

Quiz Date: 4th March 2020

Directions (1-8): Compare the value of 2 quantities given in the question and give answer.(Compare only numerical values)

Q1. Quantity I: Number of balls made after casting. A solid metallic cylinder having 6cm radius and 24cm height is melted and recast into small spherical balls having 6cm diameter.
Quantity II: No. of days taken by A to complete the work alone.

A and B can complete the work in 12 days together, B and C can complete the same work in 15 days together and A and C can complete that work in 20 days together.

- (a) if quantity I > quantity II
- (b) if quantity I < quantity II
- (c) if quantity I \geq quantity II
- (d) if quantity I \leq quantity II
- (e) if quantity I = quantity II or no relation can be established

Q2. Quantity I: Cost price to the manufacturer. A manufacturer sells a pair of glasses to a wholesale dealer at a profit of 17%. The wholesaler sells the same to a retailer at a profit of 25%. The retailer in turn sells them to a customer for Rs. 32.76, thereby earn a profit of 40%.

Quantity II: Area of the hall.

If the Material cost of flooring per m² is Rs. 250 while labor cost of flooring the hall is Rs. 3500 and the total cost of flooring the hall is Rs. 14500.

- (a) if quantity I > quantity II
- (b) if quantity I < quantity II
- (c) if quantity I \geq quantity II
- (d) if quantity I \leq quantity II
- (e) if quantity I = quantity II or no relation can be established

Q3. Quantity I: Rate of interest per annum, If the amount is 2.25 times of the sum after 2 years at compound interest (compound annually).

Quantity II: The speed of the train. A train passes a 50 meters long Platform in 14 seconds and a man standing on the platform in 10 seconds. (In km/h)

- (a) if quantity I > quantity II

- (b) if quantity I < quantity II
- (c) if quantity I \geq quantity II
- (d) if quantity I \leq quantity II
- (e) if quantity I = quantity II or no relation can be established

Q4. Quantity I: Height of the tank, if the volume of cylindrical tank is 12320 cm^3 . Its radius and height are in the ratio of 7 : 10 respectively.

Quantity II: Level of kerosene in the jar. A conical vessel of base radius 2 cm and height 3 cm is filled with kerosene. This liquid leak through a hole in the bottom and collects in a cylindrical jar of radius 2 cm.

- (a) Quantity I > Quantity II
- (b) Quantity I < Quantity II
- (c) Quantity I \geq Quantity II
- (d) Quantity I \leq Quantity II
- (e) Quantity I = Quantity II or No relation

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Q5. A man who swims 48m/minute in still water, swims 200m against the current and 200m with the current. The difference between those two times is 10 minutes.

Quantity I: speed of current. (in m/min)

Quantity II: Speed of a man who completes 3 rounds of a circular path of radius 49 m in 14 minutes. (in m/min)

- (a) Quantity I > Quantity II
- (b) Quantity I < Quantity II
- (c) Quantity I \geq Quantity II
- (d) Quantity I \leq Quantity II
- (e) Quantity I = Quantity II or No relation

Q6. Quantity I: Percentage mark-up above cost price of an article so as to gain 33% after allowing the customer a discount of 5%.

Quantity II: Percentage of dancers under 25 years out of a group of 20 singers and 40 dancers if 20% of the singers are under 25 years old and 40% of the entire group is under 25 years.

- (a) Quantity I > Quantity II
- (b) Quantity I < Quantity II
- (c) Quantity I \geq Quantity II
- (d) Quantity I \leq Quantity II
- (e) Quantity I = Quantity II or No relation

Q7. Quantity I: Value of fifth number when Average of five numbers is 61. The average of 1st and 3rd number is 69 and average of second and fourth number is 69.

Quantity II: No. of boys in the class. The average age of all students of a class is 18 years. The average age of boys of the class is 20 years and that of the girls is 15 years. The no. of girls in the class is 20.

Note: Compare the magnitudes of quantities.

