Quiz Date: 9th April 2020

Directions (1-10): In the given questions, two quantities are given, one as Quantity I and another as Quantity II. You have to determine relationship between two quantities and choose the appropriate option

Q1. Quantity I:'x' -. Two circles are concentric with center 'O'. Their radii are 8cm and 10cm respectively. 'B' and 'C' are the points of contact of two tangents drawn from bigger circle to smaller circle from point 'A' lying on bigger circle. 'x' is area of quadrilateral ABOC formed in cm^2

Quantity II: - 'y' - The lengths of two parallel sides of a trapezium are 6 cm and 8 cm. If the height of the trapezium be 6 cm, then its area is 'y' cm^2

(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 No relation

Q2. Quantity I: 'x' -. Kundan invested Rs. 20,000 in a scheme offering 22% p.a. at Simple interest. After 2 years he withdraws his money and invested in a bank which is offering 'x%' p.a. at compound interest. After 3 years, interest earned by him is Rs.1350 less than amount invested by him in this bank.

Quantity II: - 'y' – Bhawesh sells a diary at Marked price and earns 85 (5/7) % profit while if he gives 'y%' discount on Marked price then he will earn 'y%' profit.

(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 No relation

Q3. Quantity I—'x': P alone can do the work in 'x' days. Q can complete a work in 5 more days than P while Q does the same work in 9 more days than R. If Q and P working together can complete the whole work in same time as time taken by R alone to do the whole work.

Quantity II —'y': 'y' is the days taken by 8 men and 14 women to reap $\frac{7}{12}$ $part$ of 360-hectare land by working 7 hrs per day if 6 men and 10 women can reap $\frac{5}{12}$ part of the land in 15 days by working 6 hrs per day. It is also given that work of 2 men is equal to that of 3 women.

(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 No relation

Q4. Quantity I — 'x': 'x' is the difference between the speeds of X and Y. Distance between P and Q is 60 km. X and Y start from P at same time & meet 1st time at a place 12 km from Q. They return to P immediately after reaching Q. The speed of slower person is 48 km/hr.

Quantity II —'y': 'y' is the average speed of train if a distance of 600 km is to be covered in 2 parts. In 1ˢᵗ phase 120 km is travelled by train and rest by car and it took total of 8 hrs, but if 200 km is covered by train and rest by car it takes 20 min more.
(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 No relation

Q5. The length of a passenger train moving at a speed of 45km/h is 250m. The length of a Rajdhani train is 750m which are moving at a speed of 135km/h.
Quantity I: Time taken by the passenger train to cross a person standing on the platform.
Quantity II: Time taken by the passenger train to cross the Rajdhani train coming from opposite direction.
(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 No relation
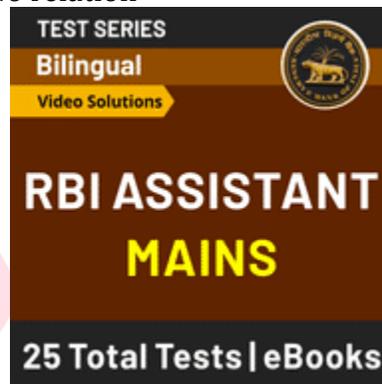
Q6. There are 3 vessels A, B and C full of mixture of milk and water. Vessel A contains 5 liters of water and 25 liters of milk, Vessel B contains 15 liters of water and 30 liters of milk and Vessel C contains water and milk in the ratio 1 : 5. 20%, 40% and 30% of the total mixtures from vessels A, B and C respectively is taken and poured into a fourth vessel. The ratio of milk and water in the fourth vessel is 16 : 5.
Quantity I: Capacity of vessel C in litres.
Quantity II: 80 litres.
(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 No relation

Q7. P, Q and R can complete a piece of work in 8, 12 and 24 days respectively. They work on alternate days.

