

# IBPS PO 2019

## 50 Imp. Quadratic Equations & Quantity Comparison PDF



**Direction:** In the following questions two quantities are given. You are required to calculate the value in the quantity and compare them. According to the comparison kindly mark your answer.

- Quantity I: In an examination, Sejal got 23% marks and failed by 80 marks and Ankita got 50% marks which was 190 more than the passing marks. Find the marks obtained by Tanuja if she got 80% marks.  
Quantity II: A fruit seller has some apples and oranges such that oranges are 50% less than apples. He sells 20% oranges to a man, 50% of remaining oranges to a woman and left with 160 oranges. Find the number of apples.  
A. Quantity I > Quantity II  
B. Quantity I < Quantity II  
C. Quantity I = Quantity II  
D. Quantity I ≥ Quantity II  
E. None of these

**Direction:** 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.

- A can do a work in 16 days. B is 60% more efficient than A.  
**Quantity I:** Time taken by A and B together to do the work.  
**Quantity II:** Time taken by A and B to do the work together when A works at double his original efficiency and B works at half his original efficiency.  
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

**Direction:** Find the correct relationship between the given quantities-

- Quantity I. At simple Interest, a sum becomes 3 times in 20 year. Find the time, in which the sum will be double at the same rate of interest.

Quantity II. Simple interest for the sum of Rs 1500 is Rs 30 in 4 year and Rs 60 in 8 year. Find the rate of simple interest.

- Quantity I > Quantity II
- Quantity I ≥ Quantity II
- Quantity II > Quantity I
- Quantity II ≥ Quantity I
- Quantity I = Quantity II or Relation cannot be established

**Direction:** 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.

- There are certain numbers of red balls and 4 green balls in a bag. The probability of getting a red ball when 1 ball is picked at random is 1/3.  
Quantity I. Number of red balls.  
Quantity II. Number of green balls.  
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

**Direction:** Given below are two quantities named I and II. Based on the given information, you have to determine the relation between the two quantities. You should use the given data and your knowledge of Mathematics to choose among the possible answers.

- Quantity I: Tank A and Tank B contain a mixture of petrol and diesel in ratio of 3: 7 and 4: 1, respectively. If 300 litres and 400 litres are drawn from tank A and tank B, respectively, then what would be the difference between the total quantity of petrol and the total quantity of diesel drawn from the 2 tanks?  
Quantity II: Vessel X and vessel Y contain mixture of oil and water in the ratio of 3: 2 and 1: 1, respectively. 200 litres of the mixture is transferred from vessel X to vessel Y. If the initial quantity in vessel Y was 600 litres, then what would be the total quantity of water in vessel Y in the end?



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- 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 No relation

6. **Direction:** Read the following information carefully & establish a relation between quantity I & quantity II:

A research study predicted that the price of commodity will increase by Rs 5 per kg. Sumit bought some quantity of this commodity for Rs. 4500. If he bought this quantity on new price, then he gets 10 kg less.  
Quantity I: Quantity bought by Sumit in kg

Quantity II: 150

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I = Quantity II
- E. No relation

**Direction:** Find the appropriate relation for quantity1 and quantity2 in the following question:

7. Total number of students in class IX is 600, out of them 25% are girls. Total number of students in class X is 450. The difference between the total number of boys in class IX to class X is 200.

**Quantity 1:** The total number of girls in class X.

**Quantity 2:** 200

- A. Quantity 1  $\geq$  Quantity 2
- B. Quantity 1  $\leq$  Quantity 2
- C. Quantity 1 = Quantity 2 or no relation can be established
- D. Quantity 1 > Quantity 2
- E. Quantity 1 < Quantity 2

**Directions:** Find the appropriate relation for quantity 1 and quantity 2 in the following question:

8. Two train going in the opposite direction cross each other in 12 sec.

**Quantity 1:** Length of train 1 if it crosses the pole in 9 sec

**Quantity 2:** Length of train 2 if it crosses the pole in 24 sec

- A. quantity 1 > quantity 2
- B. quantity 1  $\geq$  quantity 2
- C. quantity 1  $\leq$  quantity 2
- D. quantity 1 < quantity 2
- E. quantity 1 = quantity 2

**Direction:** Given below are two quantities named I and II. Based on the given information, you have to determine the relation between the two quantities. You should use the given data and your knowledge of Mathematics to choose among the possible answers.

9. **Quantity I:** There are 42 workers in a factory with an average weight of 65 kg. The ratio of the number of male workers to female workers is 13: 8. If the average weight of male workers and female workers is 72 kg and 'x' kg respectively, then find the value of 'x'.

**Quantity II:** The average weight of a class of 25 students is 'x' kg. If a student whose weight is 100 kg is excluded, then the average of the class reduces by 2 kg. Find the value of 'x'.

- 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 No relation

**Direction:** Given below are two quantities named I and II. Based on the given information, you have to determine the relation between the two quantities. You should use the given data and your knowledge of Mathematics to choose among the possible answers.

10. **Quantity I:** If Suresh is 20 years older than Mahesh and the age of Mahesh is 16 years, then the age of Ramesh, who is older than Suresh.

**Quantity II:** The ratio of the present age of Rohan to his father is 7: 22. Four years ago, the ratio of their ages was 1: 4 respectively. The present age of Rohan's father

- 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 No relation

**Direction:** Find the correct relationship between the given quantities:

11. There are 63 cards in a box numbered from 01 to 63. Every card is numbered with only 1 number.  
**Quantity I:** Probability of picking up a card whose digits, if interchanged, result in a number which is 36 more than the number picked up.  
**Quantity II:** Probability of picking up a card, the number printed on which is a multiple of 8 but not that of 16.
- A. Quantity I < Quantity II
  - B. Quantity II < Quantity I
  - C. Quantity I = Quantity II
  - D. Can't establish a relation
  - E. None of the above

**Direction:** Given below are two quantities named I and II. Based on the given information, you have to determine the relation between the two quantities. You should use the given data and your knowledge of Mathematics to choose among the possible answers.

