Bipin Nambiar
(SBI PO 2018)

Shiraz Khan
(SBI Clerk 2018)

Kuldeep Yadav
(SBI PO 2018)

Rajat Saxena
(IBPS Clerk 2018)

Anupam Tyagi
(IBPS PO 2018)

FRIENDS!
WE USED **TESTZONE**
AND CRACKED BANK EXAMS

बैंक परीक्षाओ के लिए निश्चित
रूप से सर्वश्रेष्ट मॉक
टेस्ट सीरीज

IT'S YOUR TURN NOW
TAKE A **FREE** MOCK TEST

Smartkeeda
The Question Bank

Maths Inequalities Questions for SBI Clerk Mains, IBPS Clerk Mains, RBI Assistant Mains, LIC AAO, SBI PO Pre, IBPS PO Pre and RRB Scale I Pre Exams.

Maths Inequalities Quiz 16

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 :** Vessels P, Q, R and S contain mixture of oil and water in the ratio 3 : 7, 3 : 2, 5 : 4 and 1 : 1 respectively. The total quantity in the 4 vessels was 2100 litres. The quantity in vessel P, Q and S was 300 litres, 500 litres and 700 litres less than that in vessel R. If 10% of mixture is taken out from each vessel and poured into a drum, then what would be the ratio of the total quantity of oil and water in the drum?

    Quantity II : Drums A, B and C contain mixture of petrol and diesel. The ratio of quantity of petrol and diesel in drums A and C is 3 : 5 and 7 : 3, respectively. The quantity of petrol in drum B was equal to 50 litres less than the average of quantity of petrol in drums A and C. If the total quantity of mixture in drum A, B and C were 1200 litres, 700 litres and 800 litres respectively, then what would be the ratio of the total quantity of petrol in the 3 drums combined to the total quantity of diesel in the 3 drums combined?

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

2. **Quantity I :** The discount given by the shopkeeper on an article was 16% and the profit earned by the shopkeeper was 47%. If the shopkeeper marked the price of the article Rs. 600 more than the cost price of the article, then find at what percent more than the cost price the article was marked?

    Quantity II : The discount given by the shopkeeper was Rs. 1580 more than the profit earned by the shopkeeper. If the cost price of the article was Rs. 800 and the profit earned by the shopkeeper was 13.75%, then find the discount percent given by the shopkeeper.

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

3. **Quantity I :** Present ages of A and B are in the ratio of 4 : 5 respectively. Present ages of C and D are in the ratio of 5 : 6 respectively. Present average age of A, B, C and D is 40

years and 6 months. Age of A after 2 years will be half the age of D 6 years hence. Find the present average age of B and C.

Quantity II : Present age of Reva is 75% more than the present age of Vijay. Ajay is 12 years younger to Reva. Present age of Vijay is 20% less than the present age of Ajay. Find the average age of Reva, Ajay and Vijay after seven years.

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

4. **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 < Quantity : II
D. Quantity : II ≥ Quantity : I   E. Quantity I = Quantity II or relation can't be established

5. **Quantity I :** The average marks obtained by 3 departments is 848. If the average marks obtained by the students of physics department of 15 students is 64 and the average marks of the students of chemistry department of 12 students is 72. Find the average marks of the students of Maths department having 9 students.

Quantity II : The average marks of four students in Mathematics is 68. Later it was found that, one of the students got 88 marks and due to error in marking he got 76. Find the actual average marks of the four students.

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

6. A bowl contains 3 blue, 2 black and 5 yellow pins. Two pins are drawn at random with replacement from the box.
Quantity I : The probability that the pins drawn are different in colour

Quantity II : The probability that the pins drawn are same in colour

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

7. **Quantity I :** A ream of paper contains 540 sheets of paper. A certain box holds 13 such reams. A boy kept 9 reams in the box. After some time, he took out 20% of the total

number of sheets of paper. He again kept 4 reams of paper. What was the total number of sheets of paper in the box?

Quantity II : 6000

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

8. In an elevator, there are 6 children, 8 men and 12 women. The average weight of the men is 15/7 of the average weight of the women and the average weight of children is half of the average weight of men. The maximum capacity of the elevator is 3071 kg and 12% of the maximum capacity of the elevator is empty.

Quantity I : The average weight of children is how many kg more than that of women?

Quantity II : 6 kg

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

9. **Quantity I :** Rs. 28500

Quantity II : In a business, the ratio of the investment of A and B is 4 : 3 respectively. After 4 months, C joined the business with some investment. At the end of one year, the share of C was Rs. 2500 more than that of B and the share of A was Rs. 1200 more than that of B. Initially, if A had invested Rs. 15000, then was the investment of C?

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

10. Ram takes 4 hours to swim some distance in upstream and return the same distance in downstream. His speed in still water is 400% more than that of the rate of stream.

