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## Boost up Quadratic Equation Questions for Competitive

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## What is Quadratic Equation?

In quadratic equation, students are expected to find the relation between two variable given in the two equation. The related can be of Smaller to, Greater to, Greater than, Smaller than and Equal to.

## Types of Quadratic Equation

Linear Equation- In this type, when a student solve the equation then he/she will only get one value for X and for Y .
for ex- $2 X+3 Y=5, X+2 Y=6$
$2 \mathrm{X}+3 \mathrm{Y}=5-$-(eq.1), $(\mathrm{X}+2 \mathrm{Y}=6) \mathrm{X} 2-$-(eq.2)

Solving these two equations, we will get
We get, $X=-8 \& Y=7$

## Hence $Y>X$, this will be our final answer

Squares Equation- In this type of question, we have to find the sqaure root of the given below and we end up getting two values each for $X$ and $Y$ but one is negative

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while other is positive. The best thing about such type of questions is that the answer to such questions are always Cannot be Determined.

For e.q., $\mathrm{X}=1600$ \& $\mathrm{Y}=2500$

On finding their square root we will get $\mathrm{X}=+40,-40 \& Y=+50,-50$

## Hence the answer will be Cannot be determined.

Sqaures and Sqaure root equation- In this type of question, one is sqaure while the other one is square root and we know that sqaure root always gives positive value when we solve it.

For e.g. $X=1600 \& Y=2500$
On solving them we will get, $X=+40,-40 \& Y=+50$
Hence, our answer will be $\mathrm{Y}>\mathrm{X}$
Cube Cases- In this type of questions, the cube will be given and you have to answer the relation between those cubes.

For e.g. $\mathrm{X}=1331 \& Y=729$
When we solve these two equation, we will get $\mathrm{X}=11 \& \mathrm{Y}=9$

Hence, $\mathrm{X}>\mathrm{Y}$. The trick to solve these questions is that whichsoever cube will be greater when you will solve it that cube will remain greater.

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## Table Method to Solve Quadratic Equation

Sign of coefficient ' $x$ '
+
$+$

Sign of coefficient ' $y$ '
$+$

Sign of roots


This is one of the best methods to solve Quadratic Equation questions. You can answer the question without actually solving the equations.

For e.g. $x^{2}-7 x+10=0, y^{2}+8 y+15=0$
We can solve this equation without actually solving the equation. Let's see

- First look at the sign in equation. 1 which are -, + means its roots will be,++ as per our table.
- Secondly, look at the other equation, we will see the signs are +, + which means that our roots will be,-- .
- Hence $X>Y$ as it has both the roots positive.


## Different cases in Quadratic Equations

Roots of Eq. 1 Roots of Eq. 2 Conclusion

CASES


## Quadratic Equation Questions Set-1

 You have to solve both the equations and give answer.

1. I. $x^{2}-\mathbf{3 4 x}+\mathbf{2 8 8}=\mathbf{0}$
II. $y^{2}-28 y+192=0$
A. $x>y$
B. $x<y$
C. $x \geq y$
D. $x \leq y$
E. $x=y$ or relation cannot be established

Correct option is: C
Solution:
$\mathrm{x}^{2}-34 \mathrm{x}+288=0$
$\mathrm{x}=18,16$
II. $y^{2}-28 y+192=0$
$y=12,16$

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2) I. $x^{2}-26 x+168=0$
II. $y^{2}-32 y+252=0$
A. $x>y$
B. $x<y$
C. $x \geq y$
D. $x \leq y$
E. $x=y$ or relation cannot be established

Correct option is: $\mathbf{D}$

## Solution:

$\mathrm{x}^{2}-26 \mathrm{x}+168=0$
$\mathrm{x}=12,14$
II. $y^{2}-32 y+252=0$
$y=14,18$
3. I. $x^{2}+26 x+168=0$
II. $y^{2}+23 y+132=0$
A. $x>y$
B. $x<y$
C. $x \geq y$
D. $x \leq y$
E. $x=y$ or relation cannot be established

