RRB PO 2020 Prelims

Quadratic Equations Comparison with Tips & Expected Questions

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Be Ready for Quadratic Equations Comparison Questions

In this article, we have come up with the tips & tricks of answering quadratic equations comparison questions quickly and with accuracy. We have also provided questions for your practice. Please note that these questions have been prepared by exam-experts who have kept the past years’ exams trend in mind while coming up with these questions. So *practising these questions in a time-bound manner* will help you assess your skills. Use these tips when practising quadratic equations comparison questions and see the difference yourself. Before proceeding further, let’s have a look at the Exam Pattern of [RRB PO 2020 Prelims](https://www.practicemock.com).

**RRB PO 2020 Prelims Exam Pattern**

Since the [RRB PO 2020](https://www.practicemock.com) notification is yet to be released, we are providing you with RRB PO 2019 Prelims exam pattern. However, be rest assured that if there is any change in [RRB PO 2020 Prelims](https://www.practicemock.com), exam pattern, we will update it here.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of Tests</th>
<th>No. of Questions</th>
<th>Maximum Marks</th>
<th>Medium of Exam</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reasoning</td>
<td>40</td>
<td>40</td>
<td>English &amp; Hindi</td>
<td>Composite Time of 45 minutes</td>
</tr>
<tr>
<td>2</td>
<td>Quantitative Aptitude</td>
<td>40</td>
<td>40</td>
<td>English &amp; Hindi</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>80</strong></td>
<td><strong>80</strong></td>
<td></td>
<td><strong>45 minutes</strong></td>
</tr>
</tbody>
</table>

**Note:**

- *Negative Marking of 0.25 per incorrect answer is applicable.*
- *Aspirants need to clear the Overall & Sectional Cut-offs to qualify for the Mains exam*
- *Marks of Prelims will be considered only for the Mains Exam and not in the final selection.*
Let’s now have a look at the [IBPS RRB PO 2019 Prelims analysis](https://www.practicemock.com/), so that you will get an idea of which topics were asked and how many questions from each topic were asked.

### IBPS RRB PO 2019 Prelims- Quantitative Aptitude Analysis

<table>
<thead>
<tr>
<th>Topic</th>
<th>No. of Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puzzles</td>
<td></td>
</tr>
<tr>
<td>● Bar Graph</td>
<td>11</td>
</tr>
<tr>
<td>● Table</td>
<td></td>
</tr>
<tr>
<td><strong>Number Series (Missing)</strong></td>
<td>6</td>
</tr>
<tr>
<td>Equations Comparison (Quadratic)</td>
<td>6</td>
</tr>
<tr>
<td><strong>Data Sufficiency (Two statements based)</strong></td>
<td>5</td>
</tr>
<tr>
<td>Word Problems (Averages, Profit and Loss, Compound Interest, Time and Work, Partnership etc.)</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>40</td>
</tr>
</tbody>
</table>

If you look at [RRB PO](https://www.practicemock.com/) 2019 Prelims analysis, you will find that there were 6 questions of Quadratic Equations Comparison were asked. So if you are able to answer these 5-6 quadratic equations comparison question quickly and with accuracy, you will definitely improve your score. Don’t make the mistake of skipping the quadratic equation comparison questions just because they look tough. They are actually easy and scoring if you have clarified your concepts and have done enough practice.
Remember: it’s only with practice that you can identify easy quadratic equation comparison questions from those of the difficult ones.

Let’s get started with the topic of quadratic equation comparison. A quadratic equation is in the form of the expression $ax^2 + bx + c$ where the value of $x$ needs to be found out. $a$ is the coefficient of $x^2$, $b$ is the coefficient of $x$ and $c$ is the constant. Have a look at the example below:

**Understanding Quadratic Equation Comparison**

In the following question, two equations numbered (i) and (ii) are given. You have to solve both equations and give the answer:

1. if $x > y$
2. if $x \geq y$
3. if $x < y$
4. if $x \leq y$
5. If $x = y$ or the relationship cannot be established

1. (i) $x^2 - 5x + 6 = 0$
   
   (ii) $3y^2 + 3y - 18 = 0$

Solution with Explanation: The first equation can be solved in the mind itself. There is no need to even picking a pen.

