MATHS

BOOKS - TARGET MATHS (HINGLISH)

QUADRATIC EQUATIONS

Examples

1. Classify the following polynominals as linear and quadratic:

(i) $5x + 9$ (Ii) $x^2 + 3x - 5$

(iii) $3x - 7$ (iv) 3x^(2)-5x(v)5x^2`

2. $x^2 + 3x - 5, 3x^2 - 5x, 5x^2,$ Write the polyniminals in the index form. Observe the coefficients and fill in the boxes.

3. Complete the following table:

Quadratic Equation	General form	a	b	c
$x^2 - 4 = 0$	$x^2 + 0x - 4 = 0$	1	0	−4
$y^2 = 2y - 7$	...	...	...	...
$x^2 + 2x = 0$	...	...	...	...

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4. Decided which of the following are quadratic equations ?

(i) $9y^2 + 5 = 0$.

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5. Decided which of the following are quadratic equations ?

(ii) $m^3 - 5m^2 + 4 = 0$

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6. Decide which of the following are quadratic equations :

$(m + 2)(m - 5) = 0$

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7. For the quadratic equation

$2x^2 - x - 10 = 0$ check whether

(i) $x = -2$

are roots or not?

8. For the quadratic equation

$2x^2 - x - 10 = 0$ check whether

(ii)$x = \dfrac{-5}{2}$

are roots or not?

9. One of the roots of the quadratic equation

$kx^2 - 14x - 5 = 0$ is 5. Complete the

following activity to find the value of k .

10. Find the factors of the following

polynominals.

(i) $x^2 - 4x - 5$.

11. Find the factors of the following polynominals.

(ii) $2m^2 - 5m.$

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12. Find the factors of the following polynominals.

(iii) $a^2 - 25.$

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13. Solve $x^2 - 9x + 20 = 0$ by factorisation method.

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14. Solve : $4x^2 + 5x + 1 = 0$.

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15. Determine nature of roots of the quadratic equation : $x^2 + 2x - 9 = 0$.

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16. If sum of the roots of quadratic equations is 10 and the product is 9, then form the quadratic equation:

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17. What will be the quadratic equation if $\alpha = 2, \beta = 5$.

18. The product of two consecutive natural number is 240. Find the numbers.

19. Classify the following polynominals as linear and quadratic:

(i) $5x + 9$ (li) $x^2 + 3x - 5$

(iii) $3x - 7$ (iv) 3x^(2)-5x(v)5x^2`

20. $x^2 + 3x - 5, \, 3x^2 - 5x, \, 5x^2,$ Write the polyniminals in the index form. Observe the coefficients and fill in the boxes.

21. Complete the following table:

Quadratic Equation	General form	a	b	c
$x^2 - 4 = 0$	$x^2 + 0x - 4 = 0$	1	0	-4
$y^2 = 2y - 7$	...	...	...	...
$x^2 + 2x = 0$	...	...	...	...

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22. Decided which of the following are quadratic equations ?

(i) $9y^2 + 5 = 0$.

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23. Decided which of the following are quadratic equations ?

(ii) $m^3 - 5m^2 + 4 = 0$

24. Decided which of the following are quadratic equations ?

(iii) $(l + 2)(l - 5) = 0$

25. For the quadratic equation $2x^2 - x - 10 = 0$ check whether

(i) $x = -2$

are roots or not?

26. For the quadratic equation $2x^2 - x - 10 = 0$ check whether

(ii) $x = \dfrac{-5}{2}$

are roots or not?

27. If $x = 5$ is a root of equation $kx^2 = 14x - 5 = 0$, then find the value of k by completing the following activity.

28. Find the factors of the following polynominals.

(i) $x^2 - 4x - 5$.

29. Find the factors of the following polynominals.

(ii) $2m^2 - 5m.$

30. Find the factors of the following polynominals.

(iii) $a^2 - 25.$

31. Solve $x^2 - 9x + 20 = 0$ by factorisation method.

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32. Solve : $4x^2 + 5x + 1 = 0$.

▶ Watch Video Solution

33. Determine nature of roots of the quadratic

equation : $x^2 + 2x - 9 = 0$.

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34. Write the quadratic equation if addition of

the roots is 10 and product of the roots is 9.

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35. What will be the quadratic equation if $\alpha = 2, \beta = 5$.

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36. The product of two consecutive natural number is 240. Find the numbers.

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Try This

1. Solve the equation $2x^2 + 13x + 15 = 0$ by factorisation method, by completing the square mathod and by using the formula. Verify that you will get the same roots every time.

2. Solve the equation $2x^2 + 13x + 15 = 0$ by factorisation method, by completing the square mathod and by using the formula.

Verify that you will get the same roots every time.

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Practice Set 2 1

1. Write any two quadratic equations.

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2. Decide which of the following are quadratic equations :

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

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3. Decide which of the following are quadratic equations :

$$y^2 = 5y - 10$$

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4. Decide which of the following are quadratic

equations :

$$y^2 + \frac{1}{y} = 2$$

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5. Decide which of the following are quadratic

equations :

$$x + \frac{1}{x} = -2$$

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6. Decide which of the following are quadratic equations :

$$(m + 2)(m - 5) = 0$$

7. Decide which of the following are quadratic equations :

$$m^3 + 3m^2 - 2 = 3m^3$$

8. Write the following equatratic equations in the form $ax^2 + bx + c = 0$. Write the value of a, b, c, for each equation.

$$2y = 10 - y^2$$

9. Write the following equations in the form of $ax^2 + bx + x = 0$, then write the values of a,b,c for each equation.

$$(x - 1)^2 = 2x + 3$$

10. Write the following equations in the form of $ax^2 + bx + x = 0$, then write the values of a,b,c for each equation.

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

11. Write the following equatratic equations in the form $ax^2 + bx + c = 0$. Write the value of

a, b, c, for each equation.

$$3m^2 = 2m^2 - 9$$

12. Write the following equatratic equations in the form $ax^2 + bx + c = 0$. Write the value of a, b, c, for each equation.

$$p(3 + 6p) = -5$$

13. Write the following equatratic equations in the form $ax^2 + bx + c = 0$. Write the value of a, b, c, for each equation.

$x^2 - 9 = 13$

14. Determine whether the values given against each of the quadratic equations are the roots of the quadratic equation or not :

$x^2 + 4x - 5 = 0, x = 1, -1$

15. Determine wheter the value given against each of the quadratic equation are the roots of the equation.

(ii) $2m^2 - 5m = 0, m = 2, \dfrac{5}{2}$.

16. Find k if x=3 is a root of equation $kx^2 - 10x + 3 = 0$.

17. One of the roots of equation $5m^2 + 2m + k = 0$ is $-\dfrac{7}{5}$. Complete the following activity to find the value of 'k'.

18. Write any two quadratic equations.

19. Decide which of the following are quadratic equations :

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

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20. Decide which of the following are quadratic equations :

$$y^2 = 5y - 10$$

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21. Decide which of the following are quadratic equations :

$$y^2 + \frac{1}{y} = 2$$

22. Decide which of the following are quadratic equations :

$$x + \frac{1}{x} = -2$$

23. Decide which of the following are quadratic equations :

$$(m + 2)(m - 5) = 0$$

24. Decide which of the following are quadratic equations :

$$m^3 + 3m^2 - 2 = 3m^3$$

25. Write the following equations in the form $ax^2 + bx + c = 0$, then write the value of a, b,c for each equation.

(i)$2y = 10 - y^2$.

26. Write the following equations in the form of $ax^2 + bx + x = 0$, then write the values of a,b,c for each equation.

$(x - 1)^2 = 2x + 3$

27. Write the following equations in the form of $ax^2 + bx + x = 0$, then write the values of a,b,c for each equation.

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

28. Write the following equations in the form $ax^2 + bx + c = 0$, then write the value of a,

b,c for each equation.

(iv)$3m^2 = 2m^2 - 9$

29. Write the following equatratic equations in the form $ax^2 + bx + c = 0$. Write the value of a, b, c, for each equation.

$p(3 + 6p) = -5$

30. Write the following equations in the form $ax^2 + bx + c = 0$, then write the value of a, b,c for each equation.

(vi) $x^2 - 9 = 13$

31. Determine whether the values given against each of the quadratic equations are the roots of the quadratic equation or not :

$x^2 + 4x - 5 = 0, x = 1, -1$

32. Determine wheter the value given against each of the quadratic equation are the roots of the equation.

(ii) $2m^2 - 5m = 0, m = 2, \dfrac{5}{2}.$

33. Find k if x=3 is a root of equation $kx^2 - 10x + 3 = 0.$

34. One of the roots of equation $5m^2 + 2m + k = 0$ is $-\dfrac{7}{5}$. Complete the following activity to find the value of 'k'.

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Practice Set 2 2

1. Solve the following quadratic equations by factorization.

$$x^2 - 15x + 54 = 0$$

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2. Solve the following quadratic equations by factorisation method:

$$x^2 + x - 20 = 0$$

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3. Solve the following quadratic equations by factorisation method:

$$2y^2 + 27 + 13 = 0$$

4. Solve the following quadratic equations by factorization.

$$5m^2 = 22m + 15$$

5. Solve the following quadratic equations by factorization.

$$2x^2 - 2x + \frac{1}{2} = 0$$

6. Solve the following quadratic equations by factorisation method:

$$6x - \frac{2}{x} = 1$$

7. Complete the following activity to sovle the quadratic equation $\sqrt{2x^3} + 7x + 5\sqrt{2} = 0$ by

factorisation method :

8. Solve the following quadratic equations by factorization.

$$3x^2 - 2\sqrt{6}x + 2 = 0$$

9. Solve the following quadratic equations by factorization.

2m(m-24)=50

10. Complete the following activity to sovle the quadratic equation $\sqrt{2x^3} + 7x + 5\sqrt{2} = 0$ by factorisation method :

$25m^2 = 9$

11. Solve the following quadratic equations by factorization.

$$7m^2 = 21m$$

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12. Solve the following quadratic equation by factorisation.

(xii) $m^2 - 11 = 0$.

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13. Solve the following quadratic equations by factorization.

$$x^2 - 15x + 54 = 0$$

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14. Solve the following quadratic equations by factorisation method:

$$x^2 + x - 20 = 0$$

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15. Solve the following quadratic equations by factorization.

$$2y^2 + 27y + 13 = 0$$

16. Solve the following quadratic equations by factorization.

$$5m^2 = 22m + 15$$

17. Solve the following quadratic equations by factorization.

$$2x^2 - 2x + \frac{1}{2} = 0$$

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18. Solve the following quadratic equations by factorisation method:

$$6x - \frac{2}{x} = 1$$

▶ Watch Video Solution

19. Complete the following activity to sovle the quadratic equation $\sqrt{2x^3} + 7x + 5\sqrt{2} = 0$ by factorisation method :

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20. Solve the following quadratic equations by factorization.

