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

Maths Inequalities Quiz 13

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 and B entered into a partnership and invested money in the ratio 2 : 3

Quantity I: The value of A's share if the ratio of time period of their investments is 3: 2 and the profit is Rs. 10, 000.

Quantity II: C enters the partnership after 4 months and is to be provided some money as monthly salary from the profit at the end of the year. If the profit at the end of the year is Rs. 2,40,000, the ratio of investments by B and C is 6 : 5 and B's share is Rs. 90,000. What is C's monthly salary?

- 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:** A man sold an article at a loss of 12%, while another man sold the same article having the same cost price at a profit of 8%. The total selling price of both the articles is Rs. 4312. If the man who incurs 12% loss sold the article after giving a discount of Rs. 424, then find the marked price of the article.

Quantity II: A shopkeeper sold an article of cost price Rs.1840 at a profit of $\frac{415}{46}\%$. If the shopkeeper offers a discount of 15%, then find the marked price of the article.

- 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 average of present ages of A and C is 25 years and the average of present ages of B and D is also 25 years. If A is 10 years younger to C and D is 14 years younger to B, then what is the difference between the present ages of A and B?

Quantity II: The average of the ages of P, Q and R, 3 years hence from now would be 35 years. P's present age is $\frac{7}{17}$ of the sum of the present ages of Q and R. If the ratio of present ages of Q and R is 9: 8, respectively, then what is the difference between the present ages of P and R?

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:** Tank A and Tank B contain a mixture of petrol and diesel in ratio of 3 : 7 and 4 : 1, respectively. If 300 litres and 400 litres are drawn from tank A and tank B, respectively, then what would be the difference between the total quantity of petrol and the total quantity of diesel drawn from the 2 tanks?

Quantity II: Vessel X and vessel Y contain mixture of oil and water in the ratio of 3 : 2 and 1 : 1, respectively. 200 litres of the mixture is transferred from vessel X to vessel Y. If the initial quantity in vessel Y was 600 litres, then what would be the total quantity of water in vessel Y in the end?

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:** The average age of Mayank, Sachit, and Mudit is 32 years. The ratio of age of Mayank to Sachit is 4 : 3 and the age of Mudit is 16 years more than the age of Sachit. Find the age of Sachit.

Quantity II: The age of A, B, C is $(x + 4)$ years, $(x + 8)$ years, and $(x - 4)$ years respectively. The ratio of the age of A, 6 years before to the age of B, 2 years hence is 3 : 5. Find the average age of A, B and C.

- 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

6. **Quantity I:** Speed of train A is 12.5% less than that of train B and both the trains cross a pole in same time. Train B crosses a platform of 0.6 km in 27 seconds more than that of time taken by A to cross a standing man which is 0.54 minutes. What is the speed of train A (in kmph)

Quantity II: Two cars P and Q start moving towards each other from opposite points 140 km away and Q stops after covering half of the journey and at this time car P has travelled $70/3$ km more than car Q. Find the sum of speed of P and Q..

- 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

7. **Quantity I:** Rajiv, Sushil and Prashank can do a work in 20 days while working together. Rajiv is twice efficient than Prashank and Prashank and Sushil individually can do the work in the same number of days. Find the time taken by Rajiv to complete the work individually

Quantity II: 80 men were employed to complete the construction work in 45 days. The work started and 30 men left after working for 20 days. Find the number of days taken to complete the remaining work with the remaining number of men.

- 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

8. **Quantity I:** A man can row a boat downstream at a speed of 12 km/hr. Find the time taken to cover 12 km by the man in still water, if the ratio of resultant speed of boat at downstream to upstream is 2: 1

Quantity II: A man walking at a speed of 4 km/hr covers a certain distance in 195 minutes. Find the time taken by the same man to cover the same distance by running at a speed of 13km/hr.

- 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

9. **Quantity I:** Find the volume of a cone of slant height 25 cm and curved surface area same as that of a cylinder of radius 5 cm and height 17.5 cm.

