Date : 24th Jan 2024 **Quantitative Aptitude - Quadratic Equations** **English**

Q:1 Direction: In each of these questions, two equations (I) and (II) are given. You have to solve both equations and mark the appropriate answer.
I. $4x^2 - 9/4 = 0$
II. $y^2 + 6y - 7 = 0$
1. x > y
2. x < y
3. x ≥ y
4. x ≤ y
5. x = y or relationship between x and y can't be established

Q:2 Direction: In each of these questions, two equations (I) and (II) are given. You have to solve both equations and mark the appropriate answer.
I. $4x^2/9 - 1 = 0$
II. $y^2 - 2y - 8 = 0$
1. x > y
2. x < y
3. x ≤ y
4. x ≥ y
5. x = y or relationship between x and y can't be established

Q:3 Direction: In each of these questions, two equations (I) and (II) are given. You have to solve both equations and mark the appropriate answer.
I. $x^2 - 5x + 6 = 0$
II. $y^2 - 4 = 0$
1. x > y
2. x < y
3. x ≤ y
4. x ≥ y
5. x = y or relationship between x and y can't be established

Q:4 Direction: In each of these questions, two equations (I) and (II) are given. You have to solve both equations and mark the appropriate answer.
I. $x^2 + 13x - 48 = 0$
II. $6y^2 + 17y - 3 = 0$
1. x > y
2. x < y
3. x ≤ y
4. x ≥ y
5. x = y or relationship between x and y can't be established

Q:5 Direction: In each of these questions, two equations (I) and (II) are given. You have to solve both equations and mark the appropriate answer.
I. $x^2 - 8x + 15 = 0$
II. $2y^2 - 13y/2 - 6 = 0$
1. x > y
2. x < y
3. x ≤ y
4. x ≥ y
5. x = y or relationship between x and y can't be established

Q:6 Direction: In each of these questions, two equations (I) and (II) are given. You have to solve both equations and mark the appropriate answer.
I. $x^2 + x - 2 = 0$
II. $y^2 + 2y - 15 = 0$
1. x > y
2. x ≥ y
3. x < y
4. x ≤ y
5. x = y or relationship between x and y can't be established.

Q:7 Direction: In each of these questions, two equations (I) and (II) are given. You have to solve both equations and mark the appropriate answer.
I. $2x^2 + 5x + 3 = 0$
II. $8y^2 + 6y + 1 = 0$
1. x > y
2. x ≥ y
3. x < y
4. x ≤ y
5. x = y or relationship between x and y can't be established.

Q:8 Direction: In each of these questions, two equations (I) and (II) are given. You have to solve both equations and mark the appropriate answer.
I. $x^2 + 13x + 42 = 0$
II. $4y^2 + 7y - 15 = 0$
1. x > y
2. x ≥ y
3. x < y
4. x ≤ y
5. x = y or relationship between x and y can't be established.

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Q:9 Direction: In each of these questions, two equations (I) and (II) are given. You have to solve both equations and mark the appropriate answer.

I. $4x^2 - 24x + 35 = 0$

II. $8y^2 - 6y + 1 = 0$

1. $x > y$

2. $x \geq y$

3. $x < y$

4. $x \leq y$

5. x = y or relationship between x and y can't be established.

Q:10 Direction: In each of these questions, two equations (I) and (II) are given. You have to solve both equations and mark the appropriate answer.

I. $15x^2 + 19x + 6 = 0$

II. $6y^2 - 5y - 1 = 0$

1. $x > y$

2. $x \geq y$

3. $x < y$

4. $x \leq y$

5. x = y or relationship between x and y can't be established.

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Answer Key

1. (5)	**2.** (5)	**3.** (4)	**4.** (5)	**5.** (5)
6. (5)	**7.** (3)	**8.** (3)	**9.** (1)	**10.** (3)

Answers and Solutions

Q:1 The correct answer is **option 5** i.e. **x = y or relationship between x and y can't be established**

Equation I	Equation II
$4x^2 - 9/4 = 0$	$y^2 + 6y - 7 = 0$
$(2x)^2 - (3/2)^2 = 0$	$y^2 + 7y - y - 7 = 0$
$(2x + 3/2)(2x - 3/2) = 0$	$(y - 1)(y + 7) = 0$
$x = -3/4, 3/4$	$y = 1, -7$

We can analyse,

Value of x	Value of y	Result
-3/4	1	x < y
-3/4	-7	x > y
3/4	1	x < y
3/4	-7	x > y

Hence, **relationship between x and y can't be established**.

Q:2 The correct answer is **option 5** i.e. **x = y or relationship between x and y can't be established**

Equation I	Equation II
$4x^2/9 - 1 = 0$	$y^2 - 2y - 8 = 0$
$(2x/3)^2 - 1 = 0$	$y^2 + 2y - 4y - 8 = 0$
$(2x/3 + 1)(2x/3 - 1) = 0$	$y(y + 2) - 4(y + 2) = 0$
$x = - 3/2, 3/2$	$(y - 4)(y + 2) = 0$
	$y = 4, - 2$

We can analyse,

Value of x	Value of y	Result
-3/2	4	x < y
-3/2	-2	x > y
3/2	4	x < y
3/2	-2	x > y

Hence, **Relationship between x and y can't be established.**

Q:3 The correct answer is **option 4** i.e. **x ≥ y**

Equation I	Equation II
$x^2 - 5x + 6 = 0$	$y^2 + 2y - 8 = 0$
$x^2 - 3x - 2x + 6 = 0$	$y^2 + 4y - 2y - 8 = 0$
$x(x - 3) - 2(x - 3) = 0$	$y(y + 2) - 2(y + 2) = 0$
$(x - 3)(x - 2) = 0$	$(y - 2)(y + 2) = 0$
$x = 3, 2$	$y = 2, -2$

