

100 Quadric Equation Practice Questions

Q1. In each of the following questions two equations are given. Solve these equations and give answer:

I. $6x^2 - 11x + 4 = 0$ II. $10y^2 - 41y + 40 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(b)

Sol. From I: $6x^2 - 11x + 4 = 0$

$$6x^2 - 3x - 8x + 4 = 0$$

$$3x(2x - 1) - 4(2x - 1) = 0$$

$$(3x - 4)(2x - 1) = 0$$

$$x = 4/3, 1/2$$

From II: $10y^2 - 41y + 40 = 0$

$$10y^2 - 16y - 25y + 40 = 0$$

$$2y(5y - 8) - 5(5y - 8) = 0$$

$$(2y - 5)(5y - 8) = 0$$

$$y = 5/2, 8/5$$

Q2. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 - 9x + 20 = 0$

II. $y^2 - 7y + 12 = 0$

- (a) if $x > y$
- (b) if $x < y$
- (c) if $x \geq y$
- (d) if $x \leq y$
- (e) if $x = y$ or there is no relation between x and y

Ans.(c)

Sol. I. $x^2 - 9x + 20 = 0$

$$\Rightarrow x^2 - 5x - 4x + 20 = 0$$

$$\Rightarrow (x - 5)(x - 4) = 0$$

$$\Rightarrow x = 5, 4$$

II. $y^2 - 7y + 12 = 0$

$$\Rightarrow y^2 - 4y - 3y + 12 = 0$$

$$\Rightarrow (y - 4)(y - 3) = 0$$

$$\Rightarrow y = 4, 3$$

$$x \geq y$$

★ Topper's Choice



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Q3. In each of these questions, two equations (i) and (ii) are given. You have to solve both the equations and give answer.

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

(ii) $y^3 = 8$

(a) if $x > y$

(b) if $x \geq y$

(c) if $x < y$

(d) if $x \leq y$

(e) if $x = y$ or no relation can be established between x and y

Ans.(c)

Sol. (i) $(x + 3)^2 = 1$

$x + 3 = \pm 1$

$x = -2, -4$

(ii) $y^3 = 8$

$y = 2$

$\therefore y > x$

Q4. In the following two equations questions numbered (I) and (II) are given. You have to solve both equations and Give answer.

(i) $x^2 - 21x + 108 = 0$

(ii) $y^2 - 17y + 72 = 0$

Testing

(a) $x > y$

(b) $x < y$

(c) $x \geq y$

(d) $x \leq y$

(e) $x = y$ or there is no relationship

Ans.(c)

Sol. I. $x^2 - 21x + 108 = 0$

$x^2 - 9x - 12x + 108 = 0$

$x(x - 9) - 12(x - 9) = 0$

$x = 9, 12$

II. $y^2 - 17y + 72 = 0$

$\therefore y^2 - 8y - 9y + 72 = 0$

$y(y - 8) - 9(y - 8) = 0$

$\therefore y = 8, 9$

$\therefore x \geq y$

Q5. In each of the following questions two equations are given. Solve these equations and give answer:

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

II. $4y^2 + 13y + 10 = 0$

(a) $x > y$

(b) $x \geq y$

(c) $x < y$

(d) $x \leq y$

(e) $x = y$ or no relation can be established between x and y .

Ans.(c)

Sol. I. $x^2 + 11x + 24 = 0$

$\Rightarrow x^2 + 8x + 3x + 24 = 0$

$\Rightarrow (x + 8)(x + 3) = 0$

$\Rightarrow x = -8, -3$

II. $4y^2 + 13y + 10 = 0$

$\Rightarrow 4y^2 + 8y + 5y + 10 = 0$

$\Rightarrow (y + 2)(4y + 5) = 0$

$\Rightarrow y = -2, -5/4$

$x < y$

Q6. In each of the following questions two equations are given. Solve these equations and give answer:

I. $2y^2 - 13y - 34 = 0$

II. $3x^2 - 11x - 20 = 0$

(a) if $x > y$

(b) if $x < y$

(c) if $x \geq y$

(d) if $x \leq y$

(e) if $x = y$ or relation between x and y cannot be established

Ans.(e)

Sol. I. $2y^2 - 13y - 34 = 0$

$\Rightarrow 2y^2 - 17y + 4y - 34 = 0$

$\Rightarrow y(2y-17) + 2(2y-17) = 0$

$\Rightarrow (2y-17)(y+2) = 0$

$\Rightarrow y = 17/2, -2$

II. $3x^2 - 11x - 20 = 0$

$\Rightarrow 3x^2 - 15x + 4x - 20 = 0$

$\Rightarrow 3x(x-5) + 4(x-5) = 0$

$\Rightarrow (x-5)(3x+4) = 0$

$\Rightarrow x = 5, (-4)/3$

No relation

Q7. In the following two equations questions numbered (I) and (II) are given. You have to solve both equations and Give answer.

I. $x^2 = 81$

II. $(y-9)^2 = 0$

(a) If $x > y$

(b) If $x \geq y$

(c) If $y > x$

(d) If $y \geq x$

(e) If $x = y$ or no relation can be established

Ans.(d)

Sol. I. $x^2 = 81$

$x = \pm 9$

II. $(y-9)^2 = 0$

$(y-9) = 0 \sqrt{0} = 0$

$y - 9 = 0$

$y = 9$

Clearly, $x \leq y$

Q8. In each of the following questions two equations are given. Solve these equations and give answer:

I. $2x + 3y = 4$

II. $3x + 2y = 11$

(a) if $x < y$

(b) if $x > y$

(c) if $x \leq y$

(d) if $x \geq y$

(e) if $x = y$ or no relation can be established

Ans.(b)

Sol. I. $2x + 3y = 4$

II. $3x + 2y = 11$

$I \times 3 - II \times 2$

$x = 5, y = -2$

$\therefore x > y$

Q9. In each of the following questions two equations are given. Solve these equations and give answer:

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

II. $y^2 - 2y - 3 = 0$

(a) if $x < y$

(b) if $x > y$

(c) if $x \leq y$

(d) if $x \geq y$

(e) if $x = y$ or no relation can be established

Ans.(d)

Sol. I. $x^2 - 7x + 12 = 0$

$\Rightarrow x^2 - 4x - 3x + 12 = 0$

$\Rightarrow x(x-4) - 3(x-4) = 0$

$\Rightarrow (x-3)(x-4) = 0$

$\Rightarrow x = 3, 4$

II. $y^2 - 2y - 3 = 0$

$\Rightarrow y^2 - 3y + y - 3 = 0$

$\Rightarrow y(y-3) + 1(y-3) = 0$

$\Rightarrow (y+1)(y-3) = 0$

$\Rightarrow y = -1, 3$

$\therefore x \geq y$

Q10. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 - 5x - 14 = 0$

II. $y^2 - 16y + 64 = 0$

(a) if $x > y$

(b) if $x < y$

(c) if $x \geq y$

(d) if $x \leq y$

(e) if $x = y$ or there is no relation between x and y

Ans.(b)

Sol. I. $x^2 - 5x - 14 = 0$

$\Rightarrow x^2 - 7x + 2x - 14 = 0$

$\Rightarrow x(x - 7) + 2(x - 7) = 0$

$\Rightarrow (x - 7)(x + 2) = 0$

$\Rightarrow x = 7, -2$

II. $y^2 - 16y + 64 = 0$

$\Rightarrow (y - 8)^2 = 0$

$\Rightarrow y = 8, 8$

$\Rightarrow y > x$

Q11. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 - 48x + 576 = 0$

II. $y^2 = 576$

(a) if $x > y$

(b) if $x < y$

(c) if $x \geq y$

(d) if $x \leq y$

(e) if $x = y$ or relation between x and y cannot be established

Ans.(c)

Sol. I. $x^2 - 48x + 576 = 0$

$\Rightarrow (x - 24)^2 = 0$

$\Rightarrow x = 24, 24$

II. $y^2 = 576$

$\Rightarrow y = \pm 24$

$x \geq y$

Q12. In each of these questions, two equations (i) and (ii) are given, you have to solve both the equations and give answer accordingly.

(i) $3x^2 + 11x + 10 = 0$

(ii) $2y^2 + 11y + 14 = 0$

(a) $x \geq y$

(b) $x \leq y$

(c) $x > y$

(d) $x < y$

(e) $x = y$ or no relation can be established between x & y .

Ans.(a)

Sol.

(i) $3x^2 + 11x + 10 = 0$

$3x^2 + 6x + 5x + 10 = 0$

$3x(x + 2) + 5(x + 2) = 0$

$x = -2, \frac{-5}{3}$

$$(ii) \quad 2y^2 + 11y + 14 = 0$$

$$2y^2 + 7y + 4y + 14 = 0$$

$$y(2y + 7) + 2(2y + 7) = 0$$

$$y = -2, -\frac{7}{2}$$

$$x \geq y$$

Q13. In each of the following questions two equations are given. Solve these equations and give answer:

I. $20x^2 - 43x + 21 = 0$ II. $5y^2 - 17y + 14 = 0$

- (a) $x > y$
 (b) $x < y$
 (c) $x = y$ or No relation
 (d) $x \geq y$
 (e) $x \leq y$

Ans.(e)

Sol. From I: $20x^2 - 43x + 21 = 0$

$$20x^2 - 15x - 28x + 21 = 0$$

$$5x(4x - 3) - 7(4x - 3) = 0$$

$$(5x - 7)(4x - 3) = 0$$

$$x = 7/5, 3/4$$

$$x = 1.4, 0.75$$

From II: $5y^2 - 17y + 14 = 0$

$$5y^2 - 10y - 7y + 14 = 0$$

$$5y(y - 2) - 7(y - 2) = 0$$

$$(5y - 7)(y - 2) = 0$$

$$y = 7/5, 2$$

$$y = 1.4, 2$$

Q14. Solve the following pair of equations and determine the relationship between the equation.

I. $3x^2 - 4x - 32 = 0$

II. $7y^2 - 8y - 12 = 0$

- (a) $x < y$
 (b) $x > y$
 (c) $x \leq y$
 (d) $x \geq y$
 (e) $x = y$ or the relation between x and y can't be established.

