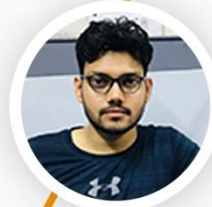Bipin Nambiar
(SBI PO 2018)

Shiraz Khan
(SBI Clerk 2018)

Kuldeep Yadav
(SBI PO 2018)

Rajat Saxena
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Maths Inequalities Questions for Bank and Insurance Exams

Maths inequalities Quiz 5

Directions: Each question below contains a statement followed by Quantity I and Quantity II. You have to study the information along with the question and compare the value derived from Quantity I, Quantity II and Quantity III then answer:

1. **Quantity I:** A shopkeeper bought five toffees in one rupees and marks them up by 25%. If he allows a 12% discount, then how many toffees should be he sell at Rs.22?
   Quantity II: A shopkeeper bought four toffees in one rupees and marks them up by 26%. If he allows a 10% discount, then how many toffees should be he sell at Rs.28.35?

   A. Quantity : I > Quantity : II   B. Quantity : I < Quantity : II
   C. Quantity : I ≤ Quantity : II   D. Quantity : I = Quantity : II or No relation
   E. Quantity : I ≥ Quantity : II

2. **Quantity I:** Rajendra, Ajnish and Narendra are three friends. They have some amount. Rajendra gave one- third of the amount he had to Ajnish. Ajnish in turn gave half of what he received from Rajendra to Narendra. If the difference between the remaining amount with Rajendra and the amount received by Narendra is Rs. 2500, how much money did Ajnish receive from Rajendra?
   Quantity II: Rajendra, Ajnish and Narendra are three friends. They have some amount. Rajendra gave one-half of the amount he had to Ajnish. Ajnish in turn gave one- fourth of what he received from Rajendra to Narendra. If the difference between the remaining amount with Rajendra and the amount received by Narendra is Rs. 1875, how much money did Ajnish receive from Rajendra?

   A. Quantity : I > Quantity : II   B. Quantity : I < Quantity : II
   C. Quantity : I ≤ Quantity : II   D. Quantity : I = Quantity : II or No relation
   E. Quantity : I ≥ Quantity : II

3. **Quantity I:** Elizabeth Farm has only Ostriches and Giant marsupial (4 legs mammal), total count of legs was 14 less than 4 times the total count of heads. How many legs are counted in total?
   Quantity II: Elizabeth Farm has only Ostriches and Giant marsupial (4 legs mammal), total count of legs was 15 less than 5 times the total count of heads. How many legs are counted in total?

   A. Quantity : I > Quantity : II   B. Quantity : I < Quantity : II
   C. Quantity : I ≤ Quantity : II   D. Quantity : I = Quantity : II or No relation
   E. Quantity : I ≥ Quantity : II

4. **Quantity I:** Worker A works 15% faster than Worker B who in turn is 12% faster than Worker C. All three of them work together and earn Rs. 10000. Find the difference between the share of Worker C and Worker A?

Quantity II: Worker A works 20% faster than Worker B who in turn is 10% faster than Worker C. All three of them work together and earn Rs. 9500. Find the difference between the share of Worker C and Worker A?

A. Quantity : I > Quantity : II   B. Quantity : I < Quantity : II
C. Quantity : I ≤ Quantity : II   D. Quantity : I = Quantity : II or No relation
E. Quantity : I ≥ Quantity : II

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5. **Quantity I:** Rs.12700 was lent in two parts by Swati. One part was lent at 4.5% simple interest per annum (p.a.) and the rest was lent at 11% simple interest p.a. The total interest received from both the parts is Rs.1150 per year. What was the amount lent at 11% p.a?

Quantity II: Rs.12000 was lent in two parts by Swati. One part was lent at 5% simple interest per annum (p.a.) and the rest was lent at 10% simple interest p.a. The total interest received from both the parts is Rs.1200 per year. What was the amount lent at 10% p.a?

A. Quantity : I > Quantity : II   B. Quantity : I < Quantity : II
C. Quantity : I ≤ Quantity : II   D. Quantity : I = Quantity : II or No relation
E. Quantity : I ≥ Quantity : II

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6. **Quantity I:** Last year Aditya's monthly expenditure was 68% of his monthly income. This year the expenditure increased by 25% and the income by 12% there by his savings reduced by Rs530. What is the monthly income of Aditya this year.

Quantity II: Tanmay spends 19% of his monthly income towards house rent, 14% towards food, 11% towards travel, 9% towards clothing, 22% towards children's education and saves the rest amount of Rs 3475. Find the monthly income of Tanmay.

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

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7. **Quantity I:** The sum of the present ages of Soham and Deepak is 44 years. After five years, the ages of Soham and Deepak will be in the ratio of 3 : 7. Find the age of Deepak after two years?

