BRIDGE COURSE - MATHEMATICS

From Class - IX to Class - X

1.Real numbers 2. Polynomials 3. Pair of L.E in two variables

	Date	Topic
Day1	13.03.26-Fri	Syllabus analysis
D-2	16.03.26-Mon	Introduction-Real numbers
3	17.03.26-tue	Fundamental theorem of arithmetic with examples
4	18.03.26-wed	Example questions about Fundamental theorem of arithmetic
5	21.03.26-sat	Exercise 1.1- 1, 2 problems
6	23.03.26-mon	Exercise 1.1 - 3,4 problems
7	24.03.26-tue	Exercise 1.1 - 5,6,7 problems
8	25.03.26-wed	Revisiting irrational numbers Proof of √2
9	26.03.26-Thu	proof of √3, and √5
10	28.03.26-sat	Proof of 5 - √3, and 3√2
11	30.03.26-mon	Exercise 1.2 Q-1, Q-2
12	31.03.26-tue	Exercise 1.2 - 3(i),(ii)
13	01.04.26-wed	Exercise 1.2 - 3(iii)
14	02.04.26-thu	Slip test on real numbers
15	04.04.26-sat	Introduction of polynomials
16	06.04.26-mon	Geometrical meaning of the zeroes of a polynomial
17	07.04.26-Tue	Exercise 2.1 & Graph based questions
18 19	08.04.26-wed 09.04.26-thu	Relationship between zeroes and coefficients of a polynomial Exercise 2.2-1(i),(ii),(iii),(iv),(v),(vi)
20	10.04.26-fri	Exercise 2.2-2(i),(ii),(iii),(iv),(v),(vi)
21	11.04.26-sat	Revision of polynomials
22	13.04.26-mon	Slip test on polynomials
23	15.04.26-wed	Pair of linear equations in two variables - Introduction Graphical Method
24	16.04.26-thu	Exercise 3.1
25	17.04.26-fri	Algebraic method Substitution method
26	18.04.26-sat	Exercise-3.2, Elimination method Exercise-3.3
27	20.04.26-mon	Revision of pair of linear equations in two variables
28	21.04.26-tue	Grand Test
29	23.04.26-thu	Review on test results-Guidance

BRIDGE COURSE FOR CLASS 10

MATHEMATICS

Suggestions for Teachers :

Chapters to be covered - 1. Real Numbers
2. Polynomials
3. Pair of Linear Equations in two variables

1. As part of the Mathematics Bridge Course Programme for students entering Class 10, study material has been prepared for three chapters: Real Numbers, Polynomials, and Pair of Linear Equations in Two Variables, which are part of the Class 10 Mathematics syllabus.
2. In each chapter, the key concepts are briefly explained and a few important problems are solved as examples to help students understand the methods and procedures.
3. In the exercise section, some problems are provided with solutions for students' reference.
4. Some problems are intended to be explained and discussed by the teacher in the classroom, emphasizing the steps and concepts involved.
5. The remaining problems may be assigned to students for independent practice or homework.
6. Teachers may support and guide students according to their level of understanding and learning needs to ensure better clarity of the concepts.

DAY-1: FRIDAY DATE : 13.03.2026

BLUE PRINT

FORMAT OF BLUEPRINT (Subject other than language)

Subject: MATHEMATICS **Class: X**

Unit/Paper: **Max Marks: 100** **Time: 3 H : 15 Min.**

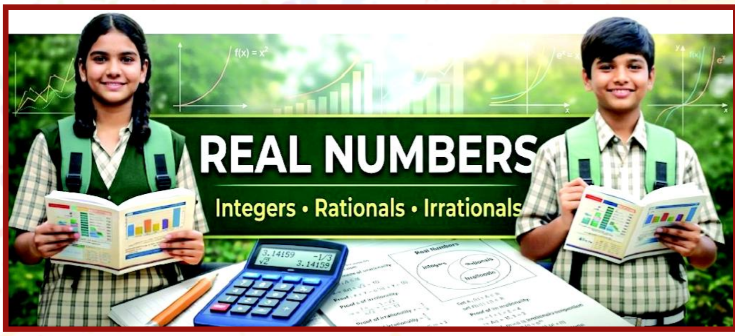
S. No.	Objective → Form of Questions / Content Unit / Sub Unit	Knowledge				Understanding				Application				Analysis				Evaluation				Creation				Total (Row-wise)
		E/LA	SA	VSA	O	E/LA	SA	VSA	O	E/LA	SA	VSA	O	E/LA	SA	VSA	O	E/LA	SA	VSA	O	E/LA	SA	VSA	O	
1	1								1					1												1 + 8 = 9
2	2				1		1																	1	1	1+1+2+4=8
3	3									1+1															1	1 + 8 = 9 (8)
4	4						1									1									1	1 + 2 + 4 = 7
5	5		1			1											1									1 + 4 + 8 = 13
6	6			1					1					1												1 + 2 + 8 = 11
7	7			1														1								2 + 8 = 10
8	8		1						1											1						1 + 2 + 4 = 7
9	9			1	1					1																1 + 2 + 8 = 11
10	10			1											1										1	1 + 2 + 4 = 7
11	11																									8
12	12				1			1			1							1								1 + 2 + 4 = 7
13	13						1																			4 + 8 = 12
14	14				1					1													1			1 + 4 + 8 = 13
	Total (Col-wise) →	20 (Marks Total)				25 (Marks Total)				20 (Marks Total)				15 (Marks Total)				10 (Marks Total)				10 (Marks Total)				100 (Marks Total)

Notes: Figures within brackets to indicate the number of questions and figures outside the brackets to indicate marks.
Denotes that marks have been combined to form one question.

Summary: Essay (E)	No.	5	Marks:	5 × 8 = 40
Short Answer (SA)	No.	8	Marks:	8 × 4 = 32
Very Short Answer (VSA)	No.	8	Marks:	8 × 2 = 16
Objective (0)	No.	12	Marks:	12 × 1 = 12

Steps: a, b, c, d, e, f, g, h, i, j

	Sections
Pattern of Options	1, 2, 3, 4
Scheme of Sections	Internal Choice Only in Section-IV



1. REAL NUMBERS

DAY-2: MONDAY DATE : 16.03.2026

Natural numbers: All counting numbers are called natural numbers.

$N = \{1, 2, 3, 4, 5\ldots\ldots\ldots\}$

Whole numbers: All counting numbers including zero are called whole numbers.

$W = \{0, 1, 2, 3, 4, 5\ldots\ldots\ldots\}$

Integers: All positive numbers, all negative numbers including zero are called Integers.

$Z = \{\ldots\ldots\ldots -3, -2, -1, 0, 1, 2, 3\ldots\ldots\ldots\ldots\}$

Rational number: A number which can be expressed in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$ is called a rational number. Rational numbers are denoted by Q.