12. **Quantity I:**  $6x^2 + 11x + 4 = 0$   
**Quantity II:**  $3y^2 + 21y + 30 = 0$
- A. Quantity I > Quantity II
  - B. Quantity I  $\geq$  Quantity II
  - C. Quantity II > Quantity I
  - D. Quantity II  $\geq$  Quantity I
  - E. Quantity I = Quantity II or Relation cannot be established

**Direction:** Given below are two quantities named I and II. Based on the given information, you have to determine the relation between the two quantities. You should use the given data and your knowledge of Mathematics to choose among the possible answers.

13. **Quantity I:** If the length of a certain rectangle is decreased by 4 cm and the width is increased by 3 cm, a square with the same area as the

original rectangle would result. The perimeter of the original rectangle.

**Quantity II:** Value of Y:  $Y^2 - 60Y - 1125 = 0$

- 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 No relation

**Direction (14 – 18) :** Given below are two quantities named I and II. Based on the given information, you have to determine the relation between the two quantities. You should use the given data and your knowledge of Mathematics to choose among the possible answers.

14. **Quantity I:** The average of three numbers a, b, and c is 28. b is twice of a and c is half of a. The value of b  
**Quantity II:** The value of a, if  $(a - 4)^2 = 400$  and  $a > 0$
- 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 No relation
15. **Quantity I:** A class has 49 students. The average marks obtained by the boys were 65, while the average marks obtained by the girls were 72. If the overall average of marks obtained by the students is 70, then find the number of boys in the class.  
**Quantity II:** The average marks obtained by 'x' boys is 62. If the total mark obtained by all the boys together is 806, then find the value of 'x'.
- 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 No relation
16. **Quantity I:** A batsman scored 144 runs in a match consisting of 10 players in a team, which is 'x%' of the total runs scored in the match by the team. If the average runs scored by



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each of the ten players are 32, then find the value of 'x'.

Quantity II: A student scored 'x'% marks in his annual exam of five subjects. If the total marks obtained by him are 220, then find the value of 'x'. [Note: maximum marks of each subject is 100 marks]

- 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 No relation

17. Quantity I: 240 litres of a mixture (wine and whisky) contains 30% wine. A certain quantity of wine is added to this mixture such that new mixture contains 40% wine and rest whisky. The quantity of wine added

Quantity II: 24 litres

- 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 No relation

18. Quantity I: An article was sold at 30% discount. If the same article was sold at 25% profit then the discount offered would be 37.5%. Find the profit percent at 30% discount.

Quantity II: 33.33%

- 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 No relation

**Direction:** Given below are two quantities named I and II. Based on the given information, you have to determine the relation between the two quantities. You should use the given data and your knowledge of Mathematics to choose among the possible answers.

19. **Quantity I:** A car takes 6 hours to reach point B from point A and 7.5 hours to reach point A from point B. What was the average speed of the car during the journey if the distance between point A and point B is 310.5 km?

**Quantity II:** 40 km/hr

- 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 No relation

**Direction:** Given below are two quantities named I and II. Based on the given information, you have to determine the relation between the two quantities. You should use the given data and your knowledge of Mathematics to choose among the possible answers.

20. **Quantity I:** A boat takes 4 hours more while going back in upstream than in downstream when the distance between two places is 32 km and the speed of boat in still water is 6 kmph. How much speed of boat in still water must be increase so that it can row downstream, 48 km in 4 hours?

**Quantity II:** value of Y:  $Y^2 - 9Y + 20 = 0$

- 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 No relation

**Direction:** Given below are two quantities named I and II. Based on the given information, you have to determine the relation between the two quantities. You should use the given data and your knowledge of Mathematics to choose among the possible answers.

21. The present age of Sunita is 3 times the present age of Nita.

**Quantity I:** 4 years hence twice the age of Sunita will be equal to thrice the age of Nita. Find the present age of Sunita.

**Quantity II:** Present age of Chandan is 1.5 times of Sunita. 6 months ago, ratio between the age of nita and Chandan was 5:33. Find age of Chandan 3 years ago.

- 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 No relation

**Direction:** Given below are two quantities named I and II. Based on the given information, you have to determine the relation between the two quantities. You should use the given data and your knowledge of Mathematics to choose among the possible answers.

22. In a bag, there are x vanilla cake, 6 chocolate cake and 3 strawberry cake. If one cake is chosen, Probability of getting a chocolate cake is  $\frac{3}{8}$ .

Quantity I : Probability of getting a vanilla cake: if one cake is drawn.

Quantity II : Probability of getting at-most 1 tail: If 3 coins are tossed simultaneously.

- 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 No relation

**Direction:** Given below are two quantities named I and II. Based on the given information, you have to determine the relation between the two quantities. You should use the given data and your knowledge of Mathematics to choose among the possible answers.

23. Quantity I: Ram invested a sum of Rs. 52, 000 in scheme offering compound interest at the rate of 10% per annum. Find the interest earned by him after 3 years.  
Quantity II: Rahim invested Rs. 28,750 in a scheme offering simple interest at the rate of 20% per annum. Find the interest earned by him after 3 years.
- 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 No relation

**Direction:** In the given questions, two quantities are given, one as quantity I and another as quantity II. You have to determine relationship between two quantities and choose the appropriate option.

24. What is the filling capacity of the pipe?
- 1) A pipe can be used for filling the cistern as well as for emptying the cistern. The capacity of the cistern is 3900 cubic meters. The filling capacity of the tank is 5 cubic meters per minute lesser than its emptying capacity and the pipe needs 5 minutes more to fill the tank than it needs to empty it.
  - 2) Pipe A is used for filling the tank and Pipe B is used for emptying the tank. The capacity of the tank is 1140 cubic meters. The efficiency of pipe B is 3 cubic meters per minute more than the efficiency of pipe A. Pipe A needs 1 minute more than to fill the tank than pipe B needs to empty it.
- 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 No relationship

**Direction:** Calculate quantity **I** and quantity **II** on the basic of the given information then compare them and answer the following questions accordingly.

25. **Quantity I:** A woman 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  $\geq$  Quantity II
  - C. Quantity II > Quantity I
  - D. Quantity II  $\geq$  Quantity I
  - E. Quantity I = Quantity II or Relation cannot be established

**Direction:** In the following question two equations are given in variables



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X and Y. You have to solve these equations and determine relation between X and Y.