$3x^2 - 2\sqrt{6}x + 2 = 0$

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21. Solve the following quadratic equations by factorization.

2m(m-24)=50

22. Complete the following activity to sovle the quadratic equation $\sqrt{2x^3} + 7x + 5\sqrt{2} = 0$ by factorisation method :

$25m^2 = 9$

23. Solve the following quadratic equations by factorization.

$$7m^2 = 21m$$

24. Solve the following quadratic equation by factorisation.

(xii) $m^2 - 11 = 0$.

1. Solve the following quatratic equations by completing square method :

$$x^2 + x - 20 = 0$$

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2. Solve the following quatratic equations by completing square method :

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

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3. Solve the following quatratic equations by completing square method :

$$m^2 - 5m = -3$$

4. Solve the following quadratic equations by completing the square method.

$$9y^2 - 12y + 2 = 0$$

5. Solve the following quatratic equations by completing square method :

$$2y^2 + 9y + 10 = 0$$

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6. Solve the following quatratic equations by completing square method :

$$5x^2 = 4x + 7$$

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7. Solve the following quatratic equations by completing square method :

$$x^2 + x - 20 = 0$$

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8. Solve the following quatratic equations by completing square method :

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

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10. Solve the following quadratic equations by completing the square method.

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11. Solve the following quatratic equations by completing square method :

$$2y^2 + 9y + 10 = 0$$

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12. Solve the following quatratic equations by completing square method :

$$5x^2 = 4x + 7$$

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1. Find the values of a,b,c for the following quadratic equations by comparing with standard form :

$$x^2 - 7x + 5 = 0$$

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2. Find the values of a,b,c for the following quadratic equations by comparing with

standard form :

$$2m^2 = 5m - 5$$

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3. Compare the given quadratic equation t the general form and write value of a,b,c

(iii) $y^2 = 7$.

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4. Solve using formula.

$$x^2 + 6x + 5 = 0$$

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5. Solve the following quadratic equations by using formula method :

$$x^2 - 3x - 2 = 0$$

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6. Solve the following quadratic equations by using formula method :

$$3m^2 + 2m - 7 = 0$$

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7. Solve the following quadratic equations by using formula method :

$$5m^2 - 4m - 2 = 0$$

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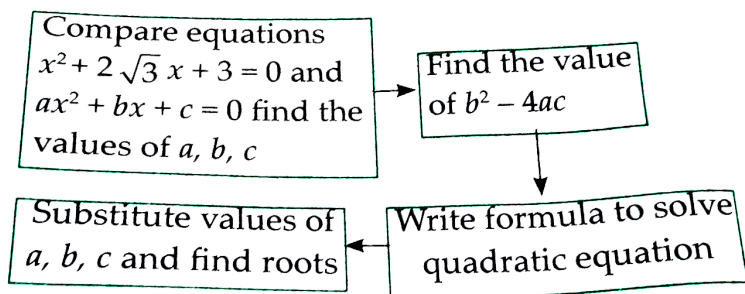**8.** Solve the following quadratic equations by using formula method :

$$y^2 + \frac{1}{3}y = 2$$

9. Find the roots of the quadratic equations by using the quadratic formula in each of the following

$$5x^2 + 13x + 8 = 0$$

10. With the help of the flow chart given below solve the equation $x^2 + 2\sqrt{3}x + 3 = 0$ using formula.

Compare equations $x^2 + 2\sqrt{3}\,x + 3 = 0$ and $ax^2 + bx + c = 0$ find the values of a, b, c	→	Find the value of $b^2 - 4ac$
Substitute values of a, b, c and find roots	←	Write formula to solve quadratic equation

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11. Compare the given quadratic equation t the general form and write value of a,b,c

(i) $x^2 - 7x + 5 = 0$

12. Compare the given quadratic equation t

the general form and write value of a,b,c

(ii) $2m^2 = 5m - 5$.

13. Compare the given quadratic equation t

the general form and write value of a,b,c

(iii) $y^2 = 7$.

14. Solve using formula.

$$x^2 + 6x + 5 = 0$$

15. Solve the following quadratic equations by using formula method :

$$x^2 - 3x - 2 = 0$$

16. Solve the following quadratic equations by using formula method :

$$3m^2 + 2m - 7 = 0$$

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17. Solve the following quadratic equations by using formula method :

$$5m^2 - 4m - 2 = 0$$

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18. Solve the following quadratic equations by using formula method :

$$y^2 + \frac{1}{3}y = 2$$

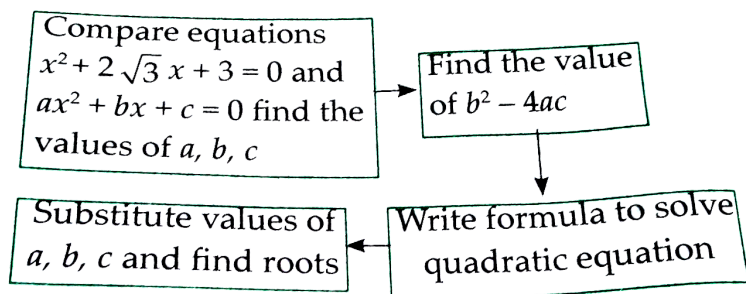**19.** Find the roots of the quadratic equations by using the quadratic formula in each of the following

$$5x^2 + 13x + 8 = 0$$

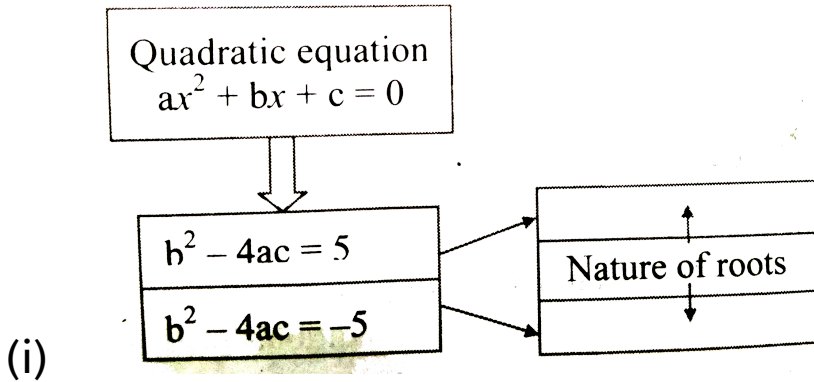**20.** With the help of the flow chart given below solve the equation $x^2 + 2\sqrt{3}x + 3 = 0$ using formula.

Compare equations $x^2 + 2\sqrt{3}\,x + 3 = 0$ and $ax^2 + bx + c = 0$ find the values of a, b, c

Find the value of $b^2 - 4ac$

Write formula to solve quadratic equation

Substitute values of a, b, c and find roots

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Practice Set 2 5

1. Fill in the gaps and complete.

(i)

Quadratic equation
$$ax^2 + bx + c = 0$$

$$b^2 - 4ac = 5$$

$$b^2 - 4ac = -5$$

Nature of roots

2. Fill in the gaps and complete.

(ii)

Sum of
roots $= -7$

Quadratic
equation
......𝓍......

Product of
roots $= 5$
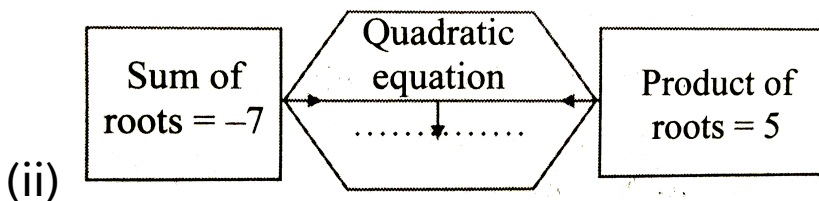
3. Fill in the gaps and complete.

(iii)

$$2x^2 - 4x - 3 = 0$$

$$\alpha + \beta = \ \ldots..$$

$$\alpha \times \beta = \ \ldots..$$

4. Find the value of discriminant.

$$x^2 + 7x - 1 = 0$$

5. Find the value of discriminant.

$$2y^2 - 5y + 10 = 0$$

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6. Find the value of discriminant.

$$\sqrt{2}x^2 + 4x + 2\sqrt{2} = 0$$

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7. Determine the nature of roots of the following quadratic equations.

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

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8. Determine the nature of roots of the following quadratic equations.

$$2y^2 - 7y + 2 = 0$$

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9. Determine the nature of roots of the following quadratic equations.

$m^2 + 2m + 9 = 0$

10. Form the quadratic equation from the roots given below.

0 and 4

11. Form the quadratic equation from the roots given below.

3 and -10

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12. Form the quadratic equation from the roots given below.

$\frac{1}{2}$ and $\frac{-1}{2}$

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13. Form the quadratic equation from the roots given below.

$2 - \sqrt{5}$ and $2 + \sqrt{5}$

14. Sum of the roots of a quadratic equation is double their product. Find k if equation is $x^2 - 4kx + k + 3 = 0.$

15. α, β are roots of $y^2 - 2y - 7 = 0$ find,

(i) $\alpha^2 + \beta^2$ (ii) $\alpha^3 + \beta^3$

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16. α, β are roots of $y^2 - 2y - 7 = 0$ find,

(i) $\alpha^2 + \beta^2$ (ii) $\alpha^3 + \beta^3$

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17. The roots of the each of the following quadratic equations are real and equal, find k.
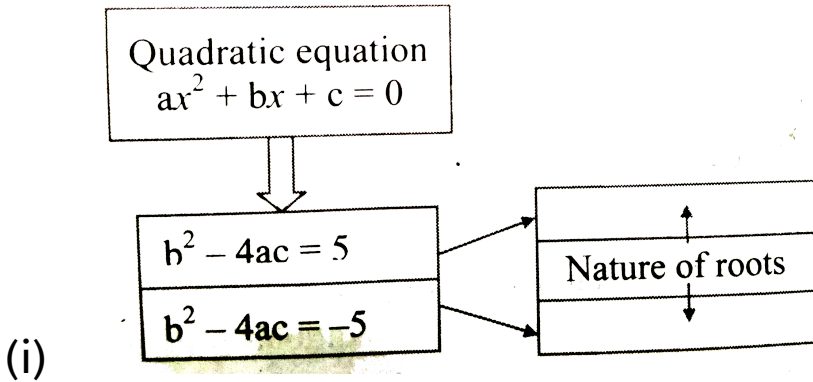
$$3y^2 + ky + 12 = 0$$

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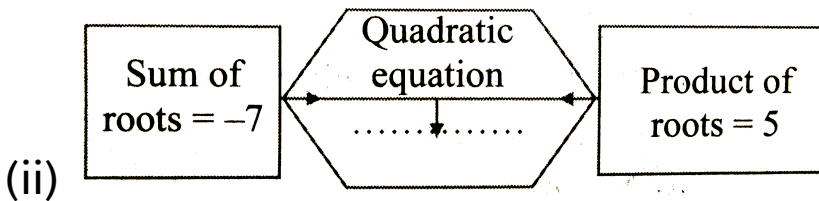**18.** For what value of k, are the roots of the quadratic equation kx (x-2) +6 = 0 equal ?