Ans.(e)

Sol. I. $3x^2 - 4x - 32 = 0$

$$3x^2 - 12x + 8x - 32 = 0$$

$$3x(x - 4) + 8(x - 4) = 0$$

$$(x - 4)(3x + 8) = 0$$

$$(x - 4) = 0 \text{ or } (3x + 8) = 0$$

$$x = 4 \text{ or } -8/3$$




$$\begin{aligned} \text{II. } 7y^2 - 8y - 12 &= 0 \\ 7y^2 - 14y + 6y - 12 &= 0 \\ 7y(y - 2) + 6(y - 2) &= 0 \\ (y - 2)(7y + 6) &= 0 \\ (y - 2) = 0 \text{ or } (7y + 6) &= 0 \\ y = 2 \text{ or } -6/7 \end{aligned}$$

Value of 'x'	Value of 'y'	Relation
4	2	$x > y$
4	-6/7	$x > y$
-8/3	2	$x < y$
-8/3	-6/7	$x < y$

When we compared the values of 'x' and 'y' in the table above, we found that there are two relations between x and y i.e. $>$ and $<$ relation between x and y cannot be established.

Q15. In each of the following questions two equations are given. Solve these equations and give answer:

I. $6x^2 - 7x + 2 = 0$ II. $30y^2 - 49y + 20 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(b)

Sol. From I: $6x^2 - 7x + 2 = 0$

$$\begin{aligned} 6x^2 - 3x - 4x + 2 &= 0 \\ 3x(2x - 1) - 2(2x - 1) &= 0 \\ (3x - 2)(2x - 1) &= 0 \\ x = 2/3, 1/2 \end{aligned}$$

From II:

$$\begin{aligned} 30y^2 - 49y + 20 &= 0 \\ 30y^2 - 25y - 24y + 20 &= 0 \\ 5y(6y - 5) - 4(6y - 5) &= 0 \\ (5y - 4)(6y - 5) &= 0 \\ y = 4/5, 5/6 \end{aligned}$$

Q16. In each of the following questions two equations are given. Solve these equations and give answer:

I. $2x + 5y = 26$ II. $4x + 10y = 52$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(c)

Sol. From I: $2x + 5y = 26$

Multiplying both sides by 2,
we get $4x + 10y = 52$,
which is equation II.
So, it cannot be solved.

Q17. In each of these questions, two equations (i) and (ii) are given, you have to solve both the equations and give answer accordingly.

(i) $6x^2 - 11x + 4 = 0$

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

- (a) $x \leq y$
- (b) $x < y$
- (c) $x \geq y$
- (d) $x > y$
- (e) $x = y$ or no relation can be established between x & y .

Ans.(e)

Sol.

(i) $6x^2 - 11x + 4 = 0$
 $6x^2 - (8 + 3)x + 4 = 0$
 $6x^2 - 8x - 3x + 4 = 0$
 $2x(3x - 4) - 1(3x - 4) = 0$
 $x = \frac{1}{2}, \frac{4}{3}$

(ii) $3y^2 - 5y + 2 = 0$
 $3y^2 - (3 + 2)y + 2 = 0$
 $3y^2 - 3y - 2y + 2 = 0$
 $3y(y - 1) - 2(y - 1) = 0$
 $y = \frac{2}{3}, 1$
 No relation between x and y

Q18. In each question two equations numbered (I) and (II) are given. Student should solve both the equations and mark appropriate answer.

I. $x^2 - 2x - 143 = 0$

II. $y^2 - 169 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x \leq y$
- (d) $x \geq y$
- (e) $x = y$ or no relation can be established

Ans.(e)

Sol. I. $x^2 - 13x + 11x - 143 = 0$

$(x - 13)(x + 11) = 0$

$x = -11, 13$

II. $y^2 = 169$

$y = \pm 13$

clearly, no relation can be established

Q19. In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answers.

I. $\sqrt[3]{125x^2 + 17x + 12} = 0$

II. $\sqrt[3]{64y^2 - 19y + 21} = 0$

- (a) If $x > y$
- (b) If $x \geq y$
- (c) If $x < y$
- (d) If $x \leq y$
- (e) If $x = y$ or no relation can be established between x and y

Ans.(c)

Sol. I. $5x^2 + 17x + 12 = 0$

$5x^2 + 5x + 12x + 12 = 0$

$x = -1, -12/5$

II. $4y^2 - 19y + 21 = 0$

$4y^2 - 7y - 12y + 21 = 0$

$y = 3, 7/4$

So, $x < y$

Q20. In the following two equations questions numbered (I) and (II) are given. You have to solve both equations and Give answer.

I. $x^2 - 17x - 84 = 0$

II. $y^2 + 4y - 117 = 0$

- (a) If $x > y$
- (b) If $x \geq y$
- (c) If $y > x$
- (d) If $y \geq x$
- (e) If $x = y$ or no relation can be established

Ans.(e)

Sol. I. $x^2 - 17x - 84 = 0$

$x^2 + 4x - 21x - 84 = 0$

$(x + 4)(x - 21) = 0$

$x = -4, 21$

II. $y^2 + 4y - 117 = 0$

$y^2 - 9y + 13y - 117 = 0$

$(y - 9)(y + 13) = 0$

$y = 9, -13$

No relation between x and y

Q21. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 - x - 6 = 0$

II. $y^2 = 4$

- (a) if $x < y$
- (b) if $x > y$
- (c) if $x \leq y$
- (d) if $x \geq y$
- (e) if $x = y$ or no relation can be established

Ans.(e)

Sol. I. $x^2 - x - 6 = 0$

$$\Rightarrow x^2 - 3x + 2x - 6 = 0$$

$$\Rightarrow x(x-3) + 2(x-3) = 0$$

$$\Rightarrow (x+2)(x-3) = 0$$

$$\Rightarrow x = -2, 3$$

II. $y^2 = 4$

$$\Rightarrow y - 4 = 0$$

$$\Rightarrow (y-2)(y+2) = 0$$

$$\Rightarrow y = 2, -2$$

Q22. In the following two equations questions numbered (I) and (II) are given. You have to solve both equations and Give answer.

(i) $x^2 = 81$

(ii) $y^2 - 18y + 81 = 0$

(a) $x > y$

(b) $x < y$

(c) $x \geq y$

(d) $x \leq y$

(e) $x = y$ or there is no relationship

Ans.(d)

Sol. I. $x^2 = 81$

$$x = \pm 9$$

II. $y^2 - 18y + 81 = 0$

$$(y - 9)^2 = 0$$

$$y = 9, 9$$

$$x \leq y$$

Q23. Solve the equation.

I. $x^2 + 17x + 30 = 0$

II. $y^2 + 12y - 45 = 0$

(a) if $x > y$

(b) if $x \geq y$

(c) if $x < y$

(d) if $x \leq y$

(e) if $x = y$ or no relation can be established between x and y .

Ans.(e)

Sol. I. $x^2 + 17x + 30 = 0$

$$x^2 + 15x + 2x + 30 = 0$$

$$x(x + 15) + 2(x + 15) = 0$$

$$x = -2, -15$$

II. $y^2 + 12y - 45 = 0$

$$y^2 + 15y - 3y - 45 = 0$$

$$y(y + 15) - 3(y + 15) = 0$$

$$y = 3, -15$$

Case	x	y	Relation
1	-2	3	(x < y)
2	-2	-15	(x > y)
3	-15	3	(x < y)
4	-15	-15	(x = y)

So, no relation can be established between x and y.

Q24. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x + 8\sqrt{x} + 15 = 0$ II. $y + 7\sqrt{y} + 12 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(c)

Sol. From I: $x + 8\sqrt{x} + 15 = 0$

$$x + 3\sqrt{x} + 5\sqrt{x} + 15 = 0$$

$$\sqrt{x}(\sqrt{x} + 3) + 5(\sqrt{x} + 3) = 0$$

$$(\sqrt{x} + 3)(\sqrt{x} + 5) = 0$$

$$\sqrt{x} = -3, -5$$

$$x = 9, 25$$

From II:

$$y + 7\sqrt{y} + 12 = 0$$

$$y + 3\sqrt{y} + 4\sqrt{y} + 12 = 0$$

$$\sqrt{y}(\sqrt{y} + 3) + 4(\sqrt{y} + 3) = 0$$

$$(\sqrt{y} + 3)(\sqrt{y} + 4) = 0$$

$$\sqrt{y} = -3, -4$$

$$y = 9, 16$$



Q25. Solve the following pair of equations and determine the relationship between the equation.

I. $x^2 - 14x + 48 = 0$

II. $y^2 - y - 30 = 0$

- (a) $x < y$
- (b) $x > y$
- (c) $x \leq y$
- (d) $x \geq y$
- (e) $x = y$ or the relation between x and y can't be established.

Ans.(d)

Sol. I. $x^2 - 14x + 48 = 0$

$$x^2 - 6x - 8x + 48 = 0$$

$$x(x - 6) - 8(x - 6) = 0$$

$$(x - 6)(x - 8) = 0$$

$$x = 6, 8$$

$$\begin{aligned} \text{II. } y^2 - y - 30 &= 0 \\ y^2 - 6y + 5y - 30 &= 0 \\ y(y - 6) + 5(y - 6) &= 0 \\ (y - 6)(y + 5) &= 0 \\ y &= -5, 6 \end{aligned}$$

Value of 'x'	Value of 'y'	Relation
6	-5	$x > y$
6	6	$x = y$
8	-5	$x > y$
8	6	$x > y$

When we compared the values of 'x' and 'y' in the table above, we found that there are two relations between x and y i.e. $>$ and $=$. So, a relation between x and y is " $x \geq y$ ".

Q26. In each of the following questions two equations are given. Solve these equations and give answer:

$$\text{I. } x^2 - 23x + 126 = 0 \quad \text{II. } y^2 - 22y + 105 = 0$$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(c)

Sol. From I: $x^2 - 23x + 126 = 0$

$$x^2 - 9x - 14x + 126 = 0$$

$$x(x - 9) - 14(x - 9) = 0$$

$$(x - 9)(x - 14) = 0$$

$$x = 9, 14$$

From II:

$$y^2 - 22y + 105 = 0$$

$$y^2 - 7y - 15y + 105 = 0$$

$$y(y - 7) - 15(y - 7) = 0$$

$$(y - 7)(y - 15) = 0$$

$$y = 7, 15$$

Questions: {27-28}

Solve the quadratic equations given below and answer the question based on these equations.

(I) $3x^2 + 25x - P = 0$

(II) $y^2 - Ry + 10 = 0$

Note: (i) Roots of the equation (I) are (A) and (B) whose product is -6.