Quantity II : The ratio of the present ages of Lokesh and NIkhil is 5 : 9. After four years the ratio of their ages will be 3 : 4. Find Lokesh's age after three 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 can't be established

8. **Quantity I:** Salmaan gave one-fourth of the amount he had to Sarukh. Sarukh in turn gave half of what he received from Salmaan to Nawal. If the difference between the remaining amount with Salmaan and the amount received by Nawel is rate RS. 500, how much money did Sarukh receive from Salmaan?

Quantity II : Salmaan gave one-fifth of the amount he had to Sarukh. Sarukh in turn gave one- third of what he received from Salmaan to Nawal. If the difference between the remaining amount with Salmaan and the amount received by Nawel is rate Rs. 586.66, how much money did Sarukh receive from Salmaan?

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 can't be established

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9. **Quantity I :** The marked price of a table is Rs 1400. He sold it after offering a discount of 18%. If the cost price of the watch is Rs 870. Find the profit percentage.

Quantity II : Manoj bought an article, which was marked at Rs 12000, for a discount of 14%. He then marked it at 25% above the price at which he bought. He then sold it after offering a discount of Rs 1850. What is the profit percentage of Manoj?

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 can't be established

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10. **Quantity I:** Ten politicians are made to stand in a row for any purpose in Parliament. Two politicians are selected at random from the given group. Find the probability that the politician thus selected were positioned adjacent to each other.

Quantity II: Seven politicians are made to stand in a row for any purpose in Parliament. Two politicians are selected at random from the given group. Find the probability that the politician thus selected were positioned adjacent to each other.

Quantity III: Eleven politicians are made to stand in a row for any purpose in Parliament. Two politicians are selected at random from the given group. Find the probability that the politician thus selected were positioned adjacent to each other.

A. Quantity II < Quantity I < Quantity III   B. Quantity II < Quantity III < Quantity I

C. Quantity I > Quantity II > Quantity III   D. Quantity II > Quantity I > Quantity III

E. Quantity II > Quantity III > Quantity I

Correct Answers:

1	2	3	4	5	6	7	8	9	10
D	B	D	B	B	B	A	A	A	D

Explanations:

1. Quantity I:

Cost of each toffee = $\dfrac{1}{5}$

As toffees are marked up by 25% then

Marked price per toffee = 125% of $\dfrac{1}{5}$

Given that discount is 12%

So, the required selling price per toffee = 88% of 125% of $\dfrac{1}{5}$

$= \dfrac{88 \times 125 \times 1}{100 \times 100 \times 5} = 0.22$

As, in Rs. 0.22 anyone can buy 1 toffee

So, in Rs. 1 anyone can buy $\dfrac{1}{0.22}$ toffees

Thus, in Rs. 22 anyone can buy $\dfrac{1}{0.22} \times 22 = 100$ toffees

Quantity II:

Cost of each toffee be $\dfrac{1}{4}$

As toffees are marked up by 26% then

Marked price per toffee = 126% of $\dfrac{1}{4}$

Given that discount is 10%

So, the required selling price per toffee = 90% of 126% of $\dfrac{1}{4}$

$= \dfrac{90 \times 126 \times 1}{100 \times 100 \times 4} = 0.2835$

As, in Rs. 0.2835 anyone can buy 1 toffee
So, in Rs. 1 anyone can buy ___1___ toffees

0.2835

Thus, in Rs. 22 anyone can buy $\dfrac{1}{0.2835} \times 28.35 = 100$ toffees

Hence, option (D) is correct

2. Quantity I :

Suppose initially Rajendra had Rs. y

Then, amount received by Ajnish = Rs. $\dfrac{y}{3}$

Amount remaining with Rajendra = Rs. $\left(y - \dfrac{y}{3}\right)$ = Rs. $\dfrac{2y}{3}$

Amount received by Narendra = Rs. $\left(\dfrac{1}{2} \times \dfrac{y}{3}\right)$ = Rs. $\dfrac{y}{6}$

Since, $\left(\dfrac{2y}{3} - \dfrac{y}{6}\right) = 2500$

$\Rightarrow (4y - y) = 2500 \times 6$
$\Rightarrow 3y = 2500 \times 6$
$\Rightarrow y = 5000.$

Hence, amount received by Ajnish = Rs. $\dfrac{y}{3}$ = Rs. 1667

Quantity II:

Suppose initially Rajendra had Rs. y

Then, amount received by Ajnish = Rs. $\dfrac{y}{2}$

Amount remaining with Rajendra = Rs. $\left(y - \dfrac{y}{2}\right)$ = Rs. $\dfrac{y}{2}$

Amount received by Narendra = Rs. $\left(\dfrac{1}{4} \times \dfrac{y}{2}\right)$ = Rs. $\dfrac{y}{8}$

Since, $\left(\dfrac{y}{2} - \dfrac{y}{8}\right) = 1875$

$\Rightarrow (4y - y) = 1875 \times 8$

$\Rightarrow 3y = 1875 \times 8$

⇒ y = 5000.

