

GREENFIELDS PUBLIC SCHOOL

SUMMER VACATIONS HOME-WORK

Class: X (2026-27)

Subject: Mathematics

1. Solve all the questions of the given ASSIGNMENTS in Assignment Register.

- Assignment 1, Chapter 1: Real Numbers
- Assignment 2, Chapter 2: Polynomials
- Assignment 3, Chapter 3: Pair of linear equations in two variables.
- Assignment 4, Chapter 4: Quadratic Equations
- Assignment 5, Chapter 5: Arithmetic progression

2. Prepare & Revise given Chapters from NCERT book and do the practice of all NCERT examples thoroughly.

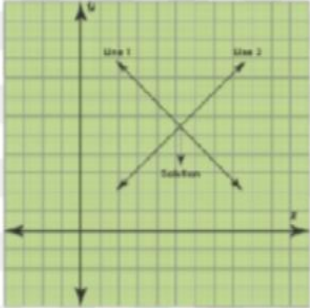
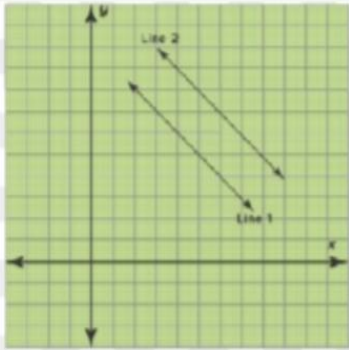
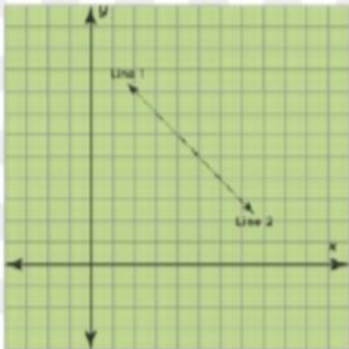
- Chapter 1 : Real Numbers
- Chapter 2 : Polynomials
- Chapter 3 : Pair of linear equations in two variables.
- Chapter 4 : Quadratic Equations
- Chapter 5 : Arithmetic progression



3. Subject Enrichment Activities

Chapter 3: Pair of linear equations in two variables

Activity 1. To obtain condition for consistency of system of linear equation in two variables.

Type of solution	Conditions	Graphical Representation
Unique Solution (Consistent and Independent)	$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$	 <p>Unique Solution (Consistent and independent)</p>
No Solution (Inconsistent and Independent)	$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$	 <p>No Solution (Inconsistent and independent)</p>
Infinite Number of Solutions (Consistent and Dependent)	$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$	 <p>Infinite number of solutions (consistent and dependent)</p>



Chapter 5. Arithmetic Progression

Activity 2 . To Identify Arithmetic progression in some given list of numbers (patterns).