Quantity II: Find the volume of small cuboidal box of dimensions 15 cm x 12 cm x 8 cm

- 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:** There are seven consecutive even numbers. Largest even number is 40% more than the smallest even number. Find the average of these seven consecutive even numbers.

Quantity II: Sum of two positive numbers is 71 and the product of these two numbers is 1260. Find the larger of the two numbers.

- 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 answer:

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

Explanation:

1. Quantity I :

Ratio of investments = 2 : 3

Ratio of time periods of investments = 3 : 2

Profit will be shared in the ratio $(2 \times 3) : (3 \times 2) = 1 : 1$

$$A's \text{ share} = \frac{1}{2} \times 10000 = \text{Rs. } 5000$$

Quantity II :

C has invested his money for 8 months.

Let Rs. 'x' be C's monthly salary.

Profit = Rs. 2,40,000

Therefore, profit to be shared = Rs. $(240000 - 8x)$

Ratio of investments by A and B = 2 : 3 = 4 : 6

Ratio of investments by B and C = 6 : 5

Ratio of investments by A, B and C = 4 : 6 : 5

Profit will be shared in the ratio $(4 \times 12) : (6 \times 12) : (5 \times 8) = 6 : 9 : 5$

Given, B's share = 90000

$$= \frac{9}{20} \times (240000 - 8x) = 90000$$

$$= 240000 - 8x = 200000$$

$$= 8x = 40000 ; x = \text{Rs.}5000$$

Therefore, Quantity I = Quantity II

Hence, option E is correct.

2. Quantity I :

Let, the cost price of both article be Rs. x

According to the question,

Selling price of the article sold at 12% loss = Rs. 0.88x

And, selling price of the article sold at 8% profit = Rs. 1.08x

According to the question,

$$0.88x + 1.08x = 4312$$

$$1.96x = 4312$$

$$x = \text{Rs.} 2200$$

So, the selling price of the article sold at 12% loss = $0.88 \times 2200 = \text{Rs.} 1936$

Therefore, marked price of the article = $1936 + 424 = \text{Rs.} 2360$

Quantity II :

Let the marked price of the article be Rs. x

Given, cost price of the article = Rs. 1840

$$\text{Profit \%} = \frac{415}{46} \%$$

So, selling price of the article =

$$\left(100 + \frac{415}{46}\right) \% \text{ of } 1840$$

$$= \text{Rs. } 2006$$

Discount = 15%

$$\text{So, } 0.85x = 2006$$

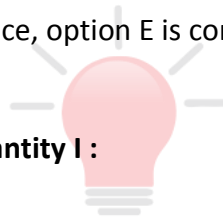
$$x = \text{Rs. } 2360$$

Therefore, Quantity I = Quantity II

Hence, option E is correct.

3.

Quantity I :



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Let C's present age be 'x' years, then A's present age would be 'x - 10' years

Let B's present age be 'y' years, then D's present age would be 'y - 14' years

$$\text{So, } \frac{(x - 10) + x}{2} = 25 ; x = 30 \text{ years}$$

$$\text{Also, } \frac{(y - 14) + y}{2} = 25 ; y = 32 \text{ years}$$

$$\text{Required difference} = 32 - (30 - 10) = 32 - 20 = 12 \text{ years}$$

Quantity II :

Let the present ages of P, Q and R be 'p' years, 'q' years and 'r' years respectively

$$\text{So, } \frac{(p + 3) + (q + 3) + (r + 3)}{3} = 35$$

$$\text{So, } p + q + r = 96$$

$$\text{So, } p = \frac{7}{17} \times (q + r)$$

$$\text{So, } p = \frac{7}{17} \times (96 - p)$$

On solving,

$$\text{We get, } p = 28 \text{ years}$$

$$\text{So, } q + r = 68 \text{ and } q : r = 9 : 8$$

On solving, we get, $q = 36$ years and $r = 32$ years

$$\text{Required difference} = 32 - 28 = 4 \text{ years}$$

Therefore, Quantity I > Quantity II

Hence, option A is correct.