(ii) Roots of the equation (II) are C and D. Smallest root (C) of the equation (II) 3 times the largest root (A) of the equation (I)

Q27. Find the difference between P and R.

- (a) 10
- (b) 14
- (c) 12
- (d) 11
- (e) 15

Ans.(d)

Sol.

$$A \times B = -\frac{P}{3} = -6$$

$$P = 18$$

$$(I) 3x^2 + 25x - 18 = 0$$

$$3x^2 + 27x - 2x - 18 = 0$$

$$3x(x+9) - 2(x+9) = 0$$

$$(3x-2)(x+9) = 0$$

$$x = -9, 2/3$$

$$A = 2/3 \text{ \& } B = -9$$

$$C = \frac{2}{3} \times 3 = 2$$

$$C \times D = 10$$

$$D = 5$$

$$R = 2 + 5 = 7$$

$$P - R = 18 - 7 = 11$$

Q28. Which of the following statement/s is/are correct.

(I) $15A + B = 0.5C$

(II) $B - D = 2C$

(III) $B < A < C < D$

(a) Both (I) and (II)

(b) Only (I)

(c) Only (III)

(d) All (I), (II) & (III)

(e) Both (I) and (III)

Ans.(e)

Sol.

$$A \times B = -\frac{P}{3} = -6$$

$$P = 18$$

$$(I) 3x^2 + 25x - 18 = 0$$

$$3x^2 + 27x - 2x - 18 = 0$$

$$3x(x+9) - 2(x+9) = 0$$

$$(3x-2)(x+9) = 0$$

$$x = -9, 2/3$$

$$A = 2/3 \text{ \& } B = -9$$

$$C = \frac{2}{3} \times 3 = 2$$

$$C \times D = 10$$

$$D = 5$$

$$R = 2 + 5 = 7$$

(I) $15A + B = 0.5C$

$$15 \times 2/3 - 9 = 0.5 \times 2$$

$$1 = 1 \text{ (correct)}$$

(II) $B - D = 2C$

$$-9 - 5 \neq 4 \text{ (incorrect)}$$

(III) $B < A < C < D$

$$-9 < 2/3 < 2 < 5 \text{ (Correct)}$$

Q29. In each of the following questions two equations are given. Solve these equations and give answer:

I. $5x + 3y = 102$ II. $8x - 5y = 26$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(b)

Sol. From I: $5x + 3y = 102$

$$5x = 102 - 3y$$

$$x = (102 - 3y)/5$$

From II:

$$8x - 5y = 26$$

$$8 \times \{(102 - 3y)/5\} - 5y = 26$$

$$816 - 24y - 25y = 130$$

$$49y = 686$$

$$y = 14$$

$$\text{Now, } x = \{102 - 14 \times 3\}/5 \quad x = 60/5 = 12$$

Q30. In each of the following questions two equations are given. Solve these equations and give answer:

I. $2x^2 + 13x + 21 = 0$

II. $y^2 + 6y + 9 = 0$

- (a) if $x < y$
- (b) if $x > y$
- (c) if $x \leq y$
- (d) if $x \geq y$
- (e) if $x = y$ or no relation can be established

Ans.(c)

Sol. I. $2x^2 + 13x + 21 = 0$

$$\Rightarrow 2x^2 + 7x + 6x + 21 = 0$$

$$\Rightarrow x(2x + 7) + 3(2x + 7) = 0$$

$$\Rightarrow (x + 3)(2x + 7) = 0$$

$$\Rightarrow x = -3, -7/2$$

II. $y^2 + 6y + 9 = 0$

$$\Rightarrow y^2 + 3y + 3y + 9 = 0$$

$$\Rightarrow y(y + 3) + 3(y + 3) = 0$$

$$\Rightarrow (y + 3)(y + 3) = 0$$

$$\Rightarrow y = -3$$

$$\therefore y \geq x$$



Topper's Choice

Test Prime

ALL EXAMS
MOCK TESTS

SUBSCRIPTION

Q31. In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answers.

I. $\sqrt[3]{27x^2 - 14x + 15} = 0$

II. $\sqrt[3]{8y^2 - 19y + 45} = 0$

- (a) If $x > y$
- (b) If $x \geq y$
- (c) If $x < y$
- (d) If $x \leq y$
- (e) If $x = y$ or no relation can be established between x and y

Ans.(c)

Sol. I. $3x^2 - 14x + 15 = 0$

$3x^2 - 5x - 9x + 15 = 0$

$x = 5/3, 3$

II. $2y^2 - 19y + 45 = 0$

$2y^2 - 9y - 10y + 45 = 0$

$y = 4.5, 5$

So, $x < y$

Q32. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 - 9x - 90 = 0$ II. $y^2 - 35y + 300 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(e)

Sol. From I: $x^2 - 9x - 90 = 0$

$x^2 - 15x + 6x - 90 = 0$

$x(x - 15) + 6(x - 15) = 0$

$(x + 6)(x - 15) = 0$

$x = -6, 15$

From II:

$y^2 - 35y + 300 = 0$

$y^2 - 20y - 15y + 300 = 0$

$y(y - 20) - 15(y - 20) = 0$

$(y - 15)(y - 20) = 0$

$y = 15, 20$

Q33. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^3 = -1331$ II. $y^2 + 23y + 132 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(d)

Sol. From I: $x^3 = -1331$

$$x = -11$$

From II: $y^2 + 23 + 132 = 0$

$$y^2 + 11y + 12y + 132 = 0$$

$$y(y + 11) + 12(y + 11) = 0$$

$$(y + 11)(y + 12) = 0$$

$$y = -11, -12$$

Q34. In each question two equations numbered (I) and (II) are given. Student should solve both the equations and mark appropriate answer.

I. $9x^2 - 12x + 4 = 0$

II. $8y^2 - 9y + 1 = 0$

(a) If $x=y$ or no relation can be established

(b) If $x>y$

(c) If $x<y$

(d) If $x\geq y$

(e) If $x\leq y$

Ans.(a)

Sol. I. $9x^2 - 12x + 4 = 0$

$$9x^2 - 6x - 6x + 4 = 0$$

$$3x(3x - 2) - 2(3x - 2)$$

$$x = 2/3, 2/3$$

II. $8y^2 - 9y + 1 = 0$

$$8y^2 - 8y - y + 1 = 0$$

$$8y(y - 1) - 1(y - 1) = 0$$

$$y = 1, 1/8$$

No relation

Q35. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 + 27x + 170 = 0$ II. $y^2 + 17y + 70 = 0$

(a) $x > y$

(b) $x < y$

(c) $x = y$ or No relation

(d) $x \geq y$

(e) $x \leq y$

Ans.(e)

Sol. From I: $x^2 + 27x + 170 = 0$

$$x^2 + 17x + 10x + 170 = 0$$

$$x(x + 17) + 10(x + 17) = 0$$

$$(x + 10)(x + 17) = 0$$

$$x = -10, -17$$

From II: $y^2 + 17y + 70 = 0$

$$y^2 + 10y + 7y + 70 = 0$$

$$y(y + 10) + 7(y + 10) = 0$$

$$(y + 7)(y + 10) = 0$$

$$y = -7, -10$$

Q36. In each question two equations numbered (I) and (II) are given. Student should solve both the equations and mark appropriate answer.

I. $x^2 - 15x + 56 = 0$

II. $y = \sqrt[3]{512}$

- (a) If $x=y$ or no relation can be established
- (b) If $x>y$
- (c) If $x<y$
- (d) If $x>=y$
- (e) If $x<=y$

Ans.(e)

Sol. I. $x^2 - 15x + 56 = 0$

$x^2 - 7x - 8x + 56 = 0$

$x(x-7) - 8(x-7) = 0$

$x = 8, 7$

II. $y = \sqrt[3]{512}$

$y = 8$

$y >= x$

Q37. In each of these questions, two equations (i) and (ii) are given, you have to solve both the equations and give answer accordingly.

(i) $21x^2 + 10x + 1 = 0$

(ii) $24y^2 + 26y + 5 = 0$

- (a) $x \leq y$
- (b) $x = y$ or no relation can be established between x & y .
- (c) $x \geq y$
- (d) $x > y$
- (e) $x < y$

Ans.(b)

Sol.

(i) $21x^2 + 10x + 1 = 0$

$21x^2 + 7x + 3x + 1 = 0$

$7x(3x + 1) + 1(3x + 1) = 0$

$x = \frac{-1}{3}, \frac{-1}{7}$

(ii) $24y^2 + 26y + 5 = 0$

$24y^2 + (20 + 6)y + 5 = 0$

$24y^2 + 20y + 6y + 5 = 0$

$4y(6y + 5) + 1(6y + 5) = 0$

$y = \frac{-5}{6}, -\frac{1}{4}$

No relation between x and y

Q38. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 - 27x + 176 = 0$ II. $y^2 - 37y + 340 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(b)

Sol. From I: $x^2 - 27x + 176 = 0$

$$x^2 - 16x - 11x + 176 = 0$$

$$x(x - 16) - 11(x - 16) = 0$$

$$(x - 16)(x - 11) = 0$$

$$x = 16, 11$$

From II:

$$y^2 - 37y + 340 = 0$$

$$y^2 - 17y - 20y + 340 = 0$$

$$y(y - 20) - 17(y - 20) = 0$$

$$(y - 17)(y - 20) = 0$$

$$y = 17, 20$$

Q39. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 + x - 72 = 0$ II. $y^2 - y - 56 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(c)

Sol. From I: $x^2 + x - 72 = 0$

$$x^2 - 8x + 9x - 72 = 0$$

$$x(x - 8) + 9(x - 8) = 0$$

$$(x + 9)(x - 8) = 0$$

$$x = -9, 8$$

From II:

$$y^2 - y - 56 = 0$$

$$y^2 + 7y - 8y - 56 = 0$$

$$y(y + 7) - 8(y + 7) = 0$$

$$(y - 8)(y + 7) = 0$$

$$y = 8, -7$$

x	y	Relationship
-9	8	$x < y$
-9	-7	$x < y$
8	8	$x = y$
8	-7	$x > y$

We get three relationships here, xy and $x=y$
So, **the relationship between x and y can't be determined**

Exam Hall Method:

THE CND SHORTCUT

The Signs: Eq I: ... -72 = 0
 +9 & -8
 Eq II: ... -56 = 0
 -8 & +7

The Logic:

X	Y	Relationship
+	+	$x = y$
+	-	$x > y$
-	+	$x < y$
-	-	$x = y$

NO RELATION

Q40. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 = 196$ II. $y^2 + 15y = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(c)

Sol. From I: $x^2 = 196$

$x = -14, 14$

From II:

$y^2 + 15y = 0$

$y(y + 15) = 0$

$y = 0, -15$

Q41. In the following two equations questions numbered (I) and (II) are given. You have to solve both equations and Give answer.