## Correct option is: $\mathbf{D}$

## Solution:

$$
\begin{aligned}
& x^{2}+26 x+168=0 \\
& x=-12,-14 \\
& \text { II. } y^{2}+23 y+132=0 \\
& y=-12,-11
\end{aligned}
$$

4. I. $\mathbf{x}^{2}-\mathbf{2 8 x}+\mathbf{1 9 5}=\mathbf{0}$
II. $y^{2}-30 y+216=0$
A. $x>y$
B. $x<y$
C. $x \geq y$

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D. $x \leq y$
E. $x=y$ or relation cannot be established

Correct option is: E
Solution:
$\mathrm{x}^{2}-28 \mathrm{x}+195=0$
$x=15,13$
II. $y^{2}-30 y+216=0$
$y=18,12$
5. I. $(x-19)^{2}=0$
II. $y^{2}=361$
A. $x>y$
B. $x<y$
C. $x \geq y$
D. $x \leq y$
E. $x=y$ or relation cannot be established

Correct option is : C

## Solution:

$$
\begin{aligned}
& x^{2}-38 x+361=0 \\
& x=19,19 \\
& \text { II. } y^{2}=361 \\
& y= \pm 19
\end{aligned}
$$

## Quadratic Equation Questions Set-2

Directions(1-5): In each of the following questions, read the given statement and compare the Quantity I and Quantity II on its basis. (only quantity is to be considered)

1. The ratio of the present age of Bala to that of Arnav is $3: \mathbf{1 1}$. Arnav is $\mathbf{1 2}$ years younger than Rahim. Rahim's age after $\mathbf{7}$ years will be 85 years.

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Quantity I: The present age of Bala's father, who is $\mathbf{2 5}$ years older than Bala
Quantity II: Rahim's present age
A. Quantity I > Quantity II
B. Quantity I < Quantity II
C. Quantity I $\geq$ Quantity II
D. Quantity I $\leq$ Quantity II
E. Quantity I = Quantity II or relation cannot be established

Correct option is: B

## Solution:

$11 \mathrm{x}=85-7-12$
$\mathrm{x}=6$
Present age of Bala $=18$
Present age of Bala's father $=18+25=43$; Rahim's present age $=78$
2. Ravi, Hari and Sanjay are three typists, who working simultaneously, can type 228 pages in four hours. In one hour, Sanjay can type as many pages more than Hari as Hari can type more than Ravi. During a period of five hours, Sanjay can type as many passages as Ravi can, during seven hours. Quantity I: Number of pages typed by Ravi
Quantity II:Number of pages typed by Hari
A. Quantity I > Quantity II
B. Quantity I < Quantity II
C. Quantity I $\geq$ Quantity II
D. Quantity I $\leq$ Quantity II
E. Quantity I = Quantity II or relation cannot be established

## Correct option is : B

## Solution:

Let Ravi, Hari and Sanjay can type $\mathrm{x}, \mathrm{y}$, and z pages respectively in 1 h .
Therefore, they together can type $4(\mathrm{x}+\mathrm{y}+\mathrm{z})$ pages in 4 h
$\therefore 4(\mathrm{x}+\mathrm{y}+\mathrm{z})=228$
$\Rightarrow \mathrm{x}+\mathrm{y}+\mathrm{z}=57$
Also, $\mathrm{z}-\mathrm{y}=\mathrm{y}-\mathrm{x}$
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i.e., $2 y=x+z$
$5 z=7 x$
From Eqs. (i) and (ii), we get
$3 y=57$
$\Rightarrow \mathrm{y}=19$
From Eq. (ii), $x+z=38$
$\mathrm{x}=16$ and $\mathrm{z}=22$
3. The length of a rectangle wall is $3 / 2$ times of its height. The area of the wall is $600 \mathrm{~m}^{2}$.
Quantity I: Height of the wall
Quantity II: Length of the wall
A. Quantity I > Quantity II
B. Quantity I < Quantity II
C. Quantity I $\geq$ Quantity II
D. Quantity I $\leq$ Quantity II
E. Quantity I = Quantity II or relation cannot be established

Correct option is: B

## Solution:

length $=3 x$
height $=2 x$
Area of the wall $=3 x * 2 x=6 x^{2}=600$
Length $=30$ \& Height $=20$

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