sin\ \theta} - \frac{Sin\ \theta}{Cos\ \theta} = \cot$.

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TEST No : 12   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.
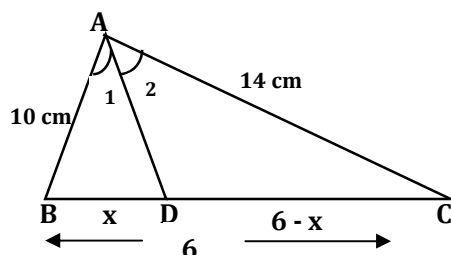
STD : X   UNIT – 4 (2 Marks)   Marks : 40

I) Answer the following questions :   (Any 20)   20 x 2 = 40

1) In two concentric circles, a chord of length 16 cm of larger circle becomes a tangent to the smallest circle whose radius is 6 cm. find the radius of the larger circle.

2) In the figure AD is the bisector of BAC, If AB = 10 cm, AC = 14 cm and BC = 6 cm find BD and DC.

3) The perimeters of two similar triangles ABC and PQR are respective 36 cm and 24 cm. if PQ = 10 cm find AB.

4) In figure A = CED. Prove that Δ CAB $\sim$ Δ CED. Also find the value of x.

5) **State menelaus theorm** :
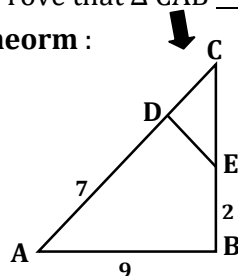
6) The length of the tangent to a circle from a point P. Which is 25 cm away from the centre is 24 cm. What is the radius of the circle.

7) In Δ ABC If DE || BC AD = x, BD = x – 2, AE = x + 2 and EC = x – 1 then find the length of the sides AB and AC.

8) A man goes 18 m due east and then 24 m due north find the distance of his current position from the starting point.

9) What length to ladder is needed to reach a height of 7m along the wall when the base of the ladder is 4m from the wall?

10) PQ is a tangent drawn from a point P to a circle with centre O and QOR is a diameter of the circle such that PQR = 120^0 find OPQ.

11) In figure OPRQ is a square and MLN = 90^0 prove that QR^2 = MQ x RN.
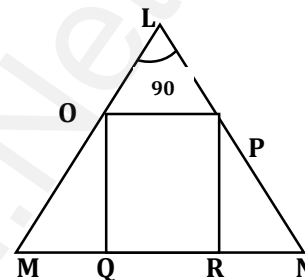
12) In Δ ABC, D and E are points on the sides AB and AC respectively such that DE || BC if $\frac{AD}{DB}$ = ¾ and AC = 15 cm, find AE.

13) In figure Δ ABC is circumscribing a circle, find the length of BC.
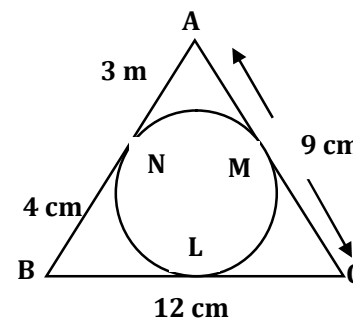
14) Find the length of the length of the tangent drawn from a point whose distance from the center of a circle is 5 cm and radius of the circle is 3 cm.

15) If radii of two concentric orders are 4 cm and 5 cm then find the length of the chord one circle which is tangent t other circle.

16) **State Ceva's theorem :**

17) If Δ ABC, D and E points on the sides AB and AC respectively for each of the following cases. Show that DE || BC. AB = 5.6 cm, AD = 1.4 cm, AC = 7.2 cm, AE = 1.8 cm.

18) A circle is inscribed in Δ ABC having sides 8 cm, 10 cm and 12 cm as shown in the figure. Find AD, BE and CF.
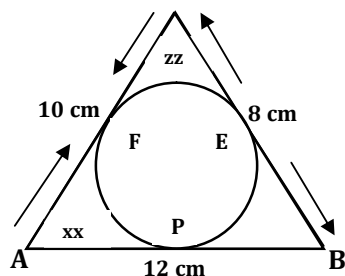
19) In figure DE || BC and CD || EF. Prove that $AD^2 = AB \times AF$.
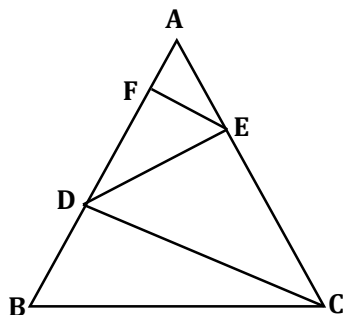
20) Check whether AD is bisector of A of Δ ABC is AB = 5 cm, AC = 10 cm, BD = 1.5 cm and CD = 3.5 cm.

