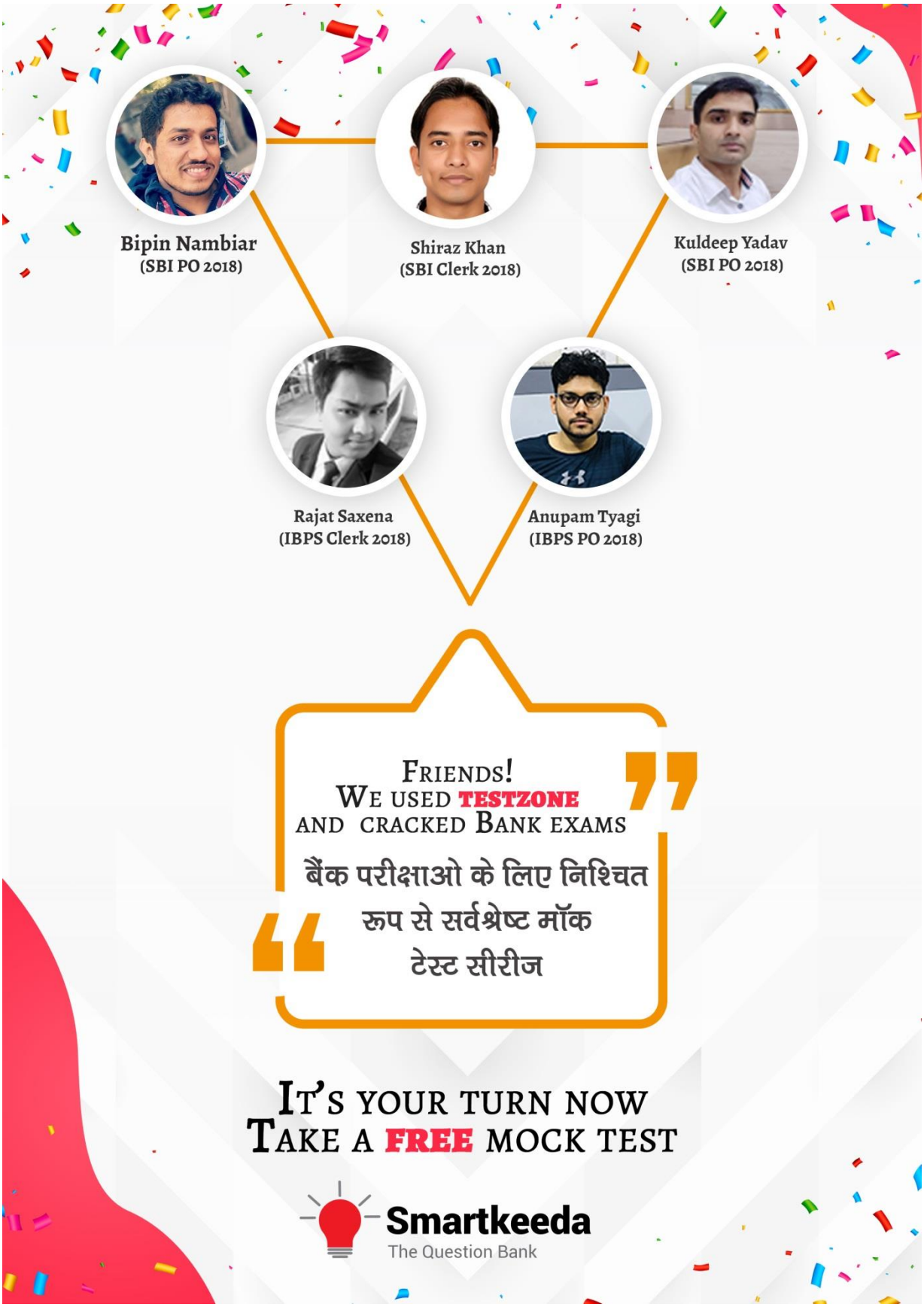
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Maths Inequalities Questions for Bank and Insurance Exams

Maths inequalities Quiz 8

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. In a mixture of 80 litres acid and water, the ratio of acid to water is 3 : 5.
Quantity I: when half of the mixture was withdrawn and in the same quantity a new solution X of acid and water was added then what should be concentration of acid in the new solution X if the ratio of acid to water in the mixture become 1 : 1
Quantity II: 50%

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

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2. In a family of three members, A, B, and C the difference between A's age and B's age is same as the difference between B's age and C's age. The average of their age is 45 years and the age of eldest member of the family is 60 years.
Quantity I: What is the age of smallest member of the family?
Quantity II: 14 years ago, what was the average of the age of smallest member and that of eldest member of the family?

