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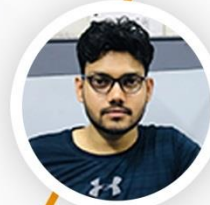
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Maths Inequalities Questions for Bank and Insurance Exams

Maths inequalities Quiz 6

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. The speed of a motorboat in upstream is 75% less than that of downstream.
Quantity I: The speed of the stream is how much percentage of the speed of the motorboat in downstream?
Quantity II: The speed of the stream is how much percentage less than the speed of the motorboat in still water?

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. A shopkeeper gives 10% discount on the marked price but adds 5% tax on the discounted price.
Quantity I: If the selling price of the article is Rs. 850.5 then what is the marked price of the article?
Quantity II: 900

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:** 'X' $X^2 + \sqrt{3}X - 60 = 0$
Quantity II: 'Y' $Y^2 + 7\sqrt{2}Y + 20 = 0$

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

4. The ratio of A's income to B's income is 4 : 5 and the difference between their income is Rs. 10000.
Quantity I: A saves 30% of his income then what is his expenditure?
Quantity II: B spends 45% of his income then what is his saving?

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. Two persons, P and Q together can complete a piece of work in 30 days. The efficiency of P is 20% more than that of Q.

Quantity I: If P works at 25% of his efficiency then how many days will he take to complete two – fifth of the work?

Quantity II: If Q works at 40% of his efficiency then how many days will he take to complete half of the work?

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. The time taken by a motorboat to travel 1050 km upstream is 40 hours more than the time taken by it to travel the same distance in downstream. The speed of the motorboat in still water is 500% more than that the speed of stream.

Quantity I: How much time the motorboat will take to travel the same distance in upstream?

Quantity II: How much time the motorboat will take to travel 1500 km downstream if due to wind, the speed of stream was increased by 20%?

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 ratio of the efficiency of a man to a woman is 4 : 3. A group of 2 men and 2 women together can complete a piece of work in 12 days.

Quantity I: How many days, a group of a man and three women will take to complete the same piece of work?

Quantity II : if the efficiency of a men was increased by 20% and the efficiency of a women was increased by 50% then how many days they will take to complete 75% of the piece of work if they work together?

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. When 5 litres of water were added with some quantity of pure milk then the ratio of milk to water become 3 : 2.

Quantity I: In the mixture, when 1.5 litres of pure milk are added then what will be the concentration of milk in the new mixture?

Quantity II : Instead of 5 litres of water, if 3.5 litres of water were added and the quantity of pure milk remained the same then what would be the concentration of pure milk in the mixture?
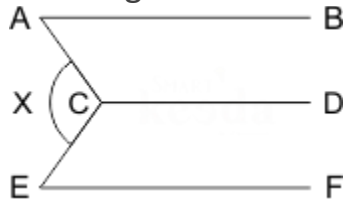
A. Quantity : I > Quantity : II   B. Quantity : I ≥ Quantity : II   C. Quantity : I < Quantity : II
D. Quantity : II ≥ Quantity : I   E. Quantity I = Quantity II or relation can't be established

9. In the given figure, AB. CD, and EF are parallel lines and AC is equal to EC. The angle BAC is 30 degree.

A ————————— B

X (C >——————— D

E ————————— F

Quantity I : What is the value of angle ACE (x) ?
Quantity II : What is the value of angle EAC?

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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10. A train of 500 meters length can cross completely a platform of 800 meters length in 2 minutes 10 seconds.

Quantity I: What is the speed of the train in meters per second?

Quantity II: A man running in the same direction of the train can pass the train completely in 8 minutes 20 seconds then what was the speed of the man in meters per sec?