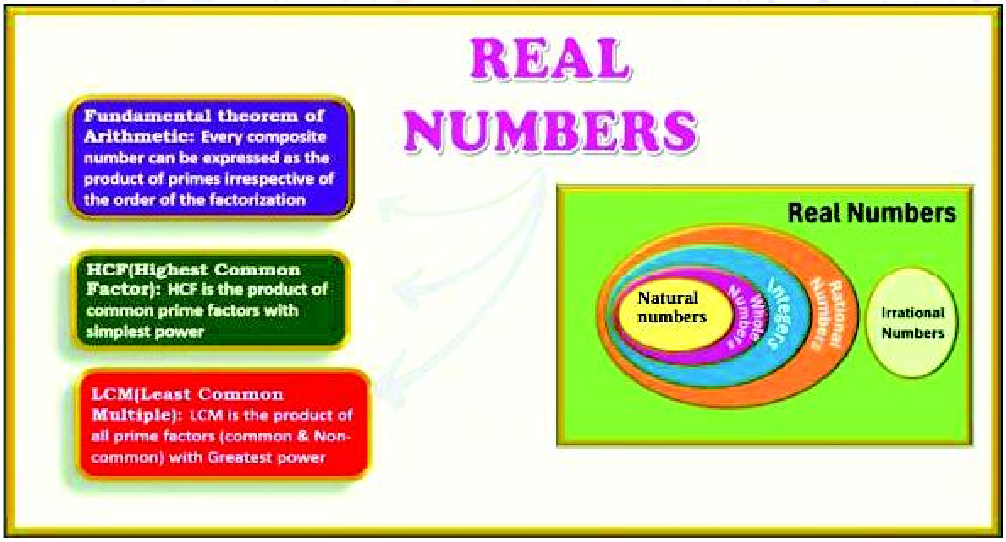
$$Q = \left\{\frac{p}{q} : p, q \in Z \text{ and } q \neq 0\right\}$$

Ex: $\frac{2}{7}, \frac{23}{11}, 4\frac{4}{5}, -2, 0, 6$

Irrational number: A number which cannot be expressed in the form $\frac{p}{q}$ where p and q are integers and $q \neq 0$ is called an irrational number. Irrational numbers are denoted by Q^{I}.

Ex: $\sqrt{2}, \sqrt{5}, \sqrt{7}, 0.10110111011110\ldots\ldots\ldots$

Real numbers: All rational numbers and all irrational numbers together make the collection of real numbers. Real numbers are denoted by R.



DAY-3: TUESDAY DATE : 17.03.2026

Fundamental theorem of arithmetic: Every composite number can be expressed as a product of primes and this factorization is unique, apart from the order in which the prime factors occur.

The first correct proof for this theorem is given by Carl Friedrich Gauss (Prince of Mathematics) in the book 'Disquisitiones Arithmeticae'.

Least Common Multiple (LCM): Product of the greatest power of each prime factor of the numbers.

Highest Common Factor (HCF): Product of the smallest power of each common prime factor of the numbers.

Note: For any two positive integers a and b,

$$\text{HCF}(a, b) \times \text{LCM}(a, b) = a \times b$$

$$\text{HCF}(a, b) = \frac{a \times b}{\text{LCM}(a,b)}$$

$$\text{LCM}(a, b) = \frac{a \times b}{\text{HCF}(a,b)}$$

- If p is prime number and p divides a^2, then p dives a, where a is a positive integer.
- If a number has both 2 and 5 in its prime factorization, then it ends with zero.
- The sum(difference/product/quotient) of two non-zero rational numbers is always rational number.
- The sum(difference/product/quotient) of one non-zero rational number and irrational number is always irrational number.
- The sum(difference/product/quotient) of two non-zero irrational numbers is need not to be irrational number.

DAY-4: WEDNESDAY DATE : 18.03.2026

Example 1: Consider the numbers 4^n, where n is a natural number. Check whether there is any value of n for which 4^n ends with the digit zero.

Sol: $4^n = (2 \times 2)^n$

If a number has both 2 and 5 in its prime factorization, it ends with zero.

4 has only 2 in its prime factorization.

4^n cannot end with the digit 0 for any natural number ‘n’.

Example 2: Find the LCM and HCF of 6 and 20 by the prime factorisation method.

2	6
	3

2	20
2	10
	5

Sol: $6 = 2^1 \times 3^1$

$20 = 2^2 \times 5$

HCF (6, 20) = Product of the smallest power of each common prime factor

$= 2^1 = 2$

LCM (6, 20) = Product of the greatest power of each prime factor

$= 2^2 \times 3 \times 5 = 60$

Example 3: Find the HCF of 96 and 404 by the prime factorisation method. Hence, find their LCM.

Sol: $96 = 2^5 \times 3$

$404 = 2^2 \times 101$

2	404
2	202
	101

2	96
2	48
2	24
2	12
2	6
	3

HCF (96, 404) = $2^2 = 4$

HCF (96, 404) × LCM (96, 404) = 96 × 404

$$\text{LCM}(96, 404) = \frac{96 \times 404}{\text{HCF}(96, 404)} = \frac{96 \times 404}{4} = 9696$$

HOME WORK

- Find the HCF and LCM of 6, 72 and 120 using the prime factorisation method.

DAY-5: SATURDAY DATE : 21.03.2026

EXERCISE 1.1

1. Express each number as a product of its prime factors:

   (i) 140 (ii) 156 (iii) 3825 (iv) 5005 (v) 7429

Sol: (i) 140 $= 2^2 \times 5 \times 7$

(ii) 156 $= 2^2 \times 3 \times 13$

(iii) 3825 $= 3^2 \times 5^2 \times 17$

(iv) 5005 $= 5 \times 7 \times 11 \times 13$

(v) 7429 $= 17 \times 19 \times 23$

2. Find the LCM and HCF of the following pairs of integers and verify that LCM × HCF = product of the two numbers.

   (i) 26 and 91

Sol: $26 = 2 \times 13$

$91 = 7 \times 13$

$LCM = 2 \times 13 \times 7 = 182$

$HCF = 13$

$LCM \times HCF = 182 \times 13 = 2366$

Product of the two numbers $= 26 \times 91 = 2366$

LCM × HCF = product of the two numbers.

HOME WORK

ii) 510 and 92

iii) 336 and 54

DAY-6: MONDAY DATE : 23.03.2026

3. Find the LCM and HCF of the following integers by applying the prime factorisation method.

(i) 12, 15 and 21

Sol: $12 = 2^2 \times 3$

$15 = 3 \times 5$

$21 = 3 \times 7$

HCF (12, 15, 21) = 3

LCM (12, 15, 21) $= 2^2 \times 3 \times 5 \times 7 = 420$

(ii) 17, 23 and 29

Sol: $17 = 17 \times 1$

$23 = 23 \times 1$

$29 = 29 \times 1$

HCF (17,23,29) =1

LCM (17,23,29) $= 17 \times 23 \times 29 = 11,339$

(iii) 8, 9 and 25

Sol: $8=2^3$ $9=3^2$ $25=5^2$

HCF (8,9,25) =1

LCM (8,9,25) = $2^3 \times 3^2 \times 5^2 = 8 \times 9 \times 25 = 1{,}800$

4. Given that HCF (306, 657) = 9, Find LCM (306, 657).

Sol: LCM x HCF = Product of the two numbers

$$\text{LCM} = \frac{\text{Product of the two numbers}}{\text{HCF}}$$

$$= \frac{306 \times 657}{9} = 22338$$

$\therefore$ LCM = 22338

DAY-7: TUESDAY DATE : 24.03.2026

5. Check whether 6^n can end with the digit 0 for any natural number n.

Sol: $6^n = (2 \times 3)^n$

If a number has both 2 and 5 in its prime factorization, it ends with zero.

6 has only 2 in its prime factorization but no 5.

$\therefore$ 6^n cannot end with the digit 0 for any natural number 'n'.

6. Explain why $7 \times 11 \times 13 + 13$ and $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ are composite numbers.

Sol: $7 \times 11 \times 13 + 13 = 13 \times (7 \times 11 + 1) = 13 \times (77 + 1)$

$= 13 \times 78$

$= 13 \times 2 \times 3 \times 13$

$7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5 = 5 \times (7 \times 6 \times 4 \times 3 \times 2 \times 1 + 1)$

$= 5 \times (1008 + 1)$

$= 5 \times 1009$

This is the product of primes.

