

Quiz Date: 11th May 2020

Q1. Average age of a group increased by 2 years if Ram who is 28 years old join the group. Shyam, whose age is half the age of Ram, when joins the group, overall average age decreased by 1 years. 'N' is the initial number of people in group.

Quantity I: Value of 'N'.

Quantity II: '3'

- (a) Quantity I \geq Quantity II
- (b) Quantity I = Quantity II
- (c) Quantity I > Quantity II
- (d) Quantity I < Quantity II
- (e) Quantity I \leq Quantity II

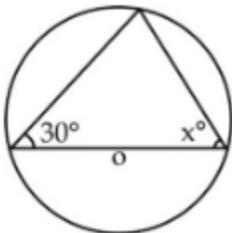
Q2. When two ships A & B are travelling in opposite direction crosses each other in 2 second. Ship B is 50% faster than ship A in still water. On a particular day, ship A was ahead of ship B by 9 meters and both of them were travelling in downstream. if Ship B overtook Ship A in 11 seconds. 'X' is the speed of ship A and if length of ship B is 54 meters.

Quantity I: 16 m/s

Quantity II: Value of 'X' in m/s

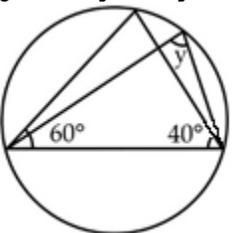
- (a) Quantity I = Quantity II
- (b) Quantity I \geq Quantity II
- (c) Quantity I \leq Quantity II
- (d) Quantity I > Quantity II
- (e) Quantity I < Quantity II

Q3. **Quantity I = x**



(o is the center of the circle)

Quantity II = y



- (a) Quantity I \geq Quantity II
- (b) Quantity I > Quantity II
- (c) Quantity I \leq Quantity II
- (d) Quantity I = Quantity II
- (e) Quantity I < Quantity II

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Q4. There are 'A' numbers of cubes each having side 2 cm is melted and re-casted into a cylinder of radius 7 cm and height 8 cm.

Quantity I: Value of 'A+77'.

Quantity II: Value of '1.5A'

- (a) Quantity I \geq Quantity II
- (b) Quantity I = Quantity II
- (c) Quantity I \leq Quantity II
- (d) Quantity I < Quantity II
- (e) Quantity I > Quantity II

Q5. 'B' kg of Rs. 36 per/kg rice that mixed with 8 kg of Rs. 42 per/kg rice, in order to earn profit of 10% while selling the mixture at Rs. 44 per/kg.

Quantity I: Value of 'B+20'.

Quantity II: Value of '6B'

- (a) Quantity I < Quantity II
- (b) Quantity I \leq Quantity II
- (c) Quantity I > Quantity II
- (d) Quantity I \geq Quantity II
- (e) Quantity I = Quantity II



Directions (6-10): Solve the given quadratic equations and mark the correct option based on your answer—

- (a) $x > y$
- (b) $x \geq y$
- (c) $x < y$
- (d) $x \leq y$
- (e) $x = y$ or no relation can be established between x and y .

Q6. I. $\frac{5}{x} - \frac{12}{x^2} = \frac{1}{2}$
II. $2 + \frac{20}{y^2} = \frac{13}{y}$

Q7. I. $(2x - 5)^2 = 9$
II. $(3y + 4)^2 = 25$

Q8. I. $3^{2x+4} = 9^{3x+4} \cdot 27^{(x+1)}$
II. $\frac{y^2+18}{y} = 9$

Q9. I. $3x^2 = 125 - 2x^2$
II. $y^2 + 12y + 32 = 0$

Q10. I. $3x + 7y = 30$
II. $4x + 6y = 30$

Directions (11-15):- Find the wrong number in the given number series questions.

