

Quiz Date: 13th August 2020

Directions (1-5): Each of the following questions below consists of a question and two statements numbered I and II given. You have to decide whether the data provided in the statements is sufficient to answer the questions.

Give answer

- (a) if the data given in statement I alone is sufficient to answer the question while the data in statement II alone is not sufficient to answer the question.
- (b) if the data given in statement II alone is sufficient to answer the question while the data in statement I alone is not sufficient to answer the question.
- (c) if the data either in statement I alone or in statement II alone is sufficient to answer the question.
- (d) If the data in neither statement I nor II is sufficient to answer the question.
- (e) If the data in both statements I and II together is necessary to answer the question.

Q1. Find the cost price of article by shopkeeper on selling the article at Rs. 240 ?

- (I) If the article sold at 25% more the profit earned will be Rs. 40.
- (II) Marked price of article is Rs. 400 and profit% is equal to discount% and profit% is 40%.

Q2. Find the volume of right circular cone ?

- (I) Height of cone is 100% more than radius of cone.
- (II) Area of base of cone is 154 cm^2 .

Q3. Find the value of $2^x \times 3^y$

- (I) Sum of value of x and y is 8.
- (II) Product of value of x & y is 7.

Q4. Find the speed of boat in still water?

- (I) Time taken by boat to cover 64 km in downstream is half the time taken by same boat to cover same distance in still water.
- (II) Speed of stream is 5 km/hr

Q5. In a box three types of balls are there, Black, Red and White. If no. of white balls is given then find out the probability of getting one white ball.

- (I) Probability of getting one Red ball is given.
- (II) Probability of getting one black ball is given.

Directions (11-15): In each of the following questions two equations are given. Solve the equations and give answer—

I. $x^2 + 10x + 24 = 0$

II. $4y^2 - 17y + 18 = 0$

Q6.

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

I. $16x^2 + 20x + 6 = 0$

II. $10y^2 + 38y + 24 = 0$

Q7.

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



I. $17x^2 + 48x = 9$

II. $13y^2 = 32y - 19$

Q8.

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

I. $4x + 7y = 209$

II. $12x - 14y + 9 = -38$

Q9.

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

$$\text{I. } x^2 = 729$$

$$\text{Q10. II. } y = \sqrt{729}$$

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

$$\text{I. } 9x^2 - 27x + 20 = 0$$

$$\text{Q11. II. } 6y^2 - 5y + 1 = 0$$

- (a) If $x < y$
- (b) If $x \leq y$
- (c) $x = y$ or relationship between x and y cannot be established.
- (d) If $x \geq y$
- (e) If $x > y$

$$\text{I. } 3x^2 - 22x + 40 = 0$$

$$\text{Q12. II. } 2y^2 - 19y + 44 = 0$$

- (a) If $x < y$
- (b) If $x \leq y$
- (c) $x = y$ or relationship between x and y cannot be established.
- (d) If $x \geq y$
- (e) If $x > y$

$$\text{I. } 2x^2 - 11x + 14 = 0$$

$$\text{Q13. II. } 2y^2 - 7y + 6 = 0$$

- (a) If $x < y$
- (b) If $x \leq y$
- (c) $x = y$ or relationship between x and y cannot be established.
- (d) If $x \geq y$
- (e) If $x > y$

$$\text{I. } x^2 = 49$$

$$\text{Q14. II. } y^2 - 4y - 21 = 0$$

- (a) If $x < y$
- (b) If $x \leq y$
- (c) $x = y$ or relationship between x and y cannot be established.
- (d) If $x \geq y$

(e) If $x > y$

$$\text{I. } 3x^2 - 13x - 10 = 0$$

Q15. $\text{II. } 3y^2 + 10y - 8 = 0$

(a) If $x < y$

(b) If $x \leq y$

(c) $x = y$ or relationship between x and y cannot be established.

(d) If $x \geq y$

(e) If $x > y$

Solutions

S1. Ans.(c)

Sol.

From I

Let C.P. of article be Rs. x .

$$\frac{125}{100} \times 240 - x = 40$$

$$x = 300 - 40 = \text{Rs } 260$$

From II

Since profit% & discount% is given and S.P. & marked price is given.

\therefore cost price can be determined.

\therefore Either from I or II.

S2. Ans.(e)

Sol.

From I & II

Area of base of cone (πr^2) = 154

$$\therefore \pi r^2 = 154$$

$$r^2 = 49$$

$$\therefore r = 7 \text{ cm}$$

$$\therefore \text{height (h)} = 7 \times 2 = 14 \text{ cm.}$$

$$\text{Volume} = \frac{1}{3} \pi r^2 h$$

$$= \frac{1}{3} \times \frac{22}{7} \times 7 \times 7 \times 14$$

$$= \frac{2156}{3} \text{ cm}^3$$

S3. Ans.(e)

Sol.

From I & II

$$x + y = 8 \dots(i)$$

$$xy = 7$$

$$(x - y)^2 = (x + y)^2 - 4xy$$

$$(x - y)^2 = (8)^2 - 4 \times 7$$

$$(x - y)^2 = 36$$

$$x - y = 6 \dots(ii)$$

$$\therefore x = 7 \text{ \& } y = 1$$

$$\text{Or } x=1 \text{ \& } y=7$$

S4. Ans.(e)

Sol.

From I & II

Let speed of boat in still water be x km/hr and speed of stream be y km/hr.

$$\frac{64}{x+y} = \frac{1}{2} \frac{64}{x}$$

$$x = y = 5 \text{ km/hr}$$

S5. Ans.(e)

Sol.

