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

Maths inequalities Quiz 14

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:** The ratio of speed of stream and speed of a boat is 1 : 3 respectively. If the boat can cover 420 km while travelling downstream in 7 hours, then how long would it take to cover 270 km while travelling upstream?

Quantity II: Boat M can travel 400 km upstream and then 400 km downstream in total time of 18 hours. If the speed of the boat is 45 km/hr, then how long would it take boat M to only travel downstream 400 km?

- 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 total surface area of a cone is 1848 square cm. If the slant height is 25 cm more than the radius, then find the volume of the cone

Quantity II: A cylinder has height equal to the radius of the sphere having volume 310464 cubic centimetres. The height and the radius of the cylinder are in the ratio 3 : 2 respectively. Find the volume of the cylinder.

- 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:** Probability of obtaining a score of 7 with two fair dice

Quantity II: Probability of obtaining two tails and one head when three coins are tossed

- 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:** $\frac{38}{2}$ % of $(64 \times 4 \div 16 \text{ of } 4)$ % of $\frac{800000}{2}$

Quantity II: $28^2 \times 2^2 - \frac{192}{2} + 27x + 8 \div 256 \div 27x$

- 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:** A shopkeeper bought some bananas at the rate of Rs. 24 for 16 and sold all of them at the rate of Rs. 27 for 15. Find his profit percent or loss percent in this transaction

Quantity II: A shopkeeper marked his product 60% above cost price and sold it after two consecutive discounts of 10% and 15% on marked price. Find the profit percent or loss percent in this transaction

- 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:** A man travels 3 km an hour in still water, he takes thrice as much time in going the same distance upstream comparison to the distance downstream. Find the speed of the stream

Quantity II: A man travels a distance of 20km in 2hrs, going with the flow of the current and covers a distance of 20 km in 4hrs, going against the flow of the current. Find the speed of man in still water?

- 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:** A cylinder with 8 cm in height has curved surface area of 704 square cm. Find the volume of the cylinder

Quantity II : An ice cream cone is filled with baking cream and the top of the cone forms a hemisphere. If the radius of the cone is 14 cm and the height being same as the radius, find the volume of the baking cream.

- 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:** Cost price of article. If an article is sold at 8% profit instead of 8% loss, it would have brought Rs. 12 more.

Quantity II : Cost price of the book. A man sells a book at a profit of 20%. If he had bought it at 20% less and sold it for Rs. 18 less he would have gained 25%.

- 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 :** A woman on tour travels first 160 km at 64 km/hr and the next 160 km at 80 km/hr. The average speed of the tour is:

Quantity II : A went from P to Q with the speed of 60km/hr. and return back with the speed of 90km/hr. Find the average speed.

- 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. A can do a piece of work in 10 days, B in 15 days. They work together for 5 days, the rest of the work is finished by C in two more days. They get Rs. 6000 as wages for the whole work.

Quantity I: What is the sum of Rs.100 and the daily wage of B?

Quantity II: What is the daily wage of 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

Correct Answers:

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



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Explanations:

1. Quantity I :

Let the speed of the boat and the speed of the stream be '3x' km/hr and 'x' km/hr respectively

According to the question

$$= \frac{420}{3x + x} = 7; x = 15$$

So, the speed of the boat and the speed of the stream be '45' km/hr and '15' km/hr respectively

So, the time taken by boat to cover 270 km while travelling upstream

$$= \frac{270}{45 - 15} = \frac{270}{30} = 9 \text{ hours}$$

Quantity II :

Let the speed of the stream be 'x' km/hr

According to the question,

$$= \frac{400}{45 + x} + \frac{400}{45 - x} = 18$$

$$= \frac{90}{2025 - x^2} = \frac{18}{400} x^2 = 25; x = \frac{5 \text{ km}}{\text{hr}}$$

So, the time taken by boat M to only travel downstream 400 km

$$= \frac{400}{45 + 5} = \frac{400}{50} = 8 \text{ hours}$$

So, Quantity I > Quantity II

Hence, option A is correct.