26. I.  $18x^2 - 60x - 48 = 0$   
 II.  $2y^2 + 21y + 54 = 0$   
 A.  $x > y$                       B.  $x < y$   
 C.  $x \geq y$                       D.  $x \leq y$   
 E.  $x = y$  or relationship cannot be determined

**Direction:** 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.

27. I.  $\sqrt{25x^2 - 125} = 0$   
 II.  $\sqrt{(361)y + 95} = 0$   
 A.  $x > y$                       B.  $x \geq y$   
 C.  $y > x$                       D.  $y \geq x$   
 E.  $x = y$  or relationship cannot be establish

**Direction:** In the following question two equations are given. You have to solve both and establish the relation between given variables:

28. I.  $8a^2 - 27a + 22 = 0$   
 II.  $8b^2 + 5b - 22 = 0$   
 A.  $a = b$                       B.  $a \leq b$   
 C.  $a < b$                       D.  $a \geq b$   
 E.  $a > b$

**Direction:** 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.

29.  $X^2 + 3X + 2 = 0$   
 $Y^2 - 7Y + 12 = 0$   
 A.  $x > y$                       B.  $x < y$   
 C.  $x \geq y$                       D.  $x \leq y$   
 E.  $x = y$  or the relationship can't be established (CND)

**Direction:** In the following question two equations are given in variables X and Y. You have to solve these equations and determine relation between X and Y.

30.  $2x^2 - 31x + 84 = 0$   
 $3y^2 + y - 2 = 0$   
 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.

**Direction:** In the following question, there are two equations. Solve the equations and answer accordingly:

31. I.  $12m - 35 = 49 - 9m$   
 II.  $\sqrt{n + 222} - \sqrt{9} = \sqrt{144}$   
 A.  $m > n$                       B.  $m \geq n$   
 C.  $m < n$                       D.  $m \leq n$   
 E.  $m = n$  or the relationship cannot be established.

**Direction:** In the following question, there are two equations. Solve the equations and answer accordingly.

32.  $x = \sqrt{576}$   
 $y^2 - 29 = 700$   
 A.  $x > y$                       B.  $x < y$   
 C.  $x \geq y$                       D.  $x \leq y$   
 E.  $x = y$  OR No relation can be established(CND)

**Directions:** In each of these questions, two equations (I) and (II) are given.

Solve both the equations and give answer.

33. I.  $3p^2 - 75p + 342 = 0$   
 II.  $q^3 = 1512 \div (2401)^{1/4}$   
 A.  $p > q$                       B.  $p < q$   
 C.  $p \geq q$                       D.  $p \leq q$   
 E.  $p = q$  or no relation can be established between 'p' and 'q'.

**Direction:** In the following question, there are two equations. Solve the equations and answer accordingly.

34. I.  $x^2 - 3x - 18 = 0$   
 II.  $2y^2 + 18y + 36 = 0$   
 A.  $x > y$                       B.  $x < y$   
 C.  $x \geq y$                       D.  $x \leq y$   
 E.  $x = y$  or no relationship can be established (CND)

**Direction:** In the following question, there are two equations. Solve the equations and answer accordingly.

35. I.  $3m^2 - 27m + 60 = 0$   
 II.  $\frac{n^2}{2} - \frac{13}{2} \times n + 21 = 0$

- A.  $m > n$                       B.  $m \geq n$   
 C.  $m < n$                       D.  $m \leq n$   
 E.  $m = n$  or the relationship cannot be established

**Direction:** In the following question two equations are given in variables X and Y. You have to solve these equations and determine relation between X and Y.

36. I.  $9x^2 - 10x - 51 = 0$   
 II.  $6y^2 - 7y - 68 = 0$   
 A.  $X > Y$                       B.  $X < Y$   
 C.  $X \geq Y$                       D.  $X \leq Y$   
 E.  $X = Y$  or No relation can be established

**Direction:** In the following question two equations are given in variables X and Y. You have to solve these equations and determine relation between X and Y.

37. I.  $\sqrt{x} + \frac{15x}{\sqrt{x}} = 4x^{\frac{5}{2}}$   
 II.  $\frac{\sqrt{46656} + \sqrt{6561}}{11} = y^3$   
 A.  $X > Y$                       B.  $X < Y$   
 C.  $X \geq Y$                       D.  $X \leq Y$   
 E.  $X = Y$  or No relation can be established

**Direction:** In the following question two equations are given in variables X and Y. You have to solve these equations and determine relation between X and Y.

38. I.  $2x^2 + 13\sqrt{3}x + 60 = 0$   
 II.  $y^2 + 7\sqrt{3}y + 36 = 0$   
 A.  $X > Y$                       B.  $X < Y$   
 C.  $X \geq Y$                       D.  $X \leq Y$   
 E.  $X = Y$  or No relation can be established

**Direction:** In the following question two equations are given in variables X and Y. You have to solve these equations and determine relation between X and Y.

establish the relationship between the given variables.

39. I.  $\frac{18}{x^2} + \frac{6}{x} - \frac{12}{x^2} = \frac{8}{x^2}$   
 II.  $y^3 + 9.68 + 5.64 = 16.95$   
 A.  $x > y$                       B.  $x \geq y$   
 C.  $x < y$                       D.  $x \leq y$   
 E.  $x = y$  or the relationship cannot be established

**Direction:** In the following question two equations are given in variables X and Y. You have to solve these equations and determine relation between X and Y.

40. I.  $9x - 15.45 = 54.55 + 4x$   
 II.  $\sqrt{(y+155)} - \sqrt{36} = \sqrt{49}$   
 A.  $x > y$                       B.  $x \geq y$   
 C.  $x < y$                       D.  $x \leq y$   
 E.  $x = y$  or the relationship cannot be established

**Directions:** In the following question, two equations numbered I and II are given. You have to solve both the equations and give answer:

41. I.  $2X^2 + 21 = 17X$   
 II.  $Y^2 + \sqrt{3136} = 15Y$   
 A. If  $X > Y$                       B. If  $Y > X$   
 C. If  $X \geq Y$                       D. If  $Y \geq X$   
 E. If  $x = y$  or a relationship between x and y cannot be established.