Q11. 900, 648, 516, 452, 420, 404, 396
(a) 396
(b) 900
(c) 404
(d) 648
(e) 452

Q12. 8, 4, 4, 8, 32, 136, 812
(a) 8
(b) 136
(c) 32
(d) 812
(e) 4

Q13. 3, 11, 49, 191, 569, 1135, 1134
(a) 1135
(b) 1134
(c) 3
(d) 49
(e) 11

Q14. 23, 30, 42, 63, 95, 140, 200
(a) 42
(b) 140
(c) 30
(d) 200
(e) 23

Q15. 8, 30, 60, 120, 180, 180, 90
(a) 30
(b) 120
(c) 90
(d) 8
(e) 60

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Solutions

S1. Ans.(c)

Sol.

'N' people in the group, with average of x.

ATQ,

$$\frac{Nx+28}{N+1} = x + 2 \dots(i)$$

$$\frac{Nx+28+14}{N+2} = x + 1$$

$$= \frac{Nx+42}{N+2} = x + 1 \dots(ii)$$

After solving, we get N = 4

Quantity I = 4**Quantity II = 3****Quantity I > Quantity II**

S2. Ans.(e)

Sol.

Let speed of ship A in still water is $2x$ m/s, and its length is ℓ mAnd speed of ship B is $3x$ m/s and its length is 54 and speed of water is Y m/s.

ATQ, when both of them are travelling in opposite direction.

Downstream speed of ship A = $(2x + Y)$ m/s [assume ship A is travelling in downstream and ship B in upstream]Upstream speed of ship B = $(3x - Y)$ m/sTheir relative speed = $2x + Y + 3x - Y = 5x$ m/s

ATQ,

$$\frac{54+\ell}{5x} = 2 \dots(i)$$

Similarly when both are travelling in downstream their relative speed is

 $= 3x + Y - 2x - Y = X$ m/s

ATQ,

$$\frac{54+9+\ell}{x} = 11$$

$$63 + \ell = 11x \dots(ii)$$

From (i)

$$\ell = 10x - 54$$

put this value in eqn. (ii)

$$= 63 + 10x - 54 = 11x$$

$$x = 9 \text{ m/s}$$

Hence speed of ship A in still water = $2 \times 9 = 18 \text{ m/s}$

Quantity I = 16 m/s

Quantity II = 18 m/s

Quantity II > Quantity I

S3. Ans.(b)

$$\text{Sol. } x = 180 - (90 + 30)$$

$$= 90 - 30$$

$$= 60^\circ$$

$$y = 180 - (60 + 40) \text{ (angles subtended by same arc in the same segment are equal)}$$

$$= 80^\circ$$

\therefore Quantity I < Quantity II

S4. Ans.(b)

Sol.

Volume of cubes = volume of cylinder

ATQ

$$A \times (2)^3 = \pi \times 7^2 \times 8$$

$$A = \frac{22}{7} \times 7 \times 7$$

$$A = 154$$

Quantity I = 154 + 77 = 231

Quantity I = 1.5 × 154 = 231

Quantity I = Quantity II

S5. Ans.(e)

Sol.

Selling mixture at Rs. 44/kg with 10% profit means, the actual price of mixture is Rs. 40/kg

Let B kg of Rs. 36/kg are mixed

Then

$$\frac{36B + 8 \times 42}{B + 8} = 40$$

$$36B + 336 = 40B + 320$$

$$4B = 16$$

$$B = 4$$

Quantity I = B + 20 = 24

Quantity I = 6 × B = 24

Quantity I = Quantity II

S6. Ans.(b)

Sol.

$$\text{I. } \frac{5}{x} - \frac{12}{x^2} = \frac{1}{2}$$

Multiply by $2x^2$

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$$\begin{aligned}
 10x - 24 &= x^2 \\
 \Rightarrow x^2 - 10x + 24 &= 0 \\
 \Rightarrow x^2 - 6x - 4x + 24 &= 0 \\
 \Rightarrow x(x - 6) - 4(x - 6) &= 0 \\
 \Rightarrow (x - 4)(x - 6) &= 0 \\
 \Rightarrow x &= 4, 6
 \end{aligned}$$

II. $2 + \frac{20}{y^2} = \frac{13}{y}$
 Multiply by y^2
 $2y^2 + 20 = 13y$
 $\Rightarrow 2y^2 - 13y + 20 = 0$
 $\Rightarrow 2y^2 - 8y - 5y + 20 = 0$
 $\Rightarrow 2y(y - 4) - 5(y - 4) = 0$
 $\Rightarrow (2y - 5)(y - 4) = 0$
 $\Rightarrow y = \frac{5}{2}, 4$
 $x \geq y$

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S7. Ans.(a)

Sol.