Hence, amount received by Ajnish = Rs. $\frac{y}{2}$ = Rs. 2500

Therefore, option (B) is correct.

3. Quantity I:

We know that, Ostriches has 1 head and 2 legs.

Giant marsupial has 1 head and 4 legs

Let number of Ostriches and Giant marsupial be x and y respectively.
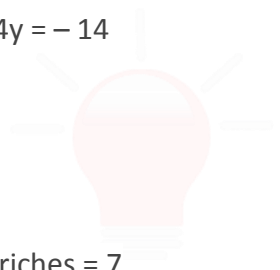
According to question,

(2x + 4y) + 14 = 4 × (x + y)

Or, 2x + 4y – 4x – 4y = – 14

Or, –2x = –14

Or, x = 7

So, number of Ostriches = 7

Number of legs = (2x + 4y) = (2 × 7 + 4y) = 14 + 4y

Quantity II:

We know that, Ostriches has 1 head and 2 legs.

Giant marsupial has 1 head and 4 legs

Let number of Ostriches and Giant marsupial be x and y respectively.

According to question,

(2x + 4y) + 15 = 5 × (x + y)

Or, 2x + 4y – 5x – 5y = –15

Or, –3x – y = –15

Or, 3x + y = 15

There is 2 unknown and 1 equation so, exactly we can say anything about x and y. Thus, we cannot calculate number of legs exactly.

Hence, we cannot find any relation between quantity I and quantity II.

Therefore, option (D) is correct.

4. Quantity I:

Let x, y and z be the rates of doing work of Worker A, Worker B and Worker C respectively.

According to question,
$x = 1.15y$ and $y = 1.12z$

So, $x = 1.15y = (1.15 \times 1.12)z = 1.288z$
Therefore, $(x : y : z) = (1.288 : 1.12 : 1)$
i.e, the rates of doing work are in the ratio $(1.288 : 1.12 : 1)$
Hence, earning will be distributed in the ratio $(1.288 : 1.12 : 1)$

Total earnings, as per the data = Rs. 10000

Hence the share of Worker A = Rs.$\dfrac{1.288}{3.408} \times 10000$ = Rs. 3779

And share of Worker C = Rs.$\dfrac{1}{3.408} \times 10000$ = Rs. 2934

Hence the difference between share of the share of Worker C and Worker A = Rs. (3779 – 2934) = Rs. 845

Quantity II:
Let x, y and z be the rates of doing work of Worker A, Worker B and Worker C respectively.

According to question,
$x = 1.20y$ and $y = 1.10z$
So, $x = 1.20y = (1.20 \times 1.10) z = 1.32z$

Therefore, $(x : y : z) = (1.32 : 1.10 : 1)$

i.e, the rates of doing work are in the ratio $(1.32 : 1.10 : 1)$

Hence, earning will be distributed in the ratio $(1.32 : 1.10 : 1)$

Total earnings, as per the data = Rs. 9500

Hence the share of Worker A = Rs.$\dfrac{1.32}{3.42} \times 9500$ = Rs. 3667

And share of Worker C = Rs. $\dfrac{1}{3.42}$ × 9500 = Rs. 2778

Hence the difference between share of the share of Worker C and Worker A = Rs. (3667 − 2778) = Rs. 889

Therefore, option (B) is correct.

5. Quantity I:

Let the amount lent at 11.225% per annum be x

The amount lent at 4.055% per annum be (12700 − x)

According to the question,

$$\dfrac{(12700 - x) \times 4.055}{100} + \dfrac{x \times 11.225}{100} = 1150$$

⇒ (12700 × 4.055) − 4.055 × x + 11.225 × x = 1150 × 100

⇒ 51498.5 + 7.17 × x = 115000

⇒ 7.17 × x = 63501.5

⇒ x = 8856.6

Hence, the amount lent at 11.225% per annum be Rs. 8856.6

Quantity II:
Let the amount lent at 10.325% per annum be x

The amount lent at 4.252% per annum be (12000 − x)

According to the question,
$$\dfrac{(12000 - x) \times 4.252}{100} + \dfrac{x \times 10.325}{100} = 1200$$

⇒ (12000 × 4.252) − 4.252 × x + 10.325 × x = 1200 × 100

⇒ 51024 + 6.073 × x = 120000

⇒ 6.073 × x = 68976

⇒ x = 11357.8

Hence, the amount lent at 10.325% per annum be Rs. 11357.8

Therefore, option (B) is correct.

6. **Quantity I** : Let the monthly income of Aditya last year be 100x.