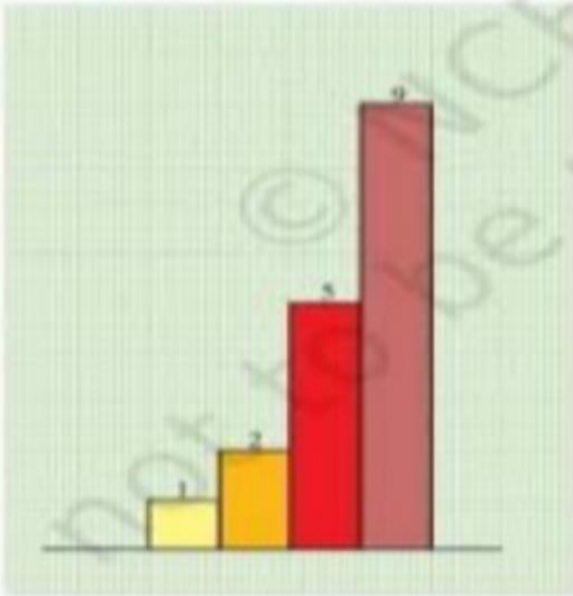


Fig. 1

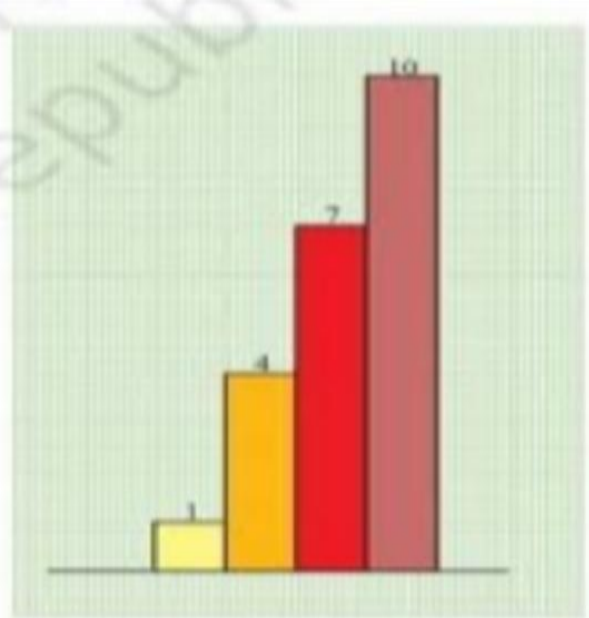
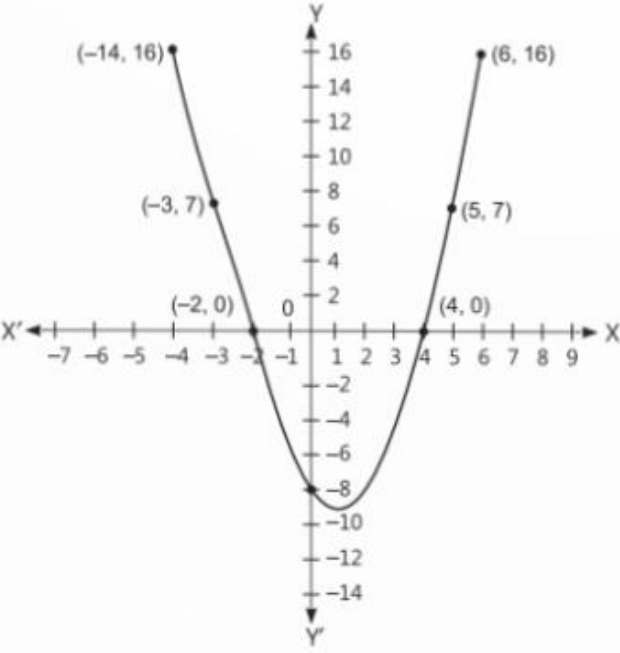
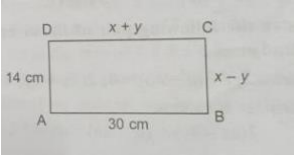



Fig. 2

Note: These activities is to be done in your maths activity file with creativity and these activities will be assessed for subject enrichment.

	your answer using the Fundamental Theorem of Arithmetic.	
8.	Find the smallest number which when increased by 17 is exactly divisible by both 520 and 468.	3
9.	<p>(a) Prove that $\frac{2+\sqrt{3}}{5}$ is an irrational number., given that $\sqrt{3}$ is an irrational number.</p> <p>(b) Three bells toll at intervals of 9, 12, and 15 minutes respectively. If they start tolling together, after what time will they next toll together? How many times will they toll together in 12 hours (excluding the start)?</p>	5
10.	<p><u>Case Study</u></p> <p>Ashish supplies bread and jams to a hospital and a school. Bread and jam are supplied in equal number of pieces. Bread comes in a bunch of 8 pieces and Jam comes in a pack of 6 pieces. On a particular day, Ashish has supplied x packets of bread and y packets of jam to the school. On the same day, Ashish has supplied $3x$ packets of bread along with sufficient packets of jam to hospital. It is known that the number of students in the school are between 500 and 525.</p> <ol style="list-style-type: none"> 1. How many students are there in school? 2. How many packets of bread are supplied in the school? 3. How many packets of bread are supplied in the hospital? <p style="text-align: center;">OR</p> <p>How many packets of jams are supplied in the hospital?</p>	4

