Quadratic Equation Short Tricks Questions & solutions

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Quadratic Equation Short Tricks & Questions with solutions

The quadratic equation is very important for all competitive exams generally 4-5 questions come from this topic in maximum exams. So we are here providing you the concepts and important short tricks to solve quadratic equation in very fast and efficient way. At the end, we will provide few practice questions also apply the trick on those and see that you have got the trick or not.

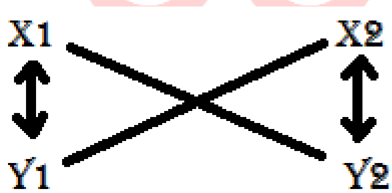
So the first thing that comes to our mind is what is a quadratic equation.

The Equation that is in the form of a(x)^2 + bx + c =0 is known as a quadratic equation.

where x represents an unknown, and a, b, and c represent known numbers such that a is not equal to 0. If a = 0, then the equation is linear, not quadratic. The numbers a, b, and c are the coefficients of the equation and may be distinguished by calling them, respectively, the quadratic coefficient, the linear coefficient, and the constant or free term.

In the equation, we have two equation in quadratic form and we have to find their roots and compare them.

Let the roots be as x1, x2, y1, y2 and then we can compare them by following method.

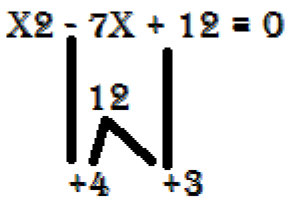


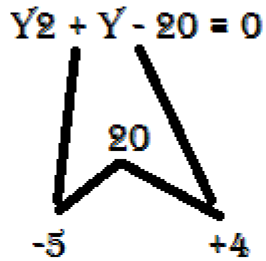
It means we compare 'x' with both factors of 'y' i.e. y1, y2, then x2 with both the factors of 'y' and answer according to it. We use the sign in the equation to find the sign of roots and the forms of an equation to find the magnitude of roots.

Sign of coefficient of 'x'	*Sign of coefficient of 'y'*	*Signs of roots*	
+	+	-	-
+	-	-	+
-	+	+	+
-	-	+	-

Example

$X^2 - 7x + 12 = 0$ *$y^2 + y - 20=0$*





By using table, Roots are

X1	x2	y1	y2
+4	+3	-5	+4

In this case we can see that X2 > Y1

X1 = X2 & Y2 > X2

So we cannot determine the relationship so answer will be CND (cannot determine). Below is the chart where you can directly answer after getting the roots.

	X1	X2	Y1	Y2	Results
Case 1	+5	+4	+2	-1	X>Y
Case 2	+5	+4	+4	+1	X>=Y
Case 3	+3	+4	+4	+1	Y>X
Case 4	+3	+5	+5	+7	Y>=X
Case 5	+9	+6	+7	+4	CND
Case 6	+4	+7	+9	+6	CND
Case 7	+8	+5	+4	+8	CND
Case 8	+8	+4	+5	+8	CND

In some special cases by using sign of quadratic equation, we can answer directly just comparing signs of roots by using table

***Type 1** : If one equation have sign "-",''+" and other has "+","+"*

***Type 2** : If both equations have sign "+","-"*

***Type 3** : If both equations have sign "-","-"*

Type 4 *: If one equation have sign "+","-" and other has sign "-","-"*

Type 1 *: When one equation has positive roots and other equation has negative roots the answer will be roots of the positive equation is greater than negative ones.*

Example : *x^2 - 7x + 10 = 0*

Y^2 + 8y + 15 = 0

By just comparing sign of equation by sign root using table

Here Roots are +x1, +x2, -y1, -y2

So, we can see that both roots of "x" are positive & roots of "y" is negative.

*Therefore **X>Y***

Type 2 *: In this type of equation, roots of the equation is positive & negative. Here by comparing the roots i.e. x2 is greater than y1 & x1 is less than y2 so we cannot determine the answer, the answer will be CND.*

Example : *x^2 + x - 56 = 0*

y^2 + 2y - 15 = 0

By just comparing sign of equation by sign root using table

Roots are -x1, +x2, -y1, +y2

Here +X2 > -Y1 & -X1 < +Y2

Therefore answer is CND (Cannot determine)

Type 3 *: In this type of equation, roots of the equation is positive & negative. Hereby comparing the roots i.e. x1 is greater than y2 & x2 is less than y1 so we cannot determine the answer, the answer will be CND.*

Example : x^2 – x - 6 = 0

y^2 + 2y – 15 = 0

By just comparing sign of equation by sign root using table

Roots are +x1, -x2, +y1, -y2

Here +X1 > -Y2 & -X2 < +Y1

Therefore answer is CND (Cannot determine)

Type 4 : *In these type of equations, roots of the equation is positive & negative. Hereby comparing the roots i.e. x2 is greater than y2 & x1 is less than y1 so we cannot determine the answer, the answer will be CND.*

Example: *x^2 + x - 56 = 0*

20(y)^2 – y - 12 = 0

By just comparing sign of equation by sign root using table

Roots are -x1, +x2, +y1, -y2

Here X1 < Y1 & X2 > Y2

Therefore relation cannot be established so the answer is CND.

Directions: *In the following questions, two equations numbered are given in variables x and y. You have to solve both the equations and find out the relationship between x and y. Then give answer accordingly:*

(i) $p^2 - 5p + 6 = 0$

(ii) $q^2 - 2q + 1 = 0$

1. *If p> q*
2. *If p < q*
3. *If p ≥ q*
4. *If p ≤ q*
5. *If p = q or relation cannot be established*

Ans : = ***A***

Roots are p = +3, +2
q = +1,+1

Here p > q

(ii) $15p^2 + 5p + 1 = 0$

(ii) $2q^2 + 10q - 48 = 0$

1. *If p > q*

2. *If $p < q$*
3. *If $p \geq q$*
4. *If $p \leq q$*
5. *If $p = q$ or relation cannot be established*

Ans : = ***E***

Roots are p = -0.2, -0.33

q = -8, +3

Here no relations are formed between p & q

iii) $6p^2 + p - 1 = 0$

$8q^2 + 10q + 3 = 0$

1. *If $p > q$*
2. *If $p < q$*
3. *If $p \geq q$*
4. *If $p \leq q$*
5. *If $p = q$ or relation cannot be established*

Ans : = ***C***

Roots are p = -0.5, 0.33

q= -0.75, -0.5

Here roots of p are greater than equal to q.