Quantity I: Time taken by them to complete the work if P works on day 1, Q works on day 2 and R works on day 3 and so on.
Quantity II: Time taken by them to complete the work if Q works on day 1, R works on day 2 and P works on day 3 and so on.
(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 No relation

Q8. There are two bags A and B. Bag A contains 5 red, 3 green and 4 blue balls while Bag B contains 8 blue, 4 green and 6 red balls.
Quantity I: Probability of getting at most 1 red ball if 3 balls are drawn at random from Bag B.
Quantity II: Probability of getting at least 2 red balls if 3 balls are drawn at random from Bag A.
(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 No relation

Q9. Quantity 1: Amount invested in each scheme. This amount is invested in scheme A for 6 years which offers simple interest at the rate of x% per annum. The same amount is invested in scheme B for 2 years which offers compound interest (compound annually) at the rate of 10% per annum. Interest earned from scheme A is twice to that of earned from scheme B. If the rate of interest of scheme A had been (x + 2) % per annum, the difference between the interest after corresponding periods would have been Rs 3960.
Quantity 2: Amount lent by the person. He lent out the same amount at 6% and 24% per annum simple interest each for a period of 18 months. he got total interest of Rs 4704. Which of these could be the amount that was lent out in each case if interest is paid half-yearly?
(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 No relation

Q10. Quantity 1: Time taken by C to complete the work alone. A and B together can do a piece of work in 16 days and B and C can do the same work in 24 days. From starting A and B worked for 4 days and 7 days respectively and remaining work is completed by C in 23 days.
Quantity 2: Final quantity of milk left in the jar. The jar has 60 litres of milk. From the jar, 12 litres of milk was taken out and replaced by an equal amount of water. Again, 12 litres of the newly formed mixture is taken out of the jar.
(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 No relation

Directions (11-15): In the following series find the term which is placed incorrectly.
Q11. 824, 408, 396, 96, 44, 18, 5
(a) 408
(b) 44
(c) 396
(d) 18
(e) 5

Q12. 5, 7, 13, 25, 45, 87, 117
(a) 87
(b) 117
(c) 45
(d) 13
(e) 25

Q13. 1, 7, 30,79,241,727, 2185
(a) 2185
(b) 30
(c) 241
(d) 79
(e) 727

Q14. 2, 3, 10, 15, 25, 35, 50, 63
(a) 25
(b) 35
(c) 63
(d) 10
(e) 15

Q15. 2, 7, 28, 60, 126, 215, 344
(a) 28
(b) 215
(c) 60
(d) 344
(e) 126

Solutions

S1. Ans(a)
Sol.
<u>Quantity I</u>
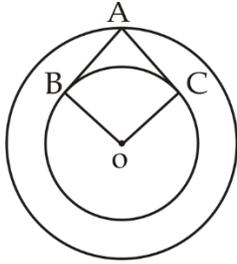
OB = 8cm and OA = 10cm

As, AB and AC are tangents on smaller circle

$\Rightarrow \angle ABO = \angle ACO = 90°$

$\Rightarrow AB = \sqrt{10^2 - 8^2} = 6$

Area of quadrilateral ABOC = $2 \times$ Area of traingle ABO

Area of triangle ABO = $\frac{1}{2} \times OB \times AB = \frac{1}{2} \times 8 \times 6 = 24cm^2$

Area of quadrilateral ABOC = $2 \times 24 = 48cm^2$

Quantity II

Area of trapezium

$= \frac{1}{2}(sum\ of\ parallel\ sides) \times perpendicular\ distance = \frac{1}{2}(6 + 8) \times 6 = 42cm^2$

Quantity I > Quantity II

S2. Ans(b)

Sol.

