Maths inequalities Questions for SBI Clerk Pre, IBPS Clerk Pre, RBI Assistant Pre, LIC Assistant and IBPS RRB Exams.

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:** What is the unit digit of $(2343)^{1234} \times (1234)^{2343}$

Quantity II: What is the unit digit of 13457^{2348}

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:** Next month, the weight of Elon increased by 20% of his original weight, then what would be the new average (in kg)?

Quantity II: Next month, the weight of Alina increased by 5% of her original weight , then what would be the new average (in 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

3. The ratio of the cost price to selling price of an article is in the ratio of 4 : 5. If the selling price was decreased by Rs. 500 then the ratio of the cost price to selling price will become 6 : 5.

Quantity I: At what price (In Rs.) should the article be sold to earn a profit of 40% on the cost price?

Quantity II: Rs. 1700

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. A food stock is available for 500 men at a place for 40 days. If after 30 days, half of the men leave the place, then for how long the remaining stock can last for the remaining number of men?

Quantity I: In a race of 800 meters, by how much distance will A beat C?

Quantity II: 20 meters

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:** Nikita reaches her school from her house in 12 hours. If she increases her speed by 20% , then how long will she take to cover the same distance?
Quantity II: Nikita reaches her school from her house in 10 hours. If she decreases her speed by 10%, then how long will she take to cover the same distance?

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

6. **Quantity I:** One–third of the total number of chocolates were distributed among all the boys of a school and one - third of the remaining number of chocolates were distributed among all the girls of the school. In the school, the number of boys is 14 more than that of the girls then what was the remaining number of chocolates after distributing among the students of the school?
Quantity II: 100

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

7. **Quantity I:** The product of the two consecutive odd numbers is 2703 then what is the smaller number?
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

8. **Quantity I:** A person buys a book for Rs. x but sells for Rs. 500. If he earns the total profit of 10% of the selling price then what is the value of x?
Quantity II : 440

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. **Quantity I :** The angle of a triangle is in the ratio of 1 : 2 : 3. If the circumradius of the triangle is 10 cm then what is the area (in sq. cm) of the triangle?
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

10. **Quantity I:** A box contains 5 balls - 3 red and 2 black. If two balls are drawn with replacement then what is the probability that both are of the same colour?
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

Correct Answers:

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

Explanations:

1. **Quantity I :** the unit digit of $(2343)^{1234} \times (1234)^{2343} = 3^{1234} \times 4^{2343}$

After the cyclic of power 4, the unit digit of 3 and 4 is same as 1 and 6 respectively

Therefore, $3^{1234} \times 4^{2343} = 3^{1232} \times 3^2 \times 4^{2340} \times 4^3 = 1 \times 9 \times 1 \times 64 \rightarrow$ Unit digit = 6

Quantity II : 13457^{2348}

After the cyclic of power 4, the unit digit of 7 is 1

Therefore, the unit digit of $13457^{2348} = 1$

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

2. The sum of the weight of Elon and Alina = 45 × 2 = 90 kg

The weight of Elon = $\dfrac{2 \times 90}{5}$ = 36 kg

The weight of Alina = $\dfrac{3 \times 90}{5}$ = 54 kg

Quantity I : Next month, Elon's weight = 120% of 36 = 43.2 kg

The average = $\dfrac{(43.2 + 54)}{2}$ = 48.6 kg

Quantity II : Next month, Alina's weight = 105% of 54 = 56.7 kg

The average = $\dfrac{(56.7 + 36)}{2} = \dfrac{92.7}{2}$ = 46.35 kg

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

3. Let the CP = Rs. 4x then SP = Rs. 5x

According to the question,

$$\frac{4x}{5x - 500} = \frac{6}{5}$$

20x = 30x − 3000
10x = 3000
x = 300

Cost price = 4x = Rs. 1200

Quantity I : SP to earn a profit of 40% = 140% of 1200 = Rs. 1680

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

4. **Quantity I :** M1D1 = M2D2

Let the remaining stock last for x days
500 × 40 = 30 × 500 + 250 × x
500 × 10 = 250 × x
x = 20 days

Therefore, Quantity : I = Qunatity : II

Hence, option E is correct.