21) A boy of height 90 cm is walking away from the base of a lamp post at a speed of 1.2 / sec. if the lam post is 3.6 cm.

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

23) The perimeter of two similar triangle ABC and PQR are respectively 36 cm and 24 cm. If PQ = 10 cm. Find AB.
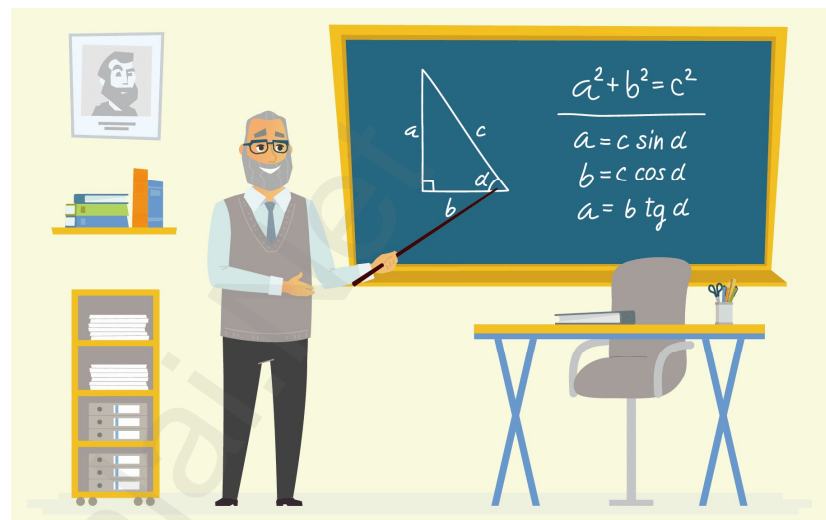
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TEST No : 13   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.

STD : X   Exercises 7.1 TO 7.4   Marks : 50

I) Answer the following questions : (Any 25)   25 x 2 = 50

1) The curves surface area of a right circular cylinder of height 14 cm is 88 cm² . Find the diameter of the cylinder.

2) If the total surface area of a cone of radius 7 cm is 704 cm² then find its slant height.

3) Find the diameter of a sphere whose surface area is 154 m².

4) If the base area of a hemispherical solid is 1386 Sq. meters then find its total surface area.

5) The slant height of a frustum of a cone is 5 cm and the radii of its ends are 4 cm and 1 cm. find the curved surface area.

6) Find the volume of a cylinder whose height is 2 m and whose base area is 250 m².

7) The volume of a solid right circular cone is 5 cm and the radii of its ends are 4 m and 1 cm. find the curved surface area.

8) The ratio of the volumes of two line is 2 : 3. Find the ratio of their radii if the height of the second cone is double the height of the first.

9) If the radii of their circular ends of a frustum which is 45 cm height are 28 m and 7 cm. find the volume of the frustum.

10) A metallic sphere of radius 16 cm is melting and recase into small spheres each of radius 2 cm. How many small spheres can be obtained?

11) A cone of height 24 cm is made up of modeling clay. A child resphapes it in the form of a cylinder of same radius as cone. Find the height of the cylinder.

12) An aluminium sphere of rdius 12 cm is melted to make a cylinder of radius 8 cm. find the height of the cylinder.

13) A solid sphere and a solid hemisphere have equal total surface area. Prove that the ratio of their volume is $3\sqrt{3}$: 4.

14) If the volume of a sphere is 36 π cm³. Find the volume of a cone with same radius and height of a sphere.

15) If the circumference of a conical wooden piece is 484 cm then find its volume when its height is 105 cm.

16) If the ratio of radii of two spheres is 4 : 7 find the ratio of their volumes.

17) The radius and height of a cylinder are in the ratio 5 : 7 and its C.S.A is 5500 Sq.cm. find its radius and height.

18) Four per son like a conical tent start height is 19 cm. if each person require 2209 cm of the floor area, then find the height of the tent.

19) A garden is leveled by a cylinder of length 3 m and diameter 2.8 m. Find the   area of the ground for 8 revolution.

20) Find the maximum volume of a cone that can be carved out of a solid hemisphere of radius "r" units.

21) A vessel is in the form of a hemispherical bowl mounted by a hollow cylinder the diameter is 64 cm and the height of the vessel is 13 cm. Find the capacity of the vessel.