(i) $4x^2 - 24x + 32 = 0$

(ii) $y^2 - 8y + 15 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x \geq y$
- (d) $x \leq y$
- (e) $x = y$ or there is no relationship

Ans.(e)

Sol. I. $4x^2 - 24x + 32 = 0$

$4x^2 - 16x - 8x + 32 = 0$

$4x(x - 4) - 8(x - 4) = 0$

$x = 4, 2$

II. $y^2 - 8y + 15 = 0$

$y^2 - 5y - 3y + 15 = 0$

$y(y - 5) - 3(y - 5) = 0$

$\therefore y = 5, 3$

\therefore No relation exists

Q42. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 - 25x + 156 = 0$ II. $y^2 - 20y + 96 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(d)

Sol. From I, $x^2 - 25x + 156 = 0$

$$x^2 - 12x - 13x + 156 = 0$$

$$x(x - 12) - 13(x - 12) = 0$$

$$(x - 12)(x - 13) = 0$$

$$x = 12, 13$$

From II, $y^2 - 20y + 96 = 0$

$$y^2 - 12y - 8y + 96 = 0$$

$$y(y - 12) - 8(y - 12) = 0$$

$$(y - 8)(y - 12) = 0$$

$$y = 8, 12$$

Q43. In each of these questions, two equations (i) and (ii) are given. You have to solve both the equations and give answer.

(i) $x^2 - 5x + 4 = 0$

(ii) $y^2 - 3y + 2 = 0$

- (a) if $x > y$
- (b) if $x \geq y$
- (c) if $x < y$
- (d) if $x \leq y$
- (e) if $x = y$ or no relation can be established between x and y

Ans.(e)

Sol. (i) $x^2 - 5x + 4 = 0$

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

$$x(x - 4) - 1(x - 4) = 0$$

$$x = 4, 1$$

(ii) $y^2 - 3y + 2 = 0$

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

$$y = 2, 1$$

\therefore No relation

Q44. In each of the following questions two equations are given. Solve these equations and give answer:

I. $2x + 3y = 5$

II. $3x + 4y = 9$

- (a) if $x > y$
- (b) if $x < y$
- (c) if $x \geq y$
- (d) if $x \leq y$
- (e) if $x = y$ or relation between x and y cannot be established

Ans.(a)

Sol.

I. $(2x + 3y = 5) \times 4$

II. $(3x + 4y = 9) \times 3$

$$\frac{\quad}{8x - 9x = 20 - 27}$$

$\Rightarrow x = 7$

Put $x = 7$ in i

$14 + 3y = 5$

$\Rightarrow y = -3$

$x > y$



Q45. In the following two equations questions numbered (I) and (II) are given. You have to solve both equations and Give answer.

I. $2x^2 - 7x - 60 = 0$

II. $3y^2 + 13y + 4 = 0$

(a) If $x > y$

(b) If $x \geq y$

(c) If $y > x$

(d) If $y \geq x$

(e) If $x = y$ or no relation can be established

Ans.(e)

Sol. I. $2x^2 - 7x - 60 = 0$

$2x^2 - 15x + 8x - 60 = 0$

$x(2x - 15) + 4(2x - 15) = 0$

$(x + 4)(2x - 15) = 0$

$x = -4, 15/2$

II. $3y^2 + 13y + 4 = 0$

$3y^2 + 12y + y + 4 = 0$

$3y(y + 4) + 1(y + 4) = 0$

$(3y + 1)(y + 4) = 0$

$y = -1/3, -4$

No relation between x and y

x	y	Relationship
-4	$-1/3 = -0.33$	$x > y$
-4	-4	$x = y$
$15/2 = 7.5$	$-1/3 = -0.33$	$x > y$
$15/2 = 7.5$	-4	$x > y$

We get three relationships between x and y here xy

So, the relationship between x and y can't be established

Q46. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 - 289 = 0$

II. $y^3 - 4913 = 0$

- (a) if $x < y$
- (b) if $x > y$
- (c) if $x \leq y$
- (d) if $x \geq y$
- (e) if $x = y$ or no relation can be established

Ans.(c)

Sol. I. $x^2 = 289 \Rightarrow x = \pm 17$

II. $y^3 = 4913 \Rightarrow y = 17$

$\therefore y \geq x$

Q47. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 - 7x - 60 = 0$

II. $y^2 + 13y + 40 = 0$

- (a) $x \geq y$
- (b) $x \leq y$
- (c) $x > y$
- (d) x
- (e) $x = y$ or no relation.

Ans.(a)

Sol. I. $x^2 - 12x + 5x - 60 = 0$

$x(x - 12) + 5(x - 12) = 0$

$(x - 12)(x + 5) = 0$

$x = 12, -5$

II. $y^2 + 8y + 5y + 40 = 0$

$y(y + 8) + 5(y + 8) = 0$

$(y + 8)(y + 5) = 0$

$y = -8, -5$

$x \geq y$

Q48. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^4 = 256$

II. $y^2 - 16y + 64 = 0$

- (a) if $x > y$
- (b) if $x < y$
- (c) if $x \geq y$
- (d) if $x \leq y$
- (e) if $x = y$ or relation between x and y cannot be established

Ans.(b)

Sol. I. $x^4 = 256$

$$(x^2)^2 = 16^2$$

$$x^2 = 16$$

$$\Rightarrow x = \pm 4$$

II. $y^2 - 16y + 64 = 0$

$$\Rightarrow (y - 8)^2 = 0$$

$$\Rightarrow y = 8$$

$$y > x$$

Q49. In each question two equations numbered (I) and (II) are given. Student should solve both the equations and mark appropriate answer.

I. $x^2 = 196$

II. $y^2 - 26y + 169 = 0$

(a) If $x=y$ or no relation can be established

(b) If $x>y$

(c) If $x<y$

(d) If $x>=y$

(e) If $x<=y$

Ans.(a)

Sol. I. $x^2=196$

$$x=-14,14$$

II. $y^2-26y+169=0$

$$y^2-13y-13y+169=0$$

$$y(y-13)-13(y-13)=0$$

$$y=13$$

No relation

Q50. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 + x - 12 = 0$

II. $y^2 + 2y - 15 = 0$

(a) $x > y$

(b) $x \geq y$

(c) $x < y$

(d) $x \leq y$

(e) $x = y$ or no relation can be established between x and y .

Ans.(e)

Sol. I. $x^2 + 4x - 3x - 12 = 0$

$$(x + 4)(x - 3) = 0$$

$$x = 3, -4$$

II. $y^2 + 5y - 3y - 15 = 0$

$$(y + 5)(y - 3) = 0$$

$$y = -5, 3$$

No relation can be established

Q51. In each of the following questions two equations are given. Solve these equations and give answer:

I. $4x + 7y = 143$ II. $8x + 2y = 130$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(c)

Sol. From I: $4x + 7y = 143$

Multiplying both sides by 2, we get $8x + 14y = 286$ -----(1)

From II: $8x + 2y = 130$ -----(2)

Subtracting (2) from (1),

we get $12y = 156$

$y = 13$

So, $x = 13$

Q52. In each of the following questions two equations are given. Solve these equations and give answer:

I. $8x + 5y = 152$ II. $18y = 144$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(a)

Sol. From II:

$18y = 144$

$y = 8$

From I:

$8x + 5y = 152$

$8x + 40 = 152$

$8x = 112$

$x = 14$

Q53. In each of the following questions two equations are given. Solve these equations and give answer:

I. $2x^2 + 5x + 3 = 0$ II. $y^2 - y - 2 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(e)

Sol. From I: $2x^2 + 5x + 3 = 0$

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

$$2x(x + 1) + 3(x + 1) = 0$$

$$(x + 1)(2x + 3) = 0$$

$$x = -1, -3/2$$

From II: $y^2 - y - 2 = 0$

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

$$y(y + 1) - 2(y + 1) = 0$$

$$(y + 1)(y - 2) = 0$$

$$y = -1, 2$$

Q54. In each of the following questions two equations are given. Solve these equations and give answer:

I. $5x^2 - 9x + 4 = 0$ II. $20y^2 - 27y + 9 = 0$

(a) $x > y$

(b) $x < y$

(c) $x = y$ or No relation

(d) $x \geq y$

(e) $x \leq y$

Ans.(a)

Sol. From I: $5x^2 - 9x + 4 = 0$

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

$$5x(x - 1) - 4(x - 1) = 0$$

$$(5x - 4)(x - 1) = 0$$

$$x = 4/5, 1$$

From II:

$$20y^2 - 27y + 9 = 0$$

$$20y^2 - 15y - 12y + 9 = 0$$

$$5y(4y - 3) - 3(4y - 3) = 0$$

$$(5y - 3)(4y - 3) = 0$$

$$y = 3/5, 3/4$$



Q55. In each of these questions, two equations (i) and (ii) are given. You have to solve both the equations and give answer.

(i) $a^2 + 4a - 12 = 0$

(ii) $2b^2 + 7b + 6 = 0$

(a) if $a > b$

(b) if $a \geq b$

(c) if $a < b$

(d) if $a \leq b$

(e) if $a = b$ or no relation can be established between a and b

Ans.(e)

Sol. (i) $a^2 + 4a - 12 = 0$

$$a^2 + 6b - 2a - 12 = 0$$

$$a = -6, 2$$

$$(ii) 2b^2 + 7b + 6 = 0$$

$$2b^2 + 4b + 3b + 6 = 0$$

$$2b(b + 2) + 3(b + 2) = 0$$

$$b = -2, \text{ \& } -3/2$$

∴ No relation

Q56. In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answers.