Quantity I : If he wants to cover the roundtrip (upstream and downstream) of the same distance in exactly 1 hours 45 minutes then by what percent should he increase still water speed? (assume that the rate of stream remains constant)

Quantity II : 150%

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

Correct Answers:

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

Explanations:

1. **Quantity I :**

Let the quantity of mixture in vessel R be 'x' litres

So,

(x – 300) + (x – 500) + x + (x – 700) = 2100

or, x = 900

So, Total quantity in vessel R = 900 litres

Total quantity in vessel P = 900 – 300 = 600 litres

Total quantity in vessel Q = 900 – 500 = 400 litres

Total quantity in vessel S = 900 – 700 = 200 litres

Quantity of oil taken out from vessel P = $0.1 \times \dfrac{3}{10} \times 600 = 18$ litres

Quantity of oil taken out from vessel Q = $0.1 \times \dfrac{3}{5} \times 400 = 24$ litres

Quantity of oil taken out from vessel R = $0.1 \times \dfrac{5}{9} \times 900 = 50$ litres

Quantity of oil taken out from vessel S = $0.1 \times \dfrac{1}{2} \times 200 = 10$ litres

Quantity of water taken out from vessel P = $0.1 \times \dfrac{7}{10} \times 600 = 42$ litres

Quantity of water taken out from vessel Q = $0.1 \times \dfrac{2}{5} \times 400 = 16$ litres

Quantity of water taken out from vessel R = $0.1 \times \dfrac{4}{9} \times 900 = 40$ litres

Quantity of water taken out from vessel S = $0.1 \times \dfrac{1}{2} \times 200 = 10$ litres

Required ratio = (18 + 24 + 50 + 10) : (42 + 16 + 40 + 10) = 102 : 108 = 17 : 18 = 0.94

Quantity II :

Quantity of petrol in drum A = $\frac{3}{8}$ × 1200 = 450 litres

Quantity of diesel in drum A = 1200 − 450 = 750 litres

Quantity of petrol in drum C = $\frac{7}{10}$ × 800 = 560 litres

Quantity of diesel in drum C = 800 − 560 = 240 litres

Quantity of petrol in drum B = $\frac{450 + 560}{2}$ − 50 = 455 litres

Quantity of diesel in drum B = 700 − 455 = 245 litres

Required ratio = (450 + 455 + 560) : (750 + 245 + 240) = 1465 : 1235 = 293 : 247 = 1.19

Therefore, Quantity I < Quantity II

Hence, option C is correct.

2. **Quantity I :**

Let, the cost price of the article = Rs. x

Then, the marked price of the article = Rs. (x + 600)

So, 84% of (x + 600) = 147% of x

So, $\frac{84}{100}$ × (x + 600) = $\frac{147}{100}$ × x

=> 84x + 50400 = 147x

=> 63x = 50400

=> x = 800

Therefore, reqd. percentage = $\frac{600}{800}$ × 100 = 75%

Quantity II :

The selling price of the article = 113.75% of 800 = Rs. 910

Profit = Rs. (910 − 800) = Rs. 110

Discount = Rs. (1580 + 110) = Rs. 1690

Marked price = Rs. (1690 + 910) = Rs. 2600

Discount% = $\frac{1690}{2600}$ × 100 = 65%

Hence, option A is correct.

3. **Quantity I :**

Let the present ages of A and B are 4x and 5x years respectively and the present ages of C and D are 5y and 6y years respectively.

So, sum of the ages of A, B, C and D = 4x + 5x + 5y + 6y = 40.5 × 4

So, 9x + 11y = 162

Also given that,

2 x (4x + 2) = 6y + 6

So, 4x – 3y = 1

From both the equation, we get,

x = 7 and y = 9

So, the present ages of A, B, C and D are 28, 35, 45 and 54 respectively.

Present average age of B and C = $\dfrac{35 + 45}{2}$ = 40 years

Quantity II :

Let the present age of Ajay = x years

Present age of Vijay = 0.80 × x = 0.8x years

Present age of Reva = 1.75 × 0.8x = 1.4x

According to the question,

1.4x – x = 12

So, x = 30

So, the present age of Ajay, Vijay and Reva are 30 years, 24 years and 42 years respectively

Average age of Ajay, Vijay and Reva after 7 years
= $\dfrac{30 + 24 + 42}{3}$ + 7 = 32 + 7 = 39 years

Therefore, Quantity I > Quantity II

Hence, option A is correct.

4. **Quantity I :**

Total number of workers = 42

Number of male workers = $\dfrac{13}{21}$ × 42 = 26

Number of female workers = 42 − 26 = 16

So, 65 × 42 = 26 × 72 + 16 × x
So, 2730 = 1872 + 16x
So, 16x = 858
So, x = 53.625
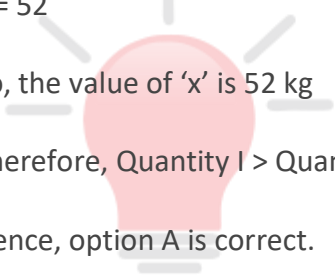So, the value of x = 53.625 kg

Quantity II :

25x = 24 x (x − 2) + 100
25x = 24x − 48 + 100
x = 52

So, the value of 'x' is 52 kg

Therefore, Quantity I > Quantity II

Hence, option A is correct.