Given no. of white ball

Let $\rightarrow a$

From I let probability $\rightarrow \frac{x}{y}$

Let no. of red ball $\rightarrow px$, total balls $\rightarrow py$

From II \rightarrow Let probability = $\frac{s}{t}$

Let no. of black ball = qs , total balls = qt

From I & II

$$px + a + qs = qt = py$$

we know the values of x, y, s, t and a so we can find the value of p and q

So probability of white ball found = $\frac{a}{qt}$ or $\frac{a}{py}$

\therefore I & II together are sufficient to answer the question

S6. Ans.(a)

Sol.

$$I. x^2 + 6x + 4x + 24 = 0$$

$$x(x + 6) + 4(x + 6) = 0$$

$$(x + 4)(x + 6) = 0$$

$$x = -4, -6$$

$$II. 4y^2 - 8y - 9y + 18 = 0$$

$$4y(y - 2) - 9(y - 2) = 0$$

$$(4y - 9)(y - 2) = 0$$

$$y = \frac{9}{4}, 2$$

$$x < y$$

S7. Ans.(b)

Sol.

$$I. 16x^2 + 8x + 12x + 6 = 0$$

$$8x(2x + 1) + 6(2x + 1) = 0$$

$$(8x + 6)(2x + 1) = 0$$

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

$$II. 10y^2 + 30y + 8y + 24 = 0$$

$$10y(y + 3) + 8(y + 3) = 0$$

$$(10y + 8)(y + 3) = 0$$

$$y = \frac{-4}{5}, -3$$

$$x > y$$

S8. Ans.(a)

Sol.

$$I. 17x^2 + 51x - 3x - 9 = 0$$

$$17x(x + 3) - 3(x + 3) = 0$$

$$(17x - 3)(x + 3) = 0$$

$$x = \frac{3}{17}, -3$$

$$II. 13y^2 - 13y - 19y + 19 = 0$$

$$13y(y - 1) - 19(y - 1) = 0$$

$$y = 1, \frac{19}{13}$$

$$x < y$$




S9. Ans.(a)

Sol.

$$4x + 7y = 209 \dots\dots(i) \quad x(-2) = -8x - 14y = -418 \dots\dots(ii)$$

$$12x - 14y = -47 \dots\dots(iii)$$

Subtracting (i) from (iii) and solutions

$$x = \frac{371}{20} = 18.55, y = 19.25$$

$$x < y$$

S10. Ans.(c)

Sol.

$$x^2 - 729 = 0$$

$$(x - 27)(x + 27) = 0$$

$$x = 27, -27$$

$$y = \sqrt{729} = 27$$

$$x \leq y$$

S11. Ans.(e)

Sol.

$$\text{I. } 9x^2 - 27x + 20 = 0$$

$$9x^2 - 12x - 15x + 20 = 0$$

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

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

$$x = \frac{5}{3} \text{ or } \frac{4}{3}$$

$$\text{II. } 6y^2 - 5y + 1 = 0$$

$$6y^2 - 2y - 3y + 1 = 0$$

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

$$y = \frac{1}{3} \text{ or } \frac{1}{2}$$

$$x > y$$



S12. Ans.(b)

Sol.

$$\text{I. } 3x^2 - 22x + 40 = 0$$

$$3x^2 - 12x - 10x + 40 = 0$$

$$3x(x - 4) - 10(x - 4) = 0$$

$$(x - 4)(3x - 10) = 0$$

$$x = 4 \text{ or } \frac{10}{3}$$

$$\text{II. } 2y^2 - 19y + 44 = 0$$

$$2y^2 - 11y - 8y + 44 = 0$$

$$y(2y - 11) - 4(2y - 11) = 0$$

$$(2y - 11)(y - 4) = 0$$

$$y = \frac{11}{2} \text{ or } 4$$

$$y \geq x$$

S13. Ans.(d)

Sol.

$$\begin{aligned} \text{I. } 2x^2 - 11x + 14 &= 0 \\ 2x^2 - 7x - 4x + 14 &= 0 \\ x(2x - 7) - 2(2x - 7) &= 0 \\ (2x - 7)(x - 2) &= 0 \\ x &= \frac{7}{2} \text{ or } 2. \\ \text{II. } 2y^2 - 7y + 6 &= 0 \\ 2y^2 - 4y - 3y + 6 &= 0 \\ 2y(y - 2) - 3(y - 2) &= 0 \\ (y - 2)(2y - 3) &= 0 \\ y &= 2 \text{ or } \frac{3}{2} \\ x &\geq y \end{aligned}$$

S14. Ans.(c)

Sol.

$$\begin{aligned} \text{I. } x^2 &= 49 \\ x &= \pm 7 \\ \text{II. } y^2 - 4y - 21 &= 0 \\ y^2 - 7y + 3y - 21 &= 0 \\ y(y - 7) + 3(y - 7) &= 0 \\ (y - 7)(y + 3) &= 0 \\ y &= 7 \text{ or } -3 \\ \text{No relation} \end{aligned}$$

S15. Ans.(c)

Sol.

$$\begin{aligned} \text{I. } 3x^2 - 13x - 10 &= 0 \\ 3x^2 - 15x + 2x - 10 &= 0 \\ 3x(x - 5) + 2(x - 5) &= 0 \\ (x - 5)(3x + 2) &= 0 \\ x &= 5 \text{ or } \frac{-2}{3} \\ \text{II. } 3y^2 + 10y - 8 &= 0 \\ 3y^2 + 12y - 2y - 8 &= 0 \\ 3y(y + 4) - 2(y + 4) &= 0 \\ (y + 4)(3y - 2) &= 0 \\ y &= -4 \text{ or } \frac{2}{3} \\ \text{No relation} \end{aligned}$$

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