7.	If α, β are the zeroes of the polynomial $p(x) = 2x^2 + 5x + k$ satisfying the relation $\alpha^2 + \beta^2 + \alpha\beta = \frac{21}{4}$, find the value of k .	2
8.	Find zeroes of $x^2 - 4\sqrt{3}x - 15$ by factorisation method & verify relation between zeroes & coefficient of polynomial.	3
9.	If α, β are zeroes of quadrilateral polynomial $p(x) = x^2 - 5x + 2$ find a quadratic Polynomial where zeroes are $2\alpha + \beta$ and $2\beta + \alpha$	5
10.	<p>Case Study</p> <p>A student was given a task to prepare a graph of quadratic polynomial $p(x) = -8 - 2x + x^2$. To draw this graph, he take seven values of y corresponding to different values of x. After plotting the points on the graph paper with suitable values, he obtain the graph as shown below.</p>  <p>Based on the above graph, solve the following questions:</p> <p>Q1. What is the shape of graph of a quadratic polynomial?</p> <p>Q2. Find the zeroes of given quadratic polynomial.</p> <p>Q3. The graph of the given quadratic polynomial cut at which points on the X-axis?</p> <p style="text-align: center;">OR</p> <p>The graph of the given quadratic polynomial cut at which point on Y-axis?</p>	

7.	<p>In Fig., ABCD is a rectangle. Find the values of x and y.</p> 	2
8.	<p>Solve graphically the system of equations $x + y = 3$ and $3x - 2y = 4$, shade the graph with these two lines and y-axis</p>	3
9.	<p>There are two examination rooms a and b. If 10 candidates are sent from a to b, the number of students in each room is same. If 20 candidates are sent from b to a the number of students in a is double the number of students in b. Find the number of students in each room</p>	5
10.	<p>Case Study questions Read the following and answer the questions given below: Mr Dhawal Aggarwal is owner of a famous amusement park in Noida. The ticket charge for the park is ₹100 for children and ₹ 150 for adults.</p>  <p>One day he went to the cash counter and checked that 310 tickets were sold and ₹ 40,000 was collected.</p> <p>(i) Assuming that x number of children and y number of adults visited the park. Represent the given situations algebraically.</p> <p>(ii) How much amount was collected if 200 adults and 150 children visited the park ?</p> <p>(iii) How many children visited the park ? How many adults visited the park ?</p> <p style="text-align: center;">Or</p> <p>One day total visited children and adults together is 750 and the total amount collected is ₹ 95,000. How many children and adults visited the park ?</p>	4



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COMPETENCY ASSIGNMENT

SUBJECT: Mathematics

GRADE: X

CHAPTER: Ch 4. Quadratic Equations

S.NO.	QUESTIONS	MARKS
1.	If $px^2 + qx + r = 0$ has equal roots, value of r will be (a) $\frac{q^2}{4p}$ (b) $-\frac{q^2}{4p}$ (c) $\frac{4p}{q^2}$ (d) none of these	1
2.	3. The roots of the quadratic equation $2x^2 + x + 4 = 0$ are: (a) Both positive (b) Both negative (c) One positive, one negative (d) No real roots	1
4.	The roots of the equation $x^2 - 3x - m(m + 3) = 0$, where m is a constant, are – (a) m , m+3 (b) -m , m+3 (c) m , -(m+3) (d) -m , (m+3)	1
5.	If $b = a + c$, then the equation $ax^2 + bx + c = 0, a \neq 0$ has a. Real roots b. No real roots c. Equal roots d. One real root.	1
	Directions for Q5: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as: Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A). Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A). Assertion (A) is true but reason (R) is false. Assertion (A) is false but reason (R) is true.	1
6.	Assertion (A): If the product of the roots of the equation	1

	$x^2 - 3x + k = 10$ is -2 , then the value of k is 8 . Reason (R): The product of the roots of a quadratic equation $ax^2 + bx + c = 0$ is given by $\frac{c}{a}$.	
7.	The sum of the squares of two consecutive multiples of 7 is 637 . Find the multiples.	2
8.	What will be the solutions of the quadratic equation: $adx^2 - x(ab - cd) = bc$.	2
9.	Solve for x : $\frac{1}{x - 3} - \frac{1}{x + 5} = \frac{1}{6}, x \neq -5, 3$	3
10.	A plane left 30 minutes later than the scheduled time and in order to reach its destination 1500 km away in time, it has to increase its speed by 250 km/h from its usual speed. Find its usual speed.	5
11.	<p>Case Study Question</p> <p>An Auditorium was booked for School Annual Day Celebrations and the seats are arranged in a particular manner. The number of rows are equal to the number of seats in each row. When the number of rows was doubled and the number of seats in each row was reduced by 10, the total number of seats increased by 300.</p>  <p>Questions:</p> <ol style="list-style-type: none"> If x is taken as the number of rows in the original arrangement, which quadratic equation describes the situation? How many rows are there in the original arrangement? How many seats are there in the auditorium in the original arrangement? <p style="text-align: center;">OR</p> <p>How many seats are there in the auditorium after re-arrangement?</p>	4



