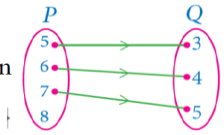
REVISION - 5 TOTAL =50 MARKS

2-marks **10 x 2 = 20**

Let $A = \{1, 2, 3, 4\}$ and $B = N$. Let $f: A \to B$ be defined by $f(x) = x^3$ then, (i) find the range of f (ii) identify the type of function

The arrow diagram shows a relationship between the sets P and Q. Write the relation in (i) Set builder form (ii) Roster form (iii) What is the domain and range of R.



Find the indicated terms of the sequences whose n^{th} terms are given by $a_n = \frac{5n}{n+2}$; a_6 and a_{13}

In a theatre, there are 20 seats in the front row and 30 rows were allotted. Each successive row contains two additional seats than its front row. How many seats are there in the last row?

If $p_1^{x_1} \times p_2^{x_2} \times p_3^{x_3} \times p_4^{x_4} = 113400$ where p_1, p_2, p_3, p_4, are primes in ascending order and x_1, x_2, x_3, x_4, are integers, find the value of p_1, p_2, p_3, p_4, and x_1, x_2, x_3, x_4.

Find the sum of (i) $1 + 3 + 5 + \ldots$ to 40 terms.

Simplify $\frac{x+2}{4y} \div \frac{x^2-x-6}{12y^2}$

The hill in the form of a right triangle has its foot at $(19, 3)$. The inclination of the hill to the ground is $45°$. Find the equation of the hill joining the foot and top

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

Prove the following identities $\sqrt{\frac{1 + \sin\theta}{1 - \sin\theta}} = \sec\theta + \tan\theta$

5- MARKS **6 X 5 = 30**

Represent the given relations by (a) an arrow diagram, (b) a graph and (c) a set in roster form $\{(x, y) / y = x + 3, x, y$ are natural numbers $<10\}$

Let f be a function $f: N \to N$ 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

Find the sum of $10^3 + 11^3 + 12^3 + \ldots + 20^3$

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

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

REVISION -1 TOTAL =50 MARKS

2-marks 10 x 2 = 20

Find $A \times B$, $A \times A$ and $B \times A$ (i) $A = \{2, -2, 3\}$ and $B = \{1, -4\}$ (ii) $A = B = \{p, q\}$ (iii) $A = \{m, n\}$; $B = \emptyset$

If $13824 = 2^a \times 3^b$, then find a and b.

Reduce each of the following rational expressions to its lowest form

(i) $\frac{x^2-1}{x^2+x}$ (ii) $\frac{x-3}{x^2-9}$

If ΔABC is similar to ΔDEF such that $BC=3cm$, $EF=4cm$ and area of $\Delta ABC=54cm^2$. Find the area of ΔDEF

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

Calculate the slope and y intercept of the straight line $8x - 7y + 6 = 0$

Prove that $\sqrt{\frac{1+\cos\theta}{1-\cos\theta}} = \operatorname{cosec}\theta + \cot\theta$

A Relation R is given by the set $\{(x, y) \mid y = x + 3, x \in \{0, 1, 2, 3, 4, 5\}\}$. Find its domain and range.

Find the 19^{th} term of an A.P. $-11, -15, -19, \ldots$

Multiply $\frac{x^3}{9y^2}$ by $\frac{27y}{x^5}$

In ΔABC, D and E are points on the sides AB and AC respectively such that $DE \parallel BC$ (i) If $\frac{AD}{DB} = \frac{3}{4}$ and $AC = 15\ cm$ find AE

5- MARKS 6X 5 = 30

Let $A = \{x \in N / 1 < x < 4\}$, $B = \{x \in W \mid 0 \le x < 2\}$ and $C = \{x \in N \mid x < 3\}$. Then verify that $A \times (B \cup C) = (A \times B) \cup (A \times C)$

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

Find the square root of the following by division method $37x^2 - 28x^3 + 4x^4 + 42x + 9$

State and prove Basic Proportionality Theorem (or) Thales Theorem

Find the area of the quadrilateral whose vertices are at $(-9, 0)$, $(-8, 6)$, $(-1, -2)$ and $(-6, -3)$

If $\cot\theta + \tan\theta = x$ and $\sec\theta - \cos\theta = y$, then prove that $(x^2y)^{\frac{2}{3}} - (xy^2)^{\frac{2}{3}} = 1$

REVISION -2 TOTAL =50 MARKS

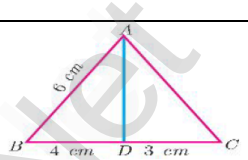
2-marks 5 x 2 = 10

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

Find the number of terms in the A.P. 3, 6, 9, 12,..., 111.