5. **Quantity I :**

According to question,
848 × 3 = 15 × 64 + 12 × 72 + x × 9
x = 80 marks

The average marks of the students of Maths department = 80 marks

Quantity II :

Total marks of four students = 68 × 4 = 272

New average marks = $\dfrac{272 - 76 + 88}{4}$ = 71

Therefore, Quantity I > Quantity II

Hence, option A is correct.

6. **Quantity I :** The probability that the pins drawn are of different colour

$$= \frac{3}{10} \times \frac{2}{10} + \frac{3}{10} \times \frac{5}{10} + \frac{2}{10} \times \frac{5}{10}$$

$$= \frac{6}{100} + \frac{15}{100} + \frac{10}{100} = \frac{31}{100}$$

Quantity II : The probability that the pins drawn are of same colour

$$= \frac{3}{10} \times \frac{3}{10} + \frac{2}{10} \times \frac{2}{10} + \frac{5}{10} \times \frac{5}{10}$$

$$= \frac{9}{100} + \frac{4}{100} + \frac{25}{100} = \frac{38}{100}$$

Therefore, Quantity I < Quantity II

Hence, option C is correct.

7. In 9 reams, the total number of paper sheets = 9 × 540 = 4860

After taking out 20% of the total number of paper sheets, the remaining number of paper sheets = 80% of 4860 = 3888

After again keeping 4 such reams, the total number of paper sheets = 3888 + 4 × 540 = 6048

Hence, option A is correct.

8. The ratio of the average weight of men and women = 15 : 7
The ratio of the average weight of children, men and women = 15: 30: 14
The total filled capacity of the elevator = 88% of 3071 = 2702.48 kg
The ratio of the weight of 6 children, 8 men and 12 women = 6 × 15 : 8 × 30 : 12 × 14 = 15 : 40 : 28

The weight of 6 children = $\dfrac{15 \times 2702.48}{83}$ = 488.4 kg

The average weight of 6 children = $\dfrac{488.4}{6}$ = 81.4 kg

The average weight of 12 women = $\dfrac{28 \times 2702.48}{83 \times 12}$ = approximately 75.97 kg

The required difference = (81.4 − 75.97) kg = 5.43 kg
Hence, option C is correct.

9. The ratio of the share of A, B and C = 4 × 12 : 3 × 12 : c × 8 (where c is the initial investment of C)

= 12 : 9 : 2c

Let A's share = Rs. 12a then B's share = Rs. 9a

According to the question, 12a – 9a = 3a = 1200

a = 400

Therefore, B's share = Rs. 3600 and C's share = Rs. (3600 + 2500) = 6100 = 2c

Therefore, the ratio of the share of A, B and C = 4800 : 3600 : 6100 = 48 : 36 : 61 = 4 × 12 : 3 × 12 : c × 8

Therefore, 8c = 61

c = 7.625

The ratio of the initial investments of A, B, and C = 4 : 3 : 7.625

Let us assume the initial investments of A = 4b then the initial investments of C = 7.625b

4b = 15000

b = 3750

7.625b = 7.625 × 3750 = Rs. 28593.75

Hence, option C is correct.

10. Let the speed of stream = a km per hour
Ram's speed in still water = 500% of a = 5a km per hour
Upstream speed = 5a − a = 4a km per hour
Downstream speed = 5a + a = 6a km per hour
Let the total distance = x km then

$$\frac{x}{4a} + \frac{x}{6a} = \frac{5x}{12a} = 4 \text{ hours}$$

$$\frac{X}{A} = \frac{48}{5}$$

Let after increasing, his speed in still water become b% of 5a $= \dfrac{b \times 5a}{100}$

New downstream speed = $\dfrac{5ab}{100} + a$ km per hour

New upstream speed = $\dfrac{5ab}{100} - a$ km per hour

$$\frac{x}{(5ab/100 + a)} + \frac{x}{(5ab/100 - a)} = \frac{7}{4}$$

$$\frac{X}{A} \times \frac{1}{\dfrac{B}{201} +} + \frac{x}{a} \times \frac{1}{(\dfrac{b}{201} -)} = \frac{7}{4}$$

$$\frac{48}{5} \times \frac{20}{b + 20} + \frac{48}{5} \times \frac{20}{b - 20} = \frac{7}{4}$$

$7b^2 - 2800 = 1536b$
$7b^2 - 1536b - 2800 = 0$
By solving b = 221 approximately
It means, percentage increase = 221 − 100 = approximately 121%
Hence, option C is correct