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19. Fill in the gaps and complete.

(i)

Quadratic equation $ax^2 + bx + c = 0$

$b^2 - 4ac = 5$

$b^2 - 4ac = -5$

Nature of roots

20. Fill in the gaps and complete.

(ii)

Sum of roots $= -7$	Quadratic equation $\ldots\ldots\ldots\ldots$	Product of roots $= 5$

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21. Fill in the gaps and complete.

$$2x^2 - 4x - 3 = 0$$

$$\alpha + \beta = \ \dots.$$

$$\alpha \times \beta = \ \dots.$$

(iii)

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22. Find the value of discriminant.

$$x^2 + 7x - 1 = 0$$

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23. Find the value of discriminant.

$$2y^2 - 5y + 10 = 0$$

24. Find the value of discriminant.

$$\sqrt{2}x^2 + 4x + 2\sqrt{2} = 0$$

25. Determine the nature of roots of the following quadratic equations.

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

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26. Determine the nature of roots of the following quadratic equations.

$$2y^2 - 7y + 2 = 0$$

▶ Watch Video Solution

27. Determine the nature of roots of the following quadratic equations.

$$m^2 + 2m + 9 = 0$$

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28. Form the quadratic equation from the roots given below.

0 and 4

▶ **Watch Video Solution**

29. Form the quadratic equation from the roots given below.

3 and -10

> ▶ **Watch Video Solution**

30. Form the quadratic equation from the roots given below.

$\frac{1}{2}$ and $\frac{-1}{2}$

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31. Form the quadratic equation from the roots given below.

$2 - \sqrt{5}$ and $2 + \sqrt{5}$

32. Sum of the roots of a quadratic equation is double their product. Find k if equation is $x^2 - 4kx + k + 3 = 0.$

33. α, β are roots of $y^2 - 2y - 7 = 0$ find,

(i) $\alpha^2 + \beta^2$ (ii) $\alpha^3 + \beta^3$

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34. α, β are roots of $y^2 - 2y - 7 = 0$ find,

(i) $\alpha^2 + \beta^2$ (ii) $\alpha^3 + \beta^3$

▶ Watch Video Solution

35. The roots of the each of the following quadratic equations are real and equal, find k.

$$3y^2 + ky + 12 = 0$$

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36. The roots of each of the following quadratic equation are real and equal , find k.

(ii)$kx(x - 2) + 6 = 0.$

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1. Product of Pragati's age 2 years ago and 3 years hence is 84. Find her present age.

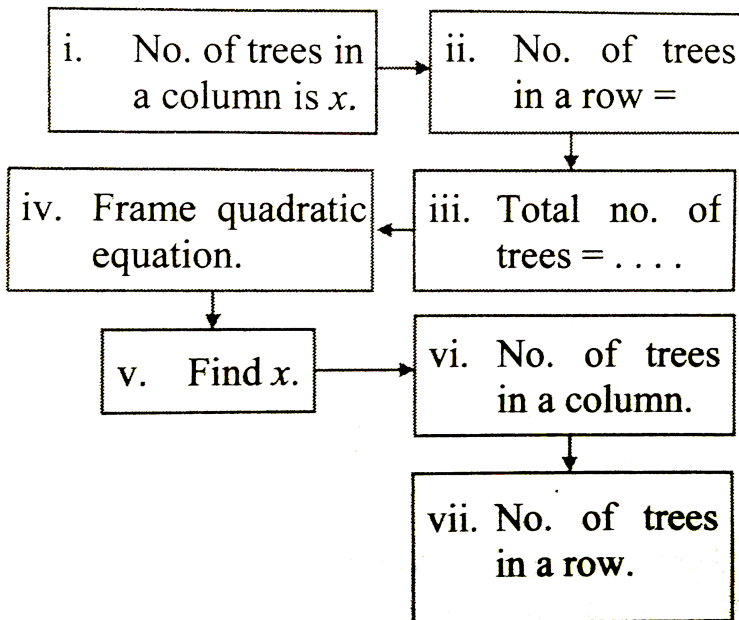▶ **Watch Video Solution**

2. The sum of squares of two consecutive even natural number is 244. Find the numbers.

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3. In the orange garden of Mr.Madhusudan there are 150 orange trees. The number of tree in each row is 5 more than that in each column. Find the number of trees in each row and each column with the help of following flow chart.

i. No. of trees in a column is x.	ii. No. of trees in a row =
iv. Frame quadratic equation.	iii. Total no. of trees = ...
v. Find x.	vi. No. of trees in a column.
	vii. No. of trees in a row.

4. Vivek is older than Kishor by 5 years. The sum of the reciprocals of their ages is $\dfrac{1}{6}$. Find their present age.

5. Suyash scored 10 marks more in second test than that in first. 5 times the score of the second test is same as square of the score in first test. Find his score in first test.

6. Mr. Kasam runs a small business of making earthen pots. He makes certain number of pots on daily basis. Production cost of each pot is Rs. 40 more than 10 times total number of pots, he makes in one day. If production cost of all pots per day is Rs. 600, find production cost of one pot and number of pots he makes per day.

7. Pratik takes 8 hours to travel 36 km downstream and return to the same spot.The speed of boat in still water is 12 km. Per hour. Find the speed of water current.

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8. Pintu takes 6 days more than those of Nishu to complete certain work. If they work togeter they finish it in 4 days. How many days would

it take to complete the work if they work alone.

9. If 460 is divided by a natural number, quotient is 6 more than 5 times the divisor and remainder is 1 then find quotient and divisor.

10. In the given fig square ABCD is a trapezium $AB \mid\mid CD$ and its area is $33cm^2$. From the information given in the figure find the lengths of all sides of the squareABCD. Fill in the empty boxes to get the solution.
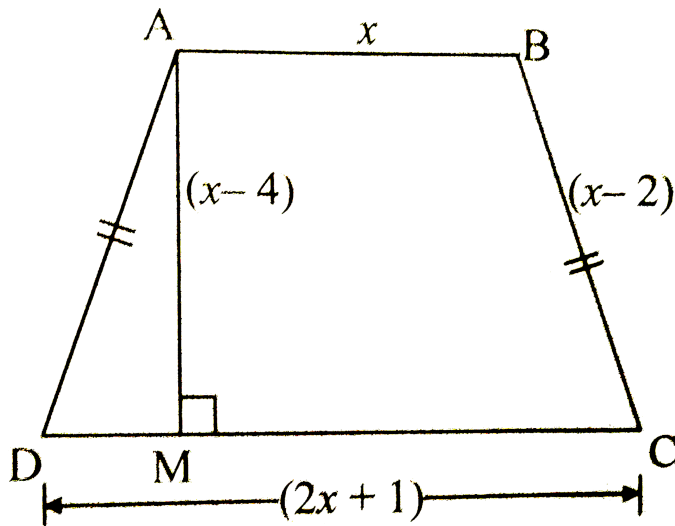
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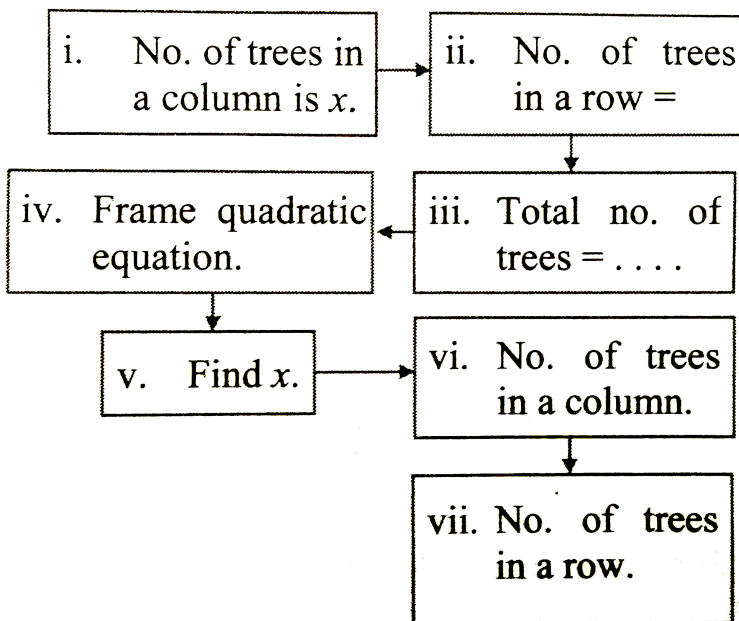**11.** Product of Pragati's age 2 years ago and 3 years hence is 84. Find her present age.

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i. No. of trees in a column is x.	ii. No. of trees in a row =

iv. Frame quadratic equation.	iii. Total no. of trees = ...

v. Find x.	vi. No. of trees in a column.

vii. No. of trees in a row.

14. Vivek is older than Kishor by 5 years. The sum of the reciprocals of their ages is $\dfrac{1}{6}$. Find their present age.

15. Suyash scored 10 marks more in second test than that in first. 5 times the score of the second test is same as square of the score in first test. Find his score in first test.

16. Mr. Kasam runs a small business of making earthen pots. He makes certain number of pots on daily basis. Production cost of each pot is Rs. 40 more than 10 times total number of pots, he makes in one day. If production cost of all pots per day is Rs. 600, find production cost of one pot and number of pots he makes per day.

17. Pratik takes 8 hours to travel 36 km downstream and return to the same spot.The speed of boat in still water is 12 km. Per hour. Find the speed of water current.

