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Inequalities Questions for IBPS RRB SCALE I Mains Exams.

Inequalities Quiz 31

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. A container Y has 80 litres water and Z has 20 litre alcohol. A person takes 6.25% of water from Y and 25% of alcohol from Z in different bottles namely C and D respectively. He pours C in Z and D in Y. He repeats the same thing but this time he fills C with 16 litre mixture from Y and D with 4 litre mixture from Z.

Quantity I : 20% of water present in container Y.

Quantity II : 64% of water present in container Z.

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 cannot be established.

2. A boat is sailing in a big river. The river is divided into two parts namely river-1 and river-2 at a point and the boat turns into river-1. The stream speed of the big river was 80% of the stream speed of river-1 and 40% of the still water speed of the boat. The boat can cover a distance of 10 km downstream in 17(1/7) minutes in the big river.

Quantity I : Time in big river on moving 30 km upstream.

Quantity II : Time in river-1 on moving 25 km upstream.

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 cannot be established.

3. A family has five kids namely A, B, C, D and E. C is 4 years younger than D and has age 33.33% more than A. A's age is 40% less than D. B, whose age is equal to the average age of A and D, is 8 years younger than E.

Quantity I : Age of A and age of B

Quantity II : Age of C, age of D and age of E

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 cannot be established.

4. A bag has 11 white balls, 8 red balls and some black balls whose number is unknown. Some balls are drawn from the bag at random:

Quantity I : Probability of getting two red balls.

Quantity II : Probability of getting three white balls.

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 cannot be established.

5. On a particular project, A works for 4 days alone, B works for 6 days alone and finally C works for 10 days alone, the work is completed. If A and B works alone for 2 and 3 days respectively, one-third of the work is completed. To complete the work alone, A needs 40% of the number of days that C needs to complete the work alone.

Quantity I : If A works at three-fourth efficiency, number of days he needs to complete the work alone.

Quantity II : If B works at normal efficiency, number of days he needs to complete the work alone.

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 cannot be established.

6. Three friends A, B and C start a business with ratio of investment 10 : 12 : 11. Investment by C is Rs. 4000 more than the investment by A. The time for which A, B and C invested is 8 months, 6 months and 5 months respectively. Total profit at the end of the business is Rs. 37,260.

Quantity I : 15% of Profit share of A.

Quantity II : 20% of Profit share of C.

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 cannot be established.

7. Two groups of kids namely P and Q have total 54 and 45 kids. Difference between the number of boys and girls in group P is six while that in group Q is five.

Quantity I : Number of Girls in team P.

Quantity II : Number of Boys in team Q.

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 cannot be established.

8. Ratio of age of mother to father after three years will be 8 : 9. Kid A is 22 years younger than mother while kid B is 27 years younger than father. Sum of age of kids is 30 years.

Quantity I : Age of kid A.

Quantity II : Age of kid B.

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 cannot be established.

9. Item A has cost price 33.33% less than item B. Marked price of A is equal to the cost price of item B. Marked price of B is 33.33% more than the marked price of A. Both the items are sold at 20% discount.

Quantity I : Find the profit percent on item A.

Quantity II : Find the profit percent on item B.

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 cannot be established.

10. There are three typewriters A, B and C. If A and B type together such that A types at 25% more efficiency, they need Z hours to finish the given typing work. But if B works with C such that C works at 16.67% less efficiency, then the two also would need Z hours to finish the same given typing work.

Quantity I : Number of pages per hour A can type at his normal efficiency.

Quantity II : Number of pages per hour C can type at his normal efficiency.

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 cannot be established.

Correct Answers:

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

Explanation:

1. Volume of water in C = 6.25% of 80 = 5 litre

Volume of alcohol in D = 25% of 20 = 5 litre

He pours C in Z and D in Y, so

In Y, we have 80 (water) – 5 (water) + 5 (alcohol) = 75 (water) + 5 (alcohol)

In Z, we have 20 (alcohol) – 5 (alcohol) + 5 (water) = 15 (alcohol) + 5 (water)

Now, he take out 16 litre from Y and 4 litre from Z.

