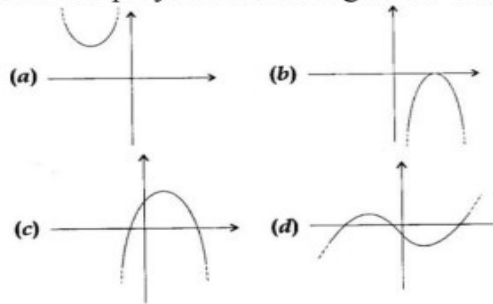


POLYNOMIAL

MULTIPLE CHOICE QUESTIONS

- Q1. If one zero of the quadratic polynomial $x^2 + 3x + k$ is 2, then the value of k is
a) 10 b) -10 c) 5 d) -5
- Q2. A quadratic polynomial, the sum of whose zeros is 2 and one zero is 3 is
a) $x^2 - 9$ b) $x^2 + 9$ c) $x^2 + 3$ d) $x^2 - 3$
- Q3. A quadratic polynomial, the sum of whose zeros is -5 and their product is 6 is
a) $x^2 + 5x + 6$ b) $x^2 + 5x + 6$ c) $x^2 - 5x + 6$ d) $-x^2 + 5x + 6$
- Q4. If one zero of the polynomial $f(x) = (k^2 + 4)x^2 + 13x + 4k$ is the reciprocal of the other, then $k =$
a) 2 b) -2 c) 1 d) -1
- Q5. If α, β are the zeros of the polynomial $f(x) = x^2 + x + 1$, then $\frac{1}{\alpha} + \frac{1}{\beta} =$
a) 1 b) -1 c) 0 d) None of these
- Q6. The number of polynomial having zeros -2 and 5 is



- a) 1 b) 2 c) 3 d) More than 3

OBJECTIVE TYPE QUESTIONS (1 MARK QUESTIONS)

- Q1. Write the zeros of the polynomial $x^2 - x - 6$
- Q2. Write a polynomial whose zeros are $(2 + \sqrt{3})$ and $(2 - \sqrt{3})$
- Q3. If α, β are the zeros of the polynomial, such that $\alpha + \beta = 6$ and $\alpha\beta = 4$, then write the polynomial.
- Q4. If α and $1/\alpha$ are the zeros of the polynomial $4x^2 - 2x + (k - 4)$, find the value of k .
- Q5. Check whether -2 is a zero of the polynomial $9x^3 - 18x^2 - x - 2$

SHORT ANSWER TYPE QUESTIONS (2 MARKS QUESTIONS)

- Q1. Find the zeroes of the polynomial $2x^2 - 9$ and verify the relationship between zeros and coefficients.
- Q2. Find a quadratic polynomial the sum and product of whose zeros are 3 and $-2/5$ respectively.
- Q3. If α and β are zeros of $3x^2 + 5x + 13$, then find the value of $1/\alpha + 1/\beta$
- Q4. Check whether $x = -3$ is a zero of $x^3 + 11x^2 + 23x - 35$.

Q5. Find p and q if p and q are the zeros of the quadratic polynomial $x^2 + px + q$.

SHORT ANSWER TYPE QUESTIONS(3 MARKS)

Q1. Find the zeroes of the following polynomial by factorisation method and verify the relations between the zeroes and their coefficients

i) $7y^2 - \frac{11}{3}y - \frac{2}{3}$

ii) $\sqrt{3}x^2 + 10x + 7\sqrt{3}$

iii) $4\sqrt{3}x^2 + 5x - 2\sqrt{3}$

Q2. If the sum of the zeroes of the polynomial $p(x) = (a + 1)x^2 + (2a + 3)x + (3a + 4)$ is -1, then find the product of the zeroes.

Q3. If $(x + a)$ is a factor of two polynomials $x^2 + px + q$ and $x^2 + mx + n$, then prove that $a = \frac{n-p}{m-p}$

Q4. Can the quadratic polynomial $x^2 + kx + k$ have equal zeroes for some odd integer $k > 1$?

Q5. If one zero of a polynomial $3x^2 - 8x + 2k + 1$ is seven times the other, find the value of k.