iv) $4p^2 - 9p - 9 = 0$

(ii) $3q^2 + 2q - 21 = 0$

1. *If $p > q$*
2. *If $p < q$*
3. *If $p \geq q$*
4. *If $p \leq q$*
5. *If $p = q$ or relation cannot be established*

Ans ***: E***

Roots are p = -0.75, 3

q = -3, 2.3

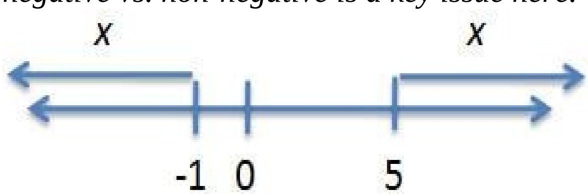
Here no relations are formed between p & q

Most people dislike absolute value, and inequalities can tie us up into knots. Put them together, and we can have some major headaches! Let's test one out.
Set your timer for 1 minute and 15 seconds for this Quantitative Comparison problem and GO!

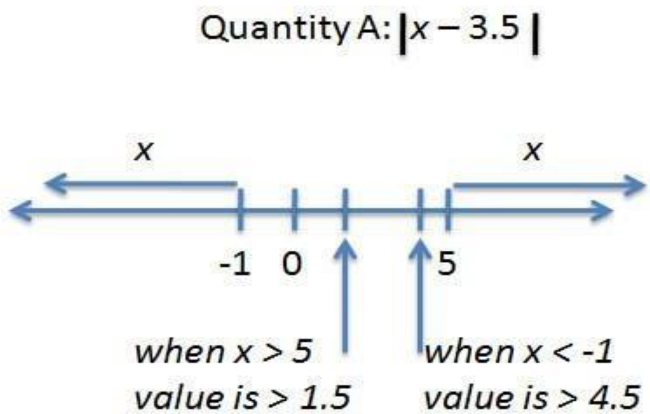
* $|x - 2| > 3$

Quantity A	Quantity B
The minimum possible value of $|x - 3.5|$	The minimum possible $|x - 1.5|$•

What did you get? (Do you remember the 4 QC answer choices? I didn't list them above! If you don't know what they are, go look them up. I'll wait. And the pain of having to look them up will help convince you that you need to memorize these.)
We have a given:
$|x - 2| > 3$•
So, first, let's figure out what this actually means. For what values of x is this inequality true? When an inequality or an equation contains an absolute value sign, we have to think of this as two equations (or inequalities). The first one is the actual inequality that we were given, without the absolute value sign:
$x - 2 > 3$
The second one is the negative of the first one. Choose one side (it doesn't matter which one, but it's easiest to choose whichever side is simpler•) and make it negative. If you have an equation (= sign), then that's all you need to do. If you have an inequality, though, then things are a bit more complicated. With inequalities, we also have to reverse the direction of the inequality (think of it as multiplying by a negative). So, in the above case, we would get this:
$x - 2 < -(3)$
You'll notice that I put parentheses around the 3. I don't really need to do that in this case, because it's only a 3, but this could make a difference on a different problem, so it's a good idea to get into the habit of including parentheses, just in case.
All right, we have these two equations:
$x - 2 > 3$
$x - 2 < -(3)$
Simplify each one. $x - 2 > 3$ *becomes* $x > 5$. *And* $x - 2 < -(3)$ *becomes* $x < -1$. *The original equation, then, is telling us that x could be greater than 5 or less than -1.*
Because we're dealing with absolute value in general, it might be useful to illustrate this on a number line (particularly because, if we glance at Quantities A and B, we can see that we're not done with absolute value yet!). Our number line will include 0 not only because we always include 0 on number lines but also because the question is about absolute value—which means negative vs. non-negative is a key issue here.



What does absolute value mean again? Absolute value turns• negative numbers positive (or, in the case of 0, leaves the number the same). Absolute value is really telling us the distance a number is from zero on the number line, regardless of direction. What's the closest possibility for x? On the -1 side, x could be just a bit more than 1 unit• away from zero.
Take any number in the world and put an absolute value symbol around it. What's the smallest possible value you can think of, once the absolute value symbol has been applied?•
Right. Zero. The absolute value of zero is zero. The absolute value of anything else is at least a tiny bit bigger than zero, because absolute value gets rid of any negative signs. So the smallest possible value for anything inside an absolute value symbol is zero.
Now, why did I ask you that? Take a look at Quantity A:
The minimum possible value of |x — 3.5|•
I asked you that because that's what the problem wants me to find: the minimum possible value once that absolute value sign has been applied.• Can we make it come out to zero? What would x have to be in order for the overall value to be zero?
The value of x would have to be 3.5. Now, I know I can't make x = 3.5 because, glancing at my number line, I can see that x has to be bigger than 5 or smaller than -1. Of the possible values for x, which is closest to 3.5?
We should look at the line that start at a little bit bigger than 5. What if we plug in this value?
|slightly bigger than 5 — 3.5|
Do the math but keep the "slightly bigger than"• language: that would equal something |slightly bigger than 1.5| or > 1.5. The value in Quantity A, then, is something just slightly bigger than 1.5.
What about Quantity B? Use the same thought process. In order for the value of |x — 1.5| to be zero, x would have to be 1.5. It can't be 1.5, but what's the closest possible value that it can be? In this case, we need to go in the other direction: 1.5 is closer to -1 than it is to +5.
This time, we're doing this math:
|slightly smaller than -1 — 1.5|
|slightly smaller than -2.5|
Now here's a weird little twist: I know I'm going to drop the negative sign since I've got an absolute value symbol, right? Think of this as dividing by a negative: we also need to flip the inequality sign. So this becomes: slightly larger than +2.5 or > 2.5.
Which is the larger value? Quantity B. The correct answer is B.
Now, you might look at all of that and think, I can't think it through like that. I'd mess that up.• If so, that's okay. Here's another (slightly longer) way to approach it. You'll have to test more cases, but you might find the process more straightforward.
Do everything the same up to the point where we began examining Quantity A. We know that x > 5 and x < -1, and we've drawn our number line. Then test <u>both</u> ends• of the possible ranges (slightly less than -1 and slightly more than 5) for both Quantity A and Quantity B.
First, try the -1 end of the range. x < |-1 — 3.5| < |-4.5|. Next, apply the absolute value symbol. If x < |-4.5|, then applying the absolute value symbol gives us x > +4.5 (remember, we flip both the sign and the inequality symbol). Next, try 5: x > |5 — 3.5| > |1.5|. We don't need to flip the sign this time because the number is already positive. x > 1.5. Here's how it would look on the number line.