22) The radius of a sphere increases by 25 % find the percentage increase in its surface area.

23) A cone of height 24 cm is made up of modeling clay. A child reshapes it in the form of a cylinder of same radius as come. Find the height of the cylinder.

24) If the base area and the T.S.A of a cylinder are 154 Sq. cm and 748 Sq. cm respectively then find the C.S.A of the cylinder.

25) The volume of a cone is $1000\frac{5}{7}$ cube cm the area of its base is $201\frac{1}{7}$ Sq. cm. Find the slant height of the cone.

26) A hollow sphere of internal and external diameters are 4 cm and 8 cm. find its volume.

27) The volumes of two cones of same base radius are 3600 cm³ and 5040 cm³. Find the ratio of heights.

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TEST No : 14   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.
STD : X   Exercises 5.1 TO 5.4   Marks : 50

I) Answer the following questions :   **25 x 2 = 50**

1) Find the area of the triangle whose vertices are (-3, 5), (5,6) and (5, -2).

2) If the area of the triangle formed by the vertices A(-1,2), B(k, -2) and C(7, 4) (take in order)

3) (a, b+c), (b, c+a) and (c, a+b) determine whether the points are collinear?

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

5) The line through the point (-2, a) and (9, 3) has slope -1/2. Find the value of a.

6) Find the slope of a line joining the its points $(5, \sqrt{5})$ with the orgin.

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

8) Find the equation of a line passing through the points (3, -4) and having slope – 5/7 .

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

10) Find the slope and y intercept of $\sqrt{3}$ + (1-$\sqrt{3}$) y=3.

11) Find the equation of the straight line which has slope -5/4 and passing through the point (-1, 2).

12) Find the equation of the straight line passing through (1, -4) and has intercepts which are in the ratio 2 : 5.

13) Find the slope of the straight line 6x + 8y + 7 = 0.

14) Find the slope of the line which is perpendicular to 2x - 3y + 8 = 0.

15) Show that the straight line 2x + 3y – 8 = 0 and 4x + 6y + 18 = 0 are parallel.

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

17) If the straight line 12y = -(p+3) x+12, t12x-7y=16 are perpendicular then find "p".

18) 5x+23y+14=0 and 23x-5y+9=0 check whether the given lines are parallel (or) perpendicular.

19) Find the equation of a straight line perpendicular to the line y=4/3 x-7 and passing through the point (7, -1).

20) Find the equation of a line through the given pairs of points (2, 2/3) and (-½, 2) .

21) Find the equation of the straight line passing thorough (5, -3) and (7, -4).

22) Find the equation of a straight line whose.,

i) Slope is 5 and y intercept is – 9

ii) Inclination is 45⁰ and y intercept is 11 .

23) If the three points (3, -1), (a, 3) and (1, -3) are collinear, find the value of a.

24) Find the slope of a line joining the given points. (-1/3, ½) and (2/7, 3/7).

25) i) What is the slope of a line whose inclination is 30)

ii) What is the inclination of a line whose slope is $\sqrt{3}$.

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TEST No : 15   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.

STD : X   **Exercise – 8.3 & 8.4**   **Marks : 50**

I) Answer the following questions : (5 Marks)   **10 x 5 = 50**

1) In a class of 50 students 28 opted for NCC, 30 opted for NSS and 18 opted both NCC and NSS. One of the students is selected at random. Find the probability that

    i) The students opted for NCC but not NSS.

    ii) The students opted for NSS but not NCC.

    iii) The students opted exactly one of them.

2) Two dice are rolled. Find the probability that the sum of outcomes is

    i) The sum as a prime number   ii) Equal to 4   iii) Greater than 10

    iv) Less than 10   v) a doubled

3) From a well shuffled pack of 52 cards. One card is drawn at random. Find the probability of getting   i) Red Card   ii) Heart Card

    iii) Red King   iv) Jack Card   v) Number Card

4) Three fair coins are tossed together. Find the probability of getting

    a) all heads   b) at least one tail

    c) at most one head   d) at most two tail

5) The king and queen of diamonds, queen and jack and king of spades are removed from a deck of 52 playing cards and then well shuffled. Now one card is drawn at random from the remaining cards.

    i) a clavor   ii) a queen of red card   iii) a king of black card

6) A card is drawn from a pack of 52 cards. Find the probability of getting a king (or) a heart (or) a red card .

7) Three unbiased coins are tossed once. Find the probability of getting most 2 tails (or) at least 2 heads.