LONG ANSWER TYPE QUESTION

Q1. If α and β are the zeroes of the quadratic polynomial $p(s) = 3s^2 - 6s + 4$, find the value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha} + 2\left(\frac{1}{\alpha} + \frac{1}{\beta}\right) + 3\alpha\beta$

Q2. If the squared difference of the zeroes of the quadratic polynomial $f(x) = x^2 + px + 45$ is equal to 144, find the value of p.

Q3. If α and β are the roots of the equation $ax^2 + bx + c = 0$ and if $px^2 + qx + r = 0$ has roots $\frac{1-\alpha}{\alpha}$ and $\frac{1-\beta}{\beta}$, then r is

Q4. If a and b are the zeroes of the quadratic polynomial $f(x) = x^2 - px + q$, prove that $\frac{a^2}{b^2} + \frac{b^2}{a^2} = \frac{p^4}{q^2} - \frac{4p^2}{q} + 2$.

Q5. If l and m are zeroes of the polynomial $p(x) = 2x^2 - 5x + 7$, find a polynomial whose zeroes are $2l+3$ and $2m+3$.

REAL NUMBER

MCQ (1 MARKS)

Q1. HCF of 8, 9, 25 is

- a) 8
- b) 9
- c) 25
- d) 1

Q.2. The product of a rational and irrational number is

- a) Rational
- b) Irrational
- c) both of above
- d) none of above

Q3. L.C.M. of 23×32 and 22×33 is :

- a) 23
- b) 33
- c) 23×33
- d) 22×32

Q4. State fundamental theorem of arithmetic

Q5. The product of a non-zero number and an irrational number is:

- a) always irrational
- b) always rational
- c) rational or irrational
- d) one

Q6. If p and q are two coprime numbers, then find the HCF and LCM of p and q .

Q7. Prime factorization of 120 is ...

Q8. Find the LCM of smallest prime and the smallest odd composite natural number

Q9. If $\text{HCF}(26, 169) = 13$, then $\text{LCM}(26, 169)$ is ...

- a) 26
- b) 52
- c) 338
- d) 13

Q10. If the LCM of a and 18 is 36 and the HCF of a and 18 is 2, then $a = ?$

- a) 2
- b) 3

c) 4

d) 1

SHORT ANSWER QUESTIONS (2 MARKS)

Q1. Find the prime factorization of 1152

Q2. Prove that $\sqrt{5}$ is irrational

Q3. The difference of the irrational numbers $5 + \sqrt{2}$ and $5 - \sqrt{2}$?

Q4. Explain why $3 \times 5 \times 7 + 7$ is a composite number.

Q5. Prove that $\sqrt{2}$ is irrational

Q6. Determine the prime factorisation of 2057?

Q7. If $a=23 \times 3$, $b=2 \times 3 \times 5$, $c=3n \times 5$ and $\text{LCM}[a,b,c] = 23 \times 3^2 \times 5$ then, $n=?$

Q8. If p and q are two coprime numbers, then p^3 and q^3 are?

Q9. The product of two numbers is 228096 and their LCM is 66. Find their HCF.

Q10. The length, breadth and height of a room are 825 cm, 675 cm and 450 cm respectively. Find the longest tape which can measure the three dimensions of the room exactly.

SHORT ANSWER QUESTIONS (3 MARKS)

Q1. Two brands of chocolates are available in packs of 24 and 15 respectively. If I buy an equal number of chocolates of both kinds, what is the least number of boxes of each kind I would need to buy?

Q2. Two bells toll at intervals of 24 minutes and 36 minutes respectively. If they toll together at 9am, after how many minutes do they toll together again, at the earliest?

Q3. There are 44 boys and 32 girls in a class. These students arranged in rows for a prayer in such a way that each row consists of only either boys or girls, and every row contains an equal number of students. Find the minimum number of rows in which all students can be arranged.

Q4. 144 Cartons of coke can and 90 cartons of Pepsi can are to be stacked in a canteen. If each stack is of the same height and is to contain cartons of the same drink. What would be the greater number of cartons each stack would have?

Q5. Find the LCM and HCF of the following pairs of positive integers by applying the prime factorization method.

1. a) 225, 240

2. b) 52, 63, 162

Q6. Find the largest number which divides 70 and 125 leaving remainder 5 and 8 respectively.