18. Pintu takes 6 days more than those of Nishu to complete certain work. If they work togeter they finish it in 4 days. How many days
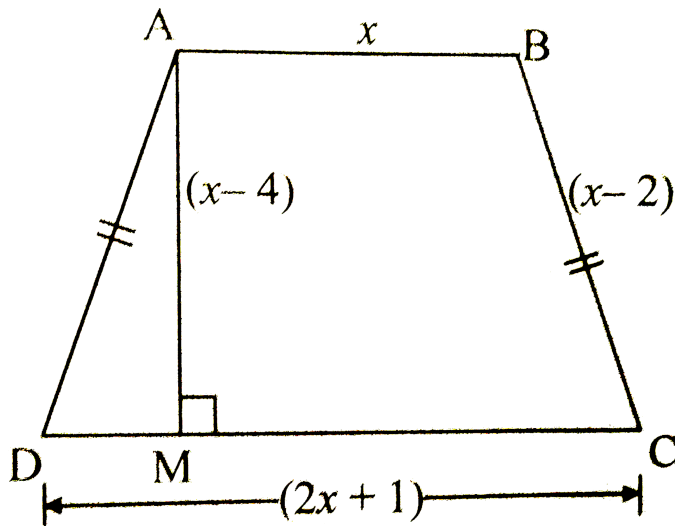
would it take to complete the work if they work alone.

19. If 460 is divided by a natural number, quotient is 6 more than 5 times the divisor and remainder is 1 then find quotient and divisor.

20. In the given fig square ABCD is a trapezium $AB \mid\mid CD$ and its area is $33cm^2$. From the information given in the figure find the lengths of all sides of the squareABCD. Fill in the empty boxes to get the solution.

Watch Video Solution

1. Which one is the quadratic equation?

A. $\dfrac{5}{x} - 3 = x^2$

B. $x(x + 5) = 2$

C. $n - 1 = 2n$

D. $\dfrac{1}{x^2}(x + 2) = x$

Answer: B

▶ **Watch Video Solution**

2. Out of the following equations which one is not a quadratic equation ?

A. $x^2 + 4x = 11 + x^2$

B. $x^2 = 4x$

C. $5x^2 = 90$

D. $2x - x^2 = x^2 + 5$

Answer: A

▶ **Watch Video Solution**

3. The roots of $x^2 + kx + k = 0$ are real and equal, find k.

A. 0

B. 4

C. 0 or 4

D. 2

Answer: C

▶ Watch Video Solution

4. Which of the following is the value of the discriminant for $\sqrt{2}x^2 - 5x + \sqrt{2} = 0$?

A. -5

B. 17

C. $\sqrt{17}$

D. $2\sqrt{2} - 5$

Answer: B

▶ **Watch Video Solution**

5. Which of the following quadratic equations has roots 3,5 ?

A. $x^2 - 15x + 8 = 0$

B. $x^2 - 8x + 15 = 0$

C. $x^2 + 3x + 5 = 0$

D. $x^2 + 8x - 15 = 0$

Answer: B

▶ **Watch Video Solution**

6. Choose the correct answer for the following questions.

(vi) Out of the following equations, find the equation having the sum of its roots -5.

A. $3x^2 - 15x + 3 = 0$

B. $x^2 - 5x + 3 = 0$

C. $x^2 + 3x - 5 = 0$

D. $3x^2 + 15x + 3 = 0$

Answer: D

7. $\sqrt{5}m^2 - \sqrt{5}m + \sqrt{5} = 0$ which of the following statement is true for this given equation ?

    A. Real and unequal roots

    B. Real and equal roots

    C. Roots and not real

    D. Three roots

Answer: C

8. One of the roots of equation $x^2 + mx - 5 = 0$ is 2 find m.

A. -2

B. $-\dfrac{1}{2}$

C. $\dfrac{1}{2}$

D. 2

Answer: C

9. Which of the following are quadratic equations?

$$x^2 + 2x + 11 = 0$$

▶ Watch Video Solution

10. Which of the following are quadratic equations?

$$x^2 - 2x + 5 = x^2$$

▶ Watch Video Solution

11. Which of the following are quadratic equations?

$(x + 2)^2 = 2x^2$

▶ Watch Video Solution

12. Find the value of discriminant for each of the following equations.

$2y^2 - y + 2 = 0$

▶ Watch Video Solution

13. Find the value of discriminant for each of the following equations.

$$5m^2 - m = 0$$

▶ Watch Video Solution

14. Find the value of discriminant for each of the following equations.

$$\sqrt{5}x^2 - x - \sqrt{5} = 0$$

▶ Watch Video Solution

15. If one root of the quadratic equation $2x^2 + kx - 2 = 0$ is -2, find the value of k.

16. Two roots of quadratic equations are given, frame the equation.

10 and -10

17. Two roots of quadratic equations are given, frame the equation.

$1 - 3\sqrt{5}$ and $1 + 3\sqrt{5}$

▶ **Watch Video Solution**

18. Two roots of quadratic equations are given, frame the equation.

0 and 7

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19. Determine the nature of roots for each of the quadratic equations.

$$3x^2 - 5x + 7 = 0$$

▶ Watch Video Solution

20. Determine the nature of roots for each of the quadratic equations.

$$\sqrt{3}x^2 + \sqrt{2}x - 2\sqrt{3} = 0$$

▶ Watch Video Solution

21. Determine the nature of roots for each of the quadratic equations.

$$m^2 - 2m + 1 = 0$$

▶ Watch Video Solution

22. Solve the following quadratic equations :

$$\frac{1}{x+5} = \frac{1}{x^2}$$

▶ Watch Video Solution

23. Solve the following quadratic equations:

$$x^2 - \frac{3x}{10} - \frac{1}{10} = 0$$

24. Solve the following quadratic equations:

$$(2x + 3)^2 = 25$$

25. Solve the following quadratic equations :

$$m^2 + 5m + 5 = 0$$

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26. Solve the following quadratic equations :

$$5m^2 + 2m + 1 = 0$$

▶ **Watch Video Solution**

27. Solve the following quadratic equations :

$$x^3 - 4x - 3 = 0$$

▶ Watch Video Solution

28. Find m, if the quadratic equation $(m - 12)x^2 + 2(m - 12)x + 2 = 0$ has real and eqaul roots.

▶ Watch Video Solution

29. The sum of two roots of a quadratic equation is 5 and the sum of their cubes is 35. Find the equation.

▶ **Watch Video Solution**

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30. Find quadratic equation such that its roots are square of sum of the roots and square of difference of the roots of equation

$$\left(2x^2 + 2(p + q)x + p^2 + q^2 = 0\right.$$

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31. Mukund possesses RS 50 more than what Sagar possesses. The product of the amount they have is numerically RS 15000. Find the amount each has.

▶ **Watch Video Solution**

32. The difference between squares of two numbers is 120. The square of smaller number is twice the greater number. Find the numbers.

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33. Ranjana wants to distribute 540 oranges among some students. If 30 students were more each would get 3 oranges less. Find the number of students.

34. Mr. Dinesh owns an agricultural farm at village Talvel. The length of the farm is 10 meter more than twice the breadth. In order

to harvest rain water, he dug a square shape pond inside the farm. The side of pond is $\dfrac{1}{3}$ times of the breadth of the farm. The area of the farm is 20 times the area of the pond. Find the length and breadth of the farm and of the pond.

▶ **Watch Video Solution**

35. A tank fills completely in 2 hours if both the taps are open. If only one of the taps is open at the given time, the smaller tap takes 3

hours more than the larger one to fill the tank. How much times does each tap take to fill the tank completely?

36. Which is the quadratic equation?

A. $\left(\dfrac{5}{x}\right) - 3 = x$

B. $x(x + 5) = 2$

C. $n - 1 = 2n$

D. $\dfrac{1}{x^2}(x + 2) = x$

Answer: B

37. Choose the correct answer for the following questions.

(ii) Out of the following equation which one is not a quadratic equation?

A. $x^2 + 4x = 11 + x^2$

B. $x^2 = 4x$

C. $5x^2 = 90$

D. $2x - x^2 = x^2 + 5$

Answer: A

▶ **Watch Video Solution**

38. The roots of $x^2 + kx + k = 0$ are real and equal, find k.

A. 0

B. 4

C. 0 or 4

D. 2

Answer: C

▶ **Watch Video Solution**

39. Which of the following is the value of the discriminant for $\sqrt{2}x^2 - 5x + \sqrt{2} = 0$?

A. -5

B. 17

C. $\sqrt{17}$

D. $2\sqrt{2} - 5$

Answer: B

▶ **Watch Video Solution**

40. Which of the following quadratic equations has roots 3,5 ?

A. $x^2 - 15x + 8 = 0$

B. $x^2 - 8x + 15 = 0$

C. $x^2 + 3x + 5 = 0$

D. $x^2 + 8x - 15 = 0$

Answer: B

▶ **Watch Video Solution**

41. Choose the correct answer for the following questions.

(vi) Out of the following equations, find the equation having the sum of its roots -5.

A. $3x^2 - 15x + 3 = 0$

B. $x^2 - 5x + 3 = 0$

C. $x^2 + 3x - 5 = 0$

D. $3x^2 + 15x + 3 = 0$

Answer: D

▶ **Watch Video Solution**

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42. Choose the correct answer for the following questions.

$\sqrt{5}m^2 - \sqrt{5}m + \sqrt{5} = 0$ which of the

following statement is true for this given equation?

A. Real and unequal roots

B. Real and equal roots

C. Roots are not real

D. Three roots

Answer: C

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43. One of the roots of equation $x^2 + mx - 5 = 0$ is 2 find m.

A. -2

B. $-\dfrac{1}{2}$

C. $\dfrac{1}{2}$

D. 2

Answer: C

44. Which of the following are quadratic equations?

$$x^2 + 2x + 11 = 0$$

45. Which of the following are quadratic equations?

$$x^2 - 2x + 5 = x^2$$

46. Which of the following are quadratic equations?

$$(x + 2)^2 = 2x^2$$

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47. Find the value of discriminant for each of the following equations.

$$2y^2 - y + 2 = 0$$

▶ Watch Video Solution

48. Find the value of discriminant for each of the following equations.

$$5m^2 - m = 0$$

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$$\sqrt{5}x^2 - x - \sqrt{5} = 0$$

▶ **Watch Video Solution**

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0 and 7

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$$3x^2 - 5x + 7 = 0$$

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55. Determine the nature of roots for each of the quadratic equations.

$$\sqrt{3}x^2 + \sqrt{2}x - 2\sqrt{3} = 0$$

▶ **Watch Video Solution**

56. Determine the nature of roots for each of the quadratic equations.

$$m^2 - 2m + 1 = 0$$

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57. Solve the following quadratic equations :

$$\frac{1}{x+5} = \frac{1}{x^2}$$

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58. Solve the following quadratic equations:

$$x^2 - \frac{3x}{10} - \frac{1}{10} = 0$$

59. Solve the following quadratic equations:

$$(2x + 3)^2 = 25$$

60. Solve the following quadratic equations :

$$m^2 + 5m + 5 = 0$$

61. Solve the following quadratic equations :

$$5m^2 + 2m + 1 = 0$$

62. Solve the following quadratic equations :

$$x^3 - 4x - 3 = 0$$

63. Find m if

$$(m - 12)x^2 + 2(m - 12)x + 2 = 0 \text{ has real}$$

and equal roots

64. The sum of two roots of a quadratic equation is 5 and the sum of their cubes is 35. Find the equation.

65. Find quadratic equation such that its roots are square of sum of the roots and square of difference of the roots of equation $\left(2x^2 + 2(p + q)x + p^2 + q^2 = 0\right)$

66. Mukund possesses RS 50 more than what Sagar possesses. The product of the amount they have is numerically RS 15000. Find the amount each has.

