



Bipin Nambiar
(SBI PO 2018)



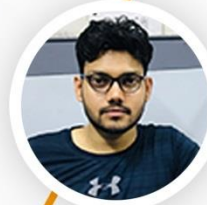
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Maths Inequalities Questions for Bank and Insurance Exams

Maths inequalities Quiz 9

Directions: 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). **Quantity I:** Find the amount on compound interest on a sum of Rs.55000 at the rate of 15% per annum after three years.

Quantity II: Find the simple interest on a sum of Rs.60000 at the rate 25% per annum after 5.5 years.

- A. Quantity: $I >$ Quantity: II B. Quantity: $I \geq$ Quantity: II
C. Quantity: $I <$ Quantity: II D. Quantity: $II \geq$ Quantity: I
E. Quantity $I =$ Quantity II or relation can't be established

2). **Quantity I:** What will be the probability of selecting a letter as vowel from the word KNIFE?

Quantity II: Find the probability of selecting 2 Red balls from a bag containing 8 red balls and 10 yellow balls?

- A. Quantity: $I >$ Quantity: II B. Quantity: $I \geq$ Quantity: II
C. Quantity: $I <$ Quantity: II D. Quantity: $II \geq$ Quantity: I
E. Quantity $I =$ Quantity II or relation can't be established

3). **Quantity I:** The length of a rectangular park is 4 times its breadth. There is a fountain in it of area is 900 square meter and which is one fourth of the total area of the park. What is the breadth of the park?

Quantity II: The ratio of length to breadth of the rectangle is 5: 3. If the length of the rectangle is decreased by 8 m it becomes a square, then what is the area of the square thus formed?

- A. Quantity: $I >$ Quantity: II B. Quantity: $I \geq$ Quantity: II

- C. Quantity: I < Quantity: II D. Quantity: II \geq Quantity: I
E. Quantity I = Quantity II or relation can't be established

4). **Quantity I:** There are 7 white, 4 green, 3 yellow and 6 black balls in a bag. Four balls are drawn at random. Find the probability that all the balls are of different colours.

Quantity II: There are 3 red, 5 green and 6 white balls in a bag. Three balls are drawn at random. Find the probability that all the balls are of same colour.

- A. Quantity: I > Quantity: II B. Quantity: I \geq Quantity: II
C. Quantity: I < Quantity: II D. Quantity: II \geq Quantity: I
E. Quantity I = Quantity II or relation can't be established

5). **Quantity I:** When a motorboat travels in upstream then its speed becomes 75% of the speed of the motorboat in still water. The speed of the stream is how much percentage of the speed of the motorboat in still water?

Quantity II: When a sum of money was invested at simple interest then at the end of 8 years the amount becomes 300% of the sum of money. What is the rate of interest?

- A. Quantity: I > Quantity: II B. Quantity: I \geq Quantity: II
C. Quantity: I < Quantity: II D. Quantity: I \leq Quantity: II
E. Quantity I = Quantity II or relation can't be established

6). **Quantity I:** Ram can do a piece of work in 20 days. If the efficiency of Ram is 66.67% of the efficiency of Mohan and the efficiency of Mohan is 25% less than the efficiency of Prakash then how long Prakash will take to do the same piece of work?

Quantity II: A person can type 50 pages in 10 hours then how many days will he take to type a book of 1320 pages? [Assume the person works continuously for 24hrs/day]

- A. Quantity: I > Quantity: II B. Quantity: I \geq Quantity: II
C. Quantity: I < Quantity: II D. Quantity: I \leq Quantity: II
E. Quantity I = Quantity II or relation can't be established

7). **Quantity I:** The base of an isosceles triangle is 12 cm and the height of the triangle is 10 cm then what is the perimeter of the triangle?

Quantity II: The side of a square is 8 cm. A rectangle is drawn, the length of which is equal to the diagonal of the square and width is equal to circumradius of the square. What is the perimeter of the rectangle?

- A. Quantity: I > Quantity: II B. Quantity: I \geq Quantity: II
C. Quantity: I < Quantity: II D. Quantity: I \leq Quantity: II
E. Quantity I = Quantity II or relation can't be established

8). **Quantity I:** The average of three numbers which are in Arithmetic Progression is 104. The difference between the largest number and the smallest number is 4 then, what is the value of the largest number?

Quantity II: A teacher writes 50 distinct positive integers on the blackboard the average of which is 125.5. A student comes and erased one of the number then the average of the remaining numbers become 125.9. What is the value of the number the student had erased?

- A. Quantity: I > Quantity: II B. Quantity: I \geq Quantity: II
C. Quantity: I < Quantity: II D. Quantity: I \leq Quantity: II
E. Quantity I = Quantity II or relation can't be established

9). **Quantity I:** The average weight of 17 students in a school is 37.5 kg. If 5 of them leave the school then the average weight of the remaining students decreases by 2.5 kg. What was the average weight of five students, who left the school?

Quantity II: In a mixture of 160 litres milk of water solution, the concentration of milk is 60%. When some litres of water are added then the concentration of milk becomes 47.29%. What is the numerical value of water added in the mixture?