From fundamental theorem of arithmetic, given number is a composite number.

7. There is a circular path around a sports field. Sonia takes 18 minutes to drive one round of the field, while Ravi takes 12 minutes for the same. Suppose they both start at the same point and at the same time, and go in the same direction. After how many minutes will they meet again at the starting point?

Sol: The time of their meeting is the LCM of 18 and 12 in minutes.

$18 = 2 \times 3^2$

$12 = 2^2 \times 3$

$$\begin{array}{r|l} 2 & 18 \\ \hline 3 & 9 \\ \hline & 3 \end{array} \qquad \begin{array}{r|l} 2 & 12 \\ \hline 2 & 6 \\ \hline & 3 \end{array}$$

LCM $(18,12) = 2^2 \times 3^2 = 4 \times 9 = 36$

$\therefore$ Sonia and Ravi meet after 36 minutes.

DAY-8: WEDNESDAY DATE : 25.03.2026

Theorem 1.3: Prove that $\sqrt{2}$ is irrational.

Let us assume $\sqrt{2}$ is a rational number

Let $\sqrt{2} = \frac{a}{b}$ here a, b are co-primes

$\Rightarrow \sqrt{2}\,b = a$

$\Rightarrow \left(\sqrt{2}\,b\right)^2 = a^2$

$\Rightarrow 2b^2 = a^2$ .... (1)

2 divides a^2. So, 2 also divides a.

Let $a = 2k$ $(k \in Z)$

From (1), $2b^2 = a^2$

$\Rightarrow 2b^2 = (2k)^2$

$\Rightarrow 2b^2 = 4k^2$

$\Rightarrow b^2 = 2k^2$

2 divides b^2, So, 2 also divides b.

$\therefore$ both a and b have 2 as a common factor.

But this contradicts the fact that a and b are co-primes.

It happened due to our wrong assumption.

So, our assumption is wrong.

$\therefore$ $\sqrt{2}$ is an irrational.

HOME WORK

- Is $\sqrt{7}$ irrational ? Justify your answer.

DAY-9: THURSDAY DATE : 26.03.2026

Example 5: Prove that $\sqrt{3}$ is irrational.

Sol: Let us assume $\sqrt{3}$ is a rational number

Let $\sqrt{3} = \frac{a}{b}$ here a, b are co-primes.

$\Rightarrow \sqrt{3}\,b = a$

$\Rightarrow \left(\sqrt{3}\,b\right)^2 = a^2$

$\Rightarrow 3b^2 = a^2$ .... (1)

3 divides a^2. So, 3 also divides a.

Let a = 3k (k $\in$ Z)

From (1),

$3b^2 = a^2$

$\Rightarrow 3b^2 = (3k)^2$

$\Rightarrow 3b^2 = 9k^2$

$\Rightarrow b^2 = 3k^2$

3 divides b^2 , So, 3 also divides a.

$\therefore$ both a and b have 3 as a common factor.

But this contradicts the fact that a and b are co-primes.

It happened due to our wrong assumption. So, our assumption is wrong.

$\therefore \sqrt{3}$ is an irrational.

HOME WORK

- Is $\sqrt{11}$ irrational ? Justify your answer.

DAY-10: SATURDAY DATE : 28.03.2026

Example 6: Prove that $5-\sqrt{3}$ is irrational.

Sol: Let us assume $5-\sqrt{3}$ is a rational number

Let $5-\sqrt{3}=\frac{a}{b}$ here a, b are co-primes.

$\Rightarrow \sqrt{3}=5-\frac{a}{b}$

$\Rightarrow \sqrt{3}=\frac{5b-a}{b}$

As a, b are co-primes,

$\frac{5b-a}{b}$ is a rational number, so $\sqrt{3}$ is rational number.

But it contradicts the fact that $\sqrt{3}$ is an irrational number.

So, our assumption is wrong.

$\therefore 5-\sqrt{3}$ is irrational.

Example 7: Prove that $3\sqrt{2}$ is irrational.

Sol: Let us assume $3\sqrt{2}$ is a rational number

Let $3\sqrt{2}=\frac{a}{b}$ here a, b are co-primes.

$\Rightarrow \sqrt{2} = \frac{a}{3b}$

As a, b are co-primes,

$\frac{a}{3b}$ is a rational number, so $\sqrt{2}$ is rational number

But it contradicts the fact that $\sqrt{2}$ is an irrational number.

So, our assumption is wrong.

HOME WORK

- Is $5+\sqrt{3}$ irrational ? Justify your answer.

DAY-11: MONDAY DATE : 30.03.2026

EXERCISE 1.2

1) Prove that $\sqrt{5}$ is irrational.

Sol: Let us assume $\sqrt{5}$ is a rational number

Let $\sqrt{5} = \frac{a}{b}$ here a, b are co-primes.

$\Rightarrow \sqrt{5}\,b = a$

$\Rightarrow \left(\sqrt{5}\,b\right)^2 = a^2$

$\Rightarrow \left(\sqrt{5}\,b\right)^2 = a^2$

$\Rightarrow 5b^2 = a^2$ .... (1)

5 divides a^2. So, 5 also divides a.

Let a = 5k $(k \in Z)$

From (1), $5b^2 = a^2$

$\Rightarrow 5b^2 = (5k)^2$

$\Rightarrow 5b^2 = 25k^2$

$\Rightarrow b^2 = 5k^2$

5 divides b^2, So, 5 also divides b.

both a and b have 5 as a common factor.

But this contradicts the fact that a and b are co-primes.

It happened due to our wrong assumption.

So, our assumption is wrong.

$\sqrt{5}$ is irrational.

2) Prove that $3+2\sqrt{5}$ is irrational.

Sol: Let us assume $3+2\sqrt{5}$ is a rational number

Let $3+2\sqrt{5} = \frac{a}{b}$ here a, b are co-primes.

$$\Rightarrow 3+2\sqrt{5} = \frac{a}{b} - 3$$

$$\Rightarrow 2\sqrt{5} = \frac{a-3b}{b}$$

$$\Rightarrow 2\sqrt{5} = \frac{a-3b}{b}$$

$$\Rightarrow \sqrt{5} = \frac{a-3b}{2b}$$

As a, b are co-primes,

$\frac{a-3b}{2b}$ is a rational number, so $\sqrt{5}$ is rational number.

But it contradicts the fact that $\sqrt{5}$ is an irrational number.

So, our assumption is wrong.

$3+2\sqrt{5}$ is irrational.

HOME WORK

1) Prove that $2+5\sqrt{3}$ is irrational

2) Is $4+3\sqrt{2}$ irrational ? Justify your answer.

DAY-12: TUESDAY DATE : 31.03.2026

3) Prove that that the following are irrationals.

(i) $\frac{1}{\sqrt{2}}$

Sol: Let us assume $\frac{1}{\sqrt{2}}$ is a rational number

Let $\frac{1}{\sqrt{2}} = \frac{a}{b}$ here a, b are co-primes.

$\Rightarrow \sqrt{2} = \frac{b}{a}$

As a, b are co-primes,

$\frac{b}{a}$ is a rational number, so $\sqrt{2}$ is rational number

But it contradicts the fact that $\sqrt{2}$ is an irrational number.

So, our assumption is wrong.

$\frac{1}{\sqrt{2}}$ is irrational.

HOME WORK

ii) Is $7\sqrt{5}$ irrational ? Justify your answer.