**Direction:** In the following question, there are two equations. Solve the equations and answer accordingly.

42. I.  $x^2 + 29x = -210$   
 II.  $Y^2 + 28y = -195$   
 A.  $x > y$                       B.  $x \geq y$   
 C.  $x < y$                       D.  $x \leq y$   
 E.  $x = y$  or the relationship cannot be established

**Direction:** In the following question, two quadratic equations I & II are given. Solve both the equations &

43. I.  $\frac{15}{\sqrt{x}} + \frac{9}{\sqrt{x}} = 11\sqrt{x}$   
 II.  $\frac{\sqrt{y}}{4} + \frac{5\sqrt{y}}{12} = \frac{1}{\sqrt{y}}$



- A. if  $x > y$       B. if  $x \geq y$   
 C. if  $x < y$       D. if  $x \leq y$   
 E. if  $x = y$  or the relationship cannot be established

**Direction:** In the following question, two equations numbered I and II are given. You have to solve both the equations and establish the relationship between the given variables:

44. I.  $8x^2 - 78x + 169 = 0$   
 II.  $20y^2 - 117y + 169 = 0$   
 A. if  $x > y$       B. if  $x \geq y$   
 C. if  $x < y$       D. if  $x \leq y$   
 E. if  $x = y$  or the relationship cannot be established

**Directions:** In the following question, two equations numbered I and II are given. You have to solve both the equations and establish the relationship between the given variables:

45. I.  $x^2 - 208 = 233$   
 II.  $y^2 + 47 - 371 = 0$   
 A. if  $x > y$       B. if  $x \geq y$   
 C. if  $x < y$       D. if  $x \leq y$   
 E. if  $x = y$  or the relationship cannot be established

**Direction:** In the following question two equations are given in variables X and Y. You have to solve these equations and determine the relation between X and Y.

46.  $3X^2 + 7X = 6$   
 $3Y^2 - 7Y + 2 = 0$   
 A.  $X > Y$       B.  $X < Y$   
 C.  $X \geq Y$       D.  $X \leq Y$   
 E.  $X = Y$  OR No relation can be established (CND)

**Direction:** In each question, two equations numbered I and II are given. You have to solve both the equations and mark the answer:

47. I.  $3x - \sqrt{2x} = 4$

II.  $\frac{9y-4}{3} = \sqrt{2y}$

- A. If  $x > y$       B. If  $x < y$

C. If

$x = y$  or no relation is obtained

- D. If  $x \geq y$       E. If  $x \leq y$

**Direction:** In the following question two equations are given in variables X and Y. You have to solve these equations and determine the relation between X and Y.

48. I.  $6x^2 - 7x + 2 = 0$   
 II.  $2y^2 - 15y + 25 = 0$   
 A.  $x > y$       B.  $x < y$   
 C.  $x \geq y$       D.  $x \leq y$   
 E.  $x = y$  or the relationship can't be established (CND)

**Direction:** In the following question two equations are given in variables X and Y. You have to solve these equations and determine the relation between X and Y.

49. I.  $2x^2 - 29x - 126 = 0$   
 II.  $y^2 + 19y - 120 = 0$   
 A.  $x > y$       B.  $x < y$   
 C.  $x \geq y$       D.  $x \leq y$   
 E.  $x = y$  or relationship cannot be established

50. **Direction:** In each question two equations numbered I and II are given. You have to solve both the equations and mark the answer:

I.  $x^2 + 3x = 28$

II.  $y^2 - 13y + 36 = 0$

- A. If  $x > y$       B. If  $x < y$

C. If

$x = y$  or no relation is obtained

- D. If  $x \geq y$       E. If  $x \leq y$

## ANSWERS

1. Ans. C.

Quantity I: Let x be the total marks.so,

$$\frac{23}{100}x + 80 = \frac{50}{100}x - 190$$

$$x = 1000$$

Marks obtained by Tanuja =

$$\frac{80}{100} \times 1000 = 800$$

Quantity II: Let x be the number of oranges. Then,

Remaining oranges = (1

$$- \frac{50}{100} \times \frac{80}{100}) x = \frac{2}{5}x$$

$$\frac{2}{5}x = 160$$

And,

$$x = 400$$

$$\text{Total apples} = 2 \times 400 = 800$$

Quantity I = Quantity II

Hence, option (c) is the answer.

2. Ans. A.

If A can do 20 units/day then B can do = 20\*1.6 = 32 units/day

Let the amount of work = LCM(20,32) = 160 units

A's efficiency = 160/20 = 8days

B's efficiency = 160/32 = 5days

Quantity I:

$$\text{The time} = \frac{160}{26} \text{ days} =$$

$$6\frac{2}{13} \text{ days}$$

Quantity II:

Updated efficiencies -

A = 2\*20 = 40 units/day

B = 0.5\*32 = 16 units/day

$$\text{The time taken} = 160/28 = 5\frac{5}{7} \text{ days}$$

### Alternative Approach:

efficiency of A : efficiency of B = Time

taken by B : Time taken by A

100:160 = Time taken by B : 16

Time taken by B = 10 days

TOTAL WORK = 160 UNIT

Now one day work of A+B = 10+16 =

26 UNIT

one day work of A+B when A works at

double his original efficiency and B works at half his original efficiency = 20+8= 28 UNIT

HENCE TIME to do the work in II case is less then the time taken in I Case.

3. Ans. A.

Quantity I

Let sum = P, then for 20 year

$$SI = 3P - P = 2P$$

$$2P = P * R * T/100$$

$$R = 10\%$$

For the sum to be double

$$SI = 2P - P = P$$

$$P = P * 10 * T / 100$$

$$T = 10 \text{ years}$$

Quantity II

SI in 8 year = 60

SI in 4 year = 30

So,

$$1500 * R * 8 / 100 - 1500 * R * 4 / 100 = 60 - 30$$

$$6000R / 100 = 30$$

$$R = 30 / 60 = 0.5 \%$$

Hence Quantity I > Quantity II

4. Ans. C.

Let the number of red balls be x

Probability of red ball =  $\frac{{}^x C_1}{{}^{x+4} C_1}$

$$1/3 = x/x+4$$

$$3x = x+4$$

$$2x = 4$$

$$x = 2$$

Quantity I = 2

Quantity II = 4

5. Ans. B.

Quantity I:

Total quantity of petrol drawn from the 2 tanks

=

$$300 \times \frac{3}{10} + 400 \times \frac{4}{5} = 90 + 320 = 410 \text{ litres}$$

Total quantity of diesel drawn from the 2 tanks

=

$$300 \times \frac{7}{10} + 400 \times \frac{1}{5} = 210 + 80 = 290 \text{ litres}$$

Required difference = 410 - 290 = 120 litres

Quantity II:

Initial quantity of water in vessel Y =

$$\frac{1}{2} \times 600 = 300$$

litres

Quantity of water in the liquid

transferred from vessel X to vessel Y =



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$$\frac{2}{5} \times 200 = 80 \text{ litres}$$

Quantity of water in the end = 300 + 80 = 380 litres

Therefore, Quantity I < Quantity II  
So option (b) is the correct answer.