Step 1: Multiply the constant with the coefficient of $x^2$. Here it will be $6 \times 1 = 6$. 
Step 2: Think of 2 numbers in such a way that their product is 6 and their addition/subtraction is -5. These numbers are -3 & -2.

Step 3: Divide both the numbers (-3 & -2) by the coefficient of x² which in this case is 1.

Step 4: Multiply both the numbers with -1.

So the answer is 3 and 2.

Let’s check the other equation with the same methodology.

Step 1: We can see that this complete equation can be divided by 3 which will make the solving of it easier. Now we get \( y^2 + y - 6 = 0 \) Multiply the constant with the coefficient of \( y^2 \). Here it will be \(-6 \times 1 = 6\).

Step 2: Think of 2 numbers in such a way that their product is -6 and their addition/subtraction is 1. These numbers are 3 & -2.

Step 3: Divide both the numbers (3 & -2) by the coefficient of x² which in this case is 1.

Step 4: Multiply both the numbers with -1.

So the answer is -3 and 2.

Obviously in this case \( x \geq y \). So option b is the answer.

**Important Tip for Quadratic Equation Comparison**

Please note that these steps do look lengthy but all of these steps can be performed in your mind if you do enough practice beforehand. We recommend...
that you **solve at least 100 questions of quadratic equations comparison** to get mastery on questions on this topic. Practising these many questions will definitely help you do the calculations in your mind and will also help you differentiate easy & moderate questions from those of the difficult ones. Let’s have a look at some more examples:

**Examples of Quadratic Equation Comparison with Detailed Explanation**

1.) In the questions, two equations I and II are given. You have to solve both the equations to establish the correct relation between x and y and choose the correct option.

I. \( x^2 + 4x = 0 \)

II. \( y^2 = -6y \)

a.) \( x > y \)
b.) \( x < y \)
c.) \( x = y \) or the relationship cannot be established
d.) \( x \geq y \)
e.) \( x \leq y \)

**Answer: c)**

**Solution:**

From I:

\[ x^2 + 4x = 0 \]
\[ x(x + 4) = 0 \]
\[ x = 0, -4 \]

From II:

\[ y^2 = -6y \]
\[ y^2 + 6y = 0 \]
y(y + 6) = 0

y = 0, -6

<table>
<thead>
<tr>
<th>X</th>
<th>Relation</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>=</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>&gt;</td>
<td>-6</td>
</tr>
<tr>
<td>-4</td>
<td>&lt;</td>
<td>0</td>
</tr>
<tr>
<td>-4</td>
<td>&gt;</td>
<td>-6</td>
</tr>
</tbody>
</table>

So, relation can’t be established between x and y.

Hence, option c.

2.) In the questions, two equations I and II are given. You have to solve both the equations to establish the correct relation between x and y and choose the correct option.

I. $x^2 + x - 72 = 0$
II. $y^2 - 23y + 120 = 0$

a.) $x > y$

b.) $x < y$

c.) $x = y$ or the relationship cannot be established

d.) $x \geq y$

e.) $x \leq y$

**Answer: e)**

**Solution:**

From I:

$x^2 + x - 72 = 0$
\[ x^2 - 8x + 9x - 72 = 0 \]
\[ x(x - 8) + 9(x - 8) = 0 \]
\[ (x - 8)(x + 9) = 0 \]
\[ x = 8, -9 \]

From II:
\[ y^2 - 23y + 120 = 0 \]
\[ y^2 - 15y - 8y + 120 = 0 \]
\[ y(y - 15) - 8(y - 15) = 0 \]
\[ (y - 15)(y - 8) = 0 \]
\[ y = 15, 8 \]

<table>
<thead>
<tr>
<th>X</th>
<th>Relation</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
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<td>=</td>
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<td>-9</td>
<td>&lt;</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>&lt;</td>
<td>15</td>
</tr>
<tr>
<td>-9</td>
<td>&lt;</td>
<td>15</td>
</tr>
</tbody>
</table>

So, \( x \leq y \)

Hence, option e.

3.) In the questions, two equations I and II are given. You have to solve both the equations to establish the correct relation between \( x \) and \( y \) and choose the correct option.