I. $x^2 - 15^2 = 23^2 - 20 + 10 \times 5$

II. $y^2 - 120 + 163 = 25^2 - 6$

(a) If $x > y$

(b) If $x \geq y$

(c) If x

(d) If $x \leq y$

(e) If $x = y$ or no relation can be established between x and y

Ans.(e)

Sol. I. $x^2 - 15^2 = 23^2 - 20 + 50$

$$x^2 - 225 = 529 + 30$$

$$x^2 = 784$$

$$x = 28, -28$$

II. $y^2 - 120 + 163 = 25^2 - 6$

$$y^2 = 576$$

$$y = 24, -24$$

So, no relation can be established between x and y

Q57. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 + 180 = 20 + 26x$ II. $y^2 - 25y + 126 = 0$

(a) $x > y$

(b) $x < y$

(c) $x = y$ or No relation

(d) $x \geq y$

(e) $x \leq y$

Ans.(c)

Sol. From I: $x^2 + 180 = 20 + 26x$

$$x^2 - 26x + 160 = 0$$

$$x^2 - 16x - 10x + 160 = 0$$

$$x(x - 16) - 10(x - 16) = 0$$

$$(x - 10)(x - 16) = 0$$

$$x = 10, 16$$

From II: $y^2 - 25y + 126 = 0$

$$y^2 - 18y - 7y + 126 = 0$$

$$y(y - 18) - 7(y - 18) = 0$$

$$(y - 7)(y - 18) = 0$$

$$y = 7, 18$$

Q58. In each of the following questions two equations are given. Solve these equations and give answer:

I. $2x + 3y = 4$

II. $3x + 2y = 6$

- (a) if $x > y$
- (b) if $x < y$
- (c) if $x \geq y$
- (d) if $x \leq y$
- (e) if $x = y$ or there is no relation between x and y

Ans.(a)

Sol. I. $2x + 3y = 4$

II. $3x + 2y = 6$

Multiplying equation i by 2 and Equation ii by 3 and then subtracting,

$$4x + 6y = 8$$

$$\begin{array}{r} \underline{9x + 6y = 18} \\ -4x - 6y = 8 \\ \hline -5x = -10 \end{array}$$

$$\Rightarrow x = 2$$

$$x = 2 \text{ in i}$$

$$4 + 3y = 4$$

$$\Rightarrow y = 0$$

$$\therefore x > y$$

Q59. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 - 78 = 91$ II. $y^2 + 121 = 377$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(c)

Sol. From I: $x^2 - 78 = 91$

$$x^2 = 169 \quad x = \pm 13$$

From II: $y^2 + 121 = 377$

$$y^2 = 256$$

$$y = \pm 16$$

Q60. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 + 38x + 361 = 0$ II. $y^2 + 29y + 190 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(e)

Sol. From I: $x^2 + 38x + 361 = 0$

$$x^2 + 19x + 19x + 361 = 0$$

$$x(x + 19) + 19(x + 19) = 0$$

$$(x + 19)(x + 19) = 0$$

$$x = -19, -19$$

From II:

$$y^2 + 29y + 190 = 0$$

$$y^2 + 10y + 19y + 190 = 0$$

$$y(y + 10) + 19(y + 10) = 0$$

$$(y + 10)(y + 19) = 0$$

$$y = -10, -19$$

Q61. Solve the following pair of equations and determine the relationship between the equation.

I. $x^2 - 14x + 45 = 0$

II. $y^2 + y - 30 = 0$

(a) $x < y$

(b) $x > y$

(c) $x \leq y$

(d) $x \geq y$

(e) $x = y$ or the relation between x and y can't be established.

Ans.(d)

Sol. I. $x^2 - 14x + 45 = 0$

$$x^2 - 5x - 9x + 45 = 0$$

$$x(x - 5) - 9(x - 5) = 0$$

$$(x - 5)(x - 9) = 0$$

$$x = 5, 9$$

II. $y^2 + y - 30 = 0$

$$y^2 + 6y - 5y - 30 = 0$$

$$y(y + 6) - 5(y + 6) = 0$$

$$(y + 6)(y - 5) = 0$$

$$y = (-6), 5$$

Value of 'x'	Value of 'y'	Relation
5	-6	$x > y$
5	5	$x = y$
9	-6	$x > y$
9	5	$x > y$

When we compared the values of 'x' and 'y' in the table above, we found that there is two relations between x and y i.e. $>$ and $=$. So, a relation between x and y is " $x \geq y$ ".

Q62. In each question two equations numbered (I) and (II) are given. Student should solve both the equations and mark appropriate answer.

I. $2x^2 - x - 1 = 0$

II. $3y^2 - 5y + 2 = 0$

(a) $x \leq y$

(b) $x < y$

(c) $x = y$ or no relation can be established

(d) $x \geq y$

(e) $x > y$

Ans.(c)

Sol. I. $2x^2 - 2x + x - 1 = 0$

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

$$x = -1/2, 1$$

II. $3y^2 - 3y - 2y + 2 = 0$

$$(3y - 2)(y - 1) = 0$$

$$y = 2/3, 1$$

clearly, no relation

Q63. In each of these questions, two equations (i) and (ii) are given, you have to solve both the equations and give answer accordingly.

(i) $2x^3 = \sqrt{256}$

(ii) $2y^2 - 9y + 10 = 0$

(a) $x = y$ or no relation can be established between x & y .

(b) $x < y$

(c) $x \leq y$

(d) $x \geq y$

(e) $x > y$

Ans.(c)

Sol.

(i) $2x^3 = 16$

$$x^3 = 8$$

$$x = 2$$

(ii) $2y^2 - 9y + 10 = 0$

$$2y^2 - (5 + 4)y + 10 = 0$$

$$2y^2 - 5y - 4y + 10 = 0$$

$$y(2y - 5) - 2(2y - 5) = 0$$

$$y = 2, \frac{5}{2}$$

$$x \leq y$$



Q64. In each of these questions, two equations (i) and (ii) are given, you have to solve both the equations and give answer accordingly.

(i) $12x^2 + 11x + 2 = 0$

(ii) $12y^2 + 7y + 1 = 0$

(a) $x \geq y$

(b) $x = y$ or no relation can be established between x & y .

(c) $x < y$

(d) $x \leq y$

(e) $x > y$

Ans.(b)

Sol.

$$(i) \quad 12x^2 + 8x + 3x + 2 = 0$$

$$4x(3x + 2) + 1(3x + 2) = 0$$

$$x = \frac{-2}{3}, \frac{-1}{4}$$

$$(ii) \quad 12y^2 + 7y + 1 = 0$$

$$12y^2 + 4y + 3y + 1 = 0$$

$$4y(3y + 1) + 1(3y + 1) = 0$$

$$y = \frac{-1}{3}, \frac{-1}{4}$$

No relation between x and y



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Q65. In each question two equations numbered (I) and (II) are given. Student should solve both the equations and mark appropriate answer.

I. $8x^2 + 6x + 1 = 0$

II. $3y^2 + 7y + 2 = 0$

(a) If $x=y$ or no relation can be established

(b) If $x>y$

(c) If $x<y$

(d) If $x\geq y$

(e) If $x\leq y$

Ans.(a)

Sol. I. $8x^2 + 6x + 1 = 0$

$$8x^2 + 4x + 2x + 1 = 0$$

$$(4x+1)(2x+1) = 0$$

$$x = -1/4, \text{ \& } -1/2$$

II. $3y^2 + 7y + 2 = 0$

$$3y^2 + 6y + y + 2 = 0$$

$$3y(y+2) + 1(y+2)$$

$$y = -2, \text{ \& } -1/3$$

No relation

Q66. In each of the following questions two equations are given. Solve these equations and give answer:

I. $3y^2 + 13y - 16 = 0$

II. $3x^2 - 13x + 14 = 0$

(a) if $x > y$

(b) if $x < y$

(c) if $x \geq y$

(d) if $x \leq y$

(e) if $x = y$ or relation between x and y cannot be established

Ans.(a)

Sol. I. $3y^2 + 13y - 16 = 0$

$$\Rightarrow 3y^2 + 16y - 3y - 16 = 0$$

$$\Rightarrow y(3y + 16) - 1(3y + 16) = 0$$

$$\Rightarrow (3y + 16)(y - 1) = 0$$

$$\Rightarrow y = 1, -16/3$$

$$\begin{aligned} \text{II. } 3x^2 - 13x + 14 &= 0 \\ \Rightarrow 3x^2 - 6x - 7x + 14 &= 0 \\ \Rightarrow 3x(x - 2) - 7(x - 2) &= 0 \\ \Rightarrow (x - 2)(3x - 7) &= 0 \\ \Rightarrow x &= 2, 7/3 \end{aligned}$$

$$x > y$$

Questions: {67-69}

Solve the given quadratic equations and answer the question given below.

$$\text{I. } x^2 - 21x + P = 0$$

$$\text{II. } y^2 - 28y + Q = 0$$

Note: One root of equation I is 5 and the highest root of equation II is 7 more than that of equation I.

Q67. Find the difference between the smallest root of the equation I and II.

- (a) 0
- (b) 2
- (c) 3
- (d) 5
- (e) 8

Ans.(a)

Sol. Given, One root of equation I is 5

$$x^2 - 21x + P = 0$$

$$5^2 - 21(5) + P = 0$$

$$25 - 105 + P = 0$$

$$\mathbf{P = 80}$$

P value put in equation I

$$x^2 - 21x + 80 = 0$$

$$x^2 - 16x - 5x + 80 = 0$$

$$x = 16, 5$$

Also given, highest root of equation II is 7 more than that of equation I.

So, highest root of equation II = $16 + 7 = 23$

$$y^2 - 28y + Q = 0$$

$$23^2 - 28(23) + Q = 0$$

$$\mathbf{Q = 115}$$

Q value put in II

$$y^2 - 28y + 115 = 0$$

$$y^2 - 5y - 23y + 115 = 0$$

$$y = 5, 23$$

$$\text{Required difference} = 5 - 5 = 0$$

Q68. Find the sum of P and Q.

- (a) 180
- (b) 195
- (c) 170
- (d) 175
- (e) None of these

Ans.(b)

Sol. Given, One root of equation I is 5

$$x^2 - 21x + P = 0$$

$$5^2 - 21(5) + P = 0$$

$$25 - 105 + P = 0$$

$$\mathbf{P = 80}$$

P value put in equation I

$$x^2 - 21x + 80 = 0$$

$$x^2 - 16x - 5x + 80 = 0$$

$$x = 16, 5$$

Also given, highest root of equation II is 7 more than that of equation I.