- (a) Quantity I > Quantity II
- (b) Quantity I < Quantity II
- (c) Quantity I \geq Quantity II
- (d) Quantity I \leq Quantity II
- (e) Quantity I = Quantity II or No relation



Q8. Quantity I: The correct average of marks. The average marks in Science subject of a class of 20 students is 68. The marks of two students were misread as 48 and 65 instead of the actual marks 72 and 61 respectively.

Quantity II: No. of days taken by B to complete the whole work alone. A can complete a work alone in 64 days. He worked for 24 days and left the work. B can do two fifth of the remaining work in 15 days.

- (a) if quantity I > quantity II
- (b) if quantity I < quantity II

(c) if quantity I \geq quantity II

(d) if quantity I \leq quantity II

(e) if quantity I = quantity II or no relation can be established

Directions (9-15): Solve the following equations and mark the correct option given below.

(a) if $x > y$

(b) if $x \geq y$

(c) if $y > x$

(d) if $y \geq x$

(e) if $x = y$ or no relation can be established

Q9. I. $x^2 - 27x + 180 = 0$
II. $y^2 - 7y = 60$

Q10. I. $x^2 - 59x + 868 = 0$
II. $y^2 - 53y + 702 = 0$

Q11. I. $100x^2 - 120x + 32 = 0$
II. $10y^2 - 17y + 6 = 0$

Q12. I. $15x^2 - 22x + 8 = 0$
II. $12y^2 - 5y - 2 = 0$

Q13. I. $x^2 + 8x + 15 = 0$
II. $y^2 - 2y - 8 = 0$

Q14. I. $x^2 - 5x - 14 = 0$

II. $y^2 + 7y + 10 = 0$

Q15. I. $\frac{25}{x^2} - \frac{15}{x} + 2 = 0$

II. $\frac{40}{y^2} + 1 = \frac{13}{y}$

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Solutions

S1. Ans. (b)

Sol. Quantity I: Let Number of spherical balls made = n

And radius of cylinder = R cm

Height of cylinder = h cm

Radius of cone = r cm

Volume of Cylinder = Volume of spherical ball $\times n$

$$\pi R^2 h = \frac{4}{3} \pi r^3 \times n$$

$$\pi \times 6^2 \times 24 = \frac{4\pi}{3} \times 3^3 \times n$$

$$n = 24$$

Quantity II: $(A + B + C)$'s one day work = $\frac{1}{2} \left(\frac{1}{12} + \frac{1}{15} + \frac{1}{20} \right)$

$$= \frac{1}{10}$$

$$A's \text{ one day work} = \frac{1}{10} - \frac{1}{15} = \frac{1}{30}$$

\therefore A can complete the work alone in 30 days.

Quantity 1 < Quantity 2



S2. Ans. (b)

Sol. Quantity I: Cost price for retailer = $32.76 \times \frac{5}{7} = Rs23.4$

$$\text{Cost price for manufacturer} = 23.4 \times \frac{100}{125} \times \frac{100}{117}$$

$$= Rs16$$

Quantity II: Let area of hall = $x \text{ m}^2$

\therefore total material cost = $250x$

Labor cost = Rs. 3500

$$\therefore 250x + 3500 = \text{Rs. } 14500$$

$$X = \frac{11000}{250} = 44 \text{ m}^2$$

Quantity II > Quantity I

S3. Ans. (a)

Sol. Quantity I: Let the rate of interest = $r\%$

$$2.25P = P \left(1 + \frac{r}{100}\right)^2$$

$$1.50 = 1 + \frac{r}{100}$$

$$r = 100 \times 0.5$$

$$r = 50\%$$

Quantity II: Let, Length of the train = l

$$\therefore \frac{50+l}{14} = \frac{l}{10}$$

$$500 + 10l = 14l$$

$$l = 125 \text{ m}$$

$$\therefore \text{Speed of train} = \frac{125}{10} \text{ m/sec}$$

$$\Rightarrow \frac{125}{10} \times \frac{18}{5} = 45 \text{ km/hr}$$

S4. Ans.(a)

Sol.