- A. Quantity: I > Quantity: II B. Quantity: I \geq Quantity: II
C. Quantity: I < Quantity: II D. Quantity: II \geq Quantity: I
E. Quantity I = Quantity II or relation can't be established

10). **Quantity I:** A train of length 200 m can cross a platform in 10 sec. If the train increases its speed by 25% then it can cross a person standing on the same platform in 3.2 seconds. What is the length of platform?

Quantity II: Two friends, A and B start running towards each other at the speed of 12 km per hour and 18 km per hour. After 30 seconds of starting, the distance between them is 750 meters. What will be the distance between them after 81 seconds of starting?

- A. Quantity: I > Quantity: II B. Quantity: I \geq Quantity: II
C. Quantity: I < Quantity: II D. Quantity: II \geq Quantity: I
E. Quantity I = Quantity II or relation can't be established



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Correct answers:

1	2	3	4	5	6	7	8	9	10
A	A	C	A	E	C	A	A	A	C

Explanations:

1. Quantity I :

Find the amount on compound interest on a sum of Rs.55000 at the rate of 15% per annum after three years.

$$\text{Reqd. amt.} = 55000 \times \frac{115}{100} \times \frac{115}{100} \times \frac{115}{100} = \text{Rs. } 83648.125$$

Quantity II :

Find the simple interest on a sum of Rs.60000 at the rate 25% per annum after 5.5 years.

$$\text{Reqd. SI} = \frac{60000 \times 25 \times 5.5}{100} = \text{Rs. } 82500$$

Hence, Quantity I > Quantity II

Hence, option A is correct.

2. Quantity I :

Number of letters in 'KNIFE' = 5

Number of vowels in 'KNIFE' = 2

$$\text{Reqd. Probability} = \frac{2}{5}$$

Quantity II :

Total number of balls in bag = 10 + 8 = 18

Number of way in which 2 balls can be drawn = ${}^{18}C_2$

Number of ways in which 2 blue balls can drawn = 8C_2

$$\text{Reqd. Probability} = \frac{{}^8C_2}{{}^{18}C_2}$$

$$= \frac{\frac{8}{2} \times 7}{\frac{18}{2} \times 17} = \frac{28}{153}$$

Here,

Quantity I > Quantity II

Hence, option A is correct.

3. **Quantity I:**

Let the length of the rectangular park is L.

then,

$$\text{Breadth} = \frac{\text{length}}{4} = \frac{L}{4}$$

$$\text{So, area of the park} = \frac{L^2}{4}$$

$$\text{And, area of fountain} = \frac{1}{4} (\text{Area of park})$$

$$\Rightarrow 900 = \frac{1}{4} \times \frac{L^2}{4}$$

$$\Rightarrow L^2 = 16 \times 900$$

$$\Rightarrow L = 4 \times 30 = 120$$

Here,

$$\text{the breadth of park is} = \frac{120}{4} = 30 \text{ m}$$

Quantity II :

Let the side of the square be x metres

then,

$$\text{Area of square} = x^2 \text{ sq.m}$$

Since, the square is made by decreasing the length of rectangle.

So, the length of the rectangle be equal to the side of square plus the value decreased.

$$\text{length} = (x + 8) \text{ m}$$

As, there is no change in breadth.

$$\text{So breadth} = x \text{ m}$$

we have

$$\Rightarrow \frac{x + 8}{x} = \frac{5}{3}$$

$$\Rightarrow 3x + 24 = 5x$$

$$\therefore x = 12$$

$$\text{then area of square} = 144 \text{ m}^2$$

Here, Quantity I < Quantity II

Hence, option C is correct.

4. **Quantity I:** There are 7 white, 4 green, 3 yellow and 6 black balls in a bag. Four balls are drawn at random. Find the probability that all the balls are of different colours.

$$\text{White} = 7$$

$$\text{Green} = 4$$

$$\text{Yellow} = 3$$

$$\text{Black} = 6$$

$$\text{Total} = 20$$

$$\text{Reqd. probability} = \frac{{}^7C_1 \times {}^4C_1 \times {}^3C_1 \times {}^6C_1}{{}^{20}C_4}$$

$$= \frac{7 \times 4 \times 3 \times 6}{4845} = \frac{168}{1615}$$

Quantity II: There are 3 red, 5 green and 6 white balls in a bag. Three balls are drawn at random. Find the probability that all the balls are of same colour.

$$\text{Red} = 3$$

Green = 5

White = 6

Total = 14

$$\begin{aligned}\text{Reqd. probability} &= \frac{{}^3C_3 + {}^5C_3 + {}^6C_3}{{}^{14}C_3} \\ &= \frac{1 + 10 + 20}{364} = \frac{31}{364}\end{aligned}$$

Hence, Quantity I > Quantity II

Hence, option A is correct.