So, highest root of equation II = $16 + 7 = 23$

$$y^2 - 28y + Q = 0$$

$$23^2 - 28(23) + Q = 0$$

$$\mathbf{Q = 115}$$

Q value put in II

$$y^2 - 28y + 115 = 0$$

$$y^2 - 5y - 23y + 115 = 0$$

$$y = 5, 23$$

$$\text{Required sum} = 80 + 115 = 195$$

Q69. Find the product of the highest root of equation II and one fifth of P.

(a) 256

(b) 529

(c) 64

(d) 100

(e) 368

Ans.(e)

Sol. Given, One root of equation I is 5

$$x^2 - 21x + P = 0$$

$$5^2 - 21(5) + P = 0$$

$$25 - 105 + P = 0$$

$$\mathbf{P = 80}$$

P value put in equation I

$$x^2 - 21x + 80 = 0$$

$$x^2 - 16x - 5x + 80 = 0$$

$$x = 16, 5$$

Also given, highest root of equation II is 7 more than that of equation I.

So, highest root of equation II = $16 + 7 = 23$

$$y^2 - 28y + Q = 0$$

$$23^2 - 28(23) + Q = 0$$

$$\mathbf{Q = 115}$$

Q value put in II

$$y^2 - 28y + 115 = 0$$

$$y^2 - 5y - 23y + 115 = 0$$

$$y = 5, 23$$

$$\text{Required product} = 23 \times 80 / 5 = 368$$

Q70. In each question two equations numbered (I) and (II) are given. Student should solve both the equations and mark appropriate answer.

I. $x^2 - 7x - 18 = 0$

II. $y^2 - 19y + 90 = 0$

- (a) $x \leq y$
- (b) $x = y$ or no relation can be established
- (c) $x > y$
- (d) $x \geq y$
- (e) $x < y$

Ans.(a)

Sol. I. $x^2 - 9x + 2x - 18 = 0$

$(x - 9)(x + 2) = 0$

$x = -2, 9$

II. $y^2 - 10y - 9y + 90 = 0$

$(y - 10)(y - 9) = 0$

$y = 9, 10$

clearly, $x \leq y$

Q71. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 + 2x - 168 = 0$ II. $y^2 + 5y - 204 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(c)

Sol. From I: $x^2 + 2x - 168 = 0$

$x^2 - 12x + 14x - 168 = 0$

$x(x - 12) + 14(x - 12) = 0$

$(x + 14)(x - 12) = 0$

$x = -14, 12$

From II: $y^2 + 5y - 204 = 0$

$y^2 - 12y + 17y - 204 = 0$

$y(y - 12) + 17(y - 12) = 0$

$(y + 17)(y - 12) = 0$

$y = -17, 12$

Q72. In each of the following questions two equations are given. Solve these equations and give answer:

I. $2x + 3y = 4$

II. $4x + 5y = 6$

- (a) if $x > y$
- (b) if $x < y$
- (c) if $x \geq y$
- (d) if $x \leq y$
- (e) if $x = y$ or relation between x and y cannot be established

Ans.(b)

Sol. I. $2x + 3y = 4$

II. $4x + 5y = 6$

Solving eq. (I) and (II),

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

$4x + 5y = 6$

$y = 2$

Put $y = 2$ in eq. (I),

$2x + 6 = 4$

$\Rightarrow x = -1$

$y > x$

Q73. In each of these questions, two equations (i) and (ii) are given, you have to solve both the equations and give answer accordingly.

(i) $2x^2 + 9x + 9 = 0$

(ii) $15y^2 + 16y + 4 = 0$

(a) $x > y$

(b) $x < y$

(c) $x \geq y$

(d) $x \leq y$

(e) $x = y$ or no relation can be established between x & y .

Ans.(b)

Sol.

(i) $2x^2 + 9x + 9 = 0$

$2x^2 + (6 + 3)x + 9 = 0$

$2x(x + 3) + 3(x + 3) = 0$

$x = \frac{-3}{2}, -3$

(ii) $15y^2 + 16y + 4 = 0$

$15y^2 + 10y + 6y + 4 = 0$

$5y(3y + 2) + 2(3y + 2) = 0$

$y = \frac{-2}{5}, \frac{-2}{3}$

$x < y$

Q74. In each of the following questions two equations are given. Solve these equations and give answer:

I. $5x^2 - 18x + 16 = 0$ II. $6y^2 = y + 12$

(a) $x > y$

(b) $x < y$

(c) $x = y$ or No relation

(d) $x \geq y$

(e) $x \leq y$

Ans.(a)

Sol. From I: $5x^2 - 18x + 16 = 0$

$$5x^2 - 10x - 8x + 16 = 0$$

$$5x(x - 2) - 8(x - 2) = 0$$

$$(5x - 8)(x - 2) = 0$$

$$x = 2, 8/5$$

From II:

$$6y^2 = y + 12$$

$$6y^2 - y - 12 = 0$$

$$6y^2 - 9y + 8y - 12 = 0$$

$$3y(2y - 3) + 4(2y - 3) = 0$$

$$(2y - 3)(3y + 4) = 0$$

$$y = -4/3, 3/2$$

Q75. In each of the following questions two equations are given. Solve these equations and give answer:

I. $9x + 3y = 57$ II. $2x + y = 14$

(a) $x > y$

(b) $x < y$

(c) $x = y$ or No relation

(d) $x \geq y$

(e) $x \leq y$

Ans.(a)

Sol. From I: $9x + 3y = 57$

$$3x + y = 19 \text{ -----(1)}$$

$$\text{From II: } 2x + y = 14 \text{ -----(2)}$$

Solving (1) and (2),

we get $x = 5$ and $y = 4$

Q76. In the following two equations questions numbered (I) and (II) are given. You have to solve both equations and Give answer.

I. $2x^2 + x - 28 = 0$

II. $2y^2 - 23y + 56 = 0$

(a) If $x > y$

(b) If $x \geq y$

(c) If $y > x$

(d) If $y \geq x$

(e) If $x = y$ or no relation can be established

Ans.(d)

Sol. I. $2x^2 + x - 28 = 0$

$$2x^2 + 8x - 7x - 28 = 0$$

$$2x(x + 4) - 7(x + 4) = 0$$

$$(2x - 7)(x + 4) = 0$$

$$x = -4, 7/2$$

II. $2y^2 - 23y + 56 = 0$

$$2y^2 - 16y - 7y + 56 = 0$$

$$2y(y - 8) - 7(y - 8) = 0$$

$$(2y - 7)(y - 8) = 0$$

$$y = 7/2, 8$$

$$y \geq x$$

Q77. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 + 22x + 112 = 0$ II. $y^2 + 31y + 238 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(d)

Sol. From I: $x^2 + 22x + 112 = 0$

$$x^2 + 8x + 14x + 112 = 0$$

$$x(x + 8) + 14(x + 8) = 0$$

$$(x + 14)(x + 8) = 0$$

$$x = -14, -8$$

From II:

$$y^2 + 31y + 238 = 0$$

$$y^2 + 14y + 17y + 238 = 0$$

$$y(y + 14) + 17(y + 14) = 0$$

$$(y + 14)(y + 17) = 0$$

$$y = -14, -17$$

$$(-14 > -17)$$

$$-14 > -17$$

$$-8 > -14$$

$$-8 > -17$$

Q78. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 = (14)^2$ II. $y^3 + 29 = 3404$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(b)

Sol. From I: $x^2 = (14)^2$

$$x^2 - 196 = 0$$

$$x = \pm 14$$

From II:

$$y^3 + 29 = 3404$$

$$y^3 = 3375$$

$$y = 15$$

Q79. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 + 9x - 22 = 0$

II. $2y^2 - 7y + 6 = 0$

- (a) if $x > y$
- (b) if $x < y$
- (c) if $x \geq y$
- (d) if $x \leq y$
- (e) if $x = y$ or relation between x and y cannot be established

Ans.(e)

Sol. I. $x^2 + 9x - 22 = 0$

$$\Rightarrow x^2 + 11x - 2x - 22 = 0$$

$$\Rightarrow (x + 11)(x - 2) = 0$$

$$\Rightarrow x = -11, 2$$

II. $2y^2 - 7y + 6 = 0$

$$\Rightarrow 2y^2 - 4y - 3y + 6 = 0$$

$$\Rightarrow 2y(y-2) - 3(y-2) = 0$$

$$\Rightarrow (y-2)(2y-3) = 0$$

$$\Rightarrow y = 2, 3/2$$

No relation

Directions (80-83): In the following questions two equations numbered I and II are given. You have to solve both the equations and choose the correct option.

Q80. I. $10x^2 - 19x + 6 = 0$

II. $y^2 - 2y - 120 = 0$

- (a) If $x = y$ or no relation can be established
- (b) If $x > y$
- (c) If $x < y$
- (d) If $x \geq y$
- (e) If $x \leq y$

Ans.(a)

Sol. I. $10x^2 - 19x + 6 = 0$

$$10x^2 - 15x - 4x + 6 = 0$$

$$5x(2x-3) - 2(2x-3)$$

$$= (2x-3)(5x-2) = 0$$

$$x = 3/2, 2/5$$

II. $y^2 - 2y - 120 = 0$

$$y^2 - 12y + 10y - 120 = 0$$

$$y(y-12) + 10(y-12) = 0$$

$$(y+10)(y-12) = 0$$

$$y = -10, 12$$

x	y	Relationship
3/2	-10	$x > y$
3/2	12	$x < y$
2/5	-10	$x > y$
2/5	12	$x < y$

We got two relationship $x < y$, and $x > y$

So, **relationship cannot be established between x and y**

Q81. I. $x = \sqrt{324}$

II. $y^2 - 14y - 72 = 0$

- (a) If $x \leq y$
- (b) If $x > y$
- (c) If $x < y$
- (d) If $x \geq y$
- (e) If $x = y$ or no relation can be established

Ans.(d)

Sol. I. $x = \sqrt{324}$

So, $x = 18$

Note: Why -18 is Not Possible Here:

-18 is not possible because $\sqrt{\quad}$ symbol always denotes the positive root (principal root)

II. $y^2 - 14y - 72 = 0$

$y^2 - 18y + 4y - 72 = 0$

$y(y-18) + 4(y-18) = 0$

$(y-18)(y+4) = 0$

$y = 18 \text{ \& } -4$

x	y	Relationship
18	18	$x = y$
18	-4	$x > y$

So, **$x \geq y$**

Q82. I. $x^2 - 12x + 20 = 0$

II. $y^2 - 11y + 30 = 0$

- (a) If $x < y$
- (b) If $x > y$
- (c) If $x = y$ or no relation can be established
- (d) If $x \geq y$
- (e) If $x \leq y$