Quantity I:

Let, radius of tank = $7x \text{ cm}$

And, Height of cylinder = $10x \text{ cm}$

A.T.Q

$$12320 = \pi(7x)^2 \times 10x$$

$$\Rightarrow 12320 = \frac{22}{7} \times 49x^3 \times 10$$

$$\Rightarrow x^3 = 8$$

$$\Rightarrow x = 2$$

Height = $10x = 20 \text{ cm}$.

Quantity II:

Volume of conical vessel = volume of cylindrical jar

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$$\frac{1}{3}\pi \times 2^2 \times 3 = \pi \times 2^2 \times h$$

$$\Rightarrow h = 1 \text{ cm.}$$

Level of kerosene in jar = 1 cm.

Quantity I > Quantity II

S5. Ans.(b)

Sol.

Quantity I: Let, speed of current be x m/minute

$$\frac{200}{48-x} = \frac{200}{48+x} + 10$$

$$\Rightarrow x = 32 \text{ m/min.}$$

$$\text{Quantity II: } \frac{3 \times 2 \times \frac{22}{7} \times 49}{14} = 66 \text{ m/min}$$

Quantity II > quantity I

S6. Ans.(a)

Sol.

Quantity I:-

$$\frac{95}{100} \text{ MP} = \frac{133}{100} \text{ CP}$$

$$\Rightarrow \text{MP} = 1.4 \text{ CP}$$

Percentage mark-up = 40%

Quantity II:-

$$\text{Total no. of people under 25 years of age} = \frac{40}{100} \times 60 = 24$$

$$\text{No. of singers under 25 years of age} = \frac{20}{100} \times 20 = 4$$

$$\text{No. of dancers under 25 years of age} = 24 - 4 = 20$$

$$\text{Percentage of dancers under 25 years of age} = \frac{(40-20)}{60} \times 100 = 33\frac{1}{3}\%$$

Quantity II < Quantity I

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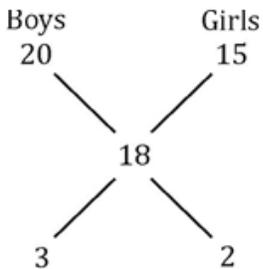
S7. Ans.(b)

Sol.

Quantity I:-

$$\begin{aligned}\text{Fifth number} &= 5 \times 61 - 2 \times 69 - 2 \times 69 \\ &= 305 - 276 = 29\end{aligned}$$

Quantity II:-



$$3 : 2$$

$$\text{No. of boys} = \frac{3}{2} \times 20 = 30$$

Quantity II > Quantity I

S8. Ans. (a)

$$\text{Sol. From I, Required Average} = 68 + \frac{[(72+61)-(48+65)]}{20} = 68 + \frac{20}{20} = 69$$

From II, A can complete work alone in 64 days

Let, Work = 1unit,

$$1 \text{ day's work of A} = \frac{1}{64} \text{ work}$$

$$24 \text{ days work of A} = \frac{24}{64} \text{ work}$$

$$\text{Remaining work when A leaves} = 1 - \frac{24}{64} = \frac{5}{8} \text{ unit}$$

∴ B does $\frac{2}{5}$ of $\frac{5}{8}$ work in 15 days.

$$\text{i.e. } \frac{2}{5} \times \frac{5}{8} \rightarrow 15 \text{ days}$$

$$\frac{1}{4} \rightarrow 15 \text{ days}$$

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∴ 1unit → 60 days

i.e. B will complete the entire work in 60 days.