Aditya's monthly expenditure last year = $\frac{68}{100}$ × 100x

= 68x

Monthly income this year = $100x \left(1 + \frac{12}{100}\right)$

= 112x

Monthly expenditure this year = $68x \left(1 + \frac{25}{100}\right)$

= 85x Amount of savings reduced = (100x − 68x) − (112x − 85x) = 32x − 27x = 5x 5x = 530 x = 106 Monthly income of Aditya this year = 112x = (112) (106) = Rs 11872 **Quantity II:** Let the monthly income of Tanmay be x in rupees. Monthly savings of Tanmay

$= \left(1 - \frac{19 + 14 + 11 + 9 + 22}{100}\right) \times x$

$3475 = \frac{100 - 75}{100} \times x$

$3475 = \frac{25}{100}x$

x = 13900 Therefore, monthly income of Tanmay = Rs 13900 Therefore, Quantity I < Quantity II Hence, option B is correct.

7. **Quantity I :** Let the ages of Soham and Deepak after five years be 3x and 7x respectively.
The ages of Soham and Deepak five years ago were (3x − 5) years and (7x − 5) years respectively.
3x − 5 + 7x − 5 = 30
10x − 10 = 30
x = 4 years
Age of Deepak after three years = (7x − 5) + 2 = 25 years

Quantity II : Let the present ages of Lokesh and Nikhil be 5x and 7x respectively.
It is given that, after 4 years ratio is 3 : 4
$\frac{5x + 4}{7x + 4} = \frac{3}{4}$

20x + 16 = 21x + 12
x = 4

Lokesh's age after three years = 5x + 3

= 20 + 3 = 23 yrs

Therefore, Quantity I > Quantity II.

Hence, option (A) is correct.

8. **Quantity I :**

Suppose initially Salmaan had Rs. x

Then, amount received by Sarukh = Rs. $\frac{x}{4}$

Amount remaining with Salmaan = Rs. $x - \frac{x}{4}$ = Rs. $\frac{3x}{4}$

Amount received by Nawal = Rs. $\frac{1}{2} \times \frac{x}{4}$ = Rs. $\frac{x}{8}$

Since, $\frac{3x}{4} - \frac{x}{8}$ = 500

⇒ 5x = 4000

⇒ x = 800.

Hence, amount received by Sarukh = Rs. $\frac{x}{4}$ = Rs. 200.

Quantity II : Suppose initially Salmaan had Rs. x

Then, amount received by Sarukh = Rs. $\frac{x}{5}$

Amount remaining with Salmaan = Rs. $x - \frac{x}{5}$ = Rs. $\frac{4x}{5}$

Amount received by Nawal = Rs. $\frac{1}{3} \times \frac{x}{5}$ = Rs. $\frac{x}{15}$

Since, $\frac{4x}{5} - \frac{x}{15}$ = 586.66

⇒ $\frac{11x}{15}$ = 586.66

⇒ x = 800

Hence, amount received by Sarukh = Rs. $\frac{x}{5}$ = Rs. 160.

Therefore, option (A) is correct.

9. Quantity I :

Price at which the table is sold = $(1 - \frac{18}{100})$ × Rs. 1400

= Rs 1148

Profit obtained = Rs 1148 − Rs 870 = Rs 278

Therefore, Profit percentage = $\frac{278}{870}$ × 100

= 31.95%

Quantity II: Price at which Manoj bought the article

= Rs12000 $(1 - \frac{14}{100})$

= Rs 10320 Price at which he marked the article

= 10320 × $(1 + \frac{25}{100})$

= Rs 12900 Price at which he sold the article = Rs 12900 − Rs 1850 = Rs 11050 Therefore, Profit obtained by Manoj = Rs 11050 − Rs 10320 = Rs 730

Profit percentage = $\frac{730}{10320}$ × 100

= 7.07% Therefore, Quantity I > Quantity II
Hence, option (A) is correct.

10.   Quantity I:
Two Politicians can be selected at random from a group of 10 politician in $^{10}C_2$ ways i.e. 45 ways
Two politicians positioned adjacent to each other can be selected from a group of 10 politician standing in a row in 9 ways

Hence, required probability = $\frac{9}{45}$ = $\frac{1}{5}$ = 0.2

Quantity II: Two Politicians can be selected at random from a group of 7 politician in $^{7}C_2$ ways i.e. 21 ways
Two politicians positioned adjacent to each other can be selected from a group of 7 politician standing in a row in 6 ways

Hence, required probability = $\frac{6}{21}$ = $\frac{2}{7}$ = 0.29

Quantity III: Two Politicians can be selected at random from a group of 10 politician in $^{11}C_2$ ways i.e. 55 ways
Two politicians positioned adjacent to each other can be selected from a group of 11 politician standing in a row in 10 ways

Hence, required probability $= \dfrac{10}{55} = \dfrac{2}{11} = 0.18$

Therefore, option (D) is correct.