From Y, he will fill 16 litre in C which would have 15 litre water and 1 litre alcohol as the ratio of water to alcohol in Y now is 15:1.

From Z, he will fill 4 litre in D which would have 1 litre water and 3 litre alcohol as the ratio of water to alcohol in Z now is 1:3.

When he will pour D into Y, we have

In Y, we have [75(w) + 5 (a)] – [15(w) + 1(a)] + [3(a) + 1(w)] = 61 (w) + 7 (a)

In Z, we have [15 (a) + 5 (w)] – [3(a) + 1(w)] + [15(w) + 1(a)] = 13 (a) + 19 (water)

Quantity I :
20% of water in Y = 20% of 61 = 12.2 litres

Quantity II :
64% of water in Z = 64% of 19 = 12.16 litres

Q I > Q II

Hence, option A is correct.

2. Let the stream speed of the river-1 = 100y kmph

Then, the stream speed of the big river = 80y kmph

Since, 40% of [Still water speed of the boat] = 80y kmph

Thus, Still water speed of the boat = 200y kmph

We have that

$$\frac{10 \text{ km}}{(200y + 80y)} = 17\frac{1}{7} \text{ min.} = \frac{2}{7} \text{ h} \rightarrow y = \frac{1}{8}$$

The stream speed of the river-1 = 12.5 kmph

The stream speed of the big river = 10 kmph

Still water speed of the boat = 25 kmph

Quantity I :

$$\text{Time in big river} = \frac{30}{25 - 10} = 2\text{h}$$

Quantity II :

$$\text{Time in river-1} = \frac{25}{25 - 12.5} = 2\text{h}$$

Quantity I = Quantity II

Hence, option E is correct.

3. C is 4 years younger than D, let D is 'y' years old, then C = (y – 4) years

C has age 33.33% more than A, then A

$= \frac{3\,(y-4)}{4}$ years ------(i)

A has age 40% less than D, then age of A = 0.6y -----(ii)

But (i) and (ii) both are the age of A, so these must be equal, we have

$\frac{3\,(y-4)}{4} = 0.6y \rightarrow y = 20$

Therefore, D = 20 years
Age of A = 0.6x20 = 12 years
Age of C = 12 + 33.33% of 12 = 16 years

Age of B = $\frac{12+20}{2}$ = 16 years

B is 8 years younger than E, so age of E = 16 + 8 = 24 years

Quantity I ≤ Quantity II

Hence, option C is correct.

4. Let there be ‘y’ black balls.

Total number of balls = 11 + 8 + y = 19 + y

Probability of getting two red balls

$$= \frac{^{8}C_2}{^{(19+y)}C_2} = \frac{28 \times 2}{(19+y)(18+y)} = \frac{56}{(19+y)(18+y)}$$

Probability of getting three white balls

$$= \frac{^{11}C_3}{^{(19+y)}C_3} = \frac{165 \times 6}{(19+y)(18+y)(17+y)}$$

$$= \frac{990}{(19+y)(18+y)(17+y)}$$

$$= \left[\frac{990}{56} \times 56\right] \times \left[\frac{1}{(19+y)(18+y)}\right] \times \frac{1}{17+y}$$

$$= \frac{17.67}{17+y} \times \frac{56}{(19+y)(18+y)}$$

$$\text{Quantity I} = \frac{56}{(19+y)(18+y)}$$

$$\text{Quantity II} = \frac{17.67}{17+y} \times \frac{56}{(19+y)(18+y)}$$

Since, y = 1, 2.., and so on.

Even for y = 1, the factor [17.67/(17 + y)] < 1. So it is obvious that the factor will always be less than 1.

Therefore the quantity II will always be less than quantity I.

Hence, option A is correct.

5. Let A alone can finish the work in 'a' days, B needs 'b' days, and C needs 'c' days, then

$\frac{4}{a}+\frac{6}{b}+\frac{10}{c}=1$ ----(i)

Now, if A work for 2 days alone and B works for 3 days alone, we have

$\frac{2}{a}+\frac{3}{b}=\frac{1}{3}\rightarrow\frac{4}{a}+\frac{6}{b}=\frac{2}{3}$ -----(ii)

From (i) and (ii), we have

$\frac{2}{3}+\frac{10}{c}=1\rightarrow c=30$

Number of days to finish the work by C = 30 days.