8) From a well – shuffled pack of 52 cards, a card is drawn at random Find the probability of it being either a red king (or) a black queen

9) A coin is tossed thrice. Find the probability of getting exactly two h (or) at least one tail (or) two consecutive heads.

10) Two dice are rolled once. Find the probability of getting an even number on the first die (or) a total of face sum 8.

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TEST No : 16   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.

STD : X   **Marks : 50**

I) Answer the following questions : (5 Marks)   **10 x 5 = 50**

1) If $f(x) = x - 1$, $g(x) = 3x + 1$ and $h(x) = x^2$ then show the

   $(f \circ g) \circ h = f \circ (g \circ h)$.

2) If $f : R \rightarrow$ and $g : R \rightarrow R$ are defined by $f(x) = x^5$, $g(x) = x^4$ then check if

   F, g are one – one and f o g is one – one?

3) 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,   i) $(A \cap B) \times C = (A \times C) \cap (B \times C)$

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

4) If $A = \{x \in N \mid 1 < x < 4 \}$, $B = \{x \in W \mid 0 \leq x < 2\}$ and $C = \{x \in N \mid x < 3\}$.

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

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

5) Let A = {1, 2, 3, 7} and B = {3, 0, -1, 7}, which of the following are

   relation from A to B?

   i) R_1 = {(2, 1), (7, 1)}   ii) R_2 = {-1, 1}

   iii) R_3 = {(2, -1), (7, 7), (1, 3)}   iv) R_4 = {(7, -1), (0, 3), (3, 3), (0, 7)}

6) Represent each of the given relation by   a) an arrow diagram

   b) a graph   and   c) a set in roster form, wherever possible.

   i){(x, y | x = 2y, x ∈ {2, 3, 4, 5},   y ∈ {1, 2, 3, 4}

   ii){(x, y | y = x + 3, x, y are natural numbers < 10}

7) A function f : [-5, 9] $\rightarrow$ R is defined as follows.

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

   i) $f(-3) + f(2)$ ii) $f(7) - f(1)$

   iii) $2f(4) + f(8)$ iv) $\dfrac{2f(-2) - f(6)}{f(4) + f(-2)}$

8) Let f : A $\rightarrow$ B be a function defined by 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

9) A function f is defined by $f(x) = 2x - 3$.

   i) find $\dfrac{f(0) + f(1)}{2}$ ii) find x such that $f(x) = 0$

   iii) find x such that $f(x) = x$ iv) find x such that $f(x) = f(1 - x)$

10) The data in the adjacent table depicts the length of a person forehand

   and their corresponding height. Based on this data, a student finds a

   relationship between the height (y) and the forehand length (x) as

   y = ax + b, where a, b are constants.

      i) Find a and b

      ii) Find the height of a person whose forehand length is 40 m

      iii) Find the length of forehand of a person if the height is

          53.3 inches.

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TEST No : 17   K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.

STD : X   **Marks : 50**

I) Answer the following questions :   **25 x 2 = 50**

1) Let X = {3, 4, 6, 8}. Determine whether the relation.

   R = {(x, f(x) | x ∈ X, f (x) = x^2 + 1}

2) Let f (x) = 2x + 5. If x ≠ 0 then find $\frac{f(x+2) - f(2)}{x}$.

3) Function f is defined by f (x) = 3 – 2x. Find x such that f (x^2) = (f (x))^2.

4) Define : Function.

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) If A = {2, -2, 3} and B= {1, - 4} then find A x B, A and B x A.

7) Let B x A = {(-2, 3), (-2, 4), (0, 3), (0, 4), (3, 3), (3, 4)} then find A and B.

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

9) If A = {1, 2, 3} and B = {x | x is a prime number less than 10} then find

   A x B and B x A.

10) A = {1, 3, 5}, B = {2, 3} then   i) Find A x B and B x A ii) Is A x B = B x A ?

11) Find f o g and g o f when f (x) = 2x + 1 and g (x) = x^2 – 2.

12) If f (x) = 2x – 1, g (x) = $\frac{x+1}{2}$ show that f o g = g o f = x.

13) If f (x) = x^2 – 1, g (x) = x – 2 find a, if g o f (a) = 1.

14) Find k, if f o f (k) = 5, where f (k) = 2 k – 1.

15). Let f (x) = x^2 – 1 find, f o f o f.

16) Let A = {1, 2, 3, 4 .... 4, 5} and R be the relation defined as "Is

   square of a number" on A. Write R as a subset of A x A. Also, find the

   domain and range of R.

17) 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.

