Brain International School
Vikas Puri, New Delhi

Assignment – 1

Subject: Mathematics Class: X April/May 2026

Chapter: Pair of linear Equations in Two Variables

Q1. Ten years ago, father was twelve times as old as his son was and ten years hence, he will be twice as old as his son will be. Represent the situation algebraically.
(FRAME EQUATIONS ONLY)

Q2. Determine the value of k for which the following pair of linear equations are inconsistent.
$2x + k\,y = 7$ and $4x + 6y = 11$

Q3. Given the linear equation 2x+3y-8=0, write another linear equation in two variables such that the geometrical representation of the pair so formed is:

Parallel lines (ii) intersecting lines (iii) coincident lines

Q4. Solve the following pair of linear equations by ELIMINATION method.

$2x + 3y - 11 = 0$
$x - 2y + 12 = 0$

Q5. On comparing the ratios : find out whether the lines representing the following pairs of linear equations intersect at a point, are parallel or co incident.

(i) $3x + 2y = 4$
$2x + 4y = -8$

(ii) $5x - 8y + 1 = 0$
$9x - \mathbf{12/5}\,y + \mathbf{8/3} = 0$

Q6. The sum of the numerator and denominator of a fraction is 12.If 1 is added to both the numerator and denominator, the fraction becomes $\frac{3}{4}$. Find the fraction.

Q7.Krishna wants to construct a rectangular garden for children and others to play. The area of this rectangle remains the same if the length is increased by 7m and breadth is decreased by 3m. The area still remains unaffected if the length is decreased by 7m and breadth is increased by 5m.
Find dimensions of the rectangular garden.

Q8.Solve the following pair of linear equations graphically.
$2x - y = 2$
$4x - y = 8$
Determine the coordinates of the vertices of the triangle formed by these lines and the x axis and shade the triangular region. Also find area of the triangle formed.

Q9.The car hire charges in a city comprises of fixed charges together with the charge for the distance covered. For a journey of 12Km, the charge paid is rupees 89 and for a journey of 20 Km, the charge paid is rupees 145.What will a person have to pay for travelling a distance of 30 Km?

Q10.A test consists of 'True' or 'False' questions. One mark is awarded for every correct answer while ¼ mark is deducted for every wrong answer. A student knew answers to some of the questions. Rest of the questions he attempted by guessing. He answered 120 questions and got 90 marks

There are 100 questions and student attempted all the questions. But only 60 answers were found correct. Find the marks he scored.
If answers to all questions he attempted by guessing were wrong and he answered 60 correctly, and he

scored 40 marks. Find the number of questions done incorrectly.

(c) He answered 120 questions and got 90 marks.
If answer to all questions he attempted by guessing were wrong, then how many questions did he answer correctly. How many questions did he guess?

Q11.Two people are 16 km apart on a straight road. They start walking at the same time. If they walk towards each other with different speeds, they will meet in 2 hours. Had they walked in the same direction with same speeds as before, they would have met in 8 hours. Find their walking speeds.

Q12.In a chemistry lab, there is some quantity of 50% acid solution and some quantity of 25% acid solution. How much quantity of each of the solutions should be mixed to make 10 litres of 40% acid solution?

Q13.What is the solution of the pair of linear equations $37x + 43y = 123$, $43x + 37y = 117$?

Q14.The ratio of incomes of two persons is 9 : 7 and the ratio of their expenditures is 4 : 3. If each of them manages to save Rs. 2000 per month, find their monthly incomes.

Q15.The students of a class are made to stand in rows. If 3 students are extra in a row, there would be 1 row less. If 3 students are less in a row, there would be 2 rows more. Find the number of students in the class.

CHAPTER : REAL NUMBERS

Q1. Two numbers are in the ratio 4: 5 and their HCF is 11. Find the LCM of these numbers.

Q2. Find the least number which when divided by 12, 16 and 24 leaves remainder 7 in each case.

Q3. Let p , q and r be three distinct prime numbers. Check whether pqr + q is a composite number or not. Further, give an example for 3 distinct primes p , q , r such that
(i) pqr + 1 is a composite number.
(ii) pqr + 1 is a prime number.

Q4. A school has invited 42 Mathematics teachers, 56 Physics teachers and 70 Chemistry teachers to attend a Science workshop. Find the minimum number of tables required, if the same number of teachers have to sit at a table and each table is occupied by teachers of the same subject.

Q5. Find the smallest number which is divisible by both 644 and 462.

Q6. In a teacher's workshop, the number of teachers teaching French, Hindi and English are 48, 80 and 144 respectively. Find the minimum number of rooms required if in each room the same number of teachers are seated and all of them are of the same subject.