5. **Quantity I :** Let Nikita's speed = 5x km per hour
Total distance = 5x × 12 = 60x km
New speed = 120% of 5x = 6x km per hour
New time = $\frac{60x}{6x}$ = 10 hours

Quantity II : Let Nikita's speed = 5x km per hour
Total distance = 5x × 10 = 50x km
New speed = 90% of 5x = 4.5x km per hour
New time = $\frac{50x}{4.5x} = \frac{100}{9}$ hours

Therefore, Quantity : I < Quantity : II

Hence, option C is correct.

6. Let the total number of chocolates = 9x

The number of chocolates distributed among boys

$= \dfrac{9x}{3} = 3x$

The number of chocolates distributed among girls

$= \dfrac{9x - 3x}{3} = 2x$

The remaining number of chocolates after distributing among the students of the school = 9x – 5x = 4x

According to the question,

3x – 2x = x = 14

Therefore, 4x = 4 × 14 = 56

Therefore, Quantity : I < Quantity : II

Hence, option C is correct.

7. **Quantity I :** Let the first number = x then the second number = x + 2

x × (x + 2) = 2703

By hit and trial method, x = 51, then the other number = 51 + 2 = 53

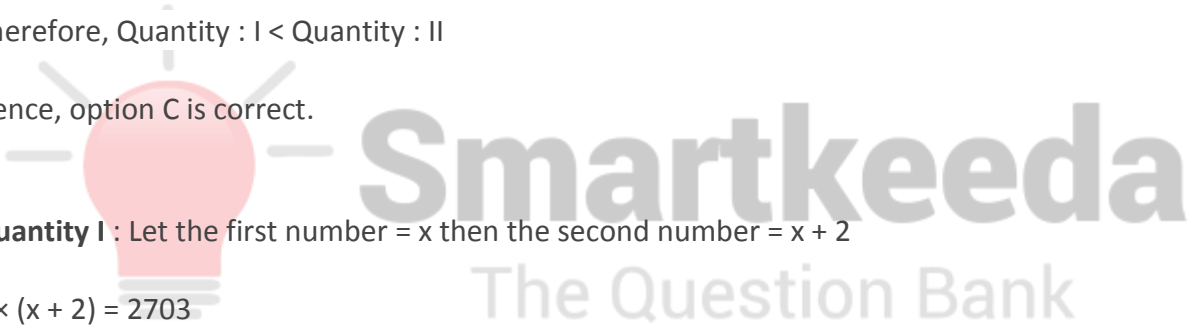Or when x = -51 then the other number will also become -53

Quantity II : 50

Therefore, for, 51. Q1 > Q2

But for, – 53

Quantity : I < Quantity : II

Therefore, relation can't be established

Hence, option E is correct.

8. SP = 500

Profit = 10% of the SP = 10% OF 500 = 50

Therefore, CP = SP − Profit = 500 − 50 = 450

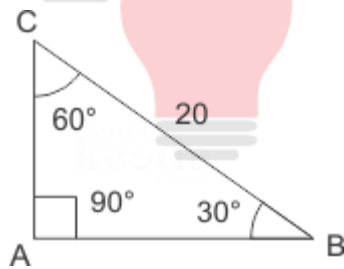Therefore, Quantity : I > Quantity : II

Hence, option A is correct.

9. We know that, the sum of the angle of a triangle = 180 degrees
Therefore, the triangle is 30, 60, and 90

The largest side of this triangle is nothing but hypotenuse

We know that, In a right-angled triangle, circumradius

$= \dfrac{hypotenuse}{2}$

Therefore, hypotenuse = 10 × 2 = 20 cm

$Cos30 = \dfrac{AB}{BC}$

$\dfrac{\sqrt{3}}{2} = \dfrac{AB}{20}$

AB = 10√3 cm

$Sin30 = \dfrac{AC}{20}$

$\dfrac{1}{2} = \dfrac{ac}{20}$

AC = 10 cm

Area of the triangle = $\dfrac{AB \times AC}{2}$ = 10 √3 × $\dfrac{10}{2}$ = 50√3 sq. cm

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

10. Case 1 : When both are red

Probability $= \dfrac{3}{5} \times \dfrac{3}{5}$ (because we are drawing with replacement) $= \dfrac{9}{25}$

Case 2 : When both are black

Probability $= \dfrac{2}{5} \times \dfrac{2}{5} = \dfrac{4}{25}$

The reqd. probability $= \dfrac{9}{25} + \dfrac{4}{25} = \dfrac{13}{25} = 52\%$

Therefore, Quantity : I > Quantity : II

Hence, option A is correct.