6. Ans. B.

Suppose he bought x kg.

Then old cost price of commodity per kg = 4500/x

$$\Rightarrow (4500/x) + 5 = 4500/(x - 10)$$

Solving for x,

And selecting positive values, we get x = 100

Hence, Quantity II > Quantity I

7. Ans. C.

**Quantity 1:**

Total number of students in class IX = 600

$$\text{Total number of girls in class IX} = \frac{600}{100} * 25 = 150$$

Total number of boys in class IX = 600 - 150 = 450

Then,

The total number of boys in class

$$X = 450 - 200 = 250$$

Total number of students in class X = 450

Total number of girls in class X = 450 - 250 = 200

**Quantity 2:**

200

So, Quantity 1 = Quantity 2

8. Ans. A.

Speed = distance/time

Let the speed and length of 1<sup>st</sup> train be 's1' and 'l1' respectively.

Let the speed and length of 2<sup>nd</sup> train be 's2' and 'l2' respectively.

Given, train going in the opposite direction cross each other in 12 sec.

Relative speed between the trains going in opposite direction = s1 + s2

Total distance travelled = l1 + l2

$$\therefore s1 + s2 = (l1 + l2)/12 \text{ ----- (1)}$$

Quantity I : Length of train 1 if it crosses the pole in 9 sec

$$\Rightarrow s1 = l1/9$$

Quantity II : Length of train 2 if it crosses the pole in 24 sec

$$\Rightarrow s2 = l2/24$$

Substituting value of s1 and s2 in eq1

$$\Rightarrow \frac{l1}{9} + \frac{l2}{24} = \frac{l1}{12} + \frac{l2}{12}$$

$$\Rightarrow l1/36 = l2/24$$

$$\Rightarrow l1 = 1.5l2$$

Thus, l1 > l2

9. Ans. A.

**Quantity I:**

Total number of workers = 42

Number of male workers =

$$\frac{13}{21} \times 42 = 26$$

Number of female workers = 42 - 26 = 16

$$\text{So, } 65 \times 42 = 26 \times 72 + 16 \times x$$

$$\text{So, } 2730 = 1872 + 16x$$

$$\text{So, } 16x = 858$$

$$\text{So, } x = 53.625$$

So, the value of x = 53.625 kg

**Quantity II:**

$$25x = 24 \times (x - 2) + 100$$

$$25x = 24x - 48 + 100$$

$$x = 52$$

So, the value of 'x' is 52 kg

Therefore, Quantity I > Quantity II

So option (a) is the correct answer.

10. Ans. E.

Quantity I:

Age of Mahesh = 16 years

Age of Suresh = 20 + 16 = 36 years

Age of Ramesh > 36 years

Quantity II:

Let the age of Rohan and his father be '7x' and '22x' years respectively

$$\text{So, } \frac{7x-4}{22x-4} = \frac{1}{4}$$

$$\text{So, } 28x - 16 = 22x - 4$$

Therefore, x = 2

Age of Rohan's father = 22 x 2 = 44 years

So, Quantity I = Quantity II or No relation

So option (e) is the correct answer.

11. Ans. B.

**Quantity I:**

Let the number be (10X+Y),

interchanged number is (10Y+X)

Hence

$$(10Y+X) = (10X+Y)+36$$

$$9(Y-X) = 36$$

$$Y - X = 4$$



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$Y = X + 4$   
Hence set of numbers = {04, 15, 26, 37, 48, 59}  
Probability = **6/63**

**Quantity II:**  
Multiple of 8 but not 16 = {8, 24, 40, 56}  
Probability = **4/63**

Hence Quantity 1 > Quantity 2

12. Ans. A.

Quantity I:

$$6x^2 + 8x + 3x + 4$$

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

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

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

Quantity II:

$$3y^2 + 15y + 6y + 30$$

$$3y(y + 5) + 6(y + 5)$$

$$(y + 6)(3y + 5)$$

$$y = -5, -2$$

13. Ans. E.

Quantity I:

Let x and y be the length and breadth of the rectangle respectively.

Then,  $x - 4 = y + 3$  or  $x - y = 7$  ----(i)

Area of the rectangle = xy; Area of the square =  $(x - 4)(y + 3)$

$$(x - 4)(y + 3) = xy$$

$$\Rightarrow 3x - 4y = 12$$
 ----(ii)

Solving (i) and (ii),

we get  $x = 16$  and  $y = 9$ .

Perimeter of the rectangle =  $2(x + y) = [2(16 + 9)]$  cm = 50 cm.

Quantity II:  $Y^2 - 60Y - 1125 = 0$

$$Y^2 - (75 - 15)Y - 1125 = 0$$

$$Y = +75, -15$$

So option E, No relation can be determined.

14. Ans. A.

Quantity I:

According to question:

$$(a + b + c) = 28 \times 3 = 84$$

Also,  $b = 2a$ , and  $a = 2c$

$$\text{So, } a + 2a + \frac{a}{2} = 84$$

$$a = 24$$

$$\text{So, } b = 24 \times 2 = 48$$

Quantity II:

$$(a - 4)^2 = 400$$

$$(a - 4) = 20$$

$$a = 24$$

So, Quantity I > Quantity II  
So option (A) is the correct answer.