Number of days needed by A = 40% of 30 = 12 days.

From (ii), we have

$\frac{2}{12}+\frac{3}{b}=\frac{1}{3}\rightarrow b=18$

Number of days to finish the work by B = 18 days.

Quantity I : If A works at three-fourth efficiency, number of days he needs to complete the work alone. Number of days needed by A = 16

Quantity II : If B works at normal efficiency, number of days he needs to complete the work alone. Number of days needed by B = 18

Quantity I < Quantity II

Hence, option B is correct.

6. Ratio of A to C = 10 : 11

Let amount of A and C be '10y' and '11y' respectively, then

Amount of C = Amount of A + 4000 → 11y = 10y + 4000 → y = 4000

Amount of A = 40,000, Amount of B = 48,000, Amount of C = 44,000

Capital ratio = 40,000 × 8 : 48,000 × 6 : 44,000 × 5 = 80 : 72 : 55

Profit share of A = $\frac{80}{207}$ × 37,260 = 14400

Profit share of C = $\frac{55}{207}$ × 37,260 = 9900

Quantity I : 15% of Profit share of A.

$\frac{15}{100}$ × 14400 = 2160

Quantity II : 20% of Profit share of C.

$\frac{20}{100}$ × 9900 = 1980

Quantity I > Quantity II

Hence, option A is correct.

7.

	Boys	Girls	Total
Case-1			
P	n	n + 6	54
Q	m	m + 5	45
Case-2			
P	n	n + 6	54
Q	m	m – 5	45
Case-3			
P	n	n – 6	54
Q	m	m + 5	45
Case-4			
P	n	n – 6	54
Q	m	m – 5	45

We get the following choices:

Case-1: n + n + 6 = 54 → n = 24; and m + m + 5 = 45 → m = 20

Similarly we find for other cases.

	Boys	Girls	Total
Case-1			
P	24	30	54
Q	20	25	45
Case-2			
P	24	30	54
Q	25	20	45
Case-3			
P	30	24	54
Q	20	25	45
Case-4			
P	30	24	54
Q	25	20	45

Quantity I : Number of Girls in team P.

Possible choices are 30, 30, 24, and 24

Quantity II : Number of Boys in team Q.

Possible choices are 20, 25, 20, and 25

We cannot establish any relation as two numbers in Quantity I namely 30 and 30 are greater than all the numbers in Quantity II but two numbers in Quantity I namely 24 and 24 are less than two numbers in Quantity II namely 25 and 25.

Hence, option E is correct.

8. Let the age of mother and father today is 'm' and 'f' years, then after three years

$\frac{(m+3)}{(f+3)} = \frac{8}{9} \rightarrow 9m - 8f = -3$ ----(i)

Age of A = (m – 22)

Age of B = (f – 27)

Therefore, we have

(m – 22) + (f – 27) = 30 → m + f = 79 ----(ii)

From (i) and (ii), we get m = 37 and f = 42

Quantity I : Age of kid A.

Age of A = (37 – 22) = 15

Quantity II : Age of kid B.

Age of B = (42 – 27) = 15

Quantity I = Quantity II

Hence, option E is correct.

9. We have the following information:

	Cost Price	Selling Price	Marked Price
A	200y	240y	300y
B	300y	320y	400y

Quantity I : Find the profit percent on item A.

Profit percent = $\frac{40y}{200y} \times 100 = 20\%$

Quantity II : Find the profit percent on item B.

Profit percent = $\frac{20y}{300y} \times 100 = 6.66\%$

Quantity I > Quantity II

Hence, option A is correct.

10. Each time B types at his normal efficiency but in first case A types at some higher efficiency and in second case C types at some lower efficiency then the two groups need equal number of hours.

It is clear without any calculation that A is less efficient than C.

Quantity I < Quantity II

Hence, option B is correct.