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meter more than twice the breadth. In order to harvest rain water, he dug a square shape pond inside the farm. The side of pond is $\frac{1}{3}$ times of the breadth of the farm. The area of the farm is 20 times the area of the pond. Find the length and breadth of the farm and of the pond.

70. A tank fills completely in 2 hours if both the taps are open. If only one of the taps is

open at the given time, the smaller tap takes 3 hours more than the larger one to fill the tank. How much times does each tap take to fill the tank completely?

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Multiple Choice Questions

1. Which of the following is not a quadratic equation?

A. $4x^2 + 2x + 2 = 0$

B. $m + \dfrac{1}{m} = 5$

C. $(p + 10)(p - 5) = 0$

D. $\dfrac{q^2 + 1}{q^1} = 3q + 9$

Answer: D

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2. If the qudratic equation $3x + \dfrac{1}{x} = x + 3$ is

written in standard form, then

A. a=3,b=3,c=1

B. a=3,b=-3,c=1

C. a=2,b=-3,c=1

D. a=3,b=-3,c=3

Answer: C

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3. Which of the following equation has 3 as a

root?

A. $3x^2 - 6x - 2 = 0$

B. $2x^2 - 5x - 3 = 0$

C. $2x^2 - 7x - 6 = 0$

D. $3x^2 - 10x - 8 = 0$

Answer: B

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4. If one root of the quadratic equation

$p^2 - 3p + k = 0$ is 5, then the value of k is

A. 0

B. 10

C. -10

D. 5

Answer: C

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5. The roots of the quadratic equation

$x^2 + 5x + 6 = 0$ are

A. 2,3

B. $-2, 3$

C. $2, -3$

D. $-2, -3$

Answer: D

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6. Solve: $4\sqrt{3}x^2 + 5x - 2\sqrt{3} = 0$.

A. $\dfrac{\sqrt{3}}{4}, \dfrac{2}{\sqrt{3}}$

B. $\dfrac{\sqrt{3}}{4}, \ -\dfrac{2}{\sqrt{3}}$

C. $\dfrac{\sqrt{3}}{2}, \ \dfrac{2}{\sqrt{3}}$

D. $\dfrac{\sqrt{3}}{2}, \ -\dfrac{2}{\sqrt{3}}$

Answer: B

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7. Which term must be added and subtracted to solve the quadratic equation $3x^2 - 5x + 2 = 0$ by the method of completing the square?

A. 25

B. $\dfrac{25}{4}$

C. $\dfrac{25}{9}$

D. $\dfrac{25}{36}$

Answer: D

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8. The roots of the quadratic equation

$m^2 - 3m + 1 = 0$ are

A. $3, 1$

B. $\dfrac{-3 + \sqrt{5}}{2}$, $\dfrac{-3 - \sqrt{5}}{2}$

C. $\dfrac{3 + \sqrt{5}}{2}$, $\dfrac{3 - \sqrt{5}}{2}$

D. $\dfrac{3 + \sqrt{2}}{2}$, $\dfrac{3 - \sqrt{2}}{2}$

Answer: C

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9. The discriminate (Δ) of the quadratic equation $3x^2 + 2x - 9 = 0$ is

A. 112

B. -112

C. 56

D. 0

Answer: A

▶ **Watch Video Solution**

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10. If the discriminant (Δ) of the quadratic

equation $4x^2 + dx + 25 = 0$ is zero, then the

value of d is / are

A. 10

B. ± 10

C. 20

D. ± 20

Answer: D

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11. The roots of the qudratic equation $9x^2 - 6x + 1 = 0$ are

A. real and equal

B. not real

C. real and unequal

D. none of these

Answer: A

12. The roots of the equation

$2x^2 - 6x + 3 = 0$ are

A. real and equal

B. real and unequal

C. not real

D. none of these

Answer: B

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13. Which of the following equations has no real roots?

A. $2x^2 - 3x + 5 = 0$

B. $3x^2 - 2x - 8 = 0$

C. $4x^2 + 4x + 1 = 0$

D. $3x^2 - 4x + 1 = 0$

Answer: A

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14. If α and β are the roots of the quadratic

equation $\qquad$ $3m^2 + 2m - 4 = 0$, $\qquad$ then

$\alpha^2 + \beta^2 =$

A. $\dfrac{28}{9}$

B. $\dfrac{-28}{9}$

C. $\dfrac{12}{9}$

D. $\dfrac{-12}{9}$

Answer: A

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15. If α and β are the roots of the quadratic equation $x^2 - 3x - 2 = 0$, then $\dfrac{\alpha}{\beta} + \dfrac{\beta}{\alpha} =$

A. $\dfrac{3}{2}$

B. $\dfrac{-3}{-2}$

C. $\dfrac{13}{2}$

D. $\dfrac{-13}{2}$

Answer: D

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16. If the roots of a quadratic equation are -1 and 3, then the quadratic equation is

A. $x^2 - 2x - 3 = 0$

B. $x^2 + 2x - 3 = 0$

C. $x^2 - 2x + 3 = 0$

D. $x^2 + 2x + 3 = 0$

Answer: A

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17. Which of the following is not a quadratic

equation?

A. $4x^2 + 2x + 2 = 0$

B. $m + \dfrac{1}{m} = 5$

C. $(p + 10)(p - 5) = 0$

D. $\dfrac{q^2 + 1}{q} = q + 9$

Answer: D

18. If the qudratic equation $3x + \dfrac{1}{x} = x + 3$

is written in standard form, then

A. a=3,b=3,c=1

B. a=3,b=-3,c=1

C. a=2,b=-3,c=1

D. a=3,b=-3,c=3

Answer: C

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19. Which of the following equation has 3 as a root?

A. $3x^2 - 6x - 2 = 0$

B. $2x^2 - 5x - 3 = 0$

C. $2x^2 - 7x - 6 = 0$

D. $3x^2 - 10x - 8 = 0$

Answer: B

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20. If one root of the quadratic equation

$p^2 - 3p + k = 0$ is 5, then the value of k is

A. 0

B. 10

C. -10

D. 5

Answer: C

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21. The roots of the quadratic equation

$x^2 + 5x + 6 = 0$ are

A. 2,3

B. $-2, 3$

C. $2, -3$

D. $-2, -3$

Answer: D

▶ **Watch Video Solution**

22. Solve: $4\sqrt{3}x^2 + 5x - 2\sqrt{3} = 0$.

A. $\dfrac{\sqrt{3}}{4}, \dfrac{2}{\sqrt{3}}$

B. $\dfrac{\sqrt{3}}{4}, \quad -\dfrac{2}{\sqrt{3}}$

C. $\dfrac{\sqrt{3}}{2}, \quad \dfrac{2}{\sqrt{3}}$

D. $\dfrac{\sqrt{3}}{2}, \quad -\dfrac{2}{\sqrt{3}}$

Answer: B

▶ **Watch Video Solution**

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23. Which term must be added and subtracted to solve the quadratic equation $3x^2 - 5x + 2 = 0$ by the method of completing the square?

A. 25

B. $\dfrac{25}{4}$

C. $\dfrac{25}{9}$

D. $\dfrac{25}{35}$

Answer: D

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24. The roots of the quadratic equation $m^2 - 3m + 1 = 0$ are

A. 3, 1

B. $\dfrac{-3 + \sqrt{5}}{2}, \dfrac{-3 - \sqrt{5}}{2}$

C. $\dfrac{3 + \sqrt{5}}{2}, \dfrac{3 - \sqrt{5}}{2}$

D. $\dfrac{3 + \sqrt{2}}{2}, \dfrac{3 - \sqrt{2}}{2}$

Answer: C

▶ Watch Video Solution

25. The discriminate (Δ) of the quadratic

equation $3x^2 + 2x - 9 = 0$ is

A. 112

B. -112

C. 56

D. 0

Answer: A

▶ **Watch Video Solution**

26. If the discriminant (Δ) of the quadratic equation $4x^2 + dx + 25 = 0$ is zero, then the value of d is / are

A. 10

B. ± 10

C. 20

D. ± 20

Answer: D

27. The roots of the qudratic equation $9x^2 - 6x + 1 = 0$ are

A. real and equal

B. not real

C. real and unequal

D. none of these

Answer: A

▶ **Watch Video Solution**

28. The roots of the equation

$2x^2 - 6x + 3 = 0$ are

A. real and equal

B. real and unequal

C. not real

D. none of these

Answer: B

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29. Which of the following equations has no real roots?

A. $2x^2 - 3x + 5 = 0$

B. $3x^2 - 2x - 8 = 0$

C. $4x^2 + 4x + 1 = 0$

D. $3x^2 - 4x + 1 = 0$

Answer: A

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30. If α and β are the roots of the quadratic

equation $\quad 3m^2 + 2m - 4 = 0, \quad$ then

$\alpha^2 + \beta^2 =$

A. $\dfrac{28}{9}$

B. $\dfrac{-28}{9}$

C. $\dfrac{12}{9}$

D. $\dfrac{-12}{9}$

Answer: A

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31. If α and β are the roots of the quadratic equation $x^2 - 3x - 2 = 0$, then $\dfrac{\alpha}{\beta} + \dfrac{\beta}{\alpha} =$

A. $\dfrac{3}{2}$

B. $\dfrac{-3}{-2}$

C. $\dfrac{13}{2}$

D. $\dfrac{-13}{2}$

Answer: D

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32. If the roots of a quadratic equation are -1 and 3, then the quadratic equation is

A. $x^2 - 2x - 3 = 0$

B. $x^2 + 2x - 3 = 0$

C. $x^2 - 2x + 3 = 0$

D. $x^2 + 2x + 3 = 0$

Answer: A

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Additional Problems For Practice Based On Practice Set 2 1

1. Which of the following are qudratic equations?

(i) $x^2 - x - 5 = 0$

(ii) $y^2 + 4 = 3y - 1$

(iii) $3x^2 - 5x + 3 = 0$

(iv) $x - 3 = 4x$

(v) $(y - 2)(y + 2) = 0$

(vi) $p + 3 = \dfrac{1}{p^2}$

(vii) $\dfrac{3}{y} - 4 = y.$

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2. Write the following equations in the form $ax^2 + bx + c = 0$. Also, find the value of a,b and c.