So for Quantity A, the smallest possible value (the one closest to zero) is something just a bit bigger than 1.5. Now, do the same thing for Quantity B: test both ends of the range.
This time, we've got x < |-1 — 1.5| < |-2.5|. Applying the absolute value symbol to this negative value, we get x > 2.5. The other possibility is x > |5 — 1.5| > |3.5|, or x > 3.5. In this case, the smallest possible value (the one closest to zero) is something just a bit bigger than 2.5, so Quantity B is greater and the answer is B.

Key Takeaways for Inequality and Absolute Value Problems

(1) Equations or inequalities containing absolute value symbols actually represent two different equations (or inequalities), not just one. Make sure that you're solving for both!
(2) If you have an inequality inside of an absolute value symbol (as we did when we tested possible values here), you have to flip the sign when the value of the number is negative—just as we would if we were solving a normal inequality.
(3) Try drawing things out. Absolute value problems are really about negative vs. non-negative, so a number line will often help to sort out what the problem is really telling/really asking

Quadratic Equation Questions

Directions (Q. 1-5): Two equations (I) and (II) are given in each question. On the basis of these equations you have to decide the relation between 'x' and 'y' and give answer.

(1) if x > y *(2) if x < y* *(3) if x y*

(4) if x y *(5) if x = y or no relation can be established between 'x' and 'y'.*

1. **I.** $6x^2 - 19x + 15 = 0$ **II.** $10y^2 - 29y + 21 = 0$

2. **I.** $12x^2 + 11x - 56 = 0$ **II.** $4y^2 - 15y + 14 = 0$

3. **I.** $3x^2 + 13x + 12 = 0$ **II.** $y^2 + 9y + 20 = 0$

4. **I.** $8x^2 - 15x + 7 = 0$ **II.** $2y2 - 7y + 6 = 0$

5. **I.** $7x - 3y = 13$ **II.** $5x + 4y = 40$

Directions (Q. 6-10): In the following questions, two equations numbered I and II are given. You have to solve both the equations and give answer

(1) if $x > y$ (2) if $x < y$ (3) if x y

(4) if x y (5) if $x = y$ or no relation can be established between 'x' and 'y'.

6. **I.** $2x^2 - 11x + 15 = 0$ **II.** $21y^2 - 23y + 6 = 0$

7. **I.** $5x^2 - 16x + 11= 0$ **II.** $5y^2 - 3y - 2 = 0$

8. **I.** $x^2 + 11x + 28 = 0$ **II.** $2y^2 + 13y + 20 = 0$

9. **I.** $6x^2 + 29x + 35 = 0$ **II.** $3y^2 + 19y + 30 = 0$

10. **I.** $2x + 5y = 6$ **II.** $5x + 11y = 9$

Directions (Q. 11 - 15): Two equations (I) and (II) are given in each question. On the basis of these equations you have to decide the relation between x and y and give answer

(1) if $x > y$ (2) if $x < y$ (3) if x y

(4) if x y (5) if $x = y$ or no relation can be established between 'x' and 'y'..

11. **I.** 1225x+4900= 0 **II.** 811/4y+34313= 0

12. **I.** 18x2+6x-12x2=8x2. **II.** y3+9.68+5.64=16.95

13. **I.** 25+1.136=x3 **II.** 4y3=-589÷4+5y3

14. **I.** 12x2+11x+12=10x2+22x **II.** 13y2-18y+3=9y2-10y

15. **I.** x75 ÷9=169÷y35 **II.** y14y14×7=273÷y12

Directions (Q. 16 - 20): Two equations (I) and (II) are given in each question. On the basis of these equations you have to decide the relation between x and y and give answer

(1) if $x > y$ (2) if $x < y$ (3) if x y

(4) if x y (5) if $x = y$ or no relation can be established between 'x' and 'y'.

16. **I.** x = 42401 **II.** $2y^2 - 9y - 56 = 0$

17. **I.** $5x^2 + 3x - 14 = 0$ **II.** $2y^2 - 9y + 10 = 0$

18. **I.** $8x^2 + 31x + 21 = 0$ **II.** $5y^2 + 11y - 36 = 0$

19. **I.** $3x - y = 12$ **II.** $y = 1089$

20. **I.** $15x^2 + 68x + 77 = 0$ **II.** $3y^2 + 29y + 68 = 0$

Directions (Q. 21 - 25): Two equations (I) and (II) are given in each question. On the basis of these equations you have to decide the relation between x and y and give answer

(1) if x > y *(2) if x < y* *(3) if x y*

(4) if x y *(5) if x = y or no relation can be established between 'x' and 'y'.*

21. **I.** $2x^2 + x - 1 = 0$ **II.** $6y^2 - 13y + 5 = 0$

22. **I.** $21x^2 - 122x + 165 = 0$ **II.** $3y^2 - 2y - 33 = 0$

23. **I.** $5x^2 - 29x + 36 = 0$ **II.** $10y^2 - 3y - 27 = 0$

24. **I.** $7x + 4y = 3$ **II.** $5x + 3y = 3$

25. **I.** $7x^2 - 54x + 99 = 0$ **II.** $4y^2 - 16y + 15 = 0$

Directions (Q. 26 - 30): Two equations (I) and (II) are given in each question. On the basis of these equations you have to decide the relation between x and y and give answer

(1) if x > y *(2) if x < y* *(3) if x y*

(4) if x y *(5) if x = y or no relation can be established between 'x' and 'y'.*

26. **I.** $5x^2 - 87x + 378 = 0$ **II.** $3y^2 - 49y + 200 = 0$

27. **I.** $10x^2 - x - 24 = 0$ **II.** $y^2 - 2y = 0$

28. **I.** $x^2 - 5x + 6 = 0$ **II.** $2y^2 - 15y + 27 = 0$

29. **I.** $3x + 2y = 301$ **II.** $7x - 5y = 74$

30. **I.** $14x^2 - 37x + 24 = 0$ **II.** $28y^2 - 53y + 24 = 04$

Directions (Q. 31-35): In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answer

