

Quiz Date: 25th June 2020

Directions (1-5): 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. $5X$ men can complete a work in $\frac{X}{2}$ days while $2Y$ men can complete same work in $\frac{4Y}{5}$ days.

Quantity I: Value of '**Y+20**'.

Quantity II: Value of '**1.25X**'

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

Q2. Rs. X is invested in a scheme which offers 15% p.a. at C.I. Interest earned after two years is Rs.3870.

Quantity I: 'Value of '**A**'. Rs. $2X$ is invested in a scheme which offers $A\%$ p.a. at C.I. and interest earned after two years is Rs. 10,560

Quantity II: Value of '**B**'. Rs. $(X+6,000)$ is invested in a scheme which offers $B\%$ p.a. at C.I. and amounts to Rs. 28,125

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

Q3. Total surface area of a cylinder is 200% more than that of its sum of area of base and top of cylinder. Volume of cylinder is 2156 cm^3

Quantity I: Volume of cone whose base radius and height is same as that of radius and height of cylinder respectively.

Quantity II: Volume of hemisphere whose radius is same as that of radius of cylinder.

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

Q4. **Quantity I:** Percentage profit earned by the shopkeeper if at the time of selling and purchasing he uses weights 10% less and 20% more per kilogram respectively and professes to all goods at 5% profit.

Quantity II: '**x**'; A book was sold for a certain sum and there was a loss of 20%. Had it been sold for Rs 12 more, there would have been a gain of 30%. '**x**' would be value of profit percent if the book were sold for Rs 4.8 more than what it was sold for.

- (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

Q5. A group consist of 4 couples in which each of the 4 persons have one wife

Quantity I : Number of ways in which they could be arranged in a straight line such that the men and women occupy alternate positions

Quantity II: Eight times the number of ways in which they be seated around circular table such that men and women occupy alternate position.

- (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



Directions (6-10): The following table shows the average speeds of five different trains during six days of a week. Study the table carefully to answer the following questions.

Note: In the table, some data are missing, find them if required in any question and then proceed.

Trains	Speeds (in km/hr) of trains on different days					
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Kafiyat exp	72	80	-	64	54	-
Shatabdi	88	-	80	84	72	90
Prayagraj	54	70	72	-	64	60
Rajdhani	-	120	95	-	90	110
Shramjivi	72	80	84	75	-	-

Q6. If the average speed of Kafiyat express on Saturday was 20% more than that of Wednesday, then what is the approximate average speed of Kafiyat express on Saturday if average of values of speeds over all the six days is 68?

- (a) 78 km/hr
 (b) 75.27 km/hr
 (c) 72.5 km/hr

- (d) 70 km/hr
- (e) 82.3 km/hr

Q7. If the average of values of speeds of Prayagraj during all the six days is 25% less than value of average speed of Shatabdi train on Saturday, then speed of Prayagraj on Thursday is what percent of speed of Rajdhani on Tuesday (approximately)?

- (a) 73%
- (b) 68%
- (c) 71%
- (d) 74%
- (e) 65%

Q8. Rajdhani express runs 150 km more on Monday than that on Thursday and time taken by the train on Monday and Thursday are 5 hours and 4 hours respectively. If average speed of this train on Monday is 15 km/hr more than that on Thursday, then find the average of distance covered by the train on Monday and Thursday together.

- (a) 365 km
- (b) 357 km
- (c) 370 km
- (d) 375 km
- (e) 380 km

Q9. Shatabdi Express covers total distance of 3400 km during all the six days in total time 40 hours. Speed of Shatabdi on Monday is approximately what percent more or less than average speed of the same train during all the six days together?