(i) $t^2 - 3t = 4 - 2t$.

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3. Write the following equations in the form $ax^2 + bx + c = 0$. Also, find the value of a,b and c.

(ii) $x^2 - 3x = -1$.

▶ Watch Video Solution

4. Write the following equations in the form $ax^2 + bx + c = 0$. Also, find the value of a,b and c.

(iii) $(x + 5)(x - 1) = 6$

5. Write the following equations in the form $ax^2 + bx + c = 0$. Also, find the value of a,b and c.

(iv) $\dfrac{x^2 + 5}{x^2} = -3$

6. Determine whether the value given against each of the qaudratic equation are the roots of the equation.

(i) $x^2 + 5x - 6 = 0, x = -6, 2.$

7. What are the roots of the quadratic equation $2x^2 - 7x + 6 = 0$?

8. Determine whether the value given against each of the qaudratic equation are the roots of the equation.

(iii) $x^2 + 3x - 4 = 0, x = 1, -2, -3.$

9. Determine whether the value given against each of the qaudratic equation are the roots

of the equation.

(iv) $(m + 1)(m + 3) = 0, m = 1, -1, 2.$

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10. If one root of the quadratic equation $kx^2 - 7x + 5 = 0$ is 1, then find the value of k.

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11. Find k, one of the roots of the quadratic equation $kx^2 - 7x + 12 = 0$ is 3.

12. If one of the roots of the quadratic equation $x^2 - 7x + k = 0$ is 4, then find the value of k.

13. Which of the following are qudratic equations?

(i) $x^2 - x - 5 = 0$

(ii) $y^2 + 4 = 3y - 1$

(iii) $3x^2 - 5x + 3 = 0$

(iv) $x - 3 = 4x$

(v) $(y - 2)(y + 2) = 0$

(vi) $p + 3 = \dfrac{1}{p^2}$

(vii) $\dfrac{3}{y} - 4 = y.$

> ▶ **Watch Video Solution**

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14. Write the following equations in the form

$ax^2 + bx + c = 0$. Also, find the value of a,b

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(i) $t^2 - 3t = 4 - 2t$.

15. Write the following equations in the form $ax^2 + bx + c = 0$. Also, find the value of a,b and c.

(ii) $x^2 - 3x = -1$.

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18. Determine whether the value given against each of the qaudratic equation are the roots of the equation.

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19. Determine whether the value given against each of the qaudratic equation are the roots

of the equation.

(ii) $2x^2 - 7x + 6 = 0, x = \dfrac{3}{2}, \; -2.$

20. Determine whether the value given against

each of the qaudratic equation are the roots

of the equation.

(iii) $x^2 + 3x - 4 = 0, x = 1, \; -2, \; -3.$

21. Determine whether the value given against each of the qaudratic equation are the roots of the equation.

(iv) $(m + 1)(m + 3) = 0, m = 1, \ -1, 2.$

22. If one root of the quadratic equation $kx^2 - 7x + 5 = 0$ is 1, then find the value of k.

23. Find k, one of the roots of the quadratic

equation $kx^2 - 7x + 12 = 0$ is 3.

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24. If one of the roots of the quadratic

equation $x^2 - 7x + k = 0$ is 4, then find the

value of k.

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1. Solve the following quadratic equation by factorisation method:

(i) $x^2 + 6x + 5 = 0$.

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2. Solve the following quadratic equation by factorisation method:

(ii) $x^2 + 10x + 24 = 0$.

3. Solve the following quadratic equation using factorization method:

$$x^2 + 11x + 24 = 0$$

4. Solve the following quadratic equation by factorisation method:

(iv) $m^2 - 14m + 13 = 0$.

5. Solve the following quadratic equation by factorization method

$$x^2 - 7x + 12 = 0$$

6. Solve the following quadratic equation by factorisation method:

(vi) $x^2 - 3x - 28 = 0$.

7. Solve the following quadratic equation by factorisation method:

(vii) $q^2 - 2(7q + 16) = 0$.

8. Solve the following quadratic equation by factorisation method:

(viii) $3y^2 = 15y$.

9. Solve the following quadratic equation by factorisation method:

(ix) $x^2 = 3$

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10. Solve the following quadratic equation by factorisation method:

(x) $y^2 - 36 = 0$.

▶ Watch Video Solution

11. Solve the following quadratic equation by factorisation method:

(xi) $t^2 - 49 = 0$.

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12. Solve the following quadratic equation by factorisation method:

(xii) $4x^2 - 1 = 0$.

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13. Solve the following quadratic equation by factorisation method:

(xiii) $9x^2 - 16 = 0$

14. Solve the following quadratic equation by factorisation method:

(xiv) $3y^2 - 14y + 8 = 0$.

15. Solve the following quadratic equation by factorisation method:

(xv) $3x^2 - x - 10 = 0.$

16. Solve the following quadratic equation by factorisation method:

(xvi) $3x^2 - 29x + 40 = 0$

17. Solve the following quadratic equation by factorisation method:

(xvii) $x + \dfrac{35}{x} = 12, x \neq 0.$

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18. Solve the following quadratic equation by factorisation method:

(xviii) $6\sqrt{3}x^2 + 7x = \sqrt{3}.$

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19. Solve the following quadratic equation by factorisation method:

(i) $x^2 + 6x + 5 = 0$.

> ▶ **Watch Video Solution**

20. Solve the following quadratic equation by factorisation method:

(ii) $x^2 + 10x + 24 = 0$.

> ▶ **Watch Video Solution**

21. Solve the following quadratic equation using factorization method:

$$x^2 + 11x + 24 = 0$$

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22. Solve the following quadratic equation by factorisation method:

(iv) $m^2 - 14m + 13 = 0.$

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▶ **Watch Video Solution**

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(xiii) $9x^2 - 16 = 0$

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32. Solve the following quadratic equation by factorisation method:

(xiv) $3y^2 - 14y + 8 = 0.$

▶ Watch Video Solution

33. Solve the following quadratic equation by factorisation method:

(xv) $3x^2 - x - 10 = 0.$

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35. Solve the following quadratic equation by factorisation method:

(xvii) $x + \dfrac{35}{x} = 12, x \neq 0.$

36. Solve the following quadratic equation by factorisation method:

(xviii) $6\sqrt{3}x^2 + 7x = \sqrt{3}.$

1. Solve following quadratic equations by completing the square method.

(i) $x^2 + 8x - 48 = 0.$

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2. Solve the following quadratic equation by completing square method:

$x^2 + 11x + 24 = 0$

3. Solve following quadratic equations by completing the square method.

(iii) $m^2 + \dfrac{m}{2} - \dfrac{3}{2} = 0$

4. Solve following quadratic equations by completing the square method.

(iv) $y^2 - 4y = 1$.

5. Solve following quadratic equations by completing the square method.

(v) $x^2 - 6x + 4 = 0$

6. Solve following quadratic equations by completing the square method.

(vi) $x^2 + 8x + 9 = 0$

7. Solve the following quadratic equation by completing square: $z^2 + 4z - 7 = 0$.

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8. Solve following quadratic equations by completing the square method.

(viii) $t^2 + 2t = t + 3$

▶ **Watch Video Solution**

9. Solve following quadratic equations by completing the square method.

(ix) $m^2 - 3m - 1 = 0$

▶ **Watch Video Solution**

10. Solve following quadratic equations by completing the square method.

$5x^2 - 4x - 3 = 0.$

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11. Solve following quadratic equations by completing the square method.

(i) $x^2 + 8x - 48 = 0$.

12. Solve the following quadratic equation by completing square method:

$x^2 + 11x + 24 = 0$

13. Solve following quadratic equations by completing the square method.

(iii) $m^2 + \dfrac{m}{2} - \dfrac{3}{2} = 0$

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14. Solve following quadratic equations by completing the square method.

(iv) $y^2 - 4y = 1$.

▶ Watch Video Solution

15. Solve following quadratic equations by completing the square method.

(v) $x^2 - 6x + 4 = 0$

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16. Solve following quadratic equations by completing the square method.

(vi) $x^2 + 8x + 9 = 0$

▶ **Watch Video Solution**

17. Solve the following quadratic equation by completing square: $z^2 + 4z - 7 = 0$.

18. Solve following quadratic equations by completing the square method.

(viii) $t^2 + 2t = t + 3$

19. Solve following quadratic equations by completing the square method.

(ix) $m^2 - 3m - 1 = 0$

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20. Solve following quadratic equations by completing the square method.

$5x^2 - 4x - 3 = 0.$

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1. Solve the following quadratic equations equation by using formula.

(i) $m^2 - 14m + 13 = 0$.

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2. Solve the following quadratic equations equation by using formula.

(ii) $x^2 - 2x - 3 = 0$.

3. Solve the following quadratic equations equation by using formula.

(iii) $m^2 - 3m - 10 = 0.$

4. Solve the following quadratic equations equation by using formula.

(iv) $x^2 + x + 5 = 0.$

5. Solve the following quadratic equations equation by using formula.

(v) $m^2 - \dfrac{1}{2}m - 3 = 0$

6. Solve the following quadratic equations equation by using formula.

(vi) $3y^2 + 7y + 4 = 0$

7. Solve the following quadratic equations equation by using formula.

(vii) $2x^2 + 5x + 2 = 0.$

8. Solve the following quadratic equations equation by using formula.

(viii) $25x^2 + 30x + 9 = 0.$

9. Solve the following quadratic equations equation by using formula.

(ix) $7p^2 - 5p - 2 = 0.$

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10. Solve the following quadratic equations equation by using formula.

(xiii) $x^2 - 3x = 2.$

▶ Watch Video Solution

11. Solve the following quadratic equations equation by using formula.

(xi) $y^2 - 6y + 2 = 0$.

▶ Watch Video Solution

12. Solve the following quadratic equations equation by using formula.

(xii) $x^2 + 10x + 2 = 0$.

▶ Watch Video Solution

13. Solve the following quadratic equations by using formula method :

$$x^2 - 3x - 2 = 0$$

14. Solve the following quadratic equations equation by using formula.

(xiv) $4x^2 + 7x + 2 = 0$

15. Solve the following quadratic equation using formula method:

$$6x^2 - 7x - 1 = 0.$$

16. Solve the following quadratic equations equation by using formula.

(i) $m^2 - 14m + 13 = 0.$

17. Solve the following quadratic equations equation by using formula.

(ii) $x^2 - 2x - 3 = 0$.

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18. Solve the following quadratic equations equation by using formula.