(1) if x > y *(2) if x < y* *(3) if x y*

(4) if x y *(5) if x = y or no relation can be established between 'x' and 'y'.*

31. **I.** $11x + 5y = 117$ **II.** $7x + 13y = 153$

32. **I.** $6x^2 + 51x + 105 = 0$ **II.** $2y^2 + 25y + 78 = 0$

33. **I.** $6x + 7y = 52$ **II.** $14x + 4y = 35$

34. **I.** $x^2 + 11x + 30 = 0$ **II.** $y^2 + 12y + 36 = 0$

35. **I.** $2x^2 + x - 1 = 0$ **II.** $2y^2 - 3y + l = 0$

Directions (Q. 41-45): In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answer

(1) if x > y *(2) if x < y* *(3) if x y*

(4) if x y *(5) if x = y or no relation can be established between 'x' and 'y'.*

41. **I.** $7x^2 - 9x + 2 = 0$ **II.** $y^2 - 4y + 3 = 0$

42. **I.** $x^2 = 64$ **II.** $2y^2 + 25y + 72 = 0$

43. **I.** $x^2 + x - 20 = 0$ **II.** $2y^2 - 19y + 45 = 0$

44. **I.** $7x + 3y = 26$ **II.** $2x + 17y = -41$

45. **I.** $3x^2 - 20x + 33 = 0$ **II.** $2y^2 - 11y + 15 = 0$

Directions (Q. 46-50): In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answer

(1) if x > y *(2) if x < y* *(3) if x y*

(4) if x y *(5) if x = y or no relation can be established between 'x' and 'y'.*

46. **I.** $4x^2 - 43x + 105 = 0$ **II.** $7y^2 - 29y + 30 = 0$

47. **I.** $x^2 + 13x + 40 = 0$ **II.** $y^2 + 7y + 10 = 0$

48. **I.** $x= 32197$ **II.** $2y^2 - 54y + 364 = 0$

49. **I.** $5x^2 - 27x + 36 = 0$ **II.** $y^2 - 2y + 2 = 0$

50. **I.** $13x - 8y + 81 = 0$ **II.** $15x + 5y + 65 = 0$

Directions (Q. 51-55): Two equations (I) and (II) are given in each question. On the basis of these equations, you have to decide the relation between x and y and give answer

(1) if x > y *(2) if x < y* *(3) if x y*

(4) if x y *(5) if x = y or no relation can be established between 'x' and 'y'.*

51. **I.** $15x^2 - 19x + 6 = 0$ **II.** $6y^2 - 5y + 1 = 0$

52. **I.** $x=172$ **II.** $y^2 - 29y + 210 = 0$

53. **I.** $3x^2 - 20x + 32 = 0$ **II.** $2y^2 - 19y + 44 = 0$

54. **I.** $3x + 8y = -2$ **II.** $4x + 18y = l$

55. **I.** $2x^2 - 15x + 28 = 0$ **II.** $10y^2 - y - 119 = 0$

Solutions

Q1. Option C

I. *$6x^2 - 9x - 10x + 15 = 0$*
or, $3x(2x - 3) - 5(2x - 3) = 0$
or, $(3x - 5)(2x - 3) = 0$
$x = 5/3, 3/2$
II. *$6x^2 - 9x - 10x + 15 = 0$*
or, $3x(2x - 3) - 5(2x - 3) = 0$
or, $(3x - 5)(2x - 3) = 0$
$y = 7/5, 3/2$
$x \quad y$

Q2. Option D
I. *$12x^2 + 32x - 21x - 56 = 0$*
or, $4x(3x + 8) - 7(3x + 8) = 0$
or, $(4x - 7)(3x + 8) = 0$
$x = 7/4, -8/3$
II. *$4y^2 - 8y - 7y + 14 = 0$*
or, $4y(y - 2) - 7(y - 2) = 0$
or, $(4y - 7)(y - 2) = 0$
$y = 2, 7/4$
$x \quad y$

Q3. Option A
I. *$3x^2 + 9x + 4x + 12 = 0$*
or, $3x(x + 3) + 4(x + 3) = 0$
or, $(3x + 4)(x + 3) = 0$
$x = -4/3, -3$

II. *$y^2 + 5y + 4y + 20 = 0$*
or, $y(y + 5) + 4(y + 5) = 0$
or, $(y + 4)(y + 5) = 0$
$y = -4, -5$
$x > y$

Q4. Option B

I. $8x^2 - 8x - 7x + 7 = 0$
or, $8x(x - 1) -7(x - 1) = 0$
or, $(8x - 7)(x - 1) = 0$
$x=7/8, 1$
II. $2y^2 - 4y - 3y + 6 = 0$
or, $2y(y - 2) -3(y - 2) = 0$
or, $(y - 2)(2y - 3) = 0$
$y=2,3/2$

Q5. Option B
Eqn (I) × 4 + Eqn (II) × 3
$28x - 12y = 52$
$\underline{15x + 12y = 120}$
$43x \quad = 172$
$\therefore x = 4$ and $y = 5$
$y>x$

Q6. Option A
I. $2x^2 - 6x - 5x + 15 = 0$
or, $2x(x - 3) - 5(x - 3) = 0$
or, $(2x - 5)(x - 3) = 0$
$x=3,5/2$

II. $21y^2 - 14y - 9y + 6 = 0$
or, $7y(3y - 2) - 3(3y - 2) = 0$
or, $(7y - 3)(3y - 2) = 0$
$y=3/7, 2/3$
$x>y$

Q7. Option C
I. $5x^2 - 5x - 11x + 11 = 0$
or, $5x(x - 1) - 11(x - 1) = 0$
or, $(x - 1)(5x - 11) = 0$
$x= 1, 11/5$

II. $5y^2 - 5y + 2y - 2 = 0$
or, $5y(y - 1) + 2(y - 1) = 0$
or, $(5y + 2)(y - 1) = 0$
$y = 1, -2/5$
$x \quad y$

Q8. Option D

I. $x^2 + 4x + 7x + 28 = 0$

or, $x(x + 4) + 7(x + 7) = 0$

or, $(x + 4)(x + 7) = 0$

$x = -4, -7$

II. $2y^2 + 8y + 5y + 20 = 0$

or, $2y(y + 4) + 5(y + 4) = 0$

or, $(y + 4)(2y + 5) = 0$

$y = -4, -5/2$

$x \quad y$

Q9. Option A

I. $6x^2 + 15x + 14x + 35 = 0$

or, $3x(2x + 5) + 7(2x + 5) = 0$

or, $(3x + 7)(2x + 5) = 0$

$x = -7/3, -5/2$

II. $3y^2 + 9y + 10y + 30 = 0$

or, $3y(y + 3) + 10(y + 3) = 0$

or, $(3y + 10)(y + 3) = 0$

$y = -3. -10/3$

$x > y$

Q10. Option B

eqn (I) × 5 - eqn (II) × 2

$10x + 25y = 30$

$10x \pm 22y = 18$

- - - .