Q7. Find HCF and LCM of 867 and 255 and verify that $\text{HCF} \times \text{LCM} = \text{Product of the two given numbers}$

Q8. Explain why $17 \times 5 \times 11 \times 3 \times 2 + 2 \times 11$ is a composite number.

Q9. If the sum of LCM and HCF of two numbers is 1260 and their LCM is 900 more than their HCF then, find the product of two numbers.

Q10. Can two numbers have 15 as their HCF and 175 as their LCM? Give reasons.

Quadratic Equation

Class-10

MCQ

1) Which of the following equation has the sum of roots as 3.

- a) $2x^2 - 3x + 6 = 0$ b) $-x^2 + 3x - 3 = 0$
c) $\sqrt{2}x^2 - 3x + 1 = 0$ d) $3x^2 - 3x + 3 = 0$

2) The quadratic equation $2x^2 - \sqrt{5}x + 1 = 0$ has

- (a) two distinct real roots (c) no real roots
(b) two equal real roots (d) more than 2 real roots

3) For what values of k , the roots of the equation $x^2 + 4x + k = 0$ are real ?

- (a) $k \leq 4$ (b) $k \geq 4$ (c) $k \neq 4$ (d) None of those

4) For what values of a , the equation $9x^2 - 3ax + 1 = 0$ has equal roots

- (a) 2 (b) -2 (c) 3 (d) ± 2

5) If the roots of equation $kx^2 + (a + b)x + ab = 0$ are $-a$ and $-b$ then the value of k is

- a) -1 b) 1 c) 2 d) -2

VSQ

6) Divide 27 into two parts such that the sum of their reciprocal is $3/20$.

7) Solve for $x^2 + 5x - (a^2 + a - 6) = 0$

8). Check whether the equation $6x^2 - 7x + 2 = 0$ has real roots, and if it has find them.

9) The product of two consecutive positive integers is 306. Find the integers.

10) Solve $(a + b)^2 x^2 + 8(a^2 - b^2)x + 16(a - b)^2 = 0$

SAQ

11) If $x = -2$ is a root of the equation $3x^2 + 7x + p = 0$, find k so that the roots of the equation $x^2 + k(4x + k - 1) + k = 0$ are equal.

12) Find p for which the equation $(2p + 1)x^2 - (7p + 2)x + (7p - 3) = 0$ has real and equal roots.

13) Solve for $x^{2/3} + x^{1/3} - 2 = 0$

14) The altitude of a right triangle is 7cm less than its base. If the hypotenuse is 13cm, find other two sides.

15) The cost price of an article is ₹ x and is sold at a profit of $(x+10)\%$. Find C.P. of the article if its selling price is $(2x-20)$.

LAQ

16) The speed of a boat in still water is 15 km/h. It goes 30 km upstream and return back at the same point in 4 hours 30 minutes. Find speed of stream.

17) Prove that both the roots of the equation $(x-a)(x-b) + (x-b)(x-c) + (x-c)(x-a) = 0$ are equal if $a=b=c$.

18) A train travels a certain average speed for a distance of 63 km and then travels for a distance of 72 km at an average speed of 6 km/h more than its original speed. If it takes 3hrs to complete total journey, what is the original average speed ?

19) If the equation $(1+m^2)x^2+2mcx+c^2-a^2=0$ has equal roots then show that $c^2 = a^2(1+m^2)$.

CBQ

20) Ram and Rekha together have 45 marbles. Both of them have lost 5 marbles each then the product of number of marbles they now have is 124. Based on it answer the following:

- (i) If Ram has x marbles, find no. of marbles Rekha has.
- (ii) Express the information in the form of a quadratic equation in one variable.
- (iii) Find discriminant of the equation formed.

OR

Find no of marbles they have separately

Linear Equation in two variables

MCQ

The graph of equations $x+2y-4=0$ & $2x+4y-12=0$ represents 1

- (a) coincident lines. (b) Intersecting lines
(c) parallel lines (d) None of these

2) If $ax + by = c$ and $lx + my = n$ has unique solution then the relation between coefficients will be -

- (a) $am \neq lb$ (b) $am = lb$ (c) $ab = lm$ (d) $ab \neq lm$

3) the pair of equations $x = 4$, $y = 3$ represents lines which are

- (a) parallel (b) co-incident (c) intersecting at (3,4) (d) intersecting at (4,3)

4) Assertion (A). The pair of equations $2x - y - 5 = 0$, $x - y - 3 = 0$ represent intersecting lines.