We can analyse,

Value of x	Value of y	Result
3	2	x > y
3	-2	x > y
2	2	x = y
2	-2	x > y

Hence, **x ≥ y**

Q:4 The correct answer is **option 5** i.e. **x = y or relationship between x and y can't be established**

Equation I	Equation II
$x^2 + 13x - 48 = 0$	$6y^2 + 17y - 3 = 0$
$x^2 - 3x + 16x - 48 = 0$	$6y^2 + 17y - 3 = 0$
$x(x - 3) + 16(x - 3) = 0$	$6y^2 + 18y - y - 3 = 0$
$(x - 3) (x + 16) = 0$	$(6y - 1) (y + 3) = 0$
$x = 3, -16$	$y = 1/6, -3$

We can analyse,

Value of x	Value of y	Result
3	1/6	x > y
3	-3	x > y
-16	1/6	x < y
-16	-3	x < y

Hence, **relationship between x and y can't be established**.

Q:5 The correct answer is **option 5** i.e. **x = y or relationship between x and y can't be established.**

Equation I	Equation II
$x^2 - 8x + 15 = 0$	$2y^2 - 13y/2 - 6 = 0$
$x^2 - 5x - 3x + 15 = 0$	$4y^2 - 16y + 3y - 12 = 0$
$x(x - 5) - 3(x - 5) = 0$	$4y(y - 4) + 3(y - 4) =0$
$(x -3)(x - 5) = 0$	$(4y + 3)(y - 4) = 0$
$x = 3, 5$	$y = -3/4, 4$

we can analyse,

Value of x	Value of y	Result
3	-3/4	x > y
3	4	x < y
5	-3/4	x > y
5	4	x > y

Hence, **x = y or relationship between x and y can't be established**

Q:6 The correct answer is **option 5** i.e. **x = y or the relationship cannot be established.**

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Equation 1	Equation 2
$x^2 + x - 2 = 0$	$y^2 + 2y - 15 = 0$
$x^2 - x + 2x - 2 = 0$	$y^2 - 3y + 5y - 15 = 0$
$x(x - 1) + 2(x - 1) = 0$	$y(y - 3) + 5(y - 3) = 0$
$(x + 2)(x - 1) = 0$	$(y + 5)(y - 3) = 0$
$x = -2, 1$	$y = -5, 3$

We can analyse,

Value of x	Value of y	Result
-2	-5	x > y
-2	3	x < y
1	-5	x > y
1	3	x < y

Hence, x = y or relationship between x and y can't be established.

Q:7 The correct answer is **option 3** i.e. **x < y**

Equation 1	Equation 2
$2x^2 + 5x + 3 = 0$	$8y^2 + 6y + 1 = 0$
$2x^2 + 2x + 3x + 3 = 0$	$8y^2 + 2y + 4y + 1 = 0$
$2x(x + 1) + 3(x + 1) = 0$	$2y(4y + 1) + 1(4y + 1) = 0$
$(2x + 3)(x + 1) = 0$	$(2y + 1)(4y + 1) = 0$
$x = -3/2, -1$	$y = -1/2, -1/4$

We can analyse,

Value of x	Value of y	Result
- 3/2	- 1/2	x < y
- 3/2	- 1/4	x < y
- 1	- 1/2	x < y
- 1	- 1/4	x < y

Hence, x < y

Q:8 The correct answer is **option 3** i.e. **x < y**

Equation I	Equation II
$x^2 + 13x + 42 = 0$	$4y^2 + 7y - 15 = 0$
$x^2 + 7x + 6x + 42 = 0$	$4y^2 - 5y + 12y - 15 = 0$
$x(x + 7) + 6(x + 7) = 0$	$y(4y - 5) + 3(4y - 5) = 0$
$(x + 7)(x + 6) = 0$	$(4y - 5)(y + 3) = 0$
$x = -7, -6$	$y = 5/4, -3$

We can analyse,

Value of x	Value of y	Result
-7	5/4	x < y
-7	-3	x < y
-6	5/4	x < y
-6	-3	x < y

Hence, x < y

Q:9 The correct answer is **option 1** i.e. **x > y**

Equation 1	Equation 2
$4x^2 - 24x + 35 = 0$	$8y^2 - 6y + 1 = 0$
$4x^2 - 14x - 10x + 35 = 0$	$8y^2 - 4y - 2y + 1 = 0$
$2x(2x - 7) - 5(2x - 7) = 0$	$4y(2y - 1) - 1(2y - 1) = 0$
$(2x - 5)(2x - 7) = 0$	$(4y - 1)(2y - 1) = 0$
$x = 5/2, 7/2$	$y = 1/4, 1/2$

We can analyse,

Value of x	Value of y	Result
5/2	1/4	x > y
5/2	1/2	x > y
7/2	1/4	x > y
7/2	1/2	x > y

Hence, x > y

Q:10 The correct answer is **option 3** i.e. **x < y**

Equation 1	Equation 2
$15x^2 + 19x + 6 = 0$	$6y^2 - 5y - 1 = 0$
$15x^2 + 9x + 10x + 6 = 0$	$6y^2 - 6y + y - 1 = 0$
$3x(5x + 3) + 2(5x + 3) = 0$	$6y(y - 1) + 1(y - 1) = 0$
$(3x + 2)(5x + 3) = 0$	$(6y + 1)(y - 1) = 0$
$x = -2/3, -3/5$	$y = - 1/6, 1$

We can analyse,

Value of x	Value of y	Result
- 2/3	- 1/6	x < y
- 2/3	1	x < y
- 3/5	- 1/6	x < y
- 3/5	1	x < y

Hence, x < y

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