15. Ans. A.

Quantity I:

Let the number of boys be x

So, the number of girls =  $49 - x$

According to the question:

$$49 \times 70 = 65x + 72(49 - x)$$

$$3430 = 65x + 3528 - 72x$$

$$7x = 98$$

$$x = 14$$

So, the number of boys in the class = 14

Quantity II:

$$x = \frac{806}{62} = 13$$

So, Quantity I > Quantity II

So option (A) is the correct answer.

16. Ans. A.

Quantity I:

Total runs scored by all players =

$$32 \times 10 = 320$$

Required value of 'x' =

$$\frac{144}{320} \times 100 = 45\%$$

Quantity II:

Marks obtained by the students = 220

Total maximum marks =

$$5 \times 100 = 500$$

Required value of 'x' =

$$\frac{220}{500} \times 100 = 44\%$$

So, Quantity I > Quantity II

So option (A) is the correct answer.

17. Ans. A.

Quantity I:

Quantity of whisky in initial mixture =

$$70\% \text{ of } 240 = 168 \text{ litres}$$

According to question,

$$60\% \text{ of } (240 + x) = 168$$

$$144 + 0.6x = 168$$

$$0.6x = 24$$

$$x = \frac{24}{0.6} = 40 \text{ litres}$$

Quantity II:

24 litres

So, Quantity I > Quantity II



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So option (A) is the correct answer.

18. Ans. A.

Quantity I:

Let cost price of article = Rs. 100

Selling price of article at 25% profit = Rs. 125

Marked price of article =

$$\frac{125}{0.625} = \text{Rs. } 200$$

Selling price of article at 30% discount =

$$0.7 \times 200 = \text{Rs. } 140$$

Required profit percentage =

$$\left\{ \frac{140-100}{100} \right\} \times 100 = 40\%$$

Quantity II:

33.33%

So, Quantity I > Quantity II

So option (A) is the correct answer.

19. Ans. A.

Quantity I:

Required average speed =

$$\frac{2 \times 310.5}{6+7.5} = \frac{621}{13.5} = 46 \text{ km/hr}$$

Quantity II:

40 km/hr

So, Quantity I > Quantity II

So option (A) is the correct answer.

20. Ans. D.

$$\frac{32}{(6-R)} - \frac{32}{(6+R)} = 4$$

Quantity I:

R = 2kmph

(B + 2) = 48/4

Speed of boat in still water = 10 kmph

Increase speed = 10-6 = 4 km/hr

Quantity II:  $Y^2 - 9Y + 20 = 0$

$$Y^2 - 9Y + 20 = 0$$

$$Y^2 - (5+4)Y + 20 = 0$$

$$Y = +5, +4$$

So option D, Quantity II ≥ Quantity I

21. Ans. A.

Present age of Sunita = 3x

Present age of Nita = x

After 4 year,  $2(3x+4) = 3(x+4)$

X = 4/3 years

Present age of Sunita = 4 year

Quantity II: present ratio Chandan :

Sunita = 3:2

Present ratio of Sunita: Nita: Chandan =

6:2:9

6 months ago, Nita : Chandan = 5:33

So  $5x+6/(33x+6) = 2:9$

X = 2 months

Chandan present age =  $33 \times 2 + 6 = 72$

month =  $72/12 = 6$  year

3 year ago, age of Chandan was =  $6-3 =$

3 year

So option A, Quantity I > Quantity II

22. Ans. A.

Probability of getting a chocolate cake =

$$\frac{3}{8}$$

$$\frac{6}{6+x+3} = \frac{3}{8}$$

$$6+x+3 = 8$$

$$x = 7$$

Quantity I -

Probability of getting a vanilla cake =

$$\frac{7}{6+7+3}$$

$$\frac{7}{16}$$

$$= 16$$

$$= 16$$

Quantity II -

Possible outcomes when 3 coins are

tossed =

{ HHH , HHT , HTH , HTT , THH , THT ,

TTH , TTT }

Probability of getting atleast 1 tail =  $\frac{3}{8}$

23. Ans. B.

Quantity I: Compound interest earned

by Ram =

$$52000 \times ((1.1)^3 - 1) = \text{Rs. } 17212$$

Quantity II: Simple interest earned by

$$\frac{28750 \times 3 \times 20}{100} = \text{Rs. } 17250$$

$$\text{Rahim} = \frac{100}{100}$$

$$\text{Rahim} = \frac{100}{100}$$

So, Quantity II > Quantity I

So option (b) is the correct answer.

24. Ans. A.

1. Let the emptying capacity of the pipe

= x cubic m/min

Then, filling capacity of the pipe = (x -

5) cubic m/min

$$\frac{3900}{x-5} - \frac{3900}{x} = 5$$

$$\frac{3900}{x-5} - \frac{3900}{x} = 5$$

$$\frac{3900}{x-5} - \frac{3900}{x} = 5$$

$$3900x - 3900x + 19500 = 5x^2 - 25x$$

$$x^2 - 5x - 3900 = 0$$

$$x^2 - 5x - 3900 = 0$$

$$X = -60, 65$$

So, filling capacity = (x - 5) = -65

(discarded) or 60 cubic meters

So, filling capacity = 60 cubic meters

2. Let the efficiency of pipe B = x cubic

m/min

Then efficiency of pipe A = (x - 3) cubic

m/min



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$$\frac{1140}{x-3} - \frac{1140}{x} = 1$$

$$1140x - 1140x + 3420 = x^2 - 3x$$

$$x^2 - 3x - 3420 = 0$$

$$X = 60, -57$$

So, filling capacity =  $(x - 3) = 57$  or  $-60$  (discarded)

So, filling capacity = 57 cubic meters

Quantity 1 > Quantity 2

25. Ans. C.

Quantity I: Total time taken =  $(160/64 + 160/80) = 9/2$  hrs

Then average speed =  $320/(9/2) = 320 * 2/9 = 71.11$  km/hr.

Quantity II:  $(2 * 60 * 90)/150 = 72$  km/hr.

Therefore, Quantity 2 > Quantity 1

So option (3) is the correct answer.