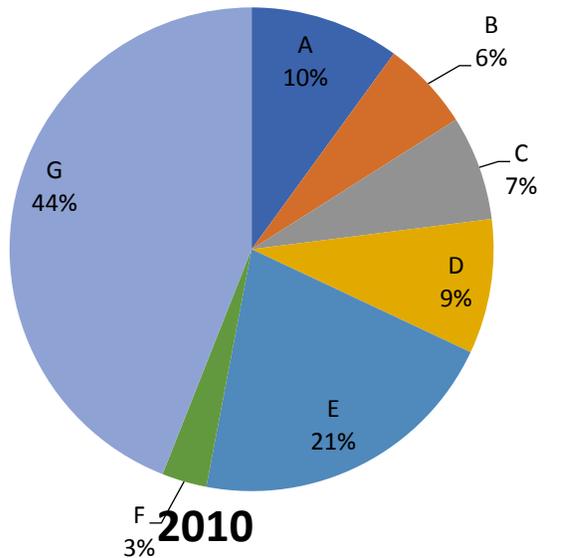
- (a) 4% less
- (b) 4% more
- (c) 2% more
- (d) 2% less
- (e) 6% more

Q10. If the ratio of average of speed of Shramjivi express on Saturday and Friday is 5 : 3, then the average speed of Shramjivi on Saturday is approximately what percent more than average speed of Shramjivi on Friday?

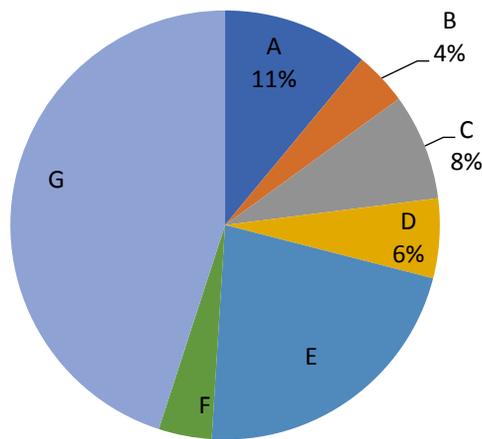
- (a) $66\frac{2}{3}\%$
- (b) $33\frac{2}{3}\%$
- (c) $77\frac{2}{3}\%$
- (d) $55\frac{2}{3}\%$
- (e) 72%

Directions (11-15): Study the following pie chart and answer the following questions.

Percentage distribution of Income of 7 firms in year 2010 and 2013 is given below in pie chart. Percentage distribution of some firms are not given. You have to calculate these values if required to answer the questions.



2010



2013



Note: Ratio of total Income of all 7 firms in 2010 to 2013 is 5 : 7.

$$profit\% = \frac{income - exp\ enditure}{exp\ enditure} \times 100$$

Q11. If expenditure of B in 2010 is 80% of its income and expenditure of E in 2013 is 60% of its income and income of E in 2013 is $33\frac{1}{3}\%$ more than the income of E in 2010 then saving of B in 2010 is what percent of saving of E in 2013.

(a) $10\frac{5}{7}\%$

- (b) $4\frac{2}{9}\%$
(c) $33\frac{1}{3}\%$
(d) $16\frac{2}{3}\%$
(e) None of these

Q12. What is the ratio of average income of firm A, B and E together in 2010 to the average of income of firm B, C and D together in 2013.

- (a) 203 : 201
(b) 133 : 123
(c) 185 : 126
(d) 119 : 143
(e) 123 : 133



Q13. If income of firm E in 2013 is $400/7\%$ of income of E in 2010 and ratio between percentage distribution of income of firm F and G is 11 : 8 in 2013 then what is the percentage distribution of income of firm F in 2013 ?

- (a) $45/23\%$
(b) $133/7\%$
(c) $253/7\%$
(d) $255/103\%$
(e) $253/133\%$

Q14. Income of firm A, B and E together in 2010 is approximate what % more or less than income of firm C, D and E together in 2013 if income of firm E in 2013 is 50% more than income of firm A in 2010 (approximately)?

- (a) 7%
(b) 5%
(c) 5.1%
(d) 8%
(e) 48%

Q15. If income of firm A and B together in 2013 is 120% of income of firm A and B together in 2012 then income of firm A and B together increase/decrease by what percent approximately in 2012 with respect to 2010.