18) Define : Null relation.

19) The arrow diagram shows a relationship between the sets P and Q.

   Write the relation in   i) Set bullder form   ii) Roster form

   iii) What is the domain and range of R?

20) Let A = {3, 4, 7, 8} and B = {1, 7, 10} which of the following sets are

   relations from A to B?

   i) R$_1$ = {(3, 7),(4, 7),(7, 10), (8,1)}   ii) R$_2$ = {(3,1), (4, 12)}

21) 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

22) Let A = {1, 2, 3, 4} and B = N, Let f : A → B defined by f (x) = x^3 then ,

   i) find the range of f   ii)Identify the type of function.

23) Let A = {- 1, 1}, B = {0, 2}. If the function f : A → B defined by

   f (x) = ax + b is an onto function. Find **"a"** and **"b"**.

24) A = {-2, -1, 0, 1, 2} and f : A → B is an onto function defined by

   f (x) = x^2 + x + 1, then find B.

25) Let f be the function from R to R defined by f () = 3x – 5. Find the

   values of **"a"** and **"b"** given that (a, 4) and (1, b) belongs to f.

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K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.

STD : X   UNIT – 2.9, 3.7, 3.8, 3.17, 3.18, 3.19 & 8.3   Marks : 50

MODEL TEST I

I) Answer the following questions :   5 x 2 = 10

1) Find the sum of $6^2+7^2+8^2+21^2$.

2) Find the sequence root of $\dfrac{400\, x^4\, y^{12}\, z^{16}}{100\, x^8\, y^4\, z^4}$

3) If A $\begin{pmatrix} 1 & 2 & 0 \\ 3 & 1 & 5 \end{pmatrix}$, B $\begin{pmatrix} 8 & 3 & 1 \\ 2 & 4 & 1 \\ 5 & 3 & 1 \end{pmatrix}$ find AB.

4) If A $\begin{pmatrix} 0 & 4 & 9 \\ 8 & 3 & 7 \end{pmatrix}$, B $\begin{pmatrix} 7 & 3 & 8 \\ 1 & 4 & 9 \end{pmatrix}$ find the value of 3A – 9B.

5) If A is an event of random experiment such that $P(A) : P(A) = 17 : 15$

and $n(S) = 640$ then find   i) $P(A)$ ii) $n(A)$

II) Answer the following questions :   8 x 5 = 40

6) Three fair coins are tossed together. Find the probability of getting

i) All heads   ii) at least one tail

iii) at most one head   iv) at most two tails

7) From a well shuffled pack of 52 cards. One card is drawn at random.

Find the probability of getting   i) red card   ii) heart card

iii) red king   iv) face card   v) number card

8) If A = $\begin{pmatrix} 1 & 1 \\ -1 & 3 \end{pmatrix}$, B = $\begin{pmatrix} 1 & 2 \\ -4 & 2 \end{pmatrix}$, C = $\begin{pmatrix} -7 & 6 \\ 3 & 2 \end{pmatrix}$ verify that

A (B++C) = AB + AC.

9) A = $\begin{pmatrix} 5 & 2 & 9 \\ 1 & 2 & 8 \end{pmatrix}$, B = $\begin{pmatrix} 1 & 7 \\ 1 & 2 \\ 5 & -1 \end{pmatrix}$ verify that $(AB)^T = B^T A^T$.
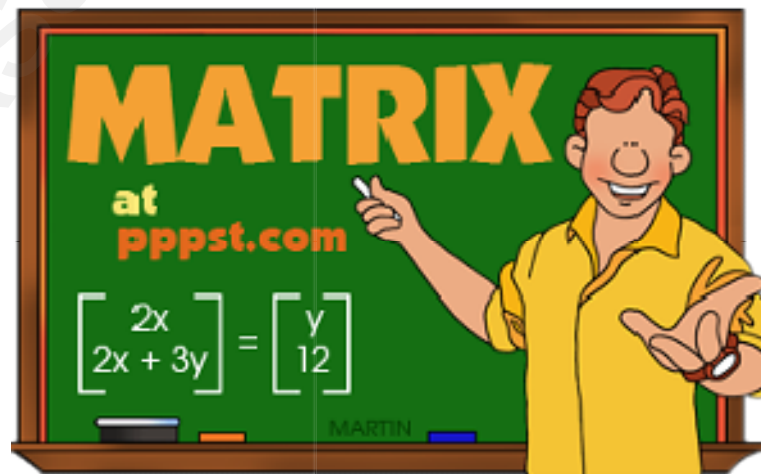
10) If $x^4-8x^3+mx^2+nx+16$ is a perfect square. Find the values of

“**m**” and “**n**”.