$3y = 12$

$y = 4$ and $x = -7$

$y > x$

Q11. Option A

I. 1225x+4900=0 or, $35x + 70 = 0$

or, x=-7035= -2II. $3y + 7 = 0$

$y = -7/3$

$x > y$

Q12. Option E

I. 18+6x-12x2=8x2

or, $x = 1/3 = 0.33$

II. $y^2 = 16.95 - 9.68 - 5.64 = 1.63$
∴ $y = \pm 1.277$

Q13. Option A
x3=32+13316=136365y3-4y3=5894or, y3=5894

$x>y$

Q14. Option B
I. $2x^2 - llx + 12 = 0$
Or, $x = 4, 3/2$
II. $4y^2 - 8y + 3 = 0$
or, $y = 3/2, ½$
x y

Q15. Option D
I. x75 ÷9=169÷y35or, x75 ×x35=169×9or, x7+35=1521or, x2=1521x= ±39

II. y14y14y12=2737or, y14+14+12=39or, y=39

x y

Q16. Option E
I. x=42401 , or x=7
II. $2y^2 - 16y + 7y - 56 = 0$
$2y(y - 8) + 7(y - 8) = 0$
$(2y + 7)(y - 8) = 0$

Q17. Option B
I. $5x^2 + 10x - 7x - 14 = 0$
or, $5x(x + 2) - 7(x + 2) = 0$
or, $(x + 2)(5x - 7) = 0$
$x = -2, 7/5$

II. $2y^2 - 4y - 5y + 10 = 0$
or, $2y(y - 2) - 5(y - 2) = 0$
or, $(2y-5)(y-2) = 0$
or, $y=2,5/2$
$x<y$

Q18.Option E

I. $8x^2 + 24x + 7x + 21 = 0$
or, $8x(x + 3) + 7(x + 3) = 0$
or, $(x + 3)(8x + 7) = 0$
$x = -3, -7/8$

II. $5y^2 + 20y - 9y - 36 = 0$
or, $5y(y + 4) - 9(y + 4) = 0$
or, $(y + 4)(5y - 9) = 0$
$y = -4, 9/5$

Q19. Option B
I.y= 1089 or, y=33II.x=12+y3=12+333=453=15
$x<y$

Q20. Option A
I. $15x^2 + 68x + 77 = 0$
or, $15x^2 + 35x + 33x + 77 = 0$
or, $5x(3x + 7) + 11(3x + 7) = 0$
or, $(5x + 11)(3x + 7) = 0$
$x = -7/3 , -11/5$

II. $3y^2 + 29y + 68 = 0$
or, $3y^2 + 12y + 17y + 68 = 0$
or, $3y(y + 4) + 17(y + 4) = 0$
or, $(y + 4)(3y + 17) = 0$
$y = -4, -17/3$
$x>y$

Q21. Option D
I. $2x^2 + 2x - x - 1 = 0$
or, $2x(x + 1) - 1(x + 1) = 0$
or, $(x + 1)(2x - 1) = 0$
$x = -1, ½$

II. $6y^2 - 3y - 10y + 5 = 0$
or, $3y(2y - 1) - 5(2y - 1) = 0$
or, $(3y - 5)(2y - 1) = 0$
$y = -3, 11/3$
x y

Q22. Option E
I. $21x^2 - 45x - 77x + 165 = 0$

or, $3x(7x - 15) - 11(7x - 15) = 0$
or, $(3x - 11)(7x - 15) = 0$
$x = 11/3, 15/7$

II. $3y^2 + 9y - 11y - 33 = 0$
or, $3y(y + 3) - 11(y + 3) = 0$
or, $(3y - 11)(y + 3) = 0$
$y = -3, 11/3$

Q23. Option C
I. $5x^2 - 20x - 9x + 36 = 0$
or, $5x(x - 4) - 9(x - 4) = 0$
or, $(x - 4)(5x - 9) = 0$
$x = 4, 9/5$

II. $10y^2 + 15y - 18y - 27 = 0$
or, $5y(2y + 3) - 9(2y + 3) = 0$
or, $(2y + 3)(5y - 9) = 0$
$y = 9/5, -3/2$
$x \quad y$

Q24. Option B
eqn (I) × 3 - eqn (II) × 4
$21x + 12y = 9$
$20x + 12y = 12$
$- \quad - \quad\quad -$
$x = -3$
and $y = 6$
$x < y$
Q25. Option A
I. $7x^2 - 21x - 33x + 99 = 0$
or, $7x(x - 3) - 33(x - 3) = 0$
or, $(x - 3)(7x - 33) = 0$
$x = 3, 33/7$

II. $4y^2 - 6y - 10y + 15 = 0$
or, $2y(2y - 3) - 5(2y - 3) = 0$
or, $(2y - 3)(2y - 5) = 0$

$y = 3/2, 5/2$

Q26. Option A

I. $5x^2 - 45x - 42x + 378 = 0$
or, $5x(x - 9) - 42(x - 9) = 0$
or, $(5x - 42)(x - 9) = 0$
$x = 9, 42/5$

II. $3y^2 - 24y - 25y + 200 = 0$
or, $3y(y - 8) - 25(y - 8) = 0$
or, $(y - 8)(3y - 25) = 0$
$y = 8, 25/3$
$x>y$

Q27. Option E

I. $10x^2 - 16x + 15x - 24 = 0$
or, $2x(5x - 8) + 3(5x - 8) = 0$
or, $(2x + 3)(5x - 8) = 0$
$x = -3/8, 8/5$

II. $y^2 - 2y = 0$
or, $y(y - 2) = 0$
$y = 0, 2$

Q28. Option D

I. $x^2 - 2x - 3x + 6 = 0$
or, $x(x - 2) - 3(x - 2) = 0$
or, $(x - 2)(x - 3) = 0$
$x = 2,3$

II. $2y^2 - 6y - 9y + 27 = 0$
or, $2y(y - 3) - 9(y - 3) = 0$
or, $(y - 3)(2y - 9) = 0$
$y= 3, 9/2$ $x \quad y$

Q29. Option B

eqn (I) × 5 + eqn (II) × 2
$15x + 10y = 1505$
$\underline{14x - 10y = 148}$
$29x = 1653$