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▶ Watch Video Solution

19. Solve the following quadratic equations equation by using formula.

(iv) $x^2 + x + 5 = 0$.

20. Solve the following quadratic equations equation by using formula.

(v) $m^2 - \dfrac{1}{2}m - 3 = 0$

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(vi) $3y^2 + 7y + 4 = 0$

22. Solve the following quadratic equations by factorisation method :

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

23. Solve the following quadratic equations equation by using formula.

(viii) $25x^2 + 30x + 9 = 0$.

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24. Solve the following quadratic equations equation by using formula.

(ix) $7p^2 - 5p - 2 = 0$.

▶ Watch Video Solution

25. Solve the following quadratic equations equation by using formula.

(x) $3q^2 - 2q = 8.$

26. Solve the following quadratic equations equation by using formula.

(xi) $y^2 - 6y + 2 = 0.$

27. Solve the following quadratic equations equation by using formula.

(xii) $x^2 + 10x + 2 = 0$.

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28. Solve the following quadratic equations by using formula method :

$x^2 - 3x - 2 = 0$

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29. Solve the following quadratic equations equation by using formula.

(xiv) $4x^2 + 7x + 2 = 0$

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30. Solve the following quadratic equation using formula method:

$6x^2 - 7x - 1 = 0.$

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1. Find the value of discriminant of the following quadratic equations.

(i) $x^2 + 10 - 7 = 0$.

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2. Find the value of discriminant of the following quadratic equations.

(ii) $2x^2 - 3x + 5 = 0$

3. Find the value of discriminant of the following quadratic equations.

(iii) $2m^2 + m - 1 = 0.$

4. Find the value of discriminant of the following quadratic equations.

(iv) $3x^2 - 4\sqrt{3}x + 4 = 0.$

5. Find the value of the discriminant (Δ) for the quadratic equation $x^2 + + 7x + 6 = 0$

6. Determine the nature of roots of the following quadratic equations.

(i) $9x^2 + 6x + 1 = 0.$

7. Determine the nature of roots of the following quadratic equations.

(ii) $p^2 - \sqrt{3}p + 2 = 0$.

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8. Determine the nature of roots of the following quadratic equations.

(iii) $2x^2 - 3x - 2 = 0$.

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9. Determine the nature of roots of the following quadratic equations.

(iv) $2x^2 - 5x + 7 = 0$.

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10. Determine the nature of roots of the following quadratic equations.

(v) $\sqrt{3}x^2 + 2\sqrt{3}x + \sqrt{3} = 0$.

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11. If α and β are the roots of the quadratic equation $2x^2 + 6x - 5 = 0$, then find $(\alpha + \beta)$ and $\alpha \times \beta$.

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12. From the quadratic equation, if its roots are

(i) 10 and 3

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13. From the quadratic equation, if its roots are

(ii) 4 and 5

▶ Watch Video Solution

14. From the quadratic equation, if its roots are

(iii) 5 and 7

▶ Watch Video Solution

15. Form the quadratic equation, if the roots are

3 and 8

▶ Watch Video Solution

16. Form the quadratic equation if its roots are

3 and –4.

▶ Watch Video Solution

17. Obtain a quadratic equation whose roots are -3 and -7.

18. From the quadratic equation, if its roots are

(vii) 4 and $\dfrac{2}{3}$

19. From the quadratic equation, if its roots are

(viii) $\dfrac{-25}{8}$ and $\dfrac{25}{8}$.

20. Find k, if the roots of the quadratic equation $kx^2 - 4x + 4 = 0$ are equal

21. Find the value (s) of k for which the given quadratic equations has real and equal roots:

(i) $9x^2 + 8kx + 16 = 0$.

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22. Find the value (s) of k for which the given quadratic equations has real and equal roots:

(ii) $kx\left(x - 2\sqrt{5}\right) + 10 = 0$.

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23. Find m, if the quadratic equation $(m-1)x^2 - 2(m-1)x + 1 = 0$ has real and equal roots.

24. If α and β are the roots of the equation $x^2 - 9x + 14 = 0$, find

(i) $\alpha^2 + \beta^2$

25. If α and β are the roots of the equation

$x^2 - 9x + 14 = 0$, find

(ii) $(\alpha - \beta)^2$.

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26. If α and β are the roots of quadratic

equation $x^2 + 5x - 1 = 0$ then, find (i)

$\alpha^3 + \beta^3$ (ii) $\alpha^2 + \beta^2$

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27. If α and β are the roots of quadratic equation $x^2 + 5x - 1 = 0$ then, find (i) $\alpha^3 + \beta^3$ (ii) $\alpha^2 + \beta^2$

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28. The difference between the roots of the equation $x^2 - 13x + k = 0$ is 7, find k.

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29. Find k if the sum of the roots of the quadratic equation $4x^2 + 8kx + k + 9 = 0$ is equal to their product.

30. If the sum of the roots of the quadratic equation is 3 and sum of their cubes is 63, find the quadratic equation.

31. Find the value of discriminant of the following quadratic equations.

(i) $x^2 + 10 - 7 = 0.$

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32. Find the value of discriminant of the following quadratic equations.

(ii) $2x^2 - 3x + 5 = 0$

▶ Watch Video Solution

33. Find the value of discriminant of the following quadratic equations.

(iii) $2m^2 + m - 1 = 0$.

▶ Watch Video Solution

34. Find the value of discriminant of the following quadratic equations.

(iv) $3x^2 - 4\sqrt{3}x + 4 = 0$.

▶ Watch Video Solution

35. Find the value of discriminant of the following quadratic equations.

(v) $x^2 + 7x + 6 = 0$.

▶ Watch Video Solution

36. Determine the nature of roots of the following quadratic equations.

(i) $9x^2 + 6x + 1 = 0$.

▶ Watch Video Solution

37. Determine the nature of roots of the following quadratic equations.

(ii) $p^2 - \sqrt{3}p + 2 = 0.$

▶ Watch Video Solution

38. Determine the nature of roots of the following quadratic equations.

(iii) $2x^2 - 3x - 2 = 0.$

▶ Watch Video Solution

39. Determine the nature of roots of the following quadratic equations.

(iv) $2x^2 - 5x + 7 = 0$.

40. Determine the nature of roots of the following quadratic equations.

(v) $\sqrt{3}x^2 + 2\sqrt{3}x + \sqrt{3} = 0$.

41. If α and β are the roots of the quadratic equation $2x^2 + 6x - 5 = 0$, then find $(\alpha + \beta)$ and $\alpha \times \beta$.

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42. From the quadratic equation, if its roots are

(i) 10 and 3

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43. From the quadratic equation, if its roots are

(ii) 4 and 5

> ▶ Watch Video Solution

44. From the quadratic equation, if its roots are

(iii) 5 and 7

> ▶ Watch Video Solution

45. Form the quadratic equation, if the roots are

3 and 8

▶ Watch Video Solution

46. Form the quadratic equation if its roots are 3 and –4.

▶ Watch Video Solution

47. Obtain a quadratic equation whose roots are -3 and -7.

48. From the quadratic equation, if its roots are

(vii) 4 and $\dfrac{2}{3}$

49. From the quadratic equation, if its roots are

(viii) $\dfrac{-25}{8}$ and $\dfrac{25}{8}$.

50. Find k, if the roots of the quadratic equation $kx^2 - 4x + 4 = 0$ are equal

51. Find the value (s) of k for which the given quadratic equations has real and equal roots:

(i) $9x^2 + 8kx + 16 = 0$.

52. Find the value (s) of k for which the given quadratic equations has real and equal roots:

(ii) $kx\left(x - 2\sqrt{5}\right) + 10 = 0$.

53. Find m, if the quadratic equation $(m - 1)x^2 - 2(m - 1)x + 1 = 0$ has real and equal roots.

54. If α and β are the roots of the equation $x^2 - 9x + 14 = 0$, find

(i) $\alpha^2 + \beta^2$

55. If α and β are the roots of the equation $x^2 - 9x + 14 = 0$, find

(ii) $(\alpha - \beta)^2$.

56. If α and β are the roots of quadratic equation $x^2 + 5x - 1 = 0$ then, find (i) $\alpha^3 + \beta^3$ (ii) $\alpha^2 + \beta^2$

57. If α and β are the roots of quadratic equation $x^2 + 5x - 1 = 0$ then, find (i) $\alpha^3 + \beta^3$ (ii) $\alpha^2 + \beta^2$

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58. The difference between the roots of the equation $x^2 - 13x + k = 0$ $is 7$, find k.

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59. Find k if the sum of the roots of the quadratic equation $4x^2 + 8kx + k + 9 = 0$ is equal to their product.

60. If the sum of the roots of the quadratic equation is 3 and sum of their cubes is 63, find the quadratic equation.

1. The product of Yusuf's age 5 years ago with his age 9 years later is 176. find Yusuf's present age.

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2. The product of two consecutive positive number is 182, find the number.

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3. Sanket purchesed a rectangular plot having area $200m^2$. Length of the plot was 10m more than its breadth. Find the length and breadth of the plot.

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4. The length of a rectangle is thrice as long as the side of a square. The side of the square is

4 cm more than the width of the rectangle.

Their areas being equal, find their dimensions.

5. The sum of a number and its reciprocal is $\dfrac{10}{3}$, find the number(s).

6. A natural number is greater than the other by 5. The sum of their squares is 73. find the

numbers.

7. The divisor and quotient of the number 6123 are same and the remainder is half the divisor. Find the divisor.

8. There is a rectangular onion storehouse in the farm of Mr. Ratnakarrao at Tivasa. The

length of rectangular base is more than its breadth by 7m and digonal is more than length by 1 m. Find length and breadth of the storehouse.

9. From the same place at 7 a.m. A started walking in the north at the speed of $4km/hr$. After 1 hours B stated cycling in the east at a speed of $8km/hr$. At what time they will be at a distance of 20 km apart from each other?

10. The denominator of a fraction exceeds its numerator by 2. If one is added to both numerator and denominator, the difference between new and the original fraction is $\dfrac{1}{28}$. Find the original fraction with positive denominator.

11. A train, travelling at a uniform speed for 360 km, would have taken 48 minutes less to travel the same distance if its speed were 5 km/h more. Find the original speed of the train.

12. The area of a rectangular playground is 420 sq.m. If its length is increasing by 7m and breadth is decreased by 5m, the area remains

the same.Find the length and breadth of the playground.

13. If the cost of bananas is increased by rupees 10 per dozen, one can get 3 dozen less for rupees 600. Find the original cost of one dozen of bananas.

14. Anand takes 9 days more than his father to do a certain piece of work. Together they can do the work in 6 days. How many days will Anand take to do that work alone?