Reason (R):- The equation $2x - y - 5 = 0$, $x - y - 3 = 0$ meet y-axis at (0,3) & (0, - 5)

The value of y when $1/y + 1/x = 3$, $1/y - 1/x = 7$ is

- (a) $1/5$ (b) $- 1/3$ (c) $- 1/5$ (d) $1/3$

VSQ

5) Find the value of k for which the system of equations $x + 2y = 5$, $3x + ky + 15 = 0$ has no solution.

6) Show that the system $x - 5y = 6$, $2x - 10y = 12$ is dependent consistent.

7) Solve for x and y -- $mx - ny = m^2 + n^2$, $x + y = 2m$.

8) Find the co-ordinates of a point where the graph of equation $3x - 2y + 1 = 0$ intersect x-axis and Y-axis.

9) The ratio of a two digit number and the sum of its digits is 7:1. How many such numbers are possible ?

SAQ

10) If $3^x(x - y) = 9$, $x - 2y = 6$ represent a system of equation. find the value of $x + y$.

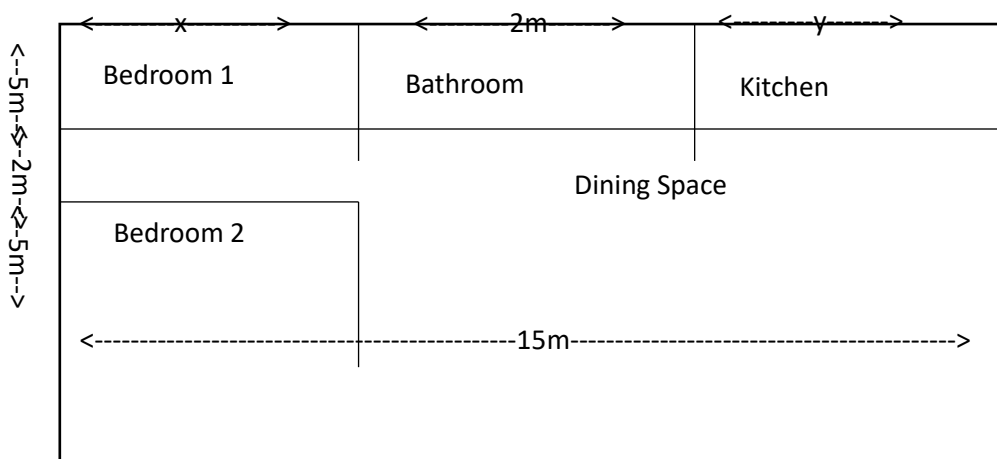
11) Solve for x and y - $\sqrt{7} * x + \sqrt{13} * y = 0$, $\sqrt{5} * x + \sqrt{17} * y = 0$

12) Find different positive fraction whose denominators are 3 and 5 and whose sum is $31/15$.

- 13) Sum of 2 positive numbers is 100 and difference between their squares is 1000 Find the numbers.
- 14) A man travels 600 km partly by train and partly by car. It takes 8 h 40 minutes if he travels 320 km by train and rest by car It would take 30 min more if he travels 200 km by train and rest by car. Find speed of train and the car separately.
- 15) A car goes uphill at the rate of 30 km/h and downhill at the rate of 50 km/h. After 15 hours, it has covered 650 km How long does it go downhill and uphill respectively.
- 16) 10 years ago, the sum of ages of two sons was one third of father's age. One son is 2 years older than the other and sum of their present ages is 14 years less than father's present age. Find present age of all.
- 18) Solve $a^2x+b^2y=c^2$, $b^2x+a^2y=d^2$
- 19) 1 kg of tea and 4 kg of sugar together cost ₹220. If price of sugar increases by 50% and price of tea increases by 10% the cost would be 266. Find original cost/kg of each .

CBQ

20) Amit is planning to buy a house and the layout is given. below. The area of 2 bedrooms & kitchen together is 95m^2 .



Based on these information answer the following

- Form pair of linear equations in two variables from this situation
- Find length of outer boundary of the Layout.
- Find area of each bedroom and kitchen.

OR

Find cost of laying tiles in kitchen at $\text{Rs.}50/\text{m}^2$