5. Quantity I:

Let the speed of the motorboat in still water = x km per hour

and the speed of the stream = y km per hour

then, according to the question, $x - y$

= 75% of x

$$25x = 100y$$

$$\frac{x}{y} = 4 : 1$$

$$\text{The reqd. \%} = \frac{1 \times 100}{4} = 25\%$$

Quantity II:

Let the sum of money = x

then,

$$x + x \times 8 \times \frac{r}{100} = 3x$$

$$x \times 8 \times \frac{r}{100} = 2x$$

$$R = \frac{200}{8} = 25\%$$

Therefore, $q_1 = q_2$

Hence, option E is correct.

6. Quantity I :

Let the efficiency of Mohan = $3x$

then the efficiency of Ram = 66.67% of $3x = 2x$

Ram can do the work in 20 days

then the total units of work = $20 \times 2x = 40x$ units

The efficiency of Mohan is 25% less than the efficiency of Prakash and the efficiency of Mohan = $3x$

Therefore, the efficiency of Prakash

$$= 3x \times \frac{100}{75} = 4x$$

The total time taken by Mohan to do $40x$ units of work

$$= \frac{40x}{4x} = 10 \text{ days}$$

Quantity II :

The total number of pages typed in 1 hr

$$= \frac{50}{10} = 5 \text{ pages}$$

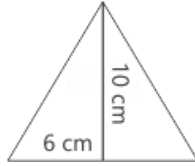
Therefore, the total time taken by the person to type 1320 pages

$$= \frac{1320}{5} = 264 \text{ hours}$$

$$= \frac{264}{24} = 11 \text{ days}$$

Hence, option C is correct.

7. **Quantity I:**



$$\text{Equal sides will be } \sqrt{(10^2 + 6^2)} = \sqrt{136}$$

$$= \text{approximately } 11.66 \text{ cm}$$

$$\text{Therefore, Perimeter} = 11.66 + 11.66 + 12$$

$$= 35.32 \text{ cm}$$

Quantity II:

$$\text{Diagonal of the square} = 8\sqrt{2} \text{ cm}$$

$$= \text{length of the rectangle}$$

$$\text{Circumradius} = \text{Diagonal}/2$$

$$= (8\sqrt{2})/2$$

$$= 4\sqrt{2} \text{ cm}$$

$$= \text{breadth of the rectangle}$$

$$\text{Perimeter of the Rectangle}$$

$$= 2(\text{length} + \text{breadth})$$

$$= 2(8\sqrt{2} + 4\sqrt{2})$$

$$= 24\sqrt{2} = 24 \times 1.414$$

$$= 33.94 \text{ cm approximately}$$

Hence, option A is correct.



8. Quantity I:

Let the middle number is x and the common difference is d then

$$x - d + x + x + d = 104 \times 3$$

$$3x = 104 \times 3$$

$$X = \text{middle number} = 104$$

$$\text{Now, } x + d - x + d = 4$$

$$d = 2$$

$$\text{Therefore, largest number} = x + 2 = 104 + 2 = 106$$

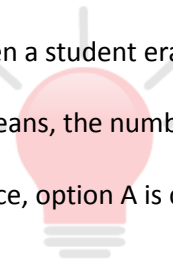
Quantity II:

$$\text{The sum of the given 50 numbers} = 50 \times 125.5 = 6275$$

$$\text{When a student erase one of the number the sum becomes } 125.9 \times 49 = 6169.1$$

$$\text{It means, the number, student had erased} = 6275 - 6169.1 = 105.9$$

Hence, option A is correct.



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9. Quantity I:

$$\text{The sum of the age of 5 students who left the school} = 37.5 \times 17 - 35 \times 12 = 637.5 - 420 = 217.5$$

$$\text{The average} = \frac{217.5}{5} = 43.5$$

Quantity II:

The quantity of milk in the solution = 60% of 160 = 96 litres and the quantity of water = 64 litres

$$\text{Let } x \text{ litres of water was added in 160 litres solution, } (160 + x) \times 47.29\% = 96$$

$$47.29x = 9600 - 160 \times 47.29 = 2033.6$$

$$x = \frac{2033.6}{47.29} = \text{approximately } 43$$

Hence, option A is correct.

10. Let the length of platform is x meters and the speed of the train is y m per sec

Then, distance = speed \times time = $(200 + x) = y \times 10$ ----- (i)

Again, when he increases his speed by 25% then the new speed = 125% of $y = 1.25y$

$1.25y \times 3.2 =$ length of train = 200

Therefore, $y = 50$ m per sec

Put the value of y in the equation (i), $x =$ length of platform = 300 meters

Quantity II: They are running towards each other then the relative speed = $12 + 18 = 30$ km per hour

$$= 30 \times \frac{5}{18} = \frac{25}{3} \text{ m/sec.}$$

After 30 seconds of starting, the distance between them is 750 meters

Therefore, the total distance travelled by them in the first 30 sec

$$= 25 \times \frac{30}{3} = 250 \text{ m}$$

The total distance between them in the starting = $750 + 250 = 1000$ m

The total distance travelled by them in 81 sec

$$= 81 \times \frac{25}{3} = 675 \text{ m}$$

The distance between them after 81 sec of starting = $1000 - 675 = 325$ m

Hence, option C is correct.

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