Quantity I > Quantity II

S9. Ans.(b)

Sol.

$$\text{I. } x^2 - 27x + 180 = 0$$

$$x^2 - 12x - 15x + 180 = 0$$

$$x(x - 12) - 15(x - 12) = 0$$

$$(x - 15)(x - 12) = 0$$

$$x = 15, 12$$

$$\text{II. } y^2 - 7y - 60 = 0$$

$$y^2 - 12y + 5y - 60 = 0$$

$$y(y - 12) + 5(y - 12) = 0$$

$$(y + 5)(y - 12) = 0$$

$$y = -5, 12$$

$$\Rightarrow x \geq y$$

S10. Ans.(a)

Sol.

$$\text{I. } x^2 - 59x + 868 = 0$$

$$x^2 - 28x - 31x + 868 = 0$$

$$x(x - 28) - 31(x - 28) = 0$$

$$(x - 31)(x - 28) = 0$$

$$x = 28, 31$$

$$\text{II. } y^2 - 53y + 702 = 0$$

$$y^2 - 27y - 26y + 702 = 0$$

$$y(y - 27) - 26(y - 27) = 0$$

$$(y - 27)(y - 26) = 0$$

$$y = 26, 27$$

$$\Rightarrow x > y$$

S11. Ans.(e)

Sol.

$$\text{I. } 100x^2 - 120x + 32 = 0$$

$$100x^2 - 40x - 80x + 32 = 0$$

$$20x(5x - 2) - 16(5x - 2) = 0$$

$$(20x - 16)(5x - 2) = 0$$

$$x = \frac{4}{5}, \frac{2}{5}$$

$$\text{II. } 10y^2 - 17y + 6 = 0$$

$$10y^2 - 12y - 5y + 6 = 0$$

$$2y(5y - 6) - 1(5y - 6) = 0$$

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$$(2y - 1)(5y - 6) = 0$$

$$y = \frac{1}{2}, \frac{6}{5}$$

⇒ No relation

S12. Ans.(b)

Sol.

$$I. 15x^2 - 22x + 8 = 0$$

$$15x^2 - 12x - 10x + 8 = 0$$

$$3x(5x - 4) - 2(5x - 4) = 0$$

$$(5x - 4)(3x - 2) = 0$$

$$x = \frac{4}{5}, \frac{2}{3}$$

$$II. 12y^2 - 5y - 2 = 0$$

$$12y^2 - 8y + 3y - 2 = 0$$

$$4y(3y - 2) + 1(3y - 2) = 0$$

$$(4y + 1)(3y - 2) = 0$$

$$y = -\frac{1}{4}, \frac{2}{3}$$

⇒ $x \geq y$

S13. Ans.(c)

Sol.

$$I. x^2 + 8x + 15 = 0$$

$$x^2 + 5x + 3x + 15 = 0$$

$$x(x + 5) + 3(x + 5) = 0$$

$$(x + 5)(x + 3) = 0$$

$$x = -5, -3$$

$$II. y^2 - 2y - 8 = 0$$

$$y^2 - 4y + 2y - 8 = 0$$

$$y(y - 4) + 2(y - 4) = 0$$

$$(y - 4)(y + 2) = 0$$

$$y = -2, 4$$

⇒ $x < y$

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S14. Ans.(b)

Sol.

$$I. x^2 - 7x + 2x - 14 = 0$$

$$x(x - 7) + 2(x - 7) = 0$$

$$x = 7, -2$$

$$II. y^2 + 5y + 2y + 10 = 0$$

$$y(y + 5) + 2(y + 5) = 0$$

$$(y + 5)(y + 2) = 0$$

$$y = -2, -5$$

$$x \geq y$$

S15. Ans. (d)

Sol.

$$I. \frac{25}{x^2} - \frac{15}{x} + 2 = 0$$

$$\Rightarrow 2x^2 - 15x + 25 = 0$$

$$\Rightarrow 2x^2 - 10x - 5x + 25 = 0$$

$$2x(x - 5) - 5(x - 5) = 0$$

$$(2x - 5)(x - 5) = 0$$

$$x = \frac{5}{2}, 5$$

$$II. \frac{40}{y^2} + 1 = \frac{13}{y}$$

$$\Rightarrow y^2 - 13y + 40 = 0$$

$$\Rightarrow y^2 - 8y - 5y + 40 = 0$$

$$\Rightarrow y(y - 8) - 5(y - 8) = 0$$

$$(y - 5)(y - 8) = 0$$

$$y = 5, 8$$

$$y \geq x$$

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