15. One tank can be filled up by two taps in 6 hours. The smaller tap alone takes 5 hours more than the bigger tap alone. Find the time required by each tap to fill the tank separately.

16. The product of Yusuf's age 5 years ago and his age 5 years ago and his age 9 years hence is 176. find Yusuf's present age.

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19. The length of a rectangle is twice as long as the side of a square. The side of a square is 4 cm longer than the width of the same

rectangle. If their areas are equal, find their dimensions.

20. The sum of a natural number and its reciprocal is $\dfrac{10}{3}$. Find the number.

21. A natural number is greater than the other by 5. The sum of their squares is 73. find the

numbers.

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24. From the same place at 7 a.m. A started walking in the north at the speed of $4km/hr$. After 1 hours B stated cycling in the east at a speed of $8km/hr$. At what time they will be at a distance of 20 km apart from each other?

25. The denominator of a fraction exceeds its numerator by 2. If one is added to both numerator and denominator, the difference between new and the original fraction is $\dfrac{1}{28}$. Find the original fraction with positive denominator.

26. Solve the following questions.

(ii) A train travels 360 km with uniform speed.The speed of the train is increased by 5 km/hr, it takes 48 minutes less to cover the same distance. Find the initial speed of the train.

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27. The area of a rectangular playground is 420 sq.m. If its length is increasing by 7m and

breadth is decreased by 5m, the area remains the same.Find the length and breadth of the playground.

28. If the cost of bananas is increased by rupees 10 per dozen, one can get 3 dozen less for rupees 600. Find the original cost of one dozen of bananas.

29. Anand takes 9 days more than his father to do a certain piece of work. Together they can do the work in 6 days. How many days will Anand take to do that work alone?

30. One tank can be filled up by two taps in 6 hours. The smaller tap alone takes 5 hours more than the bigger tap alone. Find the time required by each tap to fill the tank separately.

1. Choose the correct alternative.

(i) Which of the following is a quadratic equation?

A. $x^2 + 3x + 1 = (x - 2)^2$

B. $(x + 1)^2 = 5(x - 9)$

C. $x^3 - 1 = 0$

D. $5x + 9 = 0$

Answer:

---

2. Choose the correct alternative.

(ii) If one root of the quadratic equation $3x^2 - 12x + k = 0$ is 3, then the value of k is

A. 6

B. -6

C. 9

D. -9

Answer:

---

3. Choose the correct alternative.

(iii) Which of the following quadratic equations has roots $-2, 5$?

    A. $x^2 - 3x + 10$

    B. $x^2 - 3x - 10$

    C. $x^2 - 10x + 9$

    D. $x^2 - 10x - 9$

Answer:

4. Solve for x $\sqrt{3}x^2 - 2\sqrt{2}x - 2\sqrt{3} = 0$

A. 24

B. -24

C. 32

D. -32

Answer:

5. Solve the following question.

(i) Find the value of k for which the roots of quadratic equation $kx^2 + 2x + 3 = 0$ are real and equal.

6. Solve the following question.

(ii)   For   the   quadratic   equation

$m^2 + 5m - 14 = 0$, check whether m=3 and

m=-7 are the roots or not ?

7. Complete the following activities.

(i) Classify the following polynominals as linear

and quadratic polynominals:

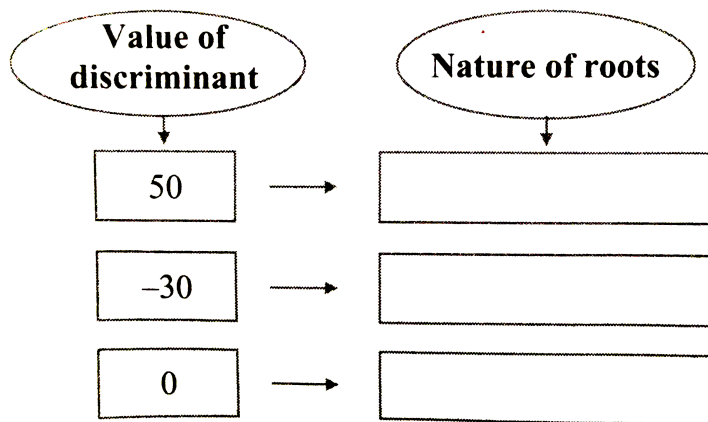$$8x - 1, 3x^2, 5x^2 + 3x + 2, x - 2$$

Linear polynomials	Quadratic polynomials

8. Complete the following activities.

(ii) fill in the blanks

Value of discriminant		Nature of roots
50	→	
−30	→	
0	→	

9. If one root of the quadratic equation $3y^2 - ky + 8 = 0$ is $\dfrac{2}{3}$, find the value of k.

10. Solve the following questions

(ii) Solve the following quadratic equation by factroisation method.

$x^2 - 17x + 60 = 0$.

11. Solve the following questions

(iii) Determine the nature of the roots of the quadratic equation $3x^2 + 9x + 4 = 0$.

> ▶ Watch Video Solution

12. Solve the following questions

(iv) From the quadratic equation, if its roots are 5 and -7.

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13. Solve the following questions.

(i) Solve the following qudratic equation by completing square:

$$4m^2 - 12m = -7$$

14. Solve the following questions.

(ii) Find k, if the sum of the roots of the qudratic equation $3x^2 - (3k - 2)x - (k - 6) = 0$ is equal to their product.

15. Find m, if the quadratic equation

$$x^2 - 2(m+1)x + m^2 = 0$$

16. the product of two consecutive natural

number is 132.find the numbers

17. If $\alpha + \beta = 5$ and $\alpha^3 + \beta^3 = 35$, find the quadratic equation whose roots are α and β.

18. Solve the following questions.

(i) Suppose height of a right angled triangle is 1 less than two times its base. It's hypotenuse is 7 less than 3 times its base. Find all the sides of the right angled triangle.

19. Solve the following questions.

(ii) The roots of the equation $x^2 - 3ax + b = 0$ differ by 4, then show that $9a^2 = 4b + 16$.

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20. Solve the following questions.

(i) Find the roots of the equation $x^2 - 2x - 3 = 0$ by solving graphically.

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21. Solve the following questions.

(ii) A train travels 360 km with uniform speed.The speed of the train is increased by 5 km/hr, it takes 48 minutes less to cover the same distance. Find the initial speed of the train.

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22. Choose the correct alternative.

(i) Which of the following is a quadratic

equation?

A. $x^2 + 3x + 1 = (x - 2)^2$

B. $(x + 1)^2 = 5(x - 9)$

C. $x^3 - 1 = 0$

D. $5x + 9 = 0$

Answer:

23. Choose the correct alternative.

(ii) If one root of the quadratic equation $3x^2 - 12x + k = 0$ is 3, then the value of k is

A. 6

B. -6

C. 9

D. -9

Answer:

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24. Choose the correct alternative.

(iii) Which of the following quadratic equations has roots $-2, 5$?

A. $x^2 - 3x + 10$

B. $x^2 - 3x - 10$

C. $x^2 - 10x + 9$

D. $x^2 - 10x - 9$

Answer:

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25. Choose the correct alternative.

(iv) For $\sqrt{3}x^2 - 2\sqrt{2}x - 2\sqrt{3} = 0$, the value

of the discriminant is

A. 24

B. -24

C. 32

D. -32

Answer:

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26. Solve the following question.

(i) Find the value of k for which the roots of quadratic equation $kx^2 + 2x + 3 = 0$ are real and equal.

27. Solve the following question.

(ii) For the quadratic equation $m^2 + 5m - 14 = 0$, check whether m=3 and m=-7 are the roots or not ?

28. Complete the following activities.

(i) Classify the following polynominals as linear and quadratic polynominals:

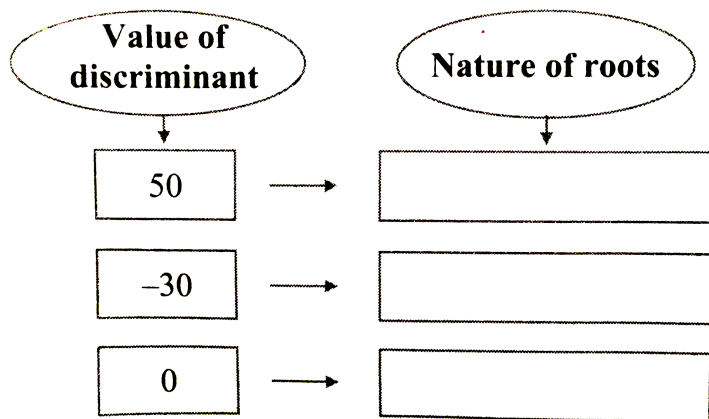$$8x - 1, \ 3x^2, \ 5x^2 + 3x + 2, \ x - 2$$

Linear polynomials   Quadratic polynomials

29. Complete the following activities.

(ii) fill in the blanks

Value of discriminant		Nature of roots
50	→	
–30	→	
0	→	

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30. Solve the following questions

(i) if $y = \dfrac{2}{3}$ is one of the roots of the equation

$3y^2 - ky + 8 = 0$, then find the value of k.

31. Solve the following questions

(ii) Solve the following quadratic equation by factroisation method.

$x^2 - 17x + 60 = 0.$

32. Solve the following questions

(iii) Determine the nature of the roots of the quadratic equation $3x^2 + 9x + 4 = 0$.

33. Solve the following questions

(iv) From the quadratic equation, if its roots are 5 and -7.

34. Solve the following questions.

(i) Solve the following qudratic equation by completing square:

$$4m^2 - 12m = -7$$

35. Solve the following questions.

(ii) Find k, if the sum of the roots of the qudratic equation

$$3x^2 - (3k - 2)x - (k - 6) = 0$$ is equal to their product.

36. Find m, if the quadratic equation

$$x^2 - 2(m+1)x + m^2 = 0$$

37. the product of two consecutive natural number is 132.find the numbers

38. If $\alpha + \beta = 5$ and $\alpha^3 + \beta^3 = 35$, find the quadratic equation whose roots are α and β.

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39. Solve the following questions.

(i) Suppose height of a right angled triangle is 1 less than two times its base. It's hypotenuse is 7 less than 3 times its base. Find all the sides of the right angled triangle.

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40. Solve the following questions.

(ii) The roots of the equation $x^2 - 3ax + b = 0$ differ by 4, then show that $9a^2 = 4b + 16$.

41. Solve the following questions.

(i) Find the roots of the equation $x^2 - 2x - 3 = 0$ by solving graphically.

42. Solve the following questions.

(ii) A train travels 360 km with uniform speed.The speed of the train is increased by 5 km/hr, it takes 48 minutes less to cover the same distance. Find the initial speed of the train.

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