11) Find the square root of $(2x^2 + \dfrac{17}{6}x + 1)\,(\dfrac{3}{2}x^2 + 4x + 2)\,(\dfrac{4}{3}x^2 + \dfrac{11}{3}$

12) Rekha has 15 square colour papers of sizes

10 cm, 11 cm, 12 cm ...... 24 cm. How much area can be decorated

these colour papers.

13) Find the sum of the series $(2^3 – 1^3) + (4^3 – 3^3) + (6^3 – 15^3) + ...$

to   i) n terms   ii) 8 terms

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K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.
UNIT – I, UNIT - II (2.1 to 2.5 & 2.9),
UNIT – III (3.2, 3.8, 3.17 to 3.19), UNIT – V (5.1 & 5.2)
UNIT – VIII (8.3 & 8.4)

STD : X **MODEL TEST II** **Marks : 100**

I) Answer the following questions : (Any 13) **13 x 2 = 26**

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

2) Show that the function f : N $\rightarrow$ N define by f (x) = 2x-1 is one – one but not onto.

3) Find k if fof (k) = 5 where f(k) = 2k – 1.

4) Find the H.C.F of 396, 504, 636 (using euclids division Algorithm).

5) If 3+k, 8 – K, 5k+1 are in A.P then find k.

6) Find the greatest number that will divide 445 and 572 using remainders 4 and 5 respectively.

7) If 13824 = 2a x 3b find "a and b".

8) Compute x, such that $104 \equiv x \pmod{19}$.

9) Construct a 3x 3 matrix whose elements are $a_{ij} = 1^2 j^2$.

10) If A = $\begin{pmatrix} 0 & 4 & 9 \\ 8 & 3 & 7 \end{pmatrix}$, B = $\begin{pmatrix} 7 & 3 & 8 \\ 1 & 4 & 9 \end{pmatrix}$ value of B - 5 A.

11) If A = $\begin{pmatrix} 2 & 1 \\ 1 & 3 \end{pmatrix}$, B = $\begin{pmatrix} 2 & 0 \\ 1 & 3 \end{pmatrix}$ find AB and BA then verify AB = BA.

12) Show that the points P(-1.5, 3), Q (6, -2), R (-3, 4) are collinear.

13) The line through the points (-2, a) and (9, 3) has slope -½. Find the value of a.

14) What is the probability of drawing either a king (or) queen in a single draw from a well shuffled pick of 52 cards.

15) If A and B are two events such that P(A) = ¼ ,P(B) = ½ and P(A and B)=1/8. Find i) P (A or B), ii) P (not A and not B)

16) What is the probability that a leap year select at random will contain 53 Saturdays.

II) Answer the following questions : (Any 10) **10 x 5 = 50**

17) Let A = {x, $\in \frac{w}{x} < 2$}, B={x∈N/1<x≤4} and c = {3 ,5} then (AUB) x C = (A x C) U (B x C).

18) f(x) = x – 4, g(x) = x^2 and b(x) = 3x – 5. Show that (fog) oh = fo(goh).

19) If(x) = 2x+3, g(x) = 1 – 2x and b(x) = 3x, prove that fo(goh) = (fog)oh.

20) In an A.P sum of four consecutive terms is 28 and their sum of their square is 276. Find the four numbers.

21) The ratio of 6th and 8th term of an A.P is 7 : 9. Find the ratio of 9th term to 13th term.

22) Find the G.C.D of $6x^3 - 30x^2 + 60x - 48$ and $3x^3 - 12x^2 + 21x - 18$.

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

24) If A = (1 -1 2), B = $\begin{pmatrix} 1 & -1 \\ 2 & 1 \\ 1 & 3 \end{pmatrix}$ and C = $\begin{pmatrix} 1 & 2 \\ 2 & -1 \end{pmatrix}$ then show that (AB) C = A (BC).

25) If A = $\begin{pmatrix} 5 & 2 & 9 \\ 1 & 2 & 8 \end{pmatrix}$ and B = $\begin{pmatrix} 1 & 7 \\ 1 & 2 \\ 5 & -1 \end{pmatrix}$ then verify that (AB) ^{T} = $B^T A^T$.

26) A Coin is tossed trice. Find the probability of getting exactly two heads (or) at least one tail (or) two consecutive heads.

27) A card is drawn from a pack of 52 cards. Find the probability of getting a king (or) a heart (or) a red card.