4. Quantity I :

Total quantity of petrol drawn from the 2 tanks

$$= 300 \times \frac{3}{10} + 400 \times \frac{4}{5} = 90 + 320 = 410 \text{ litres}$$

Total quantity of diesel drawn from the 2 tanks

$$= 300 \times \frac{7}{10} + 400 \times \frac{1}{5} = 210 + 80 = 290 \text{ litres}$$

$$\text{Required difference} = 410 - 290 = 120 \text{ litres}$$

Quantity II :

Initial quantity of water in vessel Y =

$$\frac{1}{2} \times 600 = 300 \text{ litres}$$

Quantity of water in the liquid transferred from vessel X to vessel Y
 $= \frac{2}{5} \times 200 = 80 \text{ litres}$

Quantity of water in the end = $300 + 80 = 380 \text{ litres}$

Therefore, Quantity I < Quantity II

Hence, option C is correct.

5. Quantity I :

Mayank + Sachit + Mudit = $32 \times 3 = 96 \text{ years}$

Let, the present age of Mayank and Sachit be $4x$ years and $3x$ respectively

So, age of Mudit = $96 - (4x + 3x) = 96 - 7x \text{ years}$

According to the question,

$$96 - 7x = 3x + 16$$

$$7x + 3x = 96 - 16; 10x = 80; x = 8$$

Therefore, age of Sachit = $8 \times 3 = 24 \text{ years}$

Quantity II :

According to the question,

$$[(x + 4) - 6] : [(x + 8) + 2] = 3 : 5$$

$$(x - 2) : (x + 10) = 3 : 5$$

$$5x - 10 = 3x + 30$$

$$2x = 40 ; x = 20$$

So, age of A, B, C be 24 years, 28 years, 16 years respectively

Therefore, reqd. average =

$$\frac{24 + 28 + 16}{3} = 22 \text{ years 8 months}$$

Therefore, Quantity I > Quantity II

Hence, option A is correct.

6. Quantity I :

Speed of B = a kmph

Speed of A = 0.875a kmph

Length of A = A and Length of B = B

$$\text{So, } \frac{A}{0.875a} = \frac{B}{a} ; A = 0.875B$$

[This is derived from the statement both the trains cross a pole in same time]

Now,

$$59.4 \text{ sec} = 0.0165 \text{ hours}$$

$$0.54 \text{ minutes} = 32.4 \text{ seconds}$$

$$32.4 \text{ sec} + 27 = 59.4 \text{ sec which is equal to } 0.0165 \text{ hours}$$

This information is used in the later part of the sentence

$$\text{So, } \frac{B + 0.6}{a} = \frac{27}{3600} + \frac{0.54}{60}$$

Train B crosses a platform of 0.6 km in 27 seconds more than that of time

taken by A to cross a standing man which is 0.54 minutes

Two equations are derived from the above statement. On solving both the equations we will get the result given below.

$$\text{So, } B = 0.0165a - 0.6$$

$$\text{And, } \frac{A}{0.875A} = \frac{0.54}{60}$$

$$B = 0.009a$$

$$\text{So, } B = 0.0165a - 0.6 = 0.009a$$

$$\text{So, } a = 80 \text{ kmph}$$

$$\text{Speed of A} = 80 \times 0.875 = 70 \text{ kmph}$$

Quantity II :

Speed of car P = p kmph

Speed of car Q = q kmph

Car Q covers half distance

$$\text{Car Q covers } \frac{140}{2} =$$

$$70 \text{ km in time} = \frac{70}{q} \text{ hours}$$

Distance covered by P in $(70/q)$ hours =

$$= p \times \frac{70}{q}$$

P has travelled $23\frac{1}{3}$ km more than car Q

$$\text{So, } 70 \frac{p}{q} = 70 + \frac{70}{3} = \frac{280}{3}$$



$$\text{So, } \frac{p}{q} = \frac{4}{3}$$

Hence, we cannot determine the speed of P and Q

So, Quantity I = Quantity II or No relation

Hence, option E is correct.