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
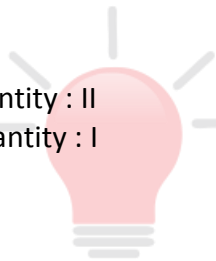
Correct Answers:

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

Explanations:

1. Let the speed of the motorboat in still water = u km per hour and the speed of the stream = v km per hour

The speed of the motorboat in downstream = (u + v) km per hour

And the speed of the motorboat in upstream = (u − v) km per hour

According to the question, (u − v) = (100 − 75)% of (u + v) = 25% of (u + v)

4u − 4v = u + v

3u = 5v

u : v = 5 : 3

Quantity I: The speed of the motorboat in downstream = 5x + 3x = 8x km per hour

The reqd. % = $3x \times \dfrac{100}{8x}$ = 37.5%

Quantity II:

Reqd. % = $\dfrac{(5 - 3) \times 100}{5}$ = 40%

Therefore, quantity I < quantity II

Hence, option C is correct.

2. Let the marked price of the article = 10x then discounted price after 10% discount on the marked price = (100 − 10)% of 10x = 90% of 10x = 9x

The selling price after adding 5% sales tax on the discounted price = (100 + 5)% of 9x = 105% of 9x = 1.05 × 9x

Quantity I:

1.05 × 9x = 850.5

1.05x = 94.5

x = 90

The marked price of the article = 10x = 10 × 90 = Rs. 900

Quantity II: 900

Therefore, Quantity I = Quantity II

Hence, option E is correct.

3. **Quantity I:**

$X^2 + \sqrt{3}X − 60 = 0$

$X^2 + 5\sqrt{3}X − 4\sqrt{3}X − 60 = 0$

$X (X + 5\sqrt{3}) − 4\sqrt{3} (X + 5\sqrt{3}) = 0$

$(X + 5\sqrt{3}) (X − 4\sqrt{3}) = 0$

X = − 5√3, 4√3

Quantity II:
$Y^2 + 7\sqrt{2}Y + 20 = 0$
$Y^2 + 5\sqrt{2}Y + 2\sqrt{2}Y + 20 = 0$
$Y(Y + 5\sqrt{2}) + 2\sqrt{2}(Y + 5\sqrt{2}) = 0$
$(Y + 2\sqrt{2})(Y + 5\sqrt{2}) = 0$
Y = − 5√2, − 2√2
For x = − 5√3, and y = − 5√2, x < y
For x = − 5√3, and y = − 2√2 x < y
For x = 4√3, and y = 5√2,or − 2√2 x > Y
Therefore, relationship can't be established
Hence, option E is correct.

4. Let A's income = 4x then B's income = 5x
    According to the question, 5x – 4x = x = 10,000
    A's income = 4x = 40,000
    B's income = 5x = 50,000
    Quantity I : A's expenditure = (100 – 30)% of 40,000 = 70% of 40000 = 28000
    Quantity II: B's saving = (100 – 45)% of 50,000 = 55% of 50000 = 27500
    Therefore, Quantity I > Quantity II
    Hence, option A is correct.

5. Let the efficiency of Q = 5x then the efficiency of P = 120% of 5x = 6x
    When they work together then the total units of work done by them in 30 days = (5x + 6x) × 30 = 330x units
    Quantity I: P's original efficiency = 6x

    25% of 6x = $25 \times \dfrac{6x}{100}$ = 1.5x

    Two fifth of the work = $\dfrac{2}{5} \times 330x = 2 \times 66x$

    The number of days, it will complete at 25% of his efficiency

    = $\dfrac{2 \times 66x}{1.5x}$ = 88 days

    Quantity II: Q's original efficiency = 5x

    40% of 5x = $40 \times \dfrac{5}{100}$ = 2x

    Half of the work = $\dfrac{330x}{2}$ = 165x

    The number of days Q will take to do half of the work at 40% of his efficiency

    = $\dfrac{165x}{2x}$ = 82.5 days

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

6. Let the speed of the stream = x km per hour

Then, the speed of the motorboat in still water = (100 + 500)% of x = 600% of x = 6x km per hour