28) Two dice are rolled. Find the probability that the sum of outcomes is i)equal to 4, ii) greater than 10, iii) less than 13, iv) The sum as a prime number , v) the product as a prime number

III) Answer the following questions : **4 x 6 = 24**

29) Construct triangle similar to give triangle ABC with its sides equal to 6/5 of the corresponding sides of the triangle ABC (Scale factor 6/5 >1).

30) Construct a Δ ABC such that AB = 5.5 cm, C = 25^0 and the altitude from C to AB is 4 cm.

31) Draw the graph of $y = 2x^2 – 3x – 5$ and hence solve $2x^2 – 4x – 6 = 0$.

32) Solve $x^2 – 6x + 9 = 0$ state their nature of solution.

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K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.

STD : X	UNIT – 2, 3, 5 & 7	Marks : 100
TYPE - I	MODEL TEST III	

I) Answer the following questions : (Any 13)　　　　　**13 x 2 = 26**

1) Find the H.C.F. of 396, 504, 969 (Using Euclid's division Algorithm).

2) "a" and "b" are two positive integers such that $a^b + b^a = 800$. Find "a" and "b".

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

4) Find the sum of first 28 terms of an A.P whose nth term is 4n – 3.

5) In a G.P the 9th term is 32805 and 6th term is 1215. Find `the 12th term.

6) Find the excluded value of $\dfrac{x^2+6x+8}{x^2+x-2}$.

7) Simply $\dfrac{P^2-10P+}{P-7}$ x $\dfrac{P^2+P-21}{(P-3)^2}$.

8) Solve $2x^2 - 2\sqrt{6}\,x + 3 = 0$.

9) Find the values of "k" for which the quadratic equation
   $Kx^2 – (8k+4)x+81=0$ has real and equal roots.

10) Without using Pythagoras theorem, show that the points (1, –4) (2,–3), (4, 7) from a right angled triangle.

11) Find the equation of a straight line perpendicular to the line $y = \dfrac{4}{3}x – 7$
   and passing through the point (7, – 1).

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

13) If the T.S.A of cone of radius 7 cm is 704 cm^2 then find its slant eight.

14) The volume of a solid right circular cone is 11088 cme^3. If its height is 24 cm then find the radius of the cone.

15) A cone of height 24 cm is made up of modeling clay. A child reshapes it in the form of a cylinder of same radius as cone. Find the height of the cylinder.

16) The volume of a cylindrical water tank is 1.078×10^6 litres. If the diameter of the tank is 2m. Find its height.

II) Answer the following questions : (Any 10)　　　　　**10 x 5 = 50**

17) The internal and external diameter of a hallow hen's Spherical shell are 6cm and 10 cm respectively. If it is melted and recase into a solid cylinder of a diameter 14 cm, then find the height of the cylinder.

18) A Capsule is in the shape of a cylinder with the hemisphere stuck each of its ends. If the length of the entire capsule is 12 mm and the diameter of the　　capsule is 3 mm, how much medicine it can hol

19) A girl wishes to prepare birthday caps in the form of right circula cones for her birthday party, using a sheet of paper whose area is 5720 cm^2. How many caps can be made with radius 5 cm and heig 12 cm.

20) Find the equation of a straight line through the intersection of lin 5x-6y=2, 3x+2y=10 and perpendicular to the line 4x-7y+13=0.

21) Prove analytically that the line segment joining the mid points of sides of a triangle is parallel to the third side and is equal to half of length.

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

23) The product of three consecutive terms of Geometric progression 343 and their sum is $\dfrac{91}{3}$. Find the three terms.

24) The sum of first n, 2n and 3n terms of an A.P are S_1, S_2, …….. S_3 respectively prove that $S_3 = 3(S_2 – S_1)$.

25) If an A.P sum of four consecutive terms is 28 and their sum of the squares is 276. Find the four terms.

26) $\dfrac{1}{x^2-5x+6} + \dfrac{1}{x^3-3x+2} - \dfrac{1}{x^2-8x+15}$ Simplify.

27) Solve $\dfrac{x}{x-1} + \dfrac{x-1}{x} = 2\,½$.

28) Solve $pqx^2 - (p+q)^2 x + (p+q)^2 =0$.

29) Prove that the equation $x^2(p^2+q^2)+2x(pr+qs) + (r^2+s^2)=0$ has no roots. If ps = pr, then show that roots are real and equal.

III) Answer the following questions :　　　　　**4 x 6 = 24**

30) Draw the graph of $y = x^2+3x+2$ and use it to solve $x^2 +2x+1= 0$.