26. Ans. A.

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

$$y = -6, -9/2$$

Put all values on number line and analyze the relationship

$-6 \dots \dots -9/2 \dots \dots -2/3 \dots \dots 4$

27. Ans. B.

I.  $\sqrt{25x^2 - 125} = 0$

$$5x^2 = 125$$

$$x^2 = 25$$

$$x = +5 \text{ or } -5$$

II.  $19y + 95 = 0$

$$y = -5$$

28. Ans. D.

$$8a^2 - 27a + 22 = 0$$

$$8a^2 - (16+11)a + 22 = 0$$

$$8a^2 - 16a - 11a + 22 = 0$$

$$8a(a-2) - 11(a-2) = 0$$

$$(8a-11)(a-2) = 0$$

$$a_1 = \frac{11}{8}$$

$$a_2 = 2$$

$$8b^2 + 5b - 22 = 0$$

$$8b^2 + (16-11)b - 22 = 0$$

$$8b^2 + 16b - 11b - 22 = 0$$

$$8b(b+2) - 11(b+2) = 0$$

$$(8b-11)(b+2) = 0$$

$$b_1 = \frac{11}{8}$$

$$b_2 = -2$$

29. Ans. B.

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

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

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

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

$$x = -1 \text{ or } x = -2$$

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

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

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

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

$$y = 4 \text{ or } y = 3$$

$$X < y$$

30. Ans. A.

$$2x^2 - 31x + 84 = 0$$

$$2x^2 - 24x - 7x + 84 = 0$$

$$2x(x-12) - 7(x-12) = 0$$

$$(x-12)(2x-7) = 0$$

$$X = 12, \frac{7}{2}$$

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

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

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

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

$$Y = -1, \frac{2}{3}$$

$$X > y$$

31. Ans. A.

I.  $12m + 9m = 49 + 35$

$$\Rightarrow 21m = 84$$



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$$\Rightarrow m = \frac{84}{21} = 4$$

$$\text{II. } \sqrt{n+222} = \sqrt{9} + \sqrt{144}$$

$$\Rightarrow \sqrt{n+222} = \pm 3 \pm 12 = \pm 15$$

$$\therefore n+222=225$$

$$\Rightarrow n=225-222=3$$

$m > n$

32. Ans. E.

$$x = \sqrt{576}$$

$$x = 24$$

$$y^2 - 29 = 700$$

$$y^2 = 700 + 29$$

$$y^2 = 729$$

$$y = \pm \sqrt{729}$$

$$y = \pm 27$$

Relationship cannot be established

33. Ans. C.

$$\text{I. } 3p^2 - 75p + 342 = 0$$

$$3p^2 - 57p - 18p + 342 = 0$$

$$3p(p-19) - 18(p-19) = 0$$

$$(p-19)(3p-18) = 0$$

$$p = 6, 19$$

$$\text{II. } q^3 = 1512 \div (2401)^{1/4}$$

$$q^3 = 1512 \div 7$$

$$q^3 = 216$$

$$q = 6$$

$p \geq q$

34. Ans. C.

$$\text{I. } x^2 - 3x - 18 = 0$$

$$x^2 - 6x + 3x - 18 = 0$$

$$x(x-6) + 3(x-6) = 0$$

$$(x-6)(x+3) = 0$$

$$x-6=0 \text{ or } x+3=0$$

$$x=6 \text{ or } x=-3$$

$$\text{II. } 2y^2 + 18y + 36 = 0$$

$$y^2 + 9y + 18 = 0$$

$$y^2 + 3y + 6y + 18 = 0$$

$$y(y+3) + 6(y+3) = 0$$

$$(y+3)(y+6) = 0$$

$$y+3=0 \text{ or } y+6=0$$

$$y=-3 \text{ or } y=-6$$

$x \geq y$

35. Ans. C.

$$\text{I. } 3m^2 - 27m + 60 = 0$$

$$m^2 - 9m + 20 = 0$$

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

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

$$m = 4, 5$$

$$\frac{n^2}{2} - \frac{13}{2} \times n + 21 = 0$$

$$\text{II. } \Rightarrow n^2 - 13n + 42 = 0$$

$$\Rightarrow n(n-7) - 6(n-7) = 0$$

$$\Rightarrow (n-6)(n-7) = 0$$

$$\therefore n = 6, 7$$

$m < n$

36. Ans. E.

$$\text{I. } 9x^2 - 10x - 51 = 0$$

$$9x^2 - 27x + 17x - 51 = 0$$

$$9x(x-3) + 17(x-3) = 0$$

$$(9x+17)(x-3) = 0$$

$$X = -\frac{17}{9}, 3$$

$$\text{II. } 6y^2 - 7y - 68 = 0$$

$$6y^2 - 24y + 17y - 68 = 0$$

$$6y(y-4) + 17(y-4) = 0$$

$$(6y+17)(y-4) = 0$$

$$Y = -\frac{17}{6}, 4$$

Hence, option E is correct.

37. Ans. B.

$$\text{I. } \sqrt{x} + \frac{15x}{\sqrt{x}} = 4x^{\frac{5}{2}}$$

$$\frac{x + 15x}{\sqrt{x}} = 4x^{\frac{5}{2}}$$

$$x + 15x = 4x^{\frac{5}{2}} \times x^{\frac{1}{2}}$$

$$16x = 4x^3$$

$$x^2 = 4$$

$$x = \pm 2$$

$$\frac{\sqrt{46656} + \sqrt{6561}}{11} = y^3$$

$$\text{II. } \frac{216 + 81}{11} = y^3$$

$$\frac{297}{11} = y^3$$

$$y^3 = 27$$

$$y = +3$$

Hence, option B is correct.

38. Ans. E.

$$\text{I. } 2x^2 + 13\sqrt{3}x + 60 = 0$$

$$2x^2 + 5\sqrt{3}x + 8\sqrt{3}x + 60 = 0$$

$$x(2x + 5\sqrt{3}) + 4\sqrt{3}(2x + 5\sqrt{3}) = 0$$

$$(2x + 5\sqrt{3})(x + 4\sqrt{3}) = 0$$



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$X = -5\sqrt{3}/2, -4\sqrt{3}$

II.  $y^2 + 7\sqrt{3}y + 36 = 0$

$y^2 + 4\sqrt{3}y + 3\sqrt{3}y + 36 = 0$

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

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

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

Hence, option E is correct.