I. \((x + 2)^2 = x^2 + 8\)

II. \(y^2 = 1\)
a.) $x > y$

b.) $x < y$

c.) $x = y$ or the relationship cannot be established

d.) $x \geq y$

e.) $x \leq y$

Answer: d)

Solution:

From I:

$(x + 2)^2 = x^2 + 8$

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

$4x = 4$

$x = 1$

From II:

$y^2 = 1$

$y = 1, -1$

<table>
<thead>
<tr>
<th>X</th>
<th>Relation</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$=$</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>$&gt;$</td>
<td>-1</td>
</tr>
</tbody>
</table>

So, $x \geq y$

Hence, option d.
4.) In the questions, two equations I and II are given. You have to solve both the equations to establish the correct relation between \( x \) and \( y \) and choose the correct option.

I. \( x^2 - 33x + 270 = 0 \)
II. \( y^2 - 20y + 96 = 0 \)

a.) \( x > y \)
b.) \( x < y \)
c.) \( x = y \) or the relationship cannot be established
d.) \( x \geq y \)
e.) \( x \leq y \)

**Answer: a)**

**Solution:**

From I:
\[
x^2 - 33x + 270 = 0
\]
\[
x^2 - 18x - 15x + 270 = 0
\]
\[
x(x - 18) - 15(x - 18) = 0
\]
\[
(x - 18)(x - 15) = 0
\]
\[
x = 15, 18
\]

From II:
\[
y^2 - 20y + 96 = 0
\]
\[
y^2 - 8y - 12y + 96 = 0
\]
\[
y(y - 8) - 12(y - 8) = 0
\]
\[
(y - 8)(y - 12) = 0
\]
\[
y = 8, 12
\]

<table>
<thead>
<tr>
<th>( x )</th>
<th>Relation</th>
<th>( y )</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
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<tr>
<td>18</td>
<td>&gt;</td>
<td>12</td>
</tr>
<tr>
<td>15</td>
<td>&gt;</td>
<td>8</td>
</tr>
<tr>
<td>15</td>
<td>&gt;</td>
<td>12</td>
</tr>
</tbody>
</table>

So, \( x > y \)

Hence, option a.

5.) In the questions, two equations I and II are given. You have to solve both the equations to establish the correct relation between \( x \) and \( y \) and choose the correct option.

I. \( x^2 - 19x + 84 = 0 \)

II. \( y^2 - 36y + 320 = 0 \)

a.) \( x > y \)

b.) \( x < y \)

c.) \( x = y \) or the relationship cannot be established

d.) \( x \geq y \)

e.) \( x \leq y \)

**Answer: b)**

**Solution:**

From I:

\[
\begin{align*}
  x^2 - 19x + 84 &= 0 \\
  x^2 - 12x - 7x + 84 &= 0 \\
  x(x - 12) - 7(x - 12) &= 0 \\
  (x - 12)(x - 7) &= 0 \\
  x &= 12, 7
\end{align*}
\]

From II:

\[
\begin{align*}
  y^2 - 36y + 320 &= 0 \\
  y^2 - 16y - 20y + 320 &= 0 \\
  y(y - 16) - 20(y - 16) &= 0 \\
  (y - 16)(y - 20) &= 0 \\
  y &= 16, 20
\end{align*}
\]
6.) In the questions, two equations I and II are given. You have to solve both the equations to establish the correct relation between x and y and choose the correct option.

I. \( x^2 + x = 12 \)

II. \( (y + 5)^2 = 22y - 2 \)

a.) \( x > y \)

b.) \( x < y \)

c.) \( x = y \) or the relationship cannot be established

d.) \( x \geq y \)

e.) \( x \leq y \)

**Answer: e)**

**Solution:**

From I:

\[ x^2 + x = 12 \]
\[ x^2 - 3x + 4x - 12 = 0 \]
\[ x(x - 3) + 4(x - 3) = 0 \]
\[ (x - 3)(x + 4) = 0 \]
\[ x = -4, 3 \]

From II:
\[ (y + 5)^2 = 22y - 2 \]
\[ y^2 + 10y + 25 = 22y - 2 \]
\[ y^2 - 12y + 27 = 0 \]
\[ y^2 - 3y - 9y + 27 = 0 \]
\[ y(y - 3) - 9(y - 3) = 0 \]
\[ (y - 3)(y - 9) = 0 \]
\[ y = 3, 9 \]

<table>
<thead>
<tr>
<th>X</th>
<th>Relation</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>&lt;</td>
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<td>&lt;</td>
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<tr>
<td>3</td>
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<td>3</td>
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<tr>
<td>3</td>
<td>&lt;</td>
<td>9</td>
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</tbody>
</table>

So, \( x \leq y \).