DAY-13: WEDNESDAY DATE : 01.04.2026

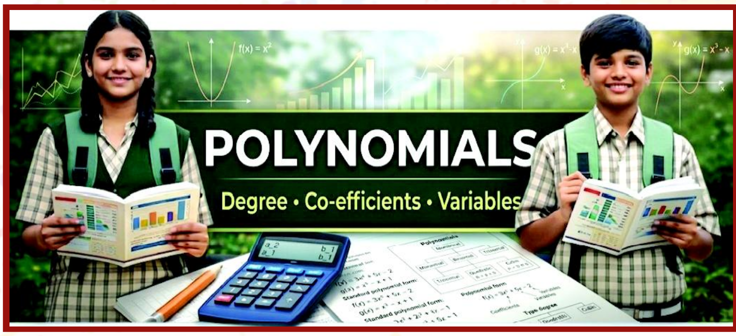
PRATICE:

iii) Is $6+\sqrt{2}$ irrational ? Justify your answer.

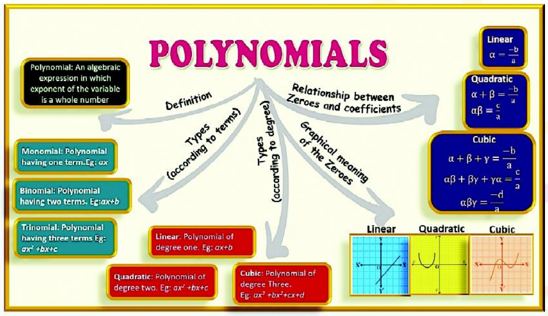
REVISION-CHAPTER-1

DAY-14: THURSDAY DATE : 02.04.2026

SLIP TEST ON THE REAL NUMBERS



2. POLYNOMIALS



DAY-15: SATURDAY DATE : 04.04.2026

Polynomial: An algebraic expression with non-negative integer powers for variables is called a polynomial.

Examples: $2 + 3x^2$, $5m + 8$, $\sqrt{5}\,y^3 - 8$, $\frac{3}{2}y + 6$

Non examples: $4x^{0.2} + 3$, $3\sqrt{m} + 9$, $\frac{5}{x} + y$, $p^{-3} + 5$, $x^{\frac{2}{3}} + z$

Types of polynomials based on number of terms: If a polynomial has only one term it is monomial, if it has 2 terms it is binomial and if it has 3 terms it is a trinomial.

Types of polynomials based on degree: Let a, b, c, d, e.....are real numbers($a \neq 0$)

Degree	Polynomial	General form in one variable x
Not define	Zero polynomial	0
0	Constant polynomial	a
1	Linear polynomial	$ax + b$
2	Quadratic polynomial	$ax^2 + bx + c$
3	Cubic Polynomial	$ax^3 + bx^2 + cx + d$
4	Bi quadratic polynomial	$ax^4 + bx^3 + cx^2 + dx + e$

Examples :

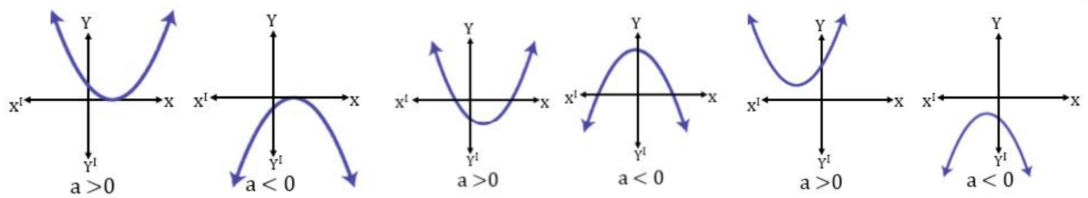
1) Create a polynomial of degree 3 having constant term –5
2) Write a polynomial of degree 5 whose constant term is –2.

Value of a polynomial: The value of polynomial p(x) at x = k is obtained by replacing x with k ($k \in R$) and it is denoted by p(k).

DAY-16: MONDAY DATE : 06.04.2026

Zero of a polynomial: A real number k is said to be a zero of a polynomial p(x), if p(k) = 0.

Note:

- Zero of linear polynomial a x + b is $\frac{-b}{a}$
- 

- Graph of a quadratic polynomial $ax^2 + bx + c$ represents a parabola. If a > 0, it is upward parabola and if a < 0, it is down ward parabola.

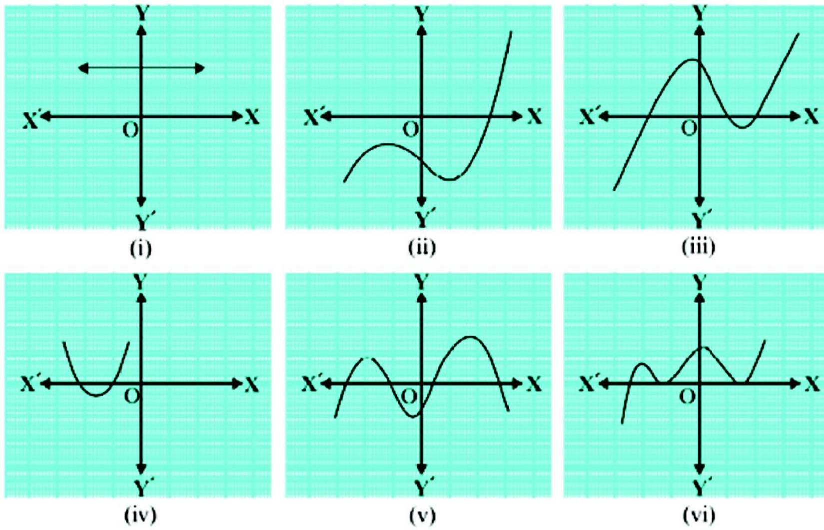
  1) Two distinct zeroes.

  2) Only one zero.

  3) No real zeroes.
- The zeroes of a polynomial p(x) are the x-coordinates of the points, where the graph of y = p(x) intersects the x-axis.
- A linear polynomial has only one zero, quadratic polynomial can have at most 2 zeroes and a cubic polynomial can have at most 3 zeroes.
- The nth degree (n > 1) polynomial can have at most n zeroes.

DAY-17: TUESDAY DATE : 07.04.2026

Example 1: Look at the graphs in given below. Each is the graph of y = p(x), where p(x) is a polynomial. For each of the graphs, find the number of zeroes of p(x).



Sol:

(i) The graph does not intersects the x-axis at. So, number of zeroes is 0.

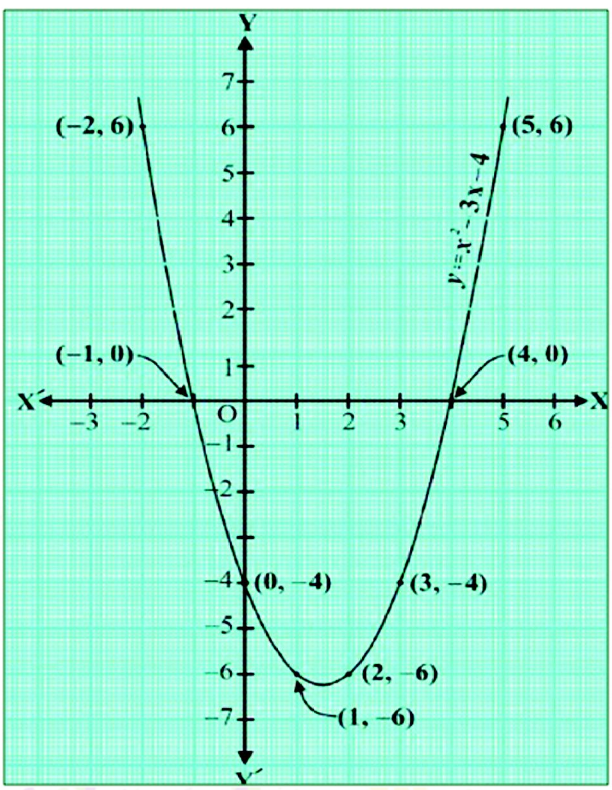
(ii) The graph intersects the x-axis at one point. So, number of zeroes is 1.