Ans.(c)

Sol. I. $x^2 - 12x + 20 = 0$

$x^2 - 10x - 2x + 20 = 0$

$x(x-10) - 2(x-10) = 0$

$(x-2)(x-10) = 0$

$x = 2 \text{ \& } 10$

II. $y^2 - 11y + 30 = 0$

$y^2 - 5y - 6y + 30 = 0$

$y(y-5) - 6(y-5) = 0$

$(y-5)(y-6) = 0$

$y = 6 \text{ \& } 5$

x	y	Relationship
2	6	$y > x$
2	5	$y > x$
10	6	$x > y$
10	5	$x > y$

We got two relationship $x < y$, and $x > y$
 So, **relationship cannot be established between x and y**

Q83. I. $2x^2 + 15x + 28 = 0$

II. $2y^2 + 19x + 45 = 0$

- (a) If $x < y$
- (b) If $x > y$
- (c) If $x = y$ or no relation can be established
- (d) If $x \geq y$
- (e) If $x \leq y$

Ans.(b)

Sol. I. $2x^2 + 15x + 28 = 0$

$2x^2 + 8x + 7x + 28 = 0$

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

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

$x = -3.5 \text{ \& } -4$

II. $2y^2 + 19x + 45 = 0$

$2y^2 + 10y + 9y + 45 = 0$

$2y(y+5) + 9(y+5) = 0$

$(2y+9)(y+5) = 0$

$y = -4.5 \text{ \& } -5$

x	y	Relationship
-3.5	-4.5	$x > y$
-3.5	-5	$x > y$
-4	-4.5	$x > y$
-4	-5	$x > y$

So, $x > y$

Q84. Below two equations I and II given, you have to find the relationship between these two equations.

I. $x^2 + 17x + 42 = 0$

II. $y^2 + 17y + 72 = 0$

- (a) If $x \leq y$
- (b) If $x \geq y$
- (c) If $x < y$
- (d) If $x > y$
- (e) If $x = y$ or no specific relation can be established



Ans.(e)

Sol.

$$I. x^2 + 17x + 42 = 0$$

$$x^2 + 14x + 3x + 42 = 0$$

$$(x + 14) (x + 3) = 0$$

$$x = - 3 \text{ or } - 14$$

$$II. y^2 + 17y + 72 = 0$$

$$y^2 + 8y + 9y + 72 = 0$$

$$(y + 8) (y + 9) = 0$$

$$y = - 9 \text{ or } - 8$$

x = y or no specific relation can be established

Q85. In each question two equations numbered (I) and (II) are given. Student should solve both the equations and mark appropriate answer.

$$I. 3x^2 + 10x + 8 = 0$$

$$II. 2y^2 + 3y + 1 = 0$$

(a) If x=y or no relation can be established

(b) If x>y

(c) If x<y

(d) If x>=y

(e) If x<=y

Ans.(c)

Sol. I. $3x^2+10x+8=0$

$$3x^2+6x+4x+8=0$$

$$3x(x+2)+4(x+2)=0$$

$$x=-2, -4/3$$

II. $2y^2+3y+1=0$

$$2y^2+2y+y+1=0$$

$$2y(y+1)+1(y+1)=0$$

$$y=-1, -1/2$$

$$y>x$$

Q86. In each of the following questions two equations are given. Solve these equations and give answer:

I. $2x^2+13x+21=0$

II. $y^2+6y+9=0$

(a) x > y

(b) x ≥ y

(c) x < y

(d) x ≤ y

(e) x = y or no relation can be established between x and y.

Ans.(d)

Sol. I. $2x^2+13x+21=0$

$$\Rightarrow 2x^2+7x+6x+21=0$$

$$\Rightarrow x(2x+7)+3(2x+7)=0$$

$$\Rightarrow (x+3)(2x+7)=0$$

$$\Rightarrow x=-3, -7/2$$

II. $y^2+6y+9=0$

$$\Rightarrow y^2+3y+3y+9=0$$

$$\Rightarrow y(y+3)+3(y+3)=0$$

$$\Rightarrow (y+3)(y+3)=0$$

$$\Rightarrow y=-3, -3$$

$$\therefore y \geq x$$

Q87. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2+12x+35=0$

II. $y^2+7y+10=0$

(a) $x \geq y$

(b) $x \leq y$

(c) $x > y$

(d) $x < y$

(e) $x=y$ or no relation.

Ans.(b)

Sol. I. $x^2+5x+7x+35=0$

$$x(x+5)+7(x+5)=0$$

$$(x+5)(x+7)=0$$

$$x=-5, -7$$

II. $y^2+7y+10=0$

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

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

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

$$y=-2, -5$$

So, $x \leq y$.

Q88. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 - 26x + 168 = 0$

II. $2y^2 - 19y - 60 = 0$

(a) if $x > y$

(b) if $x < y$

(c) if $x \geq y$

(d) if $x \leq y$

(e) if $x = y$ or relation between x and y cannot be established

Ans.(c)

Sol. I. $x^2 - 26x + 168 = 0$

$\Rightarrow x^2 - 12x - 14x + 168 = 0$

$\Rightarrow (x - 12)(x - 14) = 0$

$\Rightarrow x = 12, 14$

II. $2y^2 - 19y - 60 = 0$

$\Rightarrow 2y^2 - 24y + 5y - 60 = 0$

$\Rightarrow 2y(y - 12) + 5(y - 12) = 0$

$\Rightarrow (y - 12)(2y + 5) = 0$

$\Rightarrow y = 12, -5/2$

$x \geq y$

Q89. In each of the following questions two equations are given. Solve these equations and give answer:

I. $4x^2 - 18x - 36 = 0$

II. $6y^2 + 20y + 16 = 0$

(a) if $x > y$

(b) if $x < y$

(c) if $x \geq y$

(d) if $x \leq y$

(e) if $x = y$ or relation between x and y cannot be established

Ans.(e)

Sol. I. $2x^2 - 9x - 18 = 0$

$\Rightarrow 2x^2 - 12x + 3x - 18 = 0$

$\Rightarrow 2x(x - 6) + 3(x - 6) = 0$

$\Rightarrow (x - 6)(2x + 3) = 0$

$\Rightarrow x = 6, -3/2$

II. $6y^2 + 20y + 16 = 0$

$\Rightarrow 3y^2 + 10y + 8 = 0$

$\Rightarrow 3y^2 + 6y + 4y + 8 = 0$

$\Rightarrow 3y(y + 2) + 4(y + 2) = 0$

$\Rightarrow (y + 2)(3y + 4) = 0$

$\Rightarrow y = -2, -4/3$

No relation

Q90. In each of the following questions two equations are given. Solve these equations and give answer:

I. $(x + 2)^2 = 15x - 26$ **II.** $(y - 6)^2 = 6 - y$

(a) $x > y$

(b) $x < y$

(c) $x = y$ or No relation

(d) $x \geq y$

(e) $x \leq y$

Ans.(c)

Sol. From I: $(x + 2)^2 = 15x - 26$

$$x^2 + 4x + 4 = 15x - 26$$

$$x^2 - 11x + 30 = 0$$

$$x^2 - 5x - 6x + 30 = 0$$

$$x(x - 5) - 6(x - 5) = 0$$

$$(x - 5)(x - 6) = 0$$

$$x = 5, 6$$

From II:

$$(y - 6)^2 = 6 - y$$

$$y^2 - 12y + 36 = 6 - y$$

$$y^2 - 11y + 30 = 0$$

$$y^2 - 5y - 6y + 30 = 0$$

$$y(y - 5) - 6(y - 5) = 0$$

$$(y - 5)(y - 6) = 0$$

$$y = 5, 6$$

Q91. I. $x^2 - 19x + 90 = 0$

II. $y^2 - 2y - 99 = 0$

(a) if $x > y$

(b) if $x \geq y$

(c) if $x < y$

(d) if $x \leq y$

(e) if $x = y$ or no relation can be established between x and y .

Ans.(e)

Sol. I. $x^2 - 19x + 90 = 0$

$$x^2 - 10x - 9x + 90 = 0$$

$$x(x - 10) - 9(x - 10) = 0$$

$$x = 9, 10$$

II. $y^2 - 2y - 99 = 0$

$$y^2 - 11y + 9y - 99 = 0$$

$$y(y - 11) + 9(y - 11) = 0$$

$$y = 11, -9$$

So, no relation

Q92. In each of the following questions two equations are given. Solve these equations and give answer:

I. $2x^2 + 11x + 12 = 0$

II. $4y^2 + 13y + 10 = 0$

(a) if $x > y$

(b) if $x < y$

(c) if $x \geq y$

(d) if $x \leq y$

(e) if $x = y$ or there is no relation between x and y

Ans.(e)

Sol. I. $2x^2 + 11x + 12 = 0$

$\Rightarrow 2x^2 + 8x + 3x + 12 = 0$

$\Rightarrow (x + 4) (2x + 3) = 0$

$\Rightarrow x = -4, -3/2$

II. $4y^2 + 13y + 10 = 0$

$\Rightarrow 4y^2 + 8y + 5y + 10 = 0$

$\Rightarrow (y + 2) (4y + 5) = 0$

$\Rightarrow y = -2, -5/4$

No relation

x	y	Relationship
-4	-2	We know bigger numerical value with negative sign are less than smaller value with negative sign So, $x < y$
-4	$-5/4 = -1.25$	We know bigger numerical value with negative sign are less than smaller value with negative sign So, $x < y$
$-3/2 = -1.5$	-2	We know bigger numerical value with negative sign are less than smaller value with negative sign So, $x > y$
$-3/2 = -1.5$	$-5/4 = -1.25$	We know bigger numerical value with negative sign are less than smaller value with negative sign So, $x < y$

We get two relationships here, $x > y$ and $x < y$, so could not find the exact relationship between x and y here

So, **relationship can't be established**

Q93. In each of these questions, two equations (i) and (ii) are given. You have to solve both the equations and give answer.