Quantity I

Interest earned by Kundan after 2 years = $\frac{20,000 \times 22 \times 2}{100} = 8800$

Amount invested by Kundan in the bank = $20,000 + 8800 = 28,800$

ATQ,

$\Rightarrow 28,800 \left[1 + \frac{x}{100}\right]^3 = 28,800 + 28,800 - 1350$

$\Rightarrow 28,800 \left[1 + \frac{x}{100}\right]^3 = 56,250$

$\Rightarrow \left[1 + \frac{x}{100}\right]^3 = \frac{56,250}{28,800}$

$\Rightarrow \left[1 + \frac{x}{100}\right]^3 = \left[\frac{125}{64}\right]$

$\Rightarrow \left[1 + \frac{x}{100}\right] = \left[\frac{5}{4}\right]$

$\Rightarrow x = 25\%$

<u>Quantity II</u>
Marked price is $185\frac{5}{7}\%$ *of the cost price of article*
Let Cost price = 100x and profit % is y% after y% discount
$\Rightarrow 100x + xy = \dfrac{1300x}{700}(100 - y)$
$\Rightarrow 700 + 7y = 1300 - 13y$
$\Rightarrow 20y = 600$
$\Rightarrow y = 30\%$

Quantity II > Quantity I

S3. Ans.(b)
Sol.

	Q	P	R
Time	$x + 5$	x	$x - 4$

$\therefore \dfrac{1}{x+5} + \dfrac{1}{x} = \dfrac{1}{x-4}$
$x = 10$
$\therefore$ Quantity I $\rightarrow$ 10 days
Given $\boxed{2M = 3W}$
$\therefore \dfrac{(8M+14W)\times y \times 7}{\frac{7}{12}\times 360} = \dfrac{(6M+10W)\times 15 \times 6}{\frac{5}{12}\times 360}$
$y = \dfrac{171}{13}$
$= 13\dfrac{2}{13}$
Quantity II $\rightarrow 13\dfrac{2}{13}$
$\therefore$ Quantity I < Quantity II

S4. Ans.(b)
Sol.
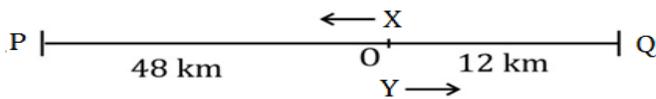
Let X is faster than Y
Then X covers 72 km distance in the same time as Y covers 48 km distance
Ratio of the speed of X and Y= 72: 48 = 3: 2
$\therefore$ Speed of X = $\dfrac{48}{2} \times 3 = 72$ km/hr
Quantity I$\rightarrow$ Difference between X and Y = 72 – 48 = 24 km/hr.
Let speed of train = T km/hr, speed of car = C km/hr
$\therefore \dfrac{120}{T} + \dfrac{480}{C} = 8$ ...(i)
$\dfrac{200}{T} + \dfrac{400}{C} = 8\dfrac{1}{3}$ ....(ii)
On solving (i) and (ii)
T = 60 km/hr

∵ Quantity I < Quantity II

S5. Ans.(e)
Sol.
Quantity I:
Time taken to cross the person = $\frac{Length\ of\ train}{Speed\ of\ train} = \frac{250}{45 \times \frac{5}{18}}$ = 20 sec

Quantity II:
time taken to cross the Rajdhani train = $\frac{Sum\ of\ lengths\ of\ trains}{sum\ of\ speeds\ of\ trains}$

$= \frac{250 + 750}{(45 + 135) \times \frac{5}{18}}$

= 20 sec
∴ Time= 20 sec
Quantity II = Quantity I

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S6. Ans.(b)
Sol.
Quantity I:
Let the quantity of water and milk in the vessel C be x and 5x liters respectively
And, capacity of vessel C be 6x liters.
$\frac{Quanity\ of\ water\ in\ fourth\ vessels}{Quanity\ of\ milk\ in\ fourth\ vessels} = \frac{5}{16}$
$\Rightarrow \frac{20\%\ of\ 5 + 40\%\ of\ 15 + 30\%\ of\ x}{20\%\ of\ 25 + 40\%\ of\ 30 + 30\%\ of\ 5x} = \frac{5}{16} \Rightarrow$ x = 10
Capacity of vessel C = 6x = 60 liters
Quantity II > Quantity I