7. Quantity I :

Let, the number of days taken by Prashank to complete the work individually be x

Then, the number of days taken by Sushil complete the work individually be x

Since, Rajiv is twice efficient than Prashank

So, the number of days taken by Rajiv to complete the work individually

$$= \frac{x}{2}$$

According to the question,

$$\frac{1}{x} + \frac{1}{x} + \frac{2}{x} = \frac{1}{20}$$

$$= \frac{4}{x} = \frac{1}{20}$$

$$= x = 80 \text{ days}$$

Number of days taken by Rajiv individually to complete the work

$$= \frac{80}{2} = 40 \text{ days}$$

Quantity II :

$$\text{Total work} = 80 \times 45 = 3600$$

Let, the number of days taken to complete the remaining work be x

According to the question,

$$3600 = 80 \times 20 + 50 \times x$$

$$x = 40 \text{ days}$$

Thus, Quantity I = Quantity II or No relation

Hence, option E is correct.

8. Quantity I:

Let the speed of man in still water be x km/hr

And the speed of stream be y km/hr

Given downstream speed, $(x+y) = 12$ km/hr

$$\text{Upstream speed, } (x - y) = \frac{1}{2} \times 12 = 6 \text{ km/hr}$$

$$\text{Speed of man in still water, } x = \frac{12 + 6}{2} = 9 \text{ km/hr}$$

$$\text{Required time} = \frac{12}{9} = 1.33 \text{ hour}$$

Quantity II :

Distance covered by the man walking at a speed of 4 km/hr in 3 hours and 15 minutes = $4 \times 3.25 = 13$ km

So, time taken to cover 13 km running at a speed of 13 km/hr

$$= \frac{13}{13} = 1 \text{ hour}$$

Thus, Quantity I > Quantity II

Hence, option A is correct.

9. Quantity I :

Let the radius of cone be r cm

Given, CSA of cone = CSA of cylinder

$$= 25\pi r = 2\pi \times 5 \times 17.5$$

$$r = 7 \text{ cm}$$

Now, for cone

$$= h^2 = 25^2 - 7^2$$

$$= h = 24 \text{ cm}$$

Therefore, volume of cone

$$= \frac{1}{3} \times \frac{22}{7} \times 7^2 \times 24 = 1232 \text{ cm}^2$$

Quantity II :

$$\text{Volume of cuboidal box} = 15 \times 12 \times 8 = 1440 \text{ cm}^2$$

Therefore, Quantity II > Quantity I

Hence, option C is correct.

10. Quantity I :

Let the consecutive even numbers be $2x$, $2x + 2$, $2x + 4$, $2x + 6$, $2x + 8$, $2x + 10$ and $2x + 12$

So, according to question,

$$1.40 \times 2x = 2x + 12$$

$$2.8x - 2x = 12$$

$$0.8x = 12; x = 15$$

So, the numbers are 30, 32, 34, 36, 38, 40 and 42

$$\text{Average of these numbers} = \frac{30 + 42}{2} = \frac{72}{2} = 36$$

Quantity II :

Let the two numbers be 'x' and (71 - x)

So, according to question,

$$x(71 - x) = 1260$$

$$x^2 - 71x + 1260 = 0$$

$$x^2 - 35x - 36x + 1260 = 0$$

$$x(x - 35) - 36(x - 35) = 0$$

$$(x - 36)(x - 35) = 0$$

$$x = 35, 36$$

So, the numbers are 35 and 36

Therefore, the larger number = 36

Therefore, Quantity I = Quantity II

Hence, option E is correct.



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