According to the question,

$$\frac{1050}{6x - x} - \frac{1050}{6x + x} = 40$$

$$\frac{1050}{5x} - \frac{1050}{7x} = 40$$

$$\frac{1050 \times (7-5)}{35x} = 40$$

1050 × 2 = 35x × 40

By solving, x = 1.5 km per hour

Quantity I :

The reqd. time = $\frac{1050}{6x - x} = \frac{1050}{5x} = \frac{1050}{5 \times 1.5}$ = 140 hours

Quantity II :

When the speed of stream was increased by 20% then the new speed of the stream = 120% of x = 1.2x
= 1.2 × 1.5 = 1.8 km per hour

And the speed of the motorboat in downstream = 6x + 1.8 = 9 + 1.8 = 10.8 km per hour

The reqd. time = 1500/10.8 = approximately 138.89 hours

Therefore, Quantity : I > Quantity : II

Hence, option A is correct.

7. Let the efficiency of a man = 4x then the efficiency of a women = 3x

When a group of 2 men and 2 women together can complete a piece of work in 12 days then the total units of work done by them in 12 days = 2 × 4x × 12 + 2 × 3x × 12 = 168x units

Quantity I:

The efficiency of a group of a man and three women = 4x + 3 × 3x = 13x

The reqd. number of days = $\frac{168x}{13x}$ = approximately 13 days

Quantity II :

If the efficiency of a men was increased by 20% and the efficiency of a women by 50% then the new efficiency of a man = 120% of 4x = 4.8x and the new efficiency of a woman = 150% of 3x = 4.5x

The new efficiency of a man and a woman = 4.8x + 4.5x = 9.3x

75% of the work = 75% of 168x = 126x units

The reqd. number of days = $\frac{126x}{9.3x}$ = 13.54 days approximately

Therefore, Quantity :I < Quantity : II

Alternate method: when work is same then efficiency is inversely proportional time. Compare according to that.

Hence, option C is correct.

8. Let the quantity of pure milk = 3x litres then the quantity of water = 2x litres = 5 litres

X = 2.5 litres

Therefore, the quantity of pure milk = 3x = 3 × 2.5 = 7.5 litres

Quantity I:
In the mixture, when 1.5 litres of pure milk are added then the quantity of pure milk = 7.5 + 1.5 = 9 litres and the quantity of mixture = 9 + 5 = 14 litres

The concentration of milk $= \dfrac{9 \times 100}{14} =$ approximately 64.28%

Quantity II:
Instead of 5 litres of water, if 3.5 litres of water were added and the quantity of pure milk remained the same then the quantity of pure milk = 7.5 litres and the quantity of water = 3.5 litres
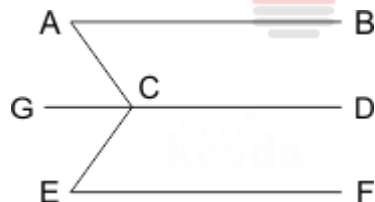The quantity of mixture = 7.5 + 3.5 = 11 litres

The reqd. concentration $= \dfrac{7.5 \times 100}{11} = 68.18\%$

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

9.

Here AB II GD II EF and AC = EC therefore, angle ACE = angle BAC = 30 degrees = angle GCE

Therefore, angle ACE = 30 + 30 = 60 degrees

Quantity I : = 60 degrees

Quantity II : Since, AC = CE therefore, angle EAC

$=$ angle AEC $= \dfrac{180 - 60}{2} = \dfrac{120}{2} = 60$ degrees

Therefore, Quantity : I = Quantity : II

Hence, option E is correct.

10. We know that, distance = speed × time
$(500 + 800) = s × 130$
$1300 = s × 130$
S = 10 meters per second
Quantity I : = 10 meters per second
Quantity II : 8 minutes 20 seconds = 500 seconds
Let the speed of the man = x m/sec then
$500 = 500 × (x − 10)$
x = 11 meters per second
Therefore, Quantity :I < Quantity : II
Hence, option C is correct.