$x =1653/29 = 57$
and $y = 65$
$x < y$

Q30. Option C

I. $14x^2 - 37x + 24 = 0$
or, $14x^2 - 21x - 16x + 24 = 0$
or, $7x(2x - 3) - 8(2x - 3) = 0$
or, $(2x - 3)(7x - 8) = 0$
$x = 3/2,\ 8/7$

II. $28y^2 - 53y + 24 = 0$
or, $28y^2 - 21y - 32y + 24 = 0$
or, $7y(4y - 3) - 8(4y - 3) = 0$
or, $(7y - 8)(4y - 3) = 0$
$y = 8/7$, ¾
$x \quad y$

Q31. Option C

eqn (I) × 7
eqn (II) × 11
$77x + 35y = 819$
$\underline{-\ 77x \pm 143y = 1683}$
$-108y = -864$
$y = 8,\ x = 7$ ie $x < y$

Q32. Option A

I. $6x^2 + 21x + 30x + 105 = 0$
or, $3x(2x + 7) + 15(2x + 7) = 0$
or, $(3x + 15)(2x + 7) = 0$
$x = -5,\ -7/2$

II. $2y^2 + 12y + 13y + 78 = 0$
or, $2y(y + 6) + 13(y + 6) = 0$
or, $(2y + 13)(y + 6) = 0$
$y = -13/2,\ -6$
$x < y$

Q33. Option C

eqn (I) × 4
eqn (II) × 7
$24x + 28y = 208$
$\underline{-\ 98x \pm 28y = 245}$
$-74x = -37$
$x = 1/2,\ y = 7$
$x < y$

Q34. Option B
I. $x^2 + 5x + 6x + 30 = 0$
or, $x(x + 5) + 6(x + 5) = 0$
or, $(x + 5) (x + 6) = 0$
$x = - 5, - 6$

II. $y^2 + 12y + 36 = 0$
or, $(y + 6)2 = 0$
or, $y + 6 = 0$
$y = - 6$
$x \quad y$

Q35. Option D
I. $2x^2 + 2x - x - 1 = 0$
or, $2x(x + 1) - 1(x + 1) = 0$
or, $(2x - 1) (x + 1) = 0$
$x = 1/2 , -1$

II. $2y^2 - 2y - y + 1 = 0$
or, $2y(y - 1) - 1(y - 1) = 0$
or, $(2y - 1)(y - 1) = 0$
$y=1/2, 1$

Q41. Option D
I. $7x^2 - 7x - 2x + 2 = 0$
or, $7x(x - 1) - 2(x - 1) = 0$
$(7x - 2) (x - 1) = 0$
Or, $x = 2/7, 1$

II. $y^2 - y - 3y + 3 = 0$
or, $y(y - 1) - 3(y - 1) = 0$
or, $(y - 3) (y - 1) = 0$
$y = 1, 3$
$x \quad y$
Q42. Option E
I. $x^2=64$
$x=\pm 8$_
II. $2y^2 + 9y + 16y + 72 = 0$
or, $y(2y + 9) + 8(2y + 9) = 0$
or, $(y + 8) (2y + 9) = 0$
$y= -8, -9/2$

Q43. Option C

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

or, $x^2 + 5x - 4x - 20 = 0$

or, $x(x + 5) - 4(x + 5) = 0$

or, $(x - 4)(x + 5) = 0$

$\therefore x = 4, -5$

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

or, $2y(y - 5) - 9(y - 5) = 0$

or, $(y - 5)(2y - 9) = 0$

$y = 5, 9/2$

$x < y$

Q44. Option A

Eqn (I) × 2

Eqn (II) × 7

$14x + 6y = 52$

$14x + 119y = -287$

$\underline{-\quad -\quad +}$

$-113y = 339$

$y = -3$ and $x = 5$, ie $x > y$

Q45. Option B

I. $3x^2 - 9x - 11x + 33 = 0$

or, $3x(x - 3) - 11(x - 3) = 0$

or, $(3x - 11)(x - 3) = 0$

$x = 3, 11/3$

II. $2y^2 - 6y - 5y + 15 = 0$

or, $2y(y - 3) - 5(y - 3) = 0$

or, $(y - 3)(2y - 5) = 0$

$y = 3, 5/2$

$x \quad y$

Q46.Option A

I. $4x^2 - 28x - 15x + 105 = 0$

or, $4x(x - 7) - 15(x - 7) = 0$

or, $(x - 7)(4x - 15) = 0$

$x = 7, 15/4$

II. $7y^2 - 14y - 15y + 30 = 0$

or, $7y(y - 2) - 15(y - 2) = 0$
or, $(y - 2)(7y - 15) = 0$
$y = 2, 15/7$
$x > y$

Q47. Option D
I. *$x^2 + 8x + 5x + 40 = 0$*
or, $x(x + 8) + 5(x + 8) = 0$
or, $(x + 5)(x + 8) = 0$
$x = -5, -8$
II. *$y2 + 2y + 5y + 10 = 0$*
or, $y(y + 2) + 5(y + 2) = 0$
or, $(y + 2)(y + 5) = 0$
$y = -2, -5$
x y

Q48. Option D
I. x= 32197
$x = 13$
II. *$2y^2 - 28y - 26y + 364 = 0$*
or, $2y(y - 14) - 26(y - 14) = 0$
or, $(2y - 26)(y - 14) = 0$
$y = 14, 13$
x y

Q49. Option A
I. *$5x^2 - 15x - 12x + 36 = 0$*
or, $5x(x - 3) - 12(x - 3) = 0$
or, $(5x - 12)(x - 3) = 0$
$x = 12/5, 3$

II. *$y^2 - y - 2y + 2 = 0$*
or, $y(y - 1) - 2(y - 1) = 0$
or, $(y - 1)(y - 2) = 0$
$y = 1, 2$
$x > y$

Q50. Option C
eqn (I) × 5 + eqn (II) × 8

$65x - 40y + 405 = 0$
$120x + 40y + 520 = 0$

$185x + 0 + 925 = 0$
$x = -925/185 = -5$
$y = 13x+818$
$= -65+818=168=2$
$x<y$

Q51. Option A
I. $15x^2 - 10x - 9x + 6 = 0$
or, $5x(3x - 2) -3(3x - 2) = 0$
or, $(5x - 3)(3x - 2) = 0$
$x = 3/5, 2/3$