- (a) 30%
- (b) 23%
- (c) 20%
- (d) 9%
- (e) 12%

Solutions

S1. Ans.(c)

Sol.

$$\text{Total work} = 5X \times \frac{X}{2} = 2Y \times \frac{4Y}{5}$$

$$\Rightarrow \frac{X^2}{Y^2} = \frac{16}{25}$$

$$\Rightarrow \frac{X}{Y} = \frac{4}{5}$$

Let $X = 4a$ and $Y = 5a$

Quantity I: $Y+20 = 5a+20$

Quantity II: $1.25X = 5a$

Quantity I > Quantity II

S2. Ans.(d)

Sol.

ATQ,

$$X \left[1 + \frac{15}{100} \right]^2 - X = 3870$$

$$X = 12,000$$

Quantity I:

$$24,000 \left[1 + \frac{A}{100} \right]^2 - 24,000 = 10,560$$

$$\left[1 + \frac{A}{100} \right]^2 = \frac{36}{25}$$

$$\Rightarrow A = 20\%$$

Quantity II:

$$18,000 \left[1 + \frac{B}{100} \right]^2 = 28,125$$

$$\left[1 + \frac{B}{100} \right]^2 = \frac{25}{16}$$

$$\Rightarrow B = 25\%$$

Quantity II > Quantity I

S3. Ans.(b)

Sol.

$$\text{T.S.A of cylinder} = 2\pi r(r + h)$$

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Sum of area of base and top of cylinder = $2\pi r^2$

ATQ,

$$\frac{3}{1} = \frac{2\pi r(r+h)}{2\pi r^2}$$

$$\Rightarrow h = 2r$$

Volume of cylinder = $\pi r^2 h = 2156$

$$\Rightarrow r = 7\text{cm}, h = 14\text{cm}$$

Quantity I:

$$\text{Volume of cone} = \frac{1}{3}\pi r^2 h = \frac{2156}{3}$$

Quantity II:

$$\text{Volume of hemisphere} = \frac{2}{3}\pi r^3 = \frac{2156}{3}$$

Quantity I = Quantity II

S4. Ans.(a)

Sol.

Quantity I:

Let C.P of 100 gm = 100 Rs

So, he purchases 120 gm in 100 Rs

And sell 90 gm in = $\frac{105}{100} \times 100$ RS

So, % profit

$$= \frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100$$

$$= \frac{\frac{105}{90} - \frac{100}{120}}{\frac{100}{120}} \times 100$$

$$= \frac{\frac{21}{18} - \frac{5}{6}}{\frac{5}{6}} \times 100 = \frac{21 - 15}{18} \times 100$$

$$= \frac{36}{90} \times 100$$

= 40% profit

Quantity II:

50% → 12 Rs

So, 100 → 24 Rs

So, 80% → 19.2

There will be 0% profit if the book were sold for Rs.4.8 more

Quantity I > Quantity II

S5. Ans.(e)

Sol.

Quantity I:

Let first we arrange all 4 men in 4! Ways then we arrange 4 women in 4P_4 ways at 4 places either left of the man or right of the man.

$$= 4! \times {}^4P_4 + 4! \times {}^4P_4 = 2 \times 576$$

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$$= 1152$$

Quantity II:

Let first we arrange 4 men in $3!$ Ways, then 4 women can be arranged in 4 places in 4P_4 ways

$$= 3! \times {}^4P_4 = 144$$

$$= 144 \times 8$$

$$= 1152$$

S6. Ans.(b)

Sol.

Let speed on Saturday was x km/hr.

$$\therefore \text{Speed on Wednesday} = \frac{5x}{6} \text{ km/hr}$$

$$\therefore x + 72 + 80 + \frac{5x}{6} + 64 + 54 = 68 \times 6$$

$$\Rightarrow \frac{11x}{6} = 138$$

$$\Rightarrow x \simeq 75.27 \text{ km/hr}$$

S7. Ans.(c)

Sol.

Speed of Prayagraj on Thursday

$$= 90 \times \frac{3}{4} \times 6 - (60 + 54 + 70 + 72 + 64)$$

$$= 85 \text{ km/hr}$$

$$\therefore \text{Required percentage} = \frac{85}{120} \times 100$$

$$\simeq 71\%$$

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S8. Ans.(d)

Sol.