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2. Quantity I :

Let r , h and l be the radius, height and slant height of the cone.

$$\pi \times r \times (r + l) = 1848$$

$$\frac{22}{7} \times r \times [r + (r + 25)] = 1848$$

$$\frac{22}{7} \times r \times [2r + 25] = 1848$$

$$2r^2 + 25r - 588 = 0$$

On solving we get, $r = 12$ cm

$$\text{So, } l = r + 25 = 12 + 25 = 37 \text{ cm}$$

$$\text{We know that } h = \sqrt{37^2 - 12^2} = \sqrt{1369 - 144} = \sqrt{1225} = 35 \text{ cm}$$

$$\text{So, volume of the cone} = \frac{1}{3} \times \frac{22}{7} \times 12^2 \times 35 = 5280$$

Quantity II :

Let the radius of the sphere be ' r ' cm

$$\frac{4}{3} \times \frac{22}{7} \times r^3 = 310464$$

$$r^3 = 74088 ; r = 42 \text{ cm}$$

So, the height of the cylinder = 42 cm

$$\text{And, radius of the cylinder} = \frac{2}{3} \times 42 = 28 \text{ cm}$$

So, the volume of the cylinder = $\pi r^2 h$

$$= \frac{22}{7} \times 28^2 \times 42 = 103488 \text{ cm}^3$$

Quantity I < Quantity II

Hence, option C is correct.

3. Quantity I : Probability of obtaining a score of 7 with two fair dice

The possible outcomes are:

(1, 1)	(1, 2)	(1, 3)	(1, 4)	(1, 5)	(1, 6)
(2, 1)	(2, 2)	(2, 3)	(2, 4)	(2, 5)	(2, 6)
(3, 1)	(3, 2)	(3, 3)	(3, 4)	(3, 5)	(3, 6)
(4, 1)	(4, 2)	(4, 3)	(4, 4)	(4, 5)	(4, 6)
(5, 1)	(5, 2)	(5, 3)	(5, 4)	(5, 5)	(5, 6)
(6, 1)	(6, 2)	(6, 3)	(6, 4)	(6, 5)	(6, 6)

$$\text{Therefore, probability} = \frac{6}{36} = \frac{1}{6}$$

Quantity II : Probability of obtaining two tails and one head when three coins are tossed

The required outcomes are:

HHT, HTH, THH, HTT, THT, TTH, HHH, TTT

$$\text{Therefore, probability} = \frac{3}{8}$$

Thus, Quantity I < Quantity II

Hence, option C is correct.



4.

$$\text{Quantity I : } \frac{38}{2} \% \text{ of } (64 \times 4 \div 16 \text{ of } 4) \% \text{ of } \frac{800000}{2}$$

$$19\% \text{ of } (64 \times 4 \div 16 \text{ of } 4) \% \text{ of } 400000$$

$$= \frac{19}{100} \times \frac{(32 \times 8 \div 16 \text{ of } 4)}{100} \times 400000$$

$$= \frac{19}{100} \times \frac{(256 \div 64)}{100} \times 400000$$

$$= \frac{19}{100} \times \frac{4}{100} \times 400000$$

$$= 3040$$

$$\text{Quantity II : } 28^2 \times 2^2 - \frac{192}{2} + 2^{7x+8} \div 256 \div 2^{7x}$$

$$= 56^2 - 96 + 2^{7x+8} \div 256 \div 2^{7x}$$

$$= 56^2 - 96 + 2^{7x+8} \div 256 \div 2^{7x}$$

$$= 56^2 - 96 + 2^{7x+8-8-7x}$$

$$= 56^2 - 96 + 2^0$$

$$= 3041$$

Thus, Quantity I < Quantity II

Hence, option C is correct.