Hence, option e.

7.) In the questions, two equations I and II are given. You have to solve both the equations to establish the correct relation between x and y and choose the correct option.
I. \( x^2 - 38x + 360 = 0 \)
II. \( y^2 - 30y + 216 = 0 \)

a.) \( x > y \)
b.) \( x < y \)
c.) \( x = y \) or the relationship cannot be established
d.) \( x \geq y \)
e.) \( x \leq y \)

**Answer: d)**

**Solution:**

From I:

\[ x^2 - 38x + 360 = 0 \]
\[ x^2 - 18x - 20x + 360 = 0 \]
\[ x(x - 18) - 20(x - 18) = 0 \]
\[ (x - 18)(x - 20) = 0 \]
\[ x = 18, 20 \]

From II:

\[ y^2 - 30y + 216 = 0 \]
\[ y^2 - 18y - 12y + 216 = 0 \]
\[ y(y - 18) - 12(y - 18) = 0 \]
\[ (y - 18)(y - 12) = 0 \]
\[ y = 18, 12 \]

<table>
<thead>
<tr>
<th>( x )</th>
<th>Relation</th>
<th>( y )</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>=</td>
<td>18</td>
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<tr>
<td>20</td>
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<td>&gt;</td>
<td>12</td>
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<tr>
<td>20</td>
<td>&gt;</td>
<td>12</td>
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</table>

So, \( x \geq y \)

Hence, option d.
8.) In the questions, two equations I and II are given. You have to solve both the equations to establish the correct relation between x and y and choose the correct option.

I. \( x = \sqrt{324} \)

II. \( \frac{y}{3} = y - 12 \)

a.) \( x > y \)

b.) \( x < y \)

c.) \( x = y \) or the relationship cannot be established

d.) \( x \geq y \)

e.) \( x \leq y \)

Answer: c)

Solution:

From I:

\[ x = \sqrt{324} \]

\[ x = 18 \]

From II:

\[ \frac{y}{3} = y - 12 \]

\[ y = 3y - 36 \]

\[ 2y = 36 \]

\[ y = 18 \]
So, $x = y$.

Hence, option c.

9.) In the questions, two equations I and II are given. You have to solve both the equations to establish the correct relation between $x$ and $y$ and choose the correct option.

I. $x^2 - 31x + 240 = 0$
II. $y^2 - 16y - 105 = 0$

a.) $x > y$
b.) $x < y$
c.) $x = y$ or the relationship cannot be established
d.) $x \geq y$
e.) $x \leq y$

Answer: c)

Solution:

From I:

$x^2 - 31x + 240 = 0$
$x^2 - 16x - 15x + 240 = 0$
$x(x - 16) - 15(x - 16) = 0$
$(x - 16)(x - 15) = 0$

$x = 16, 15$

From II:

$y^2 - 16y - 105 = 0$
$y^2 - 21y + 5y - 105 = 0$
$y(y - 21) + 5(y - 21) = 0$
$(y - 21)(y + 5) = 0$

$y = 21, -5$

<table>
<thead>
<tr>
<th>$x$</th>
<th>Relation</th>
<th>$y$</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>&lt;</td>
<td>21</td>
</tr>
</tbody>
</table>
So, no relation can be established between x and y.

Hence, option c.

10.) In the questions, two equations I and II are given. You have to solve both the equations to establish the correct relation between x and y and choose the correct option.

I) \(x^3 = -729\)

II) \(y^2 + 16y + 63 = 0\)

a.) \(x > y\)

b.) \(x < y\)

c.) \(x = y\) or the relationship cannot be established

d.) \(x \geq y\)

e.) \(x \leq y\)

**Answer: e)**

**Solution:**

From I:

\(x^3 = -729\)

\(x = -9\)

From II:

\(y^2 + 16y + 63 = 0\)

\(y^2 + 7y + 9y + 63 = 0\)

\(y(y + 7) + 9(y + 7) = 0\)
(y + 7)(y + 9) = 0
y = -9, -7

\[
\begin{array}{|c|c|c|}
\hline
X & Relation & y \\
\hline
-9 & = & -9 \\
-9 & < & -7 \\
\hline
\end{array}
\]

So, \( x \leq y \)
Hence, option e.