(iii) The graph intersects the x-axis at three points. So, number of zeroes is 3.

(iv) The graph intersects the x-axis at two point. So, number of zeroes is 2.

(v) The graph intersects the x-axis at four points. So, number of zeroes is 4.

(vi) The graph intersects the x-axis at three points. So, number of zeroes is 3.



Write the answers for the following questions by observing the graph.

1. What is the name of the polynomial represented in the graph?

Ans: Quadratic polynomial

2. What is the shape of the graph?

Ans: Parabola

3. Find the zeroes of the graph?

Ans: -1, 4

4. Find the sum of the zeroes.

Ans: -1+ 4 = 3

5. Find the product of the zeroes.

Ans: (-1)x (4) = -4

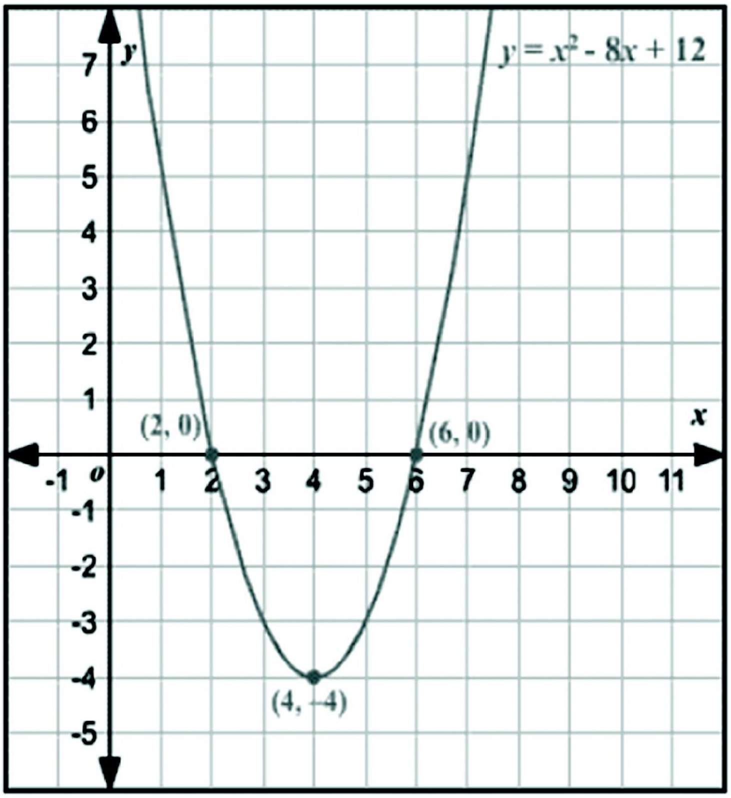
6. How many zeroes are there for the polynomial represented the graph?

Ans: 2

7. Write the points of intersection of graph and x - axis.

Ans: (-1,0) and (4,0)

Due to heavy storm an electric wire got bent as shown in the figure. It followed a mathematical shape. Answer the following questions below



1. Name the shape in which the wire bent?

Ans: Parabola

2. How many zeroes are there for the polynomial?

Ans: 2

3. Write the points of intersection points of   graph and x - axis.

Ans: (2,0) and (6,0)

4. What are the zeroes of the polynomial?

Ans: 2 and 6

5. Find the sum of the zeroes.

Ans: 2 + 6 = 8

6. Find the product of the zeroes.

Ans: $2 \times 6 = 12$

7. What is the name of the polynomial represented in the graph?

Ans: Quadratic polynomial

HOME WORK

By observing the graph, answers for the following questions.

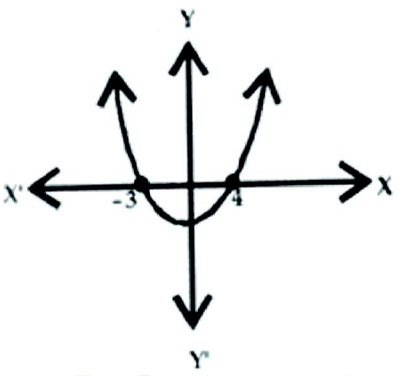
i) what is the shape of the graph?

ii) how many zeroes it has?

iii) what are the zeroes?

iv) find the sum of the zeroes.

v) find the product of the zeroes.



Relationship between zeroes and coefficients. (Here a, b and c are real numbers)

Polynomial	General form ($a\neq 0$)	Zeroes	Relation	Polynomial (If zeroes are given) $k \in R$
Linear polynomial	$ax + b$	α	$\alpha = \frac{-b}{a}$	$k(x - \alpha)$
Quadratic polynomial	$ax^2 + bx + c$	α, β	$\alpha + \beta = \frac{-b}{a}$ $\alpha\beta = \frac{c}{a}$	$k[x^2 - (\alpha + \beta)x + \alpha\beta]$
Cubic Polynomial	$ax^3 + bx^2 + cx + d$	α, β, γ	$\alpha + \beta + \gamma = \frac{-b}{a}$ $\alpha\beta + \beta\gamma + \gamma\alpha = \frac{c}{a}$ $\alpha\beta\gamma = \frac{-d}{a}$	$k[x^3 - (\alpha + \beta + \gamma)x^2 + (\alpha\beta + \beta\gamma + \gamma\alpha)x - \alpha\beta\gamma]$

Example 2: Find the zeroes of the polynomial $p(x) = x^2 + 7x + 10$ and verify the relationship between the zeroes and coefficients?

Sol: $p(x) = x^2 + 7x + 10$ comparing with standard form $ax^2 + bx + c$

Here, $a = 1$, $b = 7$, $c = 10$

To find zeroes, let $p(x) = 0$

$x^2 + 7x + 10 = 0$

$x^2 + 5x + 2x + 10 = 0$

$x(x+5) + 2(x+5) = 0$

$(x+5)(x+2) = 0$

$x + 5 = 0$ (or) $x + 2 = 0$

$x = -5$ (or) $x = -2$

zeroes are -5 and -2

Let $\alpha = 5$ and $\beta = 2$

Sum of the zeroes $\alpha + \beta = (-5) + (-2) = -7$

$$\frac{-(\text{coefficient of } x)}{\text{coefficient of } x^2} = -\frac{b}{a} = \frac{-7}{1} = -7$$

$$\alpha + \beta = \frac{-b}{a}$$

Product of the zeroes = $\alpha\beta$ = (-5) x (-2) = 10

$$\frac{\text{constant term}}{\text{coefficient of } x^2} = \frac{c}{a} = \frac{10}{1} = 10$$

$$\alpha\beta = \frac{c}{a}$$

The relation between zeroes and coefficients is verified.

HOME WORK

- Find the zeroes of the polynomial p(x) = $x^2 - 3$ and verify the relationship between the zeroes and coefficients?

DAY-19: THURSDAY DATE : 09.04.2026

EXERCISE 2.2

1. Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients.