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

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3. **Quantity I:** In a school, 50% of the total number of girls is equal to 30% of the total number of boys then the number of girls is what percentage of the total number of students of the school?
Quantity II: In a school, 33.33% of the total number of girls is equal to 66.67% of the total number of boys then the total number of girls is what percentage of the total number of students of the school?

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

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4. A train of length x meters travelling at the speed of 54 km per hour can cross a boy standing on a platform in 16 seconds but at the speed of 72 km per hour it can cross a platform of y meters long in 24 seconds.
Quantity I: What is the length of the train?
Quantity II: What is the length of the platform?

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. 10 litres of water were drawn from a cask full of water and it was filled with 30 litres milk then the concentration of milk in the mixture become 20%.
Quantity I: Again, how many litres of mixture should be replaced with 10 litres milk so the concentration of water in the mixture will become 60%.
Quantity II: What was the original quantity of water in the cask?

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

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6. P can do a piece of work in x days and Q can do the same work in 3x days.
Quantity I: If both of them together complete half of the work in 10 days then what is the value of x?
Quantity II: If P can do half of the work at 40% of his efficiency in 31.25 days then what is 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

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7. The average weight of 5 boys is 22.5 kg which is equal to two times of the average weight of 3 girls.
Quantity I: What is the average weight of the 5 boys and the 3 girls?
Quantity II : 20 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

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8. A motorcyclist X starts from a point P at 5 : 00 am at the speed of 24 km per hour and from the same point other motorcyclist Y starts at 8 : 00 am at the speed of 40 km per hour.
Quantity I: If both meet each other at other point Q and return immediately towards point P. How much total time the motorcyclist X will take go and return immediately to the point P?
Quantity II : 15 hours

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

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9. **Quantity I :** 'x' $x^2 + x - 56 = 0$
Quantity II : 'y' $2y^2 - 17y + 21 = 0$

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. The monthly expenditures of a man on travelling is 40% less than that on food. The difference between the monthly expenditures on food and that on travelling is 10% of his salary.

Quantity I: If the person spends Rs. 1200 per month on travelling then what is his monthly salary?

Quantity II: If his monthly salary is Rs. 25000 then how much did he spend on food?

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
A	C	C	E	C	A	C	E	E	A

Explanations:

1.

The quantity of acid = $\frac{80 \times 3}{8}$ = 30 litres

The quantity of Water = $\frac{80 \times 5}{8}$ = 50 litres

When half of the solution was withdrawn then acid and water would be withdrawn in the same ratio

The reaming quantity of acid = $\frac{30}{2}$ = 15 litres

And the remaining quantity of water = $\frac{50}{2}$ = 25 litres

Now, in the same quantity a new solution x of acid and water was added then the ratio become 1 : 1

It means, Acid = 40 litres and water = 40 litres

The quantity of acid in the new solution x = 40 – 15 = 25 litres

The quantity of water in the new solution = 40 – 25 = 15 litres

The reqd. % = $\frac{25 \times 100}{40} = \frac{250}{4}$ = 62.5%

Hence, option A is correct.

2. According to the question,

A – B = B – C

2B = A + C ----- (i)

And A + B + C = 45 × 3 = 135 years ------ (ii)

Solve this equation or we can say that the age of A, B, and C are in athematic progression
Were let the common difference = D then

The age of three members X – D, X, X + D years

X – D + X + X + D = 45 × 3

3X = 45 × 3

X = 45 years
The age of eldest member = X + D = 45 + D = 60
D = 15 years

Quantity I : The age of smallest member of the family = 45 – d = 45 – 15 = 30 years
Quantity II : 14 years ago, Smallest Member's age = 30 – 14 = 16 years

And Eldest member's age = 60 – 14 = 46 years
The sum = 16 + 46 = 62 years
The reqd. average = $\frac{62}{2}$ = 31 years

Therefore, Quantity : I < Quantity : II
Hence, option C is correct.

3. **Quantity I:** Let the number of girls = x and the number of boys = y then
50% of x = 30% of y
5x = 3y
x : y = $\frac{3}{5}$
x = number of girls = 3a then y = number of boys = 5a
The reqd. % = $\frac{3a \times 100}{8a} = \frac{300}{8}$ = 37.5%

Quantity II:
Let the number of girls = x and the number of boys = y then
33.33% of x = 66.67% of y
x = 2y
x : y = 2 : 1
x = number of girls = 2a then y = number of boys = a
The reqd. % = $\frac{2a \times 100}{3a}$ =66.67 %

Therefore, Quantity : I < Quantity : II
Hence, option C is correct.