II. $6y^2 - 3y - 2y + 1 = 0$
or, $3y(2y - 1) -1(2y - 1) = 0$
or, $(3y - 1)(2y - 1) = 0$
$y = 1/3, ½$
$x > y$

Q52. Option B
I. $x= 172x=13.11$

II. $y^2 - 14y - 15y + 210 = 0$
or, $y(y - 14) - 15(y - 14) = 0$
or, $(y - 14)(y - 15) = 0$
$y = 14, 15$
$x < y$

Q53. Option D
I. $3x^2 -12x - 8x + 32 = 0$
or, $3x(x - 4) - 8(x - 4) = 0$
or, $(x - 4)(3x - 8) = 0$
$x = 4, 8/3$
II. $2y^2 - 8y - 11y + 44 = 0$
or, $2y(y - 4) -11(y - 4) = 0$
or, $(y - 4)(2y - 11) = 0$
$y= 4, 11/2$
$x \quad y$

Q54. Option B
$4 \times$ eqn (I) - $3 \times$ eqn (II),

12x + 32y = -8
12x + 54y = 3
- - -
-22y = -11
y = ½ and x = -2
x < y

Q55. Option C
I. *$2x^2 - 8x - 7x + 28 = 0$*
or, 2x(x - 4) - 7(x - 4) = 0
or, (x - 4) (2x - 7) = 0
x = 4, 7/2

II. *$10y^2 - 35y + 34y - 119 = 0$*
or, 5y(2y - 7) + 17(2y - 7) = 0
or, (2y - 7)(5y + 17)
y = 7/2 , -17/5
x y

New Pattern Sets

Quantity I: The age of teacher, if the average age of 36 students is 14. When teacher's age is included the average increases by 1.
Quantity II: The age of teacher, if the average age of 19 students is 35. When teacher's age is included the average increases by 0.5.
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established
Option A
Solution:
I A=a +or – nd
*14+ (37*1) =14+37=51yrs.*
*II 35 + (20*0.5) =35+ 10=45yrs.*

- *Quantity I: Profit Percentage , if Some articles were bought at 6 articles for Rs. 5 and sold at 5 articles for Rs. 6.*

Quantity II: Profit Percentage, if 100 toys are bought at the rate of Rs. 350 and sold at the rate of Rs. 48 per dozen.
A) Quantity I > Quantity II

B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established

Option A
Solution:
I If the no of article bought is LCM of 6 and 5 is 30
*CP of 30 articles =5/6*30=Rs25*
*SP of 30 articles =6/5*30=Rs36*
Profit 36-25=11
*Profit %ge =11/25 *100=44%*
II CP of 1 toy =350/100=3.50
SP of 1toy = 48/12 =4.
Profit=4-3.5=0.5.
*Profit %ge (0.5/3.5) *100=14 2/7%*

- *Quantity I: On selling 17 balls at Rs. 720, there is a loss equal to the cost price of 5 balls. The cost price of a ball is:*
Quantity II: A man buys a cycle for Rs. 1400 and sells it at a loss of 15%. The selling price is:
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established

Option C
Solution:
I. C.P. of 12 balls = S.P. of 17 balls = Rs.720.
CP of 1 ball = 720/12=Rs60.
II. SP =85% of 1400
*=85/100*1400*
=Rs1190.

- *Quantity I: A and B together can do a piece of work in 4 days. If A alone can do the same work in 6 days, then B alone can do the same work in?*
Quantity II: A can do a piece of work in 4 hours; B and C together can do it in 3 hours, while A and C together can do it in 2 hours. How long will B alone take to do it?
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I

D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established

Option A
Solution:
I. B work= 1/4 – 1/6 = 2/24 ==> 12 days
II. A's 1hr work 1/4 .
(B+C's) 1 hr work 1/3.
(A+C's) 1hr work 1/2.
A+B+C 1hr work = 1/4+1/3=7/12.
B's work =7/12 – 1/2=1/12
12hours.

- *Quantity I: A man on tour travels first 160 km at 64 km/hr and the next 160 km at 80 km/hr. The average speed of the tour is:*

Quantity II: A went from P to Q with the speed of 60km/hr. and return back with the speed of 90km/hr. Find the average speed.
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established

Option C
Solution:
I. Total time taken = (160/64 + 160/80) =9/2hrs
Then avg speed =320/(9/2)
*=320*2/9= 71.11km/hr.*
*II. (2*60*90)/150=72km/hr.*

- *Quantity I: The ratio between the speeds of two trains is 7 : 8. If the second train runs 400 km in 4 hours, then the speed of the first train is:*

Quantity II: Find the speed of a train which passes a tree in 12 seconds. The length of the train is 264m.
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established

Option A
Solution:
I. Let the speed of two trains be 7x and 8x.
400/4=100

8x=100==>x=12.5.
*Then speed of first train =7*12.5 =87.5km/hr.*
II. Length of the train = 264m.
Time taken to pass the tree = 12 seconds.
*Speed of the train = 264/12 m/sec = 22 m/sec = 22 * 18/5 km/hr = 79.2 km/hr.*

- *Quantity I: A and B started a business by investing Rs. 20000 and Rs. 35000 respectively. Find the share of B out of an annual profit of Rs. 3520.*

Quantity II: X and Y invested in a business. Their profit ratio is 2:3. If X invested Rs. 4000. Find the amount invested by Y?
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established

Option C
Solution:
I Ratio 20:35=4:7
11 == 3520
7 ?==>Rs2240.
II 4000/y = 2/3
y = 6000.

- *Quantity I: The age of P is twelve times that of her daughter Q. If the age of Q is 3 years, what is the age of P?*

Quantity II: The ratio between the present ages of A and B is 2:3. 4 years ago the ratio between their ages was 5:8. What will be A's age after 7 years?
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established

Option A
Solution:
I
Ratio P:Q 12:1
1…….== 3
*12 ? == 12*3 =36years.*
II
(5x+4)/(8x+4) =2/3
15x+12 = 16x+8
x=4.

*A's age 4 yrs ago 5*4=20*
Then A's age after 7yrs is 20+4+7=31yrs.