S7. Ans.(e)
Sol.
Let, total units of work be 48 units
Then,
P does 6 units per day.
Q does 4 units per day.
R does 2 units per day.
3 days' work of P, Q and R working alternately = 6 + 4 + 2 = 12 units
12 days' work = $12 \times \frac{12}{3}$ = 48 units

No work left after 4 rotations (12 days), so the work will be completed in same number of days (12 days) and doesn't depend on the sequence they work.
Quantity I = quantity II

S8. Ans.(a)
Sol.
Quantity I:
Probability (at most 1 red ball from Bag B)
= Probability (no red ball + 1 red ball)
$$= \frac{12C3 + 6C1 \times 12C2}{18C3}$$
$$= \frac{77}{102}$$
Quantity II:
Probability (at least 2 red balls from Bag A)
= Probability (2 red balls + 3 red balls)
$$= \frac{5C2 \times 7C1 + 5C3}{12C3}$$
$$= \frac{4}{11}$$
Quantity I > Quantity II

S9. Ans. (a)
Sol.
Quantity 1: Let amount invested in each scheme was Rs P.
According to first condition
$$\frac{P \times x \times 6}{100} = 2 \times P\left[\left(1 + \frac{10}{100}\right)^2 - 1\right]$$
$$\Rightarrow \frac{3x}{100} = \frac{21}{100}$$
$\Rightarrow$ x = 7% per annum
According to second condition
$$\frac{P \times 9 \times 6}{100} - P\left[\left(1 + \frac{10}{100}\right)^2 - 1\right] = 3960$$
$$\Rightarrow \frac{54P}{100} - \frac{21P}{100} = 3960$$
$$\Rightarrow P = \frac{3960 \times 100}{33}$$
$\Rightarrow$ P = Rs. 12000
Quantity 2: Let sum that was lent out in each case was Rs. x
ATQ,
$$\frac{x \times 6 \times 3}{2 \times 100} + \frac{x \times 24 \times 3}{2 \times 100} = 4704$$
$\Rightarrow$ x $\simeq$ Rs 10453

S10. Ans. (b)
Sol.

Quantity 1: Let no. of days taken by A, B and C to complete the given work alone be a, b and c respectively.

$$\therefore \frac{1}{a} + \frac{1}{b} = \frac{1}{16} \quad \ldots\ldots (i)$$

$$\frac{1}{b} + \frac{1}{c} = \frac{1}{24} \quad \ldots. (ii)$$

and,

$$\frac{4}{a} + \frac{7}{b} + \frac{23}{c} = 1 \quad \ldots (iii)$$

Solving equation (i), (ii) and (iii) we get

c= 32 days

Quantity 2: Ratio of milk and water after 1st operation = 48 : 12 = 4 : 1

Final quantity of milk = $(60 - 12) \times \frac{4}{5}$

= 38.4 ℓ

S11. Ans.(c)
Sol. The pattern in the series will be
$\div 2 - 4, \div 2 - 4, \div 2 - 4, \div 2 - 4, \div 2 - 4 \ldots\ldots\ldots$
∴ Wrong term is 396

S12. Ans.(a)
Sol. The pattern is-
5,   7,   13,   25,   45,   75,   117
   2   6   12   20   30
     4   6   8   10
∴ Wrong term is 87

S13. Ans.(b)
Sol. The pattern is-
$\times 3 + 4, \times 3 + 4, \times 3 + 4, \times 3 + 4, \ldots\ldots\ldots.$

S14. Ans.(a)
Sol. The pattern is-
$1^2 + 1, 2^2 - 1, 3^2 + 1, 4^2 - 1, 5^2 + 1, 6^2 - 1, \ldots\ldots$

S15. Ans.(c)
Sol. Pattern is
   2,   7,   28,   60,   126,   215
$1^3 + 1$ $2^3 - 1$ $3^3 + 1$ $4^3 - 1$ ....
∴ Wrong term is 60

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