I. $(2x - 5)^2 = 9$
 $(2x - 5) = \pm 3$
 $2x - 5 = 3 \quad | \quad 2x - 5 = -3$
 $x = 4 \quad | \quad x = 1$
 $x = 1, 4$

II. $(3y + 4)^2 = 25$
 $(3y + 4) = \pm 5$
 $3y + 4 = 5 \quad | \quad 3y + 4 = -5$
 $y = \frac{1}{3} \quad | \quad y = -3$
 $y = \frac{1}{3}, -3$

$x > y$

S8. Ans.(c)

Sol.

I. $3^{2x+4} = 9^{3x+4} \cdot 27^{(x+1)}$
 $3^{2x+4} = 3^{6x+8} \cdot 3^{3x+3}$

$$\Rightarrow 2x + 4 = 6x + 8 + 3x + 3$$

$$\Rightarrow 7x = -7$$

$$\Rightarrow x = -1$$

$$\text{II. } \frac{y^2+18}{y} = 9$$

$$\Rightarrow y^2 - 9y + 18 = 0$$

$$\Rightarrow y^2 - 3y - 6y + 18 = 0$$

$$\Rightarrow y(y-3) - 6(y-3) = 0$$

$$\Rightarrow (y-6)(y-3) = 0$$

$$y = 6, 3$$

$$y > x$$

S9. Ans.(e)

Sol.

$$\text{I. } 3x^2 = 125 - 2x^2$$

$$5x^2 = 125$$

$$x^2 = 25$$

$$x = \pm 5$$

$$\text{II. } y^2 + 12y + 32 = 0$$

$$y^2 + 8y + 4y + 32 = 0$$

$$y(y+8) + 4(y+8) = 0$$

$$(y+4)(y+8) = 0$$

$$y = -4, -8$$

No relation can be established between x & y

S10. Ans.(e)

Sol.

$$\text{I. } 3x + 7y = 30$$

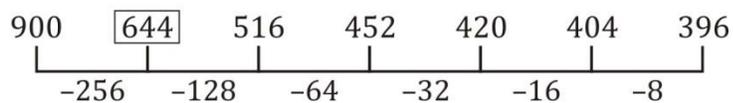
$$\text{II. } 4x + 6y = 30$$

$$\Rightarrow 3x + 7y = 4x + 6y$$

$$\Rightarrow y = x$$

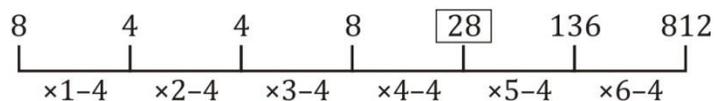
S11. Ans.(d)

Sol.



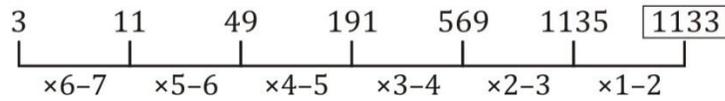
S12. Ans.(c)

Sol.



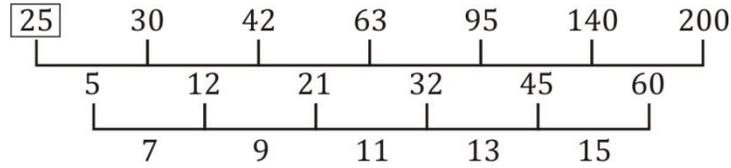
S13. Ans.(b)

Sol.



S14. Ans.(e)

Sol.



S15. Ans.(a)

Sol.