(i) $x^2 - 2x - 8$

Sol: $p(x) = x^2 - 2x - 8$

Here, a = 1, b = –2, c = –8

To find zeroes, let p(x) = 0

$x^2 - 2x - 8 = 0$

$x^2 - 4x + 2x - 8 = 0$

$x(x - 4) + 2(x - 4) = 0$

$(x - 4)(x + 2) = 0$

$x - 4 = 0$ (or) $x + 2 = 0$

x = 4 (or) x = –2

∴ zeroes are 4 and –2

Let $\alpha = 4$ and $\beta = -2$

Sum of the zeroes = $\alpha + \beta = 4 + (-2) = 2$

$$\frac{-(\text{coefficient of } x)}{\text{coefficient of } x^2} = -\frac{b}{a} = \frac{-(-2)}{1} = 2$$

$$\alpha + \beta = \frac{-b}{a}$$

Product of the zeroes = $\alpha\beta = 4 \times (-2) = -8$

$$\frac{\text{canstant term}}{\text{coefficient of } x^2} = \frac{c}{a} = \frac{-8}{1} = -8$$

$$\alpha\beta = \frac{c}{a}$$

The relation between zeroes and coefficients is verified.

HOME WORK

(i) $4s^2 - 4s + 1$

(ii) $6x^2 - 7x - 3$

(iii) $4u^2 + 8u$

(iv) $t^2 - 15$

DAY-20: FRIDAY DATE : 10.04.2026

2. Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively.

(i) $\frac{1}{4}, -1$

Sol: Sum of the zeroes = $\alpha + \beta = \frac{1}{4}$

Product of zeroes = $\alpha\beta = -1$

The quadratic polynomial = $k\left[x^2 - (\alpha + \beta)x + \alpha\beta\right], k \in R$

$= k\left[x^2 - \left(\frac{1}{4}\right)x + (-1)\right]$

$= k\left[x^2 - \frac{1}{4}x - 1\right]$

$= 4 \times \left[x^2 - \frac{1}{4}x - 1\right]$ (If k = 4)

$= 4x^2 - x - 4$

$\therefore$ Required polynomial = = $4x^2 - x - 4$

(vi) 4, 1

Sol: Sum of the zeroes = $\alpha + \beta$ = 4 + 1 = 5

Product of zeroes = $\alpha\beta$ = 4 × 1 = 4

The quadratic polynomial

$= k\left[x^2 - (\alpha + \beta)x + \alpha\beta\right]$, $k \in R$

$= k\left[x^2 - 5x + 4\right]$

$= k[x^2 - 5x + 4]$

$= x^2 - 5x + 4$ (If k = 1)

Required polynomial = x^2-5x+4

HOME WORK

(i) $\frac{1}{3}, -2$ (ii) $\sqrt{3}, \frac{1}{2}$ (iii) $1, \sqrt{7}$ (iv) –3, 2

DAY-21: SATURDAY DATE : 11.04.2026

REVISION OF POLYNOMIALS

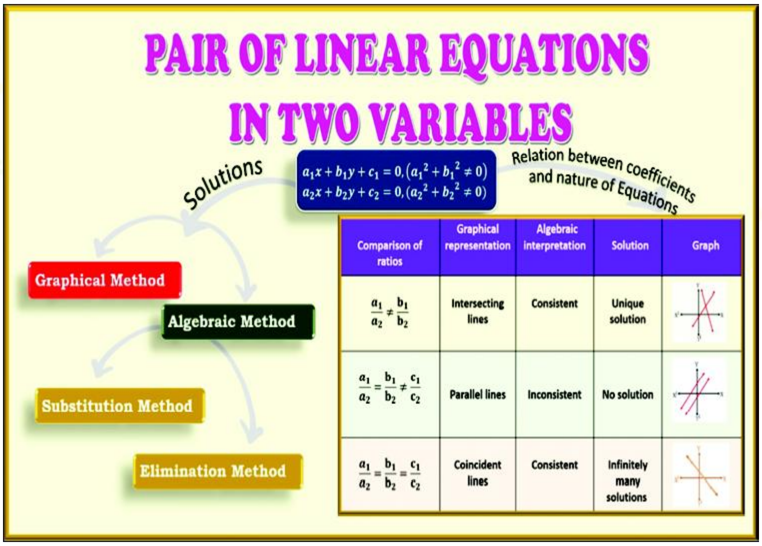
DAY-22: MONDAY DATE : 13.04.2026

SLIP TEST ON THE POLYNOMIALS

3. A PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

DAY-23: WEDNESDAY DATE : 15.04.2026

Introduction



Definition: A linear equation in two variables is an algebraic equation where the highest power (exponent) of the variables is 1. That is degree is 1

The Standard Form (or General Form) of a linear equation in two variables is $ax + by + c = 0$, condition: $a^2 + b^2 \neq 0$, where a, b and c are real numbers.

In this equation:

- x and y are the two variables (the unknowns).
- a and b are the coefficients of x and y, respectively.
- c is the constant term.
- Graphically, this equation always represents a straight line when plotted on a coordinate plane.

Identifying Linear Equations in Two Variables

Equation	Linear?	Reason / Classification
$2x + 3y = 5$	Yes	Standard linear form; both variables have an exponent of 1.
$x - 6y = 0$	Yes	A linear equation, both variables have an exponent of 1.
$x^2 + y = 10$	No	Non-linear: The variable x is squared (Degree 2).
$3x + 1/y = 4$	No	Non-linear: y is in the denominator (Power of -1).
$xy = 6$	No	Non-linear: Variables are multiplied (Degree 2).

A Pair of Linear Equations in Two Variables (also known as a system of linear equations) consists of two algebraic equations that are studied simultaneously to find a common solution.

The general form of a pair of linear equations in x and y is:

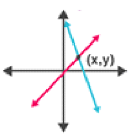
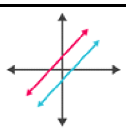
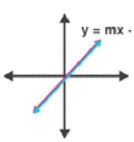
$$a_1 x + b_1 y + c_1 = 0$$
$$a_2 x + b_2 y + c_2 = 0$$

Where a_1, a_2, b_1, b_2, c_1, & c_2 are real numbers and $a_1^2 + b_1^2$ 0 and $a_2^2 + b_2^2 \neq 0$

Solution : A pair of values of the variables x and y satisfying each one of the equations in a given pair of linear equations in x and y is called a solution of the pair.

- Inconsistent: A pair of linear equations which has no solution, is called an inconsistent pair of linear equations.
- Consistent: A pair of linear equations in two variables, which has atleastone solution, is called a consistentpair of linear equations.
- Dependent: A pair of linear equations which are equivalent has infinitely many distinct common solutions. Such a pair is called a dependent pair of linear equations in two variables.

  Note that a dependent pair of linear equations is always consistent.