31) Solve $x^2 – 9x+20=0$ (State their nature of solution).

32) Construct a triangle similar to a given triangle PQR with its sides to $\dfrac{7}{3}$ of the triangle PQR (Scale factor $\dfrac{7}{3} > 1$).

33) Construct a △ PQR such that QR = 6.5 cm, P = $\lfloor 60^0$ and the altitud from P to QR is of length 4.5 cm.

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K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.
STD : X   UNIT – 3 (3.1, 3.2, 3.6, 3.8, 3.13, 3.14)   Marks : 50
TYPE - II   MODEL TEST IV

I) Answer the following questions : (5 Marks)   10 x 5 = 50

1) Solve $\frac{1}{2x} + \frac{1}{4y} - \frac{1}{3x}$; $\frac{1}{x} = \frac{1}{3y}$; $\frac{1}{x} - \frac{1}{5y} + \frac{4}{z} = 2\frac{2}{5}$.

2) Find the GCD of $6x^3 - 30x^2 + 60 - 48$ and $3x^3 - 12x^2 + 21x - 18$.

3) If A = $\frac{x}{x+1}$, B = $\frac{1}{x+1}$, prove that $\frac{(A+B)^2 + (A-B)^2}{A \div B} = \frac{2(x^2+1)}{x(x+1)^2}$.

4) Find the value of "a" and "b" $ax^4 + bx^3 + 361x^2 + 220x + 100$.

5) If the roots of the equation $(c^2 - ab)x^2 - 2(a - bc)x + b^2 - ac = 0$ are real and equal. Prove that either a = 0 (or) $a^3 + b^3 + c^3 = 3abc$.

6) If $\propto, \beta$ are the roots of the equation $2x^2 - x - 1 = 0$ then form the equation whose roots are   i) $\propto^2 \beta, \beta^2 \propto$ i) $2 \propto + \beta, 2 \beta + \propto$.

7) If $\propto$ and β are the roots of $x^2 + 7x + 10 = 0$. Find the value of

   i) $\frac{\propto}{\beta} + \frac{\beta}{\propto}$ ii) $\propto^3 - \beta^3$ iii) $\frac{\propto^2}{\beta} + \frac{\beta^2}{\propto}$.

8) The sum of the digit of a three digit number is 11 If the digits are reversed, the new number is 46 more than five times the former number. If the hundreds digit puls twice the tens digit is equal to the units digit then find the original three digit number.

9) Find the G.C.D. of $3x^4 + 6x^3 - 12x^2 - 24x$, $4x^4 + 14x^3 + 8x^2 - 8x$.

10) If the roots of $(a - b)x^2 + (b - c)x + (c - a) = 0$ are real and equal then P.T b, a, c are in A.P.

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K.M.K.A. MATRIC. HR. SEC. SCHOOL, THIRUTHANGAL.
STD : X   UNIT – 1.1, 3.2, 3.8, 8.3 & 8.4   Marks : 50
TYPE - III   MODEL TEST V

I) Answer the following questions : (5 Marks)   10 x 5 = 50

1) Find the G..C.D. of $3x^4 + 6x^3 - 12x^2 - 24$, $4x^4 + 14x^3 + 8x^2 - 8$ x.

2) $x^4 - 1 =$, $x^3 - 11x^2 + x - 11$ find the G.C.D.

3) Find the values of "**a**" and "**b**" $4x4 - 12x^3 + 37x^2 + bx + a$.

4) Find the values of "**m**" and "**b**" $36x4 - 60x^3 + 61x^2 - mx + n$.

5) A card is drawn from a pack of 52 cards . Find the probability of getting a king (or) heart (or) a red card.

6) A coin is tossed thrice. Find the probability of getting exactly two heads (or) at least one tail (or) two consecutive heads.

7) Three fair coins are tossed together. Find the probability of getting
   i)all heads   ii) at least one tail
   iii) at most one head   iv) at most two tails

8) From a well shuffled pack of 52 cards, one card is drawn at random. Find the probability of getting
   i) red card   ii) heart card   iii) red king
   iv) face card   v) number card

9) Let A = {x ∈ W/ x < 2 }, = {x ∈ N / 1 < x ≤ 4 } and C = {3, 5}, verify that
   A x (B ∩ C) = (A x B) ∩ (A x c).

10) Let A = The set of all Natural number less than 8
        B = The set of all Prime numbers less than 8
        C = The set of Even Prime number, verify that
   A x (B − C) = (A x B) − (A x c).

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