39. Ans. C.

**Ans. C**

$$\frac{18}{x^2} + \frac{6}{x} - \frac{12}{x^2} = \frac{8}{x^2}$$

$$\frac{6}{x} = \frac{8+12-18}{x^2} \Rightarrow 6x^2 = 2x \Rightarrow 3x^2 - x = 0 \Rightarrow x(3x-1) = 0 \Rightarrow x = 0, \frac{1}{3}$$

But for  $x=0$ , the expression becomes invalid, hence,  $x=1/3$ , i.e.  $x=0.33$

$$y^3 + 9.68 + 5.64 = 16.95$$

$y^3 = 1.63$

$y = 1.17$  (approx)

Hence,  $y > x$

40. Ans. E.

I.  $9x - 15.45 = 54.55 + 4x$

$9x - 4x = 70$

$5x = 70$

**$x = 14$**

II.  $\sqrt{(y+155)} - \sqrt{36} = \sqrt{49}$

$\sqrt{(y+155)} - 6 = 7$

$\sqrt{(y+155)} = 13$

$y + 155 = 169$

**$y = 14$**

**$\therefore x = y$**

41. Ans. D.

I.  $2X^2 + 21 = 17X$

$(X - 7)(2X - 3) = 0$

$\Rightarrow X = +7, +3/2$

II.  $Y^2 + \sqrt{3136} = 15Y$

$Y^2 + 56 - 15Y = 0$

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

$\Rightarrow Y = +7, +8$

$Y \geq X$

42. Ans. D.

$x^2 + 29x = -210$

$x^2 + 29x + 210 = 0$

$x^2 + 15x + 14x + 210 = 0$

$[x + 15][x + 14] = 0$

$x = -15, -14$

$y^2 + 28Y = -195$

$y^2 + 28Y + 195 = 0$

$y^2 + 15Y + 13Y + 195 = 0$

$[y + 15][y + 13] = 0$

$Y = -15, -13$

Final answer:  $x \leq y$

43. Ans. A.

From I,

$(15+9)/\sqrt{x} = 11\sqrt{x}$

$\Rightarrow 11x = 24$

$\Rightarrow x = 24/11$

From II,

$(3\sqrt{y} + 5\sqrt{y})/12 = 1/\sqrt{y}$

$\Rightarrow 8y = 12$

$\Rightarrow y = 12/8 = 3/2$

So,  $x > y$

44. Ans. B.

From I,

$8x^2 - 78x + 169 = 0$

$8x^2 - 52x - 26x + 169 = 0$

$4x(2x - 13) - 13(2x - 13) = 0$

$(2x - 13)(4x - 13) = 0$

$$x = \frac{13}{2}, \frac{13}{4}$$

From II,

$20y^2 - 117y + 169 = 0$

$20y^2 - 52y - 65y + 169 = 0$

$4y(5y - 13)(4y - 13) = 0$

$(5y - 13)(4y - 13) = 0$

$$y = \frac{13}{5}, \frac{13}{4}$$

So,  $x \geq y$

45. Ans. E.

From I,

$x^2 - 208 = 233$

$x^2 = 233 + 208$

$x = \sqrt{441} = \pm 21$

From II,

$y^2 + 47 - 371 = 0$

$y^2 = 324$

$y = +18$  or  $-18$

So, Relationship cannot be established.

46. Ans. E.

$3X^2 + 7X = 6$

$3X^2 + 7X - 6 = 0$

$3X^2 + 9X - 2X - 6 = 0$

$3X(X + 3) - 2(X + 3) = 0$

$(X + 3)(3X - 2) = 0$

$X = -3$  or  $X = 2/3$

$3Y^2 - 7Y + 2 = 0$

$3Y^2 - 6Y - Y + 2 = 0$

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

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

$Y = 2$  or  $Y = 1/3$

No relation can be established.

47. Ans. D.

According to the given equations:

I.  $3x - \sqrt{2x} = 4$



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ATTEMPT NOW

$$(3x - 4)^2 = \sqrt{2x}^2$$
$$9x^2 + 16 - 24x = 2x$$
$$9x^2 - 26x + 16 = 0$$
$$9x^2 - 18x - 8x + 16 = 0$$
$$9x(x - 2) - 8(x - 2) = 0$$
$$(9x - 8)(x - 2) = 0$$

$$x = 2, \frac{8}{9}$$

$$\text{II. } \frac{9y-4}{3} = \sqrt{2y}$$

$$(9y - 4)^2 = (3\sqrt{2y})^2$$
$$81y^2 + 16 - 72y = 18y$$
$$81y^2 - 90y + 16 = 0$$
$$81y^2 - 18y - 72y + 16 = 0$$
$$9y(9y - 2) - 8(9y - 2) = 0$$
$$(9y - 2)(9y - 8) = 0$$

$$y = \frac{2}{9}, \frac{8}{9}$$

After comparison of both equations, the

conclusion is  $x \geq y$

So option (d) is the correct answer.

48. Ans. B.

$$\Rightarrow 2x(x - 18) + 7(y - 18) = 0$$

$$\Rightarrow (x - 18)(2x + 7) = 0$$

$$\text{So, } x = + 18 \text{ or } x = - 7/2$$

$$\text{II. } y^2 + 19y - 120 = 0$$

$$\Rightarrow y^2 + 24y - 5y - 120 = 0$$

$$\Rightarrow y(y + 24) - 5(y + 24) = 0$$

$$\Rightarrow (y + 24)(y - 5) = 0$$

$$\text{So, } y = - 24 \text{ or } y = + 5$$

When,  $x = + 18$ ,  $x > y$  for  $y = - 24$  and

$x > y$  for  $y = + 5$

And, when  $x = - 7/2$ ,  $x > y$  for  $y = - 24$

and  $x < y$  for  $y = + 5$

$\therefore$  We can see that relationship cannot be established.

50. Ans. E.

According to the given equations:

$$\text{I. } x^2 + 3x = 28$$

$$x^2 + 3x - 28 = 0$$

$$x^2 + 7x - 4x - 28 = 0$$

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

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

$$x = 4, -7$$

$$\text{II. } y^2 - 13y + 36 = 0$$

$$y^2 - 9y - 4y + 36 = 0$$

$$y(y - 9) - 4(y - 9) = 0$$

$$(y - 4)(y - 9) = 0$$

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