S.No	Ratio Comparison	Graphical Representation	Nature of Solution	Consistency
	$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$	Intersecting Lines	Exactly one unique solution	Consistent
	$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$	Parallel Lines	No solution	Inconsistent
	$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$	Coincident Lines	Infinitely many solutions	Dependent and Consistent

1) Create a linear equation which is

   (i) Parallel to the given line 3x + 7y + 1 = 0

   (ii) Intersecting to the given line 3x+7y+1=0

   (iii) Coincident to the given line 3x+7y+1=0

2) Create a linear equation which is parallel to the given line $2x + 3y + 8 = 0$

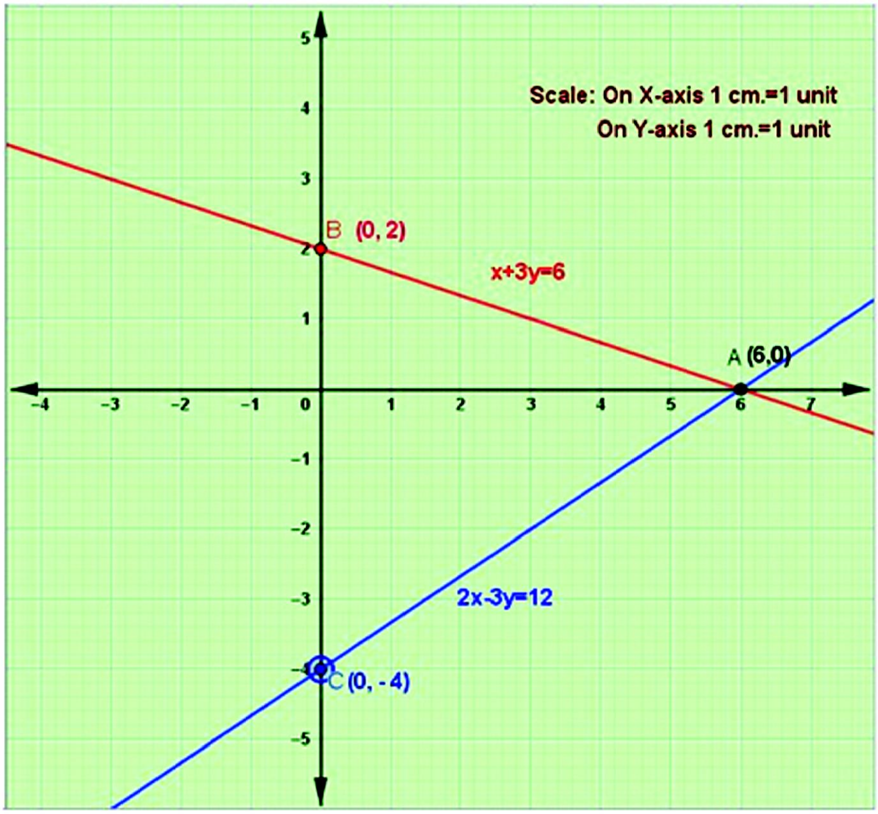
3) Generate a pair of linear equations which are dependent.

DAY-24: THURSDAY DATE : 16.04.2026

Methods to find solution of pair of linear equations

1. Graphical Method 2. Algebraic Method

- Substitution Method
- Elimination Method



1. Check graphically whether the pair of equations $x + 3y = 6$ and $2x - 3y = 12$ is consistent. If so, solve them graphically.

Sol: Given equations are $x + 3y = 6$ and $2x - 3y = 12$

By comparing with standard equations

$[a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2=0]$,

we have $a_1 = 1, b_1 = 3, c_1 = -6$ and $a_2 = 2, b_2 =-3, c_2 = -12$.

Here $\frac{a_1}{a_2}=\frac{1}{2};\frac{b_1}{b_2}=\frac{3}{-3}=-1$ and $\frac{c_1}{c_2}=\frac{-6}{-12}=\frac{1}{2}$

Since, $\frac{a_1}{a_2}\neq\frac{b_1}{b_2}$, the given pair of equations are consistent.

Table for x + 3y = 6

x	0	6
y	2	0

Table for 2x - 3y = 12

x	0	-6
y	4	0

From the graph, common solution of the given pair of equations (x,y) is (6,0)

DAY-25: FRIDAY DATE : 17.04.2026

2. Is the pair of linear equations are consistent/inconsistent? If consistent, obtain the solution graphically: x + y = 5, 2x + 2y = 10

Sol: Given equations are x+ y = 5 and 2x +2y = 10

By comparing with standard equations

[$a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$],

we have $a_1 = 1$, $b_1 = 1$, $c_1 = -5$ and $a_2 = 2$, $b_2 = 2$, $c_2 = -10$.

Here $\frac{a_1}{a_2}=\frac{1}{2};\frac{b_1}{b_2}=\frac{1}{2},\frac{c_1}{c_2}=\frac{-5}{-10}=\frac{1}{2}$

Since, $\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}=\frac{1}{2}$, so, the given pair of equations are consistent.

Table for x + y = 5

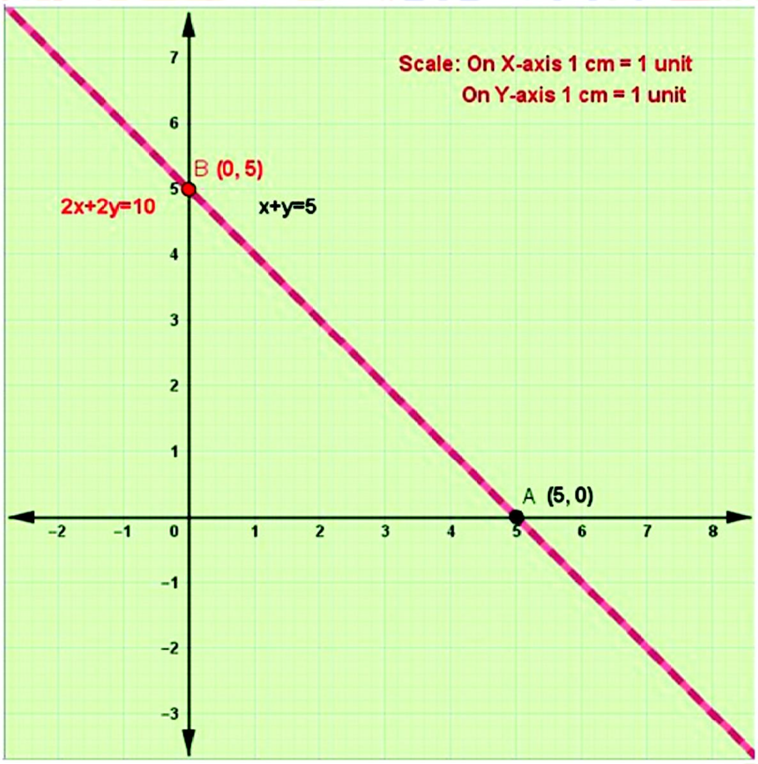
x	0	5
y	5	0

Table for 2x +2y = 10

x	0	5
y	5	0

Conclusion:

- Given pair of linear equations coincident lines.
- So, they have infinitely many solutions. (5, 0), (0 ,5) ..ect



3. Form the pair of linear equations in the following problem, and find their solution graphically. "10 students of class X took part in a mathematics quiz. If the number of girls is 4 more than the number of boys, find the number of boys and girls who took part in the quiz."

Sol: Let the number of boys be 'x' and girls be 'y'

Given total number of students = 10.