- *Quantity I: The difference between SI and CI compounded annually on a certain sum of money for 2 years at 8% per annum is Rs. 12.80. Find the principal.*

Quantity II: A sum fetched a total simple interest of Rs. 800 at the rate of 8 %per annum in 5 years. What is the sum?
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established

Option E
Solution:
I SI-CI=Pr²/100.
*P*8²/100=12.8*
*64P/(100*100)=12.8*
P=Rs2000.
II SI=Pnr/100
*800=P*8*5/100*
*P=800*100/40*
=Rs2000.

- *There are 5 Brown balls, 4 Blue balls & 3 black balls in a bag .Four balls are chosen at random*

Quantity I: The probability of their being 2 Brown and 2 Blue ball Quantity
Quantity II: The probability of their being 2 Brown, 1 Blue & 1 blacks
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established

Option C
Solution:
*I. (5c2 * 4c2)/12c4 = 60/495=4/33*
*II. (5c2 * 4c1 *3c1)/12c4 =120/95=8/33*

Directions: Each question below contains a statement followed by Quantity I and Quantity II. Find both to find the relationship among them. Mark your answer accordingly.

If the quantity of milk in mixture is 10 litre then find the quantity of water if
Quantity I: After selling it at CP, milkman saves 25%
Quantity II: If the ratio of Milk and water is 5:1
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established
Option A
***Explanation**:*
Quantity I.
Milk : Water
100 : 25
10=4 : 1=2.5
In Quantity 2:
5=10 ; 1=2
Quantity 1> Quantity 2

Find the original consumption if
Quantity I: After increasing price by 20% a family now gets 5 kg less on that price.
Quantity II: After increasing price by 25%, a family increases its expenditure by 10% and gets 6 kg less than original consumption
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established
Option C
***Explanation**:*
Quantity I: 20% Increase= 1/5
*1/(1+5) * T=5*
T=30 Kg
Quantity II:
100
110 125
125-110=15
*15/125 *T=6*
T=50 Kg
II > I

Find the present age of A
Quantity I: Three years before, the ratio of ages of A and B was 5:6. Three years hence this ratio will become 6:7
Quantity II: Eleven years before the ratio of ages of A and B was 1:3 and eleven years hence the ratio will become 1:2

A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established
Option E
***Explanation**:*

Quantity I:	*A*	*B*
3 years before	*5*	*6*
3 years after	*6*	*7*

Difference in both case 6-5=1 and 7-6=1
1=6
6=30
Present age =30+3=33

Quantity II:	*A*	*B*
11 years before	*1*	*3*
11 years after	*1*	*2*

Difference A=1-1=0 ; B= -1
To make the difference same; multiply equation 2 by 2; we get

Quantity II:	*A*	*B*
11 years before	*1*	*3*
11 years after	*2*	*4*

Difference A=2-1=1; B=4-3=1
1=2
11=22
Present age= 22+11=33

Find the sum
Quantity I: If the Compound Interest for 2 years at 20% rate of interest is Rs 1,320.
Quantity II: If the amount on a sum for 2 years in which rate of interest for 3 years makes a sum of 125 to amount 216 is Rs 2880.
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established
Option A
***Explanation**: CI for 2 years on 20%=1/5*
5 6
5 6
*5*5=25 6*6=36*
CI=36-25=11 =1320
Sum=25=3000
Quantity II: Find Rate
Cube root(125): Cube root (216)

5:6
*rate= (6-5)/5*100=20% =1/5*
5 6
5 6
*5*5=25 6*6=36*
36=2880; hence 25=2000
I > II

Find the distance if
Quantity I: A man covers a distance in 15 hours. He covers first half at 12 kmph and second half at 15 kmph.
Quantity II: Two buses moves towards each other at a speed of 30 kmph and 40 kmph respectively. When they meet it is found that faster bus covers 30 km more than slower one.
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established
Option C
***Explanation**:*
*Average Speed=2*12*15/(12+15)*
*D=S*T = 2*12*15/27 * 15 = 200 KM*
Quantity II: Speed difference for 1 hour =40-30=10 Kmph; means in 1 hour faster bus will cover 10 km more than slower one; hence to cover 30 km more it will take 3 hours.
*Distance= Relative Speed * Time*
D= 3 (30+40)*
=210 KM
II > I
Quantity I: Selling price, if cost price is Rs 24,000 and profit is 20%
Quantity II: Selling price, if cost price is Rs 24,000 and shopkeeper gained 16 2/3% after giving discount of 25%
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established

Option A
***Explanation**: SP = 120/100 * 24000 = 28800*
Discount = 25% = 1/4 (MP = 4, SP = 4-1 =3)
Gain = 16 2/3% = 1/6 (CP = 6, SP = 6+1 = 7)
Make SP same
CP…………SP…………..MP
18………….21………….28

18 == 24000
So 21 == 28000
Quantity I: No. of days in which A will work alone, given A and B can complete work in 8 days, B and C can complete work in 12 days, C and A can complete work in 8 days.
Quantity II: No. of days in which A will work alone, given A and B can complete work in 18 days, they started work together and after working for 6 days A left and B completed remaining work in 24 days.
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established
Option C
***Explanation**: LCM = 24*
So
A + B = 24/8 = 3
B + C = 24/12 = 2
C + A = 24/8 = 3
2 (A+B+C) = 3+2+3 = 8
A+B+C = 4
(A+B+C) – (B+C) = 4 – 2 = 2
So A = 24/2 = 12 days
A = 36 days
Quantity I: Volume, if diameter of sphere is 14 cm
Quantity II: Volume, if side of cube is 8 cm
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established

Option A
***Explanation**:*
Quantity I. Volume of sphere = (4/3) Pie* R^3*
R=7 ; Volume= 1437.33
Quantity II: V=a^3 = 8^3 = 512
I > II
Quantity I: x where: $3x^2 + 2x – 8=0$
Quantity II: y: where: $3y^2 + 5y -12 =0$
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established

Option E
Explanation: *x= -2 and 4/3 ; y= -3 and 4/3 ; So no relation*
Quantity I: x where: $4x^2 - 16x + 15 = 0$
Quantity II: y where: $2y^2 + y - 6 = 0$
A) Quantity I > Quantity II
B) Quantity I ≥ Quantity II
C) Quantity II > Quantity I
D) Quantity II ≥ Quantity I
E) Quantity I = Quantity II or Relation cannot be established

Option B
Explanation: *x = 3/2 and 5/2*
y= -2 and 3/2