(i) $x^2 + 3x - 54 = 0$

(ii) $y^2 + 21y + 110 = 0$

(a) if $x > y$

(b) if $x \geq y$

(c) if $x < y$

(d) if $x \leq y$

(e) if $x = y$ or no relation can be established between x and y

Ans.(a)

Sol. (i) $x^2 + 3x - 54 = 0$

$x^2 + 9x - 6x - 54 = 0$

$x(x + 9) - 6(x + 9) = 0$

$x = 6, -9$

(ii) $y^2 + 11y + 110 = 0$

$y^2 + 11y + 10y + 110 = 0$

$y = -11, -10$

$\therefore x > y$

Q94. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 + 13x + 40 = 0$

II. $y^2 + 17y + 72 = 0$

- (a) if $x > y$
- (b) if $x \geq y$
- (c) if $x < y$
- (d) if $x \leq y$
- (e) if $x = y$ or no relation can be established between x and y .

Ans.(b)

Sol. I. $x^2 + 13x + 40 = 0$

$$x^2 + 8x + 5x + 40 = 0$$

$$x(x + 8) + 5(x + 8) = 0$$

$$(x + 8)(x + 5) = 0$$

$$x = -5, -8$$

II. $y^2 + 17y + 72 = 0$

$$y^2 + 8y + 9y + 72 = 0$$

$$y(y + 8) + 9(y + 8) = 0$$

$$\Rightarrow y = -8, -9$$

So, $x \geq y$

Q95. In each of the following questions two equations are given. Solve these equations and give answer:

I. $5x^2 + 11x + 2 = 0$ **II.** $6y^2 + 11y + 4 = 0$

- (a) if $x > y$
- (b) if $x \geq y$
- (c) if $x < y$
- (d) if $x \leq y$
- (e) if $x = y$ or no relation can be established between x and y .

Ans.(e)

Sol. I. $5x^2 + 11x + 2 = 0$

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

$$5x(x + 2) + 1(x + 2) = 0$$

$$(x + 2)(5x + 1) = 0$$

$$x = -2, -1/5$$

II. $6y^2 + 11y + 4 = 0$

$$6y^2 + 8y + 3y + 4 = 0$$

$$2y(3y + 4) + 1(3y + 4) = 0$$

$$(3y + 4)(2y + 1) = 0$$

$$y = -4/3, -1/2$$

So, no relation

Q96. In each of the following questions two equations are given. Solve these equations and give answer:

I. $2x^2 - 23x + 56 = 0$

II. $3y^2 - 14y + 15 = 0$

- (a) if $x > y$
- (b) if $x \geq y$
- (c) if $x < y$
- (d) if $x \leq y$
- (e) if $x = y$ or no relation can be established between x and y .

Ans.(a)

Sol. I. $2x^2 - 23x + 56 = 0$

$$2x^2 - 7x - 16x + 56 = 0$$

$$x(2x - 7) - 8(2x - 7) = 0$$

$$(x - 8)(2x - 7) = 0$$

$$x = 8, 7/2$$

II. $3y^2 - 14y + 15 = 0$

$$3y^2 - 5y - 9y + 15 = 0$$

$$y(3y - 5) - 3(3y - 5) = 0$$

$$y = 3, 5/3$$

So, $x > y$

Q97. In each of the following questions two equations are given. Solve these equations and give answer:

I. $2x^2 - 7x + 6 = 0$ **II.** $20y^2 - 29y + 6 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(a)

Sol. From I:

$$2x^2 - 7x + 6 = 0$$

$$2x^2 - 4x - 3x + 6 = 0$$

$$2x(x - 2) - 3(x - 2) = 0$$

$$(2x - 3)(x - 2) = 0$$

$$x = 3/2, 2 = 1.5, 2$$

From II:

$$20y^2 - 29y + 6 = 0$$

$$20y^2 - 24y - 5y + 6 = 0$$

$$4y(5y - 6) - 1(5y - 6) = 0$$

$$(4y - 1)(5y - 6) = 0$$

$$y = 1/4, 6/5 = 0.25, 1.2$$

Q98. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 - 46x + 528 = 0$

II. $y^2 - 48y + 572 = 0$

- (a) if $x > y$
- (b) if $x < y$
- (c) if $x \geq y$
- (d) if $x \leq y$
- (e) if $x = y$ or relation between x and y cannot be established

Ans.(e)

Sol. I. $x^2 - 46x + 528 = 0$

$\Rightarrow x^2 - 24x - 22x + 528 = 0$

$\Rightarrow (x-24)(x-22) = 0$

$\Rightarrow x = 24, 22$

II. $y^2 - 48y + 572 = 0$

$y^2 - 26y - 22y + 572 = 0$

$(y-26)(y-22) = 0$

$y = 26, 22$

No relation between x and y

x	y	Relationship
24	26	$x < y$
24	22	$x > y$
22	26	$x < y$
22	22	$x = y$

We get three relationships here, $x < y$, $x > y$ and $x = y$

So, **the relationship between x and y will can't be established**

Q99. In the following two equations questions numbered (I) and (II) are given. You have to solve both equations and Give answer.

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

II. $y^2 - 8y + 12 = 0$

- (a) If $x > y$
- (b) If $x \geq y$
- (c) If $y > x$
- (d) If $y \geq x$
- (e) If $x = y$ or no relation can be established

Ans.(e)

Sol. I. $x^2 - 7x + 12 = 0$

$x^2 - 4x - 3x + 12 = 0$

$(x-4)(x-3) = 0$

$x = 3, 4$

II. $y^2 - 8y + 12 = 0$

$y^2 - 6y - 2y + 12 = 0$

$(y-6)(y-2) = 0$

$y = 2, 6$

No relation can be established

Q100. In each of the following questions two equations are given. Solve these equations and give answer:

I. $0.2x + 0.4y = 1600$ II. $0.3x + 0.6y = 2400$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(c)

Sol. From I: $0.2x + 0.4y = 1600$

Multiplying both sides by 1.5,
we get $0.3x + 0.6y = 2400$,
which is second equation.

Q101. In the following two equations questions numbered (I) and (II) are given. You have to solve both equations and Give answer.

(i) $x^2 - 11x + 30 = 0$

(ii) $y^2 - 15y + 56 = 0$

- (a) $x > y$
- (b) $x < y$
- (c) $x \geq y$
- (d) $x \leq y$
- (e) $x = y$ or there is no relationship

Ans.(b)

Sol. I. $x^2 - 11x + 30 = 0$

$$x^2 - 6x - 5x + 30 = 0$$

$$\therefore x(x - 6) - 5(x - 6) = 0$$

$$x = 6, 5$$

II. $y^2 - 15y + 56 = 0$

$$y^2 - 7y - 8y + 56 = 0$$

$$y(y - 7) - 8(y - 7) = 0$$

$$\therefore y = 7, 8$$

So, $x < y$

Q102. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 - 37x + 322 = 0$ II. $4y^3 - (11)^2 = y^3 + 1415$

- (a) $x > y$
- (b) $x < y$
- (c) $x = y$ or No relation
- (d) $x \geq y$
- (e) $x \leq y$

Ans.(a)

Sol. From I: $x^2 - 37x + 322 = 0$

$$x^2 - 23x - 14x + 322 = 0$$

$$x(x - 23) - 14(x - 23) = 0$$

$$(x - 14)(x - 23) = 0$$

$$x = 14, 23$$

From II: $4y^3 - (11)^2 = y^3 + 1415$

$$3y^3 = 1415 + 121$$

$$y^3 = 512$$

$$y = 8$$

Q103. In each of the following questions two equations are given. Solve these equations and give answer:

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

II. $8y^2 - 2y - 1 = 0$

(a) if $x > y$

(b) if $x < y$

(c) if $x \geq y$

(d) if $x \leq y$

(e) if $x = y$ or there is no relation between x and y

Ans.(e)

Sol. I. $6x^2 - x - 1 = 0$

$$6x^2 - 3x + 2x - 1 = 0$$

$$\Rightarrow (2x - 1)(3x + 1) = 0$$

$$\Rightarrow x = 1/2, -1/3$$

II. $8y^2 - 2y - 1 = 0$

$$\Rightarrow 8y^2 - 4y + 2y - 1 = 0$$

$$\Rightarrow (2y - 1)(4y + 1) = 0$$

$$\Rightarrow y = 1/2, -1/4$$

No relation

Q104. In each question two equations numbered (I) and (II) are given. Student should solve both the equations and mark appropriate answer.

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

II. $y^2 + 4y - 12 = 0$

(a) $x \leq y$

(b) $x > y$

(c) $x = y$ or no relation can be established

(d) $x < y$

(e) $x \geq y$

Ans.(c)

Sol. I. $2x^2 + 3x + 2x + 3 = 0$

$$(x + 1)(2x + 3) = 0$$

$$x = -1, -3/2$$

II. $y^2 + 6y - 2y - 12 = 0$

$$(y - 2)(y + 6) = 0$$

$$y = 2, -6$$

clearly, no relation can be established

Q105. I. $x^2 - 12x + 32 = 0$

II. $5y^2 - 11y + 6 = 0$

(a) if $x > y$

(b) if $x \geq y$

(c) if $x < y$

(d) if $x \leq y$

(e) if $x = y$ or no relation can be established between x and y .

Ans.(a)

Sol. I. $x^2 - 12x + 32 = 0$

$$x^2 - 8x - 4x + 32 = 0$$

$$x(x - 8) - 4(x - 8) = 0$$

$$x = 4, 8$$

II. $5y^2 - 11y + 6 = 0$

$$5y^2 - 6y - 5y + 6 = 0$$

$$y(5y - 6) - 1(5y - 6) = 0$$

$$y = 1, 1.2$$

So, $x > y$



Q106. In each of the following questions two equations are given. Solve these equations and give answer:

I. $x^2 + 7x = 60$ II. $y^2 + 19y + 84 = 0$

(a) $x > y$

(b) $x < y$

(c) $x = y$ or No relation

(d) $x \geq y$

(e) $x \leq y$

Ans.(c)

Sol. From I: $x^2 + 7x = 60$

$$x^2 + 7x - 60 = 0$$

$$x^2 + 12x - 5x - 60 = 0$$

$$x(x + 12) - 5(x + 12) = 0$$

$$(x + 12)(x - 5) = 0$$

$$x = -12, 5$$

From II: $y^2 + 19y + 84 = 0$

$$y^2 + 12y + 7y + 84 = 0$$

$$y(y + 12) + 7(y + 12) = 0$$

$$(y + 12)(y + 7) = 0$$

$$y = -12, -7$$