$\Rightarrow x + y = 10$

The number of girls is 4 more than number of boys

$\Rightarrow y = x + 4 \Rightarrow x - y = -4$

Table for $x + y = 10$

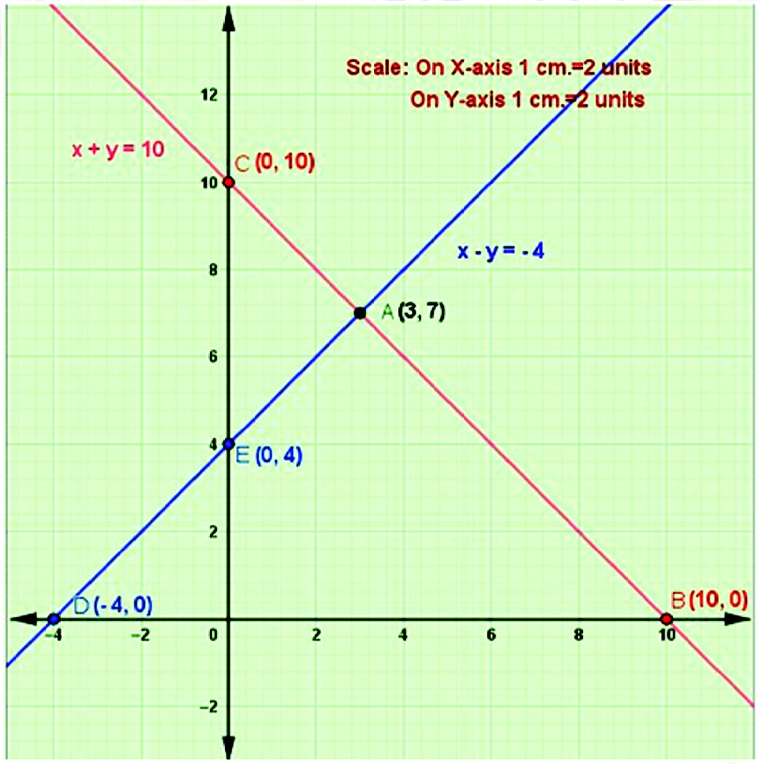
x	0	10
y	10	0

Table for $x - y = -4$

x	0	-4
y	4	0

Conclusion:

- The given linear equations intersect each other at (3,7).
- From the graph, Number of boys = 3 and girls = 7.



DAY-26: SATURDAY DATE : 18.04.2026

Exercise 3.2

Algebraic method (Substitution method.)

4. Solve the given pair of equations using substitution method.
   $2x - y = 5$ and $3x + 2y = 11$

Sol: Given equations: $2x - y = 5 \to (1)$ $3x + 2y = 11 \to (2)$

From (1), $y = 2x \to 5$

Substituting 'y' value in equation (2) we get

$3x + 2(2x - 5) = 11$

$3x + 4x - 10 = 11$

$7x = 11 + 10$

$$x = \frac{21}{7} = 3$$

Substitute $x = 3$ in equation (1)

$y = 2 \times 3 - 5 = 6 - 5 = 1$

$\therefore$ Solution : $x = 3, y = 1$

5. Solve the following pair of linear equations by the substitution method $x + y = 14$, $x - y = 4$.

Sol: Given $x + y = 14$ ...(i)

$x - y = 4$ ...(ii)

$y = x - 4$

Putting the value of y in eqn. (i)

$x + (x - 4) = 14$

$2x = 14 + 4 = 18$

$x = \frac{18}{2} = 9$

Putting the value of x in eqn. (iii),

$y = 9 - 4 = 5$

So, $x = 9$, $y = 5$.

Exercise 3.3

Algebraic method (Elimination method.)

6. Solve the following pair of equations by the elimination method.

$8x + 5y = 9$ and $3x + 2y = 4$

Sol: $8x + 5y = 9 \rightarrow (1)$

$3x + 2y = 4 \rightarrow (2)$

$2 \times (1) \Rightarrow 16x + 10y = 18$

$5 \times (2) \Rightarrow 15x + 10y = 20$

$(-) \quad (-) \quad (-)$

$x = -2$

Substitute $x = -2$ in equation (1)

$8(-2) + 5y = 9$

$-16 + 5y = 9$

$5y = 9 + 16$

$5y = 25$

$y = \frac{25}{5} = 5$

$\therefore$ Solution: $x = -2$, $y = 5$.

7. Solve the following pair of linear equations using elimination method.

$3x + 2y = 11$ and $2x + 3y = 4$

Sol: $3x + 2y = 11 \rightarrow (1)$

$2x + 3y = 4 \rightarrow (2)$

$(1) \times 3 \Rightarrow 9x + 6y = 33$

$(2) \times 2 \Rightarrow 4x + 6y = 8$

$(-) \quad (-) \qquad (-)$

$5x \qquad = 25$

$x = \frac{25}{5} = 5$

Substitute $x = 5$ in eq(1)

$3 \times 5 + 2y = 11$

$2y = 11 - 15 = -4$

$y = \frac{-4}{2} = -2$

$\therefore$ Solution: $x = 5$, $y = -2$

DAY-27: MONDAY DATE : 20.04.2026

REVISION OF A PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

DAY-28: TUESDAY DATE : 21.04.2026

GRAND TEST

DAY-30: THURSDAY DATE : 23.04.2026

REVIEW ON TEXT RESULTS GUIDANCE

CLASS 10 MATHEMATICS

QUICK REVISION AND MIND MAPS

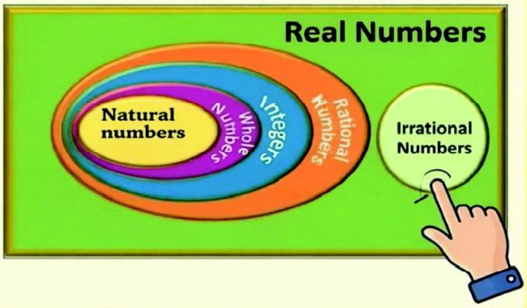
CHAPTER 1

REAL NUMBERS

Fundamental theorem of Arithmetic: Every composite number can be expressed as the product of primes irrespective of the order of the factorization

HCF(Highest Common Factor): HCF is the product of common prime factors with simplest power

LCM(Least Common Multiple): LCM is the product of all prime factors (common & Non-common) with Greatest power



CHAPTER 2

POLYNOMIALS

Definition

Polynomial: An algebraic expression in which exponent of the variable is a whole number

Types (according to terms)

Monomial: Polynomial having one term Eg: ax

Binomial: Polynomial having two terms. Eg: $ax+b$

Trinomial: Polynomial having three terms Eg: ax^2+bx+c

Types (according to degree)

Linear: Polynomial of degree one. Eg: $ax+b$

Quadratic: Polynomial of degree two. Eg: ax^2+bx+c

Cubic: Polynomial of degree Three. Eg: ax^3+bx^2+cx+d

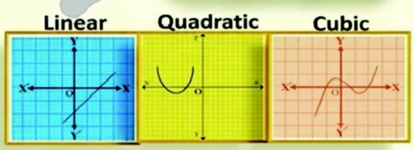
Relationship between Zerees and coefficients

Linear
$\alpha = \frac{-b}{a}$

Quadratic
$\alpha + \beta = \frac{-b}{a}$
$\alpha\beta = \frac{c}{a}$

Cubic
$\alpha + \beta + \gamma = \frac{-b}{a}$
$\alpha\beta + \beta\gamma + \gamma\alpha = \frac{c}{a}$
$\alpha\beta\gamma = \frac{-d}{a}$

Graphical meaning of the Zeroes



CHAPTER 3

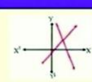
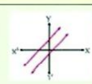
PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

$a_1x + b_1y + c_1 = 0, (a_1^2 + b_1^2 \neq 0)$
$a_2x + b_2y + c_2 = 0, (a_2^2 + b_2^2 \neq 0)$

Solutions

- Graphical Method
- Algebraic Method
  - Substitution Method
  - Elimination Method

Relation between coefficients and nature of Equations

Comparison of ratios	Graphical representation	Algebraic interpretation	Solution	Graph
$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$	Intersecting lines	Consistent	Unique solution	
$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$	Parallel lines	Inconsistent	No solution	
$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$	Coincident lines	Consistent	Infinitely many solutions