Let Rajdhani runs x km on Thursday.

$$\therefore \frac{x + 150}{5} - \frac{x}{4} = 15$$

$$\Rightarrow 4x + 600 - 5x = 300$$

$$\Rightarrow x = 300 \text{ km}$$

$$\therefore \text{Required average} = \frac{1}{2} \times (300 + 450)$$

$$= 375 \text{ km}$$

S9. Ans.(b)

Sol.

Average speed during all the six days

$$= \frac{3400}{40} = 85 \text{ km/hr}$$

$$\therefore \text{Required percentage} = \frac{88 - 85}{85} \times 100$$

$\approx 4\%$ more

S10. Ans.(a)

Sol.

Let speed of Shramjivi on Saturday and Friday be $5x$ and $3x$ km/hr respectively.

$$\therefore \text{Required percentage} = \frac{5x - 3x}{3x} \times 100$$

$$= 66\frac{2}{3}\%$$

S11. Ans.(a)

Sol.

Let total income in 2010 and 2013 is $5x$ and $7x$

$$\text{Saving of B in 2010} = \frac{20}{100} \times \frac{5x}{100} \times 6 = \frac{6x}{100}$$

$$\text{Income of E in 2013} = \frac{4}{3} \times \frac{5x}{100} \times 21 = \frac{7x}{5}$$

$$\text{Saving of E in 2013} = \frac{2}{5} \times \frac{7x}{5} = \frac{14x}{25}$$

$$\text{Required \%} = \frac{\frac{6x}{100}}{\frac{14x}{25}} \times 100 = \frac{75}{7}\%$$

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S12. Ans.(c)

Sol.

Average income of A, B and E together in 2010

$$= \frac{1}{3} \times \frac{(10 + 6 + 21)}{100} \times 5x$$

$$= \frac{185}{300}x$$

Average income of B, C and D together in 2013

$$= \frac{1}{3} \times \frac{(4 + 8 + 6)}{100} \times 7x$$

$$= \frac{126}{300}x$$

$$\therefore \text{Required of ratio} = \frac{185}{126}$$

S13. Ans.(c)

Sol.

$$\text{Income of firm E in 2013} = \frac{4}{7} \times \frac{5x}{100} \times 21 = \frac{3x}{5}$$

%distribution income of E in 2013

$$= \frac{\frac{3x}{5}}{7x} \times 100 = \frac{60}{7} \%$$

% distribution income of firm F and G together

$$= \left[100 - \left(11 + 4 + 8 + 6 + \frac{60}{7} \right) \right] = \frac{437}{7} \%$$

%distribution of income of firm F in 2013

$$= \frac{437}{7} \times \frac{11}{19}$$

$$= \frac{253}{7} \%$$



S14. Ans.(a)

Sol.

Income of A, B and E together in 2010

$$= 37 \times \frac{5x}{100} = \frac{185}{100} x$$

$$\text{Income of E in 2013} = \frac{3}{2} \times \frac{5x}{100} \times 10$$

$$= \frac{3}{4} x$$

Income of C, D and E together in 2013

$$= \frac{7x}{100} \times 14 + \frac{3}{4} x$$

$$= \frac{173}{100} x$$

$$\text{Required \%} = \frac{\left(\frac{185}{100} x - \frac{173}{100} x \right)}{\frac{173}{100} x} \times 100$$

$$= \frac{12}{173} \times 100$$

$$\approx 7\%$$

S15. Ans.(d)

Sol.

$$\begin{aligned}\text{Income of firm A and B in 2013} &= \frac{7x}{100} \times 15 \\ &= \frac{105}{100}x\end{aligned}$$

$$\begin{aligned}\text{Income of firm A and B in 2012} &= \frac{105}{100} \times \frac{100}{120}x \\ &= \frac{7x}{8}\end{aligned}$$

$$\begin{aligned}\text{Income of firm A and B in 2010} &= \frac{5x}{100} \times 16 \\ &= \frac{4}{5}x\end{aligned}$$

$$\text{Required \%} = \frac{\frac{7}{8}x - \frac{4}{5}x}{\frac{4}{5}x} \times 100 \approx 9\% \text{ increase}$$