5. **Quantity I :**

$$\text{CP of one banana} = \frac{24}{16} = \text{Rs. } 1.50$$

$$\text{SP of one banana} = \frac{27}{15} = \text{Rs. } 1.80$$

$$\text{Profit} = 1.80 - 1.50 = 0.30$$

$$\text{Profit percent} = \frac{0.30}{1.50} \times 100 = 20\%$$

Quantity II :

Let the cost price of the product = Rs. 100

Marked price of the product = $1.60 \times 100 = 160$

Selling price of the product = $0.85 \times 0.90 \times 160 = \text{Rs. } 22.40$

$$\text{So profit percent} = \frac{22.40}{100} \times 100 = 22.4\%$$

Thus, Quantity I < Quantity II

Hence, option C is correct.

6. Quantity I : Let the speed of the stream be a km/hr

Speed of the still water = 3 km/hr

Speed in the direction of stream = $(3 + a)$ km/hr

Speed opposite to the direction of stream = $(3 - a)$ km/hr

$$\text{Now, } 3 \left(\frac{D}{3 + a} \right) = \frac{D}{3 - a} \Rightarrow a = \frac{3}{2} \text{ km/hr}$$

Quantity II :

Speed in the direction of current = $\frac{20}{2} = 10$ km/hr

Speed in the direction opposite of current = $\frac{20}{4} = 5$ km/hr

Therefore, the speed of man in still water = $\frac{10 + 5}{2} = \frac{15}{2} = 7.5$ km/hr

Therefore, Quantity I < Quantity II

Hence, option C is correct.

7. Quantity I : $2\pi rh = 704$, $h = 8$

Solve both, so $r = 14$

$$\text{Volume} = \pi r^2 h = \frac{22}{7} \times 14 \times 14 \times 8 = 4928$$

Quantity II :

$$\text{Volume of cone} = \frac{1}{3} \pi \times r^2 \times h = 2875 \text{ (approx)}$$

$$\text{Volume of hemisphere} = \frac{2}{3} \pi \times r^3 = 2 \times 2875 = 5750 \text{ (approx)}$$

$$\text{Total volume of baking cream} = 2875 + 5750 = 8625$$

Therefore, Quantity I < Quantity II

Hence, option C is correct.

8.

$$\text{Quantity I : } \frac{108x}{100} - \frac{92x}{100} = 12$$

$$\frac{16x}{100} = 12$$

$$x = 75$$

$$\text{Quantity II : } \frac{(120x - 18) - 80x}{100} = \frac{25}{100} \times \frac{80x}{100}$$

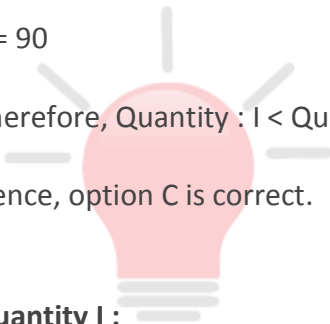
$$\frac{40x}{100} - \frac{20x}{100} = 18$$

$$\frac{20x}{100} = 18$$

$$x = 90$$

Therefore, Quantity : I < Quantity II

Hence, option C is correct.



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9.

Quantity I :

$$\text{Total time taken} = \left(\frac{160}{64} + \frac{160}{80} \right) = \frac{9}{2} \text{ hrs.}$$

$$\text{Then average speed} = \frac{320}{9/2} = \frac{320 \times 2}{9} = 71.11 \text{ km/hr}$$

$$\text{Quantity II : } \frac{2 \times 60 \times 90}{150} = 72 \text{ km/hr.}$$

Therefore, Quantity I < Quantity II

Hence, option C is correct.

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10. A's 5 days' work = 50%

B's 5 days' work = 33.33%

C's 2 days' work = $16.66\% \times 100 - (50 + 33.33)$

Ratio of contribution of work of A, B and C = 3 : 2 : 1

A's total share = Rs. 3000

B's total share = Rs. 2000

C's total share = Rs. 1000

A's one day's earning = Rs.600

B's one day's earning = Rs.400

C's one day's earning = Rs.500

Thus, the sum of Rs.100 and the daily wage of B = 500

Therefore, Quantity I = Quantity II or relation cannot be established

Hence, option E is correct.

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