4.
54 km per hour = $\frac{54 \times 5}{18}$ = 15 meters per second

Quantity I:
The length of the train = 15 × 16 = 240 meters

Quantity II :
72 km per hour = $\frac{72 \times 5}{18}$ = 20 meters per second

Let the length of the platform = y meters then
(240 + y) = 20 × 24 = 480
y = 480 – 240 = 240 meters
Therefore, Quantity : I = Quantity : II
Hence, option E is correct.

5. **Quantity I:** Let the quantity of water in the cask = x litres then

x – 10 + 30 = x + 20 litres = quantity of mixture
The quantity of milk in x + 20 litres = 30 litres
According to the question,
20% of (x + 20) = 30
x + 20 = 150
x = 130 litres
And the quantity of mixture = x + 20 = 150 litres
The quantity of water = x – 10 = 120 litres

In 1 litre mixture, the quantity of water = $\frac{120}{150}$ litres

In y litres mixture, the quantity of water = $\frac{12y}{15}$ litres

Now, let y litres of mixtures was replaced with 10 litres of milk
Then, the quantity of mixture = 150 – y + 10 = 160 – y litres

60% of (160 – y) = 120 – $\frac{12y}{15}$

96 – 0.6y = 120 – 0.8y
0.2y = 24
y = 120
Quantity II : 130 litres
Therefore, Quantity : I < Quantity : II
Hence, option C is correct.

6. **Quantity I:** half of the work in 10 days therefore, the complete work in 10 × 2 = 20 days

$\frac{1}{x} + \frac{1}{3x} = \frac{1}{20}$

4 × 20 = 3x
x = $\frac{80}{3}$days

Quantity II: Let P's efficiency = a then 40% of a = 0.4a

half of the work in 31.25 days then the complete work in 31.25 × 2 = 62.5 days
at 0.4a efficiency he does in 62.5 days
Total work = 62.5 × 0.4a = 25a units
then, at a efficiency he will do in 25a/a = 25 days

Therefore, Quantity : I > Quantity : II
Hence, option A is correct.

7. The sum of the age of 5 boys = 22.5 × 5 = 112.5 kg

The sum of the weight of 3 girls = $22.5 \times \frac{3}{2} = 33.75$ kg

The sum of the weight of 5 boys and 3 girls = 112.5 + 33.75 = 146.25 kg

Quantity I:

The reqd. average = $\frac{146.25}{8}$ = approximately 18 Kg.

Therefore, Quantity : I < Quantity : II

Hence, option C is correct.

8. The distance travelled by X in first 3 hours = 3 × 24 = 72 km
The relative speed of X and Y = 40 – 24 = 16 km per hour
Distance = speed × time
72 = 16 × y
y = 4.5 hours
It means after 4.5 hours the motorcyclist Y meets X.

Quantity I: The total time taken by P to go and return immediately = 3 + 4.5 + 3 + 4.5 = 15 hours

Therefore, Quantity : I = Quantity : II

Hence, option E is correct.

9. **Quantity I :** $x^2 + x - 56 = 0$
$x^2 + 8x - 7x - 56 = 0$
$x(x + 8) - 7(x + 8) = 0$
$(x + 8)(x - 7) = 0$
$x = -8, 7$

Quantity II : $2y^2 - 17y + 21 = 0$
$2y^2 - 14y - 3y + 21 = 0$
$2y(y - 7) - 3(y - 7) = 0$
$(y - 7)(2y - 3) = 0$

y = 7, 3/2
For, x = 7 and y = 3/2
x > y
But for x = – 8 and y = 3/2
x < y

Clearly, one value of y is lying between two values of x.

Therefore, relationship can't be established

Hence, option E is correct.

10. The monthly expenditures of a man on travelling is 40% less than that on food
The ratio of expenditures on travelling: food = 3 : 5
Let on travelling = 3x then on food = 5x
The difference = 5x – 3x = 2x =10% of his monthly salary

Quantity I : 3x = 1200
x = 400
2x = 800 = 10% of his monthly salary

Monthly salary = $\frac{800 \times 100}{10}$ = 8000

Quantity II : Monthly salary = 25000
10% of 25000 = 2500 = 2x
The expenditures on food = 5x = 1250 × 5 = 6250

Therefore, Quantity : I > Quantity : II

Hence, option A is correct.