Q7. Prove that $\left(4\sqrt{2}+\frac{5}{3}\right)$ is an irrational number given that $\sqrt{2}$ is an irrational number.

Q8. A sweet shopkeeper prepares 396 gulab jamuns and 342 ras-gullas. He packs them into containers. Each container consists of either gulab jamun or ras-gullas but have equal number of pieces. Find the number of

pieces he should put in each box so that number of boxes are least.

Q9. Find by prime factorisation the LCM of the numbers 18180 and 7575. Also, find the HCF of the two numbers.

Q10. A garden consists of 135 rose plants planted in certain number of columns. There are another set of 225 marigold plants which are also to be planted in the same number of columns. What is the maximum number of columns in which they can be planted.

CHAPTER : POLYNOMIALS

Q1.Find a quadratic polynomial whose sum of the zeroes is 8 and difference of the zeroes is 2.

Q2. If α and β are zeroes of the polynomial $x^2 - p(x + 1) + c$ such that $(\alpha + 1)(\beta + 1) = 0$, then find the value of c.

Q3. If α and β are zeroes of $4x^2 - x - 4$, find quadratic polynomial whose zeroes are $1/(2\alpha)$ and $1/(2\beta)$.

Q4. If the sum of the zeroes of the polynomial $p(x) = (p + 1)x^2 + (2p + 3)x + (3p + 4)$ is -1, then find the value of 'p'.

Q5. Find the zeroes of the polynomial $p(x) = 3x^2 - 4x - 4$. Hence, write a polynomial whose each zero is 2 more than zeroes of p(x).

Q6. If α and β are zeroes of the polynomial $p(x) = x^2 - 2x - 1$, then find the value of: $1/(2\alpha) + 1/(2\beta) + 3\alpha\beta$

Q7. If 'α' and 'β' are the zeroes of the polynomial $p(y) = y^2 - 5y + 3$, then find the value of $\alpha^4\beta^3 + \alpha^3\beta^4$.

Q8. If α, β are zeroes of the polynomial $p(x) = 5x^2 - 6x + 1$, then find the value of $\alpha + \beta + \alpha\beta$.

Q9. Find the zeroes of the quadratic polynomial $x^2 - 19$ and verify the relationship between the zeroes and the coefficients of the polynomial.

Q10. Find the zeroes of the polynomial $p(x) = 3x^2 - 4x - 4$. Hence, write a polynomial whose each of the zeroes is 2 more than zeroes of p(x).

Q11. . If one zero of the polynomial $p(x) = 6x^2 + 37x - (k-2)$ is reciprocal of the other, then find the value of k.

Q12. If the zeroes of the polynomial $x^2 + px + q$ are double in value to the zeroes of the polynomial $2x^2 - 5x - 3$, then find the values of p and q.

Q13.If α *and* β are the zeroes of the quadratic polynomial $f(x) = x^2 - x - 4$ then find the value of $\frac{1}{\alpha} + \frac{1}{\beta} - \alpha\beta$

Chapter: QUADRATIC EQUATIONS

Q1.What is the nature of the roots of the quadratic equation $4x2-12x-9 = 0$.

Q2.The sum of the squares of two consecutive positive odd numbers is 394.Find the numbers.

Q3.The sum of the digits of a two digit number is 8. The number obtained by reversing the digits exceeds the number by 18. Find the given number.

Q4.A train travels a distance of 300km at constant speed. If the speed of the train is increased by 5 km an hour, the journey would have taken 2 hours less. Find the original speed of the train.

Q5.Find k so that the quadratic equation $(k + 1)x^2 - 2(k + 1)x + 1 = 0$ has equal roots.

Q6.If one root of the quadratic equation $3x^2 + px + 4 = 0$ is 2/3, then find the value of p and the other root of the equation.

Q7.The difference of mother's age and her daughter's age is 21 years and the twelfth part of the product of their ages is less than the mother's age by 18 years. Find their ages.

Q8.The sum of two numbers is 18 and the sum of their reciprocals is 9/40. Find the numbers.

Q9. The sum of the squares of two consecutive positive odd numbers is 394.Find the numbers.

Q10.A rectangular floor area can be completely tiled with 200 square tiles. If the side length of each tile is increased by 1 unit, it would take only 128 tiles to cover the floor.
(i)Assuming the original length of side of each tile be x units, form a quadratic equation from the above information.

(ii)Write the corresponding quadratic equation in standard form.

(iii)Find the original length of side of a tile.