Multiply $\frac{x^3}{9y^2}$ by $\frac{27y}{x^5}$

D and E are respectively the points on the sides AB and AC of a ΔABC such that $AB = 5.6\ cm$, $AD = 1.4cm$, $AC = 7.2\ cm$ and $AE = 1.8\ cm$, show that $DE \parallel BC$.



Find the value of 'a', if the line through $(-2, 3)$ and $(8, 5)$ is perpendicular to $y = ax + 2$

5- MARKS 8X 5 = 30

Let $A = \{1, 2, 3, 4\}$ and $B = \{2, 5, 8, 11, 14\}$ be two sets. Let $f: A \to B$ 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

If the function $f: R \to R$ is defined by $f(x) = \begin{cases} 2x + 7 & \text{if } x < -2 \\ x^2 - 2 & \text{if } -2 \le x < 3 \\ 3x - 2 & \text{if } x \ge 3 \end{cases}$

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

Rekha has 15 square colour papers of sizes $10\ cm$, $11\ cm$, $12\ cm$, ..., $24\ cm$. How much area can be decorated with these colour papers?

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

Find the values of m and n if $36x^4 - 60x^3 + 61x^2 - mx + n$ is a perfect square.

State and prove Angle Bisector Theorem

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

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

REVISION -3 TOTAL =50 MARKS

2-marks 5 x 2 = 10

If $B \times A = \{(-2, 3), (-2, 4), (0, 3), (0, 4), (3, 3), (3, 4)\}$ find A and B

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?

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

In a G.P. 729, 243, 81,... find t_7.

. Find the square root of the following expressions

$256(x-a)^8 (x-b)^4 (x-c)^{16} (x-d)^{20}$

Write down the quadratic equation in general form for which sum and product of the roots are given below: (i) 9, 14 (ii) $-9, 20$

. A cat is located at the point $(-6, -4)$ in xy plane. A bottle of milk is kept at (5, 11). The cat wish to consume the milk travelling through shortest possible distance. Find the equation of the path it needs to take its milk.

Find the equation of a line whose intercepts on the x and y axes are given. $4, -6$

. Prove that $\frac{\sec\theta}{\sin\theta} - \frac{\sin\theta}{\cos\theta} = \cot\theta$

Solve $2x - 3y = 6, x + y = 1$

5- MARKS 6X 5 = 30

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

The houses of a street are numbered from 1 to 49. Senthil's house is numbered such that the sum of numbers of the houses prior to Senthil's house is equal to the sum of numbers of the houses following Senthil's house. Find Senthil's house number?

Find the values of m and n if the expression $x^4 - 8x^3 + mx^2 + nx + 16$ is a perfect square

Find the equation of the median of ΔABC through A where the vertices are $A(6, 2)$, $B(-5, -1)$ and $C(1, 9)$.

If $\operatorname{cosec}\theta + \cot\theta = P$, then prove that $\cos\theta = \frac{P^2 - 1}{P^2 + 1}$

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REVISION -4 TOTAL =50 MARKS

2-marks 10 x 2 = 20

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

A function f is defined by $(x) = 3 - 2x$. Find x such that $f(x^2) = (f(x))^2$.

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

Find the zeros of the quadratic expression $x^2+8x+12$

Find x,y and z, given that the numbers x, 10, y, 24, z are in A.P.

Find the sum and product of the roots for each of the following quadratic equations:
(i) $x^2+8x - 65 = 0$ (ii) $2x^2+5x+7 = 0$

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

Find the equation of a straight line whose
(i) slope is 5 and y intercept is -9 (ii) Inclination is 45° and y intercept is 11.

Prove that $tan^2\,\theta - sin^2\,\theta = tan^2\,\theta\, sin^2\,\theta$

Prove that $\frac{\sin A}{1+\cos A} = \frac{1-\cos A}{\sin A}$

5- MARKS 6X 5 = 30

If $x = \frac{a^2+3a-4}{3a^2-3}$ and $y = \frac{a^2+2a-8}{2a^2-2a-4}$ find the value of x^2y^{-2}.

The function 't' which maps temperature in Celsius (C) into temperature in Fahrenheit (F) is defined by t(C)=F where $F=\frac{9}{5}C+32$. Find (i) t(0) (ii) t(28) (iii) t(-10) (iv) the value of C when $t(C) = 212$
(v) the temperature when the Celsius value is equal to the Fahrenheit value.

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

Two poles of height 'a' meters and 'b' meters are 'p' meters apart. Prove that the height of the point of intersection of the lines joining the top of each pole to the foot of the opposite pole is given by $\frac{ab}{a+b}$ meter.

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