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COMPETENCY ASSIGNMENT

SUBJECT: Mathematics

GRADE: X

CHAPTER: Ch 5 “Arithmetic Progressions”

S.NO.	QUESTIONS	MARKS
1.	If a_n is the n^{th} term of an arithmetic progression whose common difference is d , then which of the following statements is valid? a) $a_{24} = a_1 + 24d$ b) $a_{25} = a_2 + 24d$ c) $a_{26} = a_2 + 24d$ d) None of these	1
2.	Three numbers in an AP have sum 24. Its middle term is: a) 12 b) 8 c) 4 d) 2	1
3.	The next term of the A.P. $\sqrt{7}, \sqrt{28}, \sqrt{63}$ is : a) $\sqrt{70}$ b) $\sqrt{80}$ c) $\sqrt{97}$ d) $\sqrt{112}$	1
4.	In an AP if $a = 1$, $a_n = 20$ and $S_n = 399$, then n is a) 19 b) 21 c) 38 d) 42	1
	Directions for Q5: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as: a. Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A). b. Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A). c. Assertion (A) is true but reason (R) is false. d. Assertion (A) is false but reason (R) is true.	
5.	Assertion: If numbers a, b, c are in A.P then $b - a = c - b$ Reason: Given three numbers are in AP, then the common difference will be same.	1
6.	If 4, $x_1, x_2, x_3, 28$ are in A.P., then find the values of x_1, x_2 , and x_3 .	2
7.	Show that $(a - b)^2, (a^2 + b^2)$ and $(a + b)^2$ are in A.P.	2
8.	The sum of the first three terms of an A.P is 33. If the product of the first and third term exceeds the second term by 29, find the A.P.	3
9.	If the sum of the first 'p' terms of an A.P. is 'q' and sum of the first 'q' terms is 'p' ; then show that the sum of the first (p + q) terms is $\{- (p + q)\}$.	5

10.

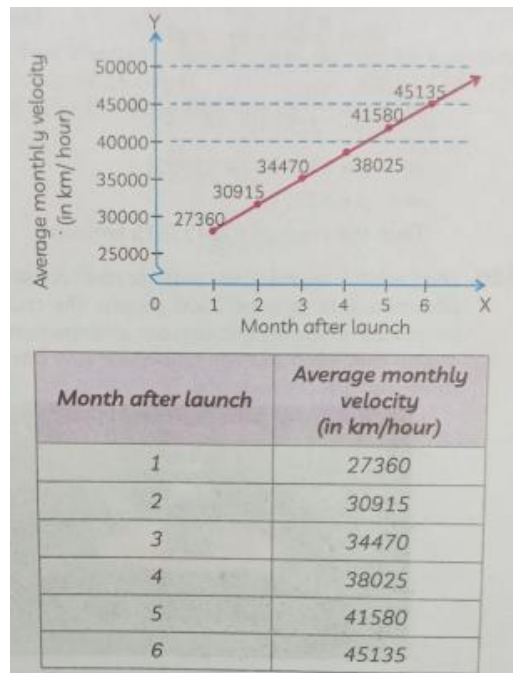
Case Study Question

Read the following and answer the questions given below :

In space exploration missions, ion propulsion engine is an efficient way of travelling. The first such engine was used in Deep Space 1 spacecraft. It produced a constant acceleration. Given below are approximate velocities of the engine.

The initial average velocity of the engine in its first month was 27360 km/hour. When the spacecrafts passed the asteroid, Braille, it reached an average velocity of 55800 km/hour.

Based on the first 6 months of Deep Space 1's monthly average velocity, the following table was created.



(A) Does the average monthly velocity (in km/hour) form an arithmetic progression? Justify your answer.

(B) The distance travelled by the spacecraft in the first 10 months (or 7300 hours) can be expressed as $7300p$ km where p is the sum of average monthly velocity for the first 10 months. Find p . Show your work.

(C) The spacecraft passed the comet, Borelly, 15 months after it passed Braille. Find the average monthly velocity of the spacecraft when it passed Borelly. Show your work.

OR

After how many months did the spacecraft pass Braille? Show your work.

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