

**Quiz Date: 12<sup>th</sup> March 2020**

**Direction (1-5):** Given below statistical data gives the information about the top 5 shoes selling companies in India in three successive years. Read the data carefully and answer the following questions:

**Year 2016** – Pairs of shoes sold by Reebok is 55% of the total pairs of shoes sold by Nike. Woodland sold 20% less pair of shoes than Reebok. Ratio of pairs of shoes sold by ADIDAS to pairs of shoes sold by Nike is 3 : 5. Pairs of shoes sold by Puma are 7,722 and average pairs of shoes sold by all 5 companies are 6,310.

**Year 2017** – Pairs of shoes sold by all 5 companies together is increased by 20% and Pairs of shoes sold by Nike is increased by 20% compared to previous year. Ratio of pairs of shoes sold by ADIDAS to pairs of shoes sold by Puma is 23 : 30 and pairs of shoes sold by Puma is 2,040 less than the pairs of shoes sold by Nike. Pairs of shoes sold by Reebok are 2,236 more than the pairs of shoes sold by Woodland.

**Year 2018** – Pairs of shoes sold by Puma is increased by 30% as compared to previous year. Pairs of shoes sold by Woodland are 40% less than the pairs of shoes sold by Puma. Total pairs of shoes sold by Reebok and ADIDAS is 16,900 and ratio of pairs of shoes sold by Nike to pairs of shoes sold by ADIDAS is 3 : 2. Total pairs of shoes sold by Nike and ADIDAS is 3,100 more than total pairs of shoes sold by Reebok and ADIDAS.

Q1. Find the ratio of pairs of shoes sold by Nike in 2016 to the pairs of shoes sold by ADIDAS in 2018.

- (a) 46:45
- (b) 92 :89
- (c) 92 : 117
- (d) 23 : 20
- (e) 2 : 1

Q2. The average number of pairs of shoes sold by Nike, Puma and Woodland in 2018 is what percent of the pairs of shoes sold by ADIDAS in 2018.

- (a) 125%
- (b) 128%
- (c) 121%
- (d) 131%
- (e) 117%

Q3. Pairs of shoes sold by ADIDAS and Puma together in 2017 is what percent more or less than the pairs of shoes sold by Reebok in 2018?

- (a)  $78\frac{58}{89}\%$
- (b)  $67\frac{26}{35}\%$
- (c)  $87\frac{14}{23}\%$
- (d)  $77\frac{21}{23}\%$
- (e) None of the above.

Q4. Find the difference between the average number of pairs of shoes sold by Puma in 2016, 2017 and 2018 and pairs of shoes sold by Reebok in 2017.

- (a) 2,877
- (b) 2,856
- (c) 2,821
- (d) 2,809
- (e) 2,896

Q5. The average number of pairs of shoes sold by all 5 companies in 2018 is how much more than the average number of pairs of shoes sold by all 5 companies in 2017.

- (a) 1,927
- (b) 1,952
- (c) 1,968
- (d) 1,989
- (e) 1,903

**Directions (6-10):** Read the given information carefully and answer the following questions.

The following is a sales and revenue data made by two shops- A and B. Stores sell only two types of product X and Y. (Note: All the units produced on the particular day may be either sold or not.)

**Note:**

I. Revenue = Selling price per unit  $\times$  number of units sold

II. Profit = Revenue – Cost incurred to produce all the units

III. Profit % =  $\frac{\text{profit}}{\text{total cost incurred}} \times 100$

**Shop A:**

Cost incurred on production of product X was Rs. 18 per unit. Revenue generated on selling per unit at Rs. 24 was Rs. 1800. Profit made on sales of product X was Rs. 180.

Per unit cost prices of product Y was  $22\frac{2}{9}\%$  more than per unit cost prices of product X.

Profit on selling  $\frac{3}{5}$ th of the total units of product Y produced was Rs. 240 and thereby making a profit of  $22\frac{8}{11}\%$ .

**Shop B:**

Number of units of product X produced was 20% less than that of product X produced by shop A. Profits made on selling all the units is 180%.

Profit on selling all 64 units of product Y produced at the rate of Rs. 45 per unit was Rs. 480.

Profit made on the sales of all units of product X was 125% more than that of product Y.

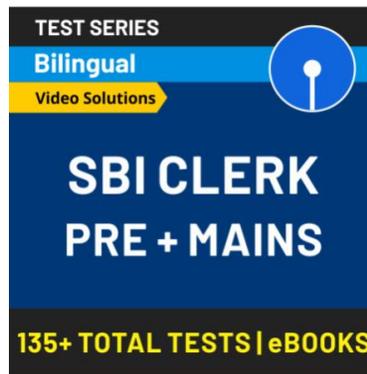
Q6. Number of units of product X that remains unsold in shop A is what percent of number of units sold of product Y by the same shop?

- (a) 30%
- (b) 35%
- (c)  $31\frac{1}{4}\%$

- (d)  $27\frac{1}{2}\%$   
(e)  $32\frac{1}{2}\%$

Q7. Revenue generated by shop A on selling all the units of product Y produced is what percent more or less than total cost incurred in producing all the units of product X by shop B ?

- (a) 300%  
(b) 280%  
(c) 220%  
(d) 240%  
(e) 260%



Q8. Find the ratio of per unit selling price of product X for shop B to the per unit cost price of product Y for the same shop?

- (a) 28:45  
(b) 24:37  
(c) 35: 53  
(d) 14: 15  
(e) 40: 53

Q9. Find the difference between total cost incurred by shop A in producing all the units of both the items and the total cost incurred by shop B in producing all the units of both the items?

- (a) Rs 320  
(b) Rs 340  
(c) Rs 360  
(d) Rs 380  
(e) Rs 400

Q10. Had the cost incurred on per unit of product X produced by shop A been 25% less than the original and had it been able to sell 60 units each of products Y and X produced that day, then what would have been the total profit made by shop A on selling both the products?

- (a) Rs 65  
(b) Rs 85  
(c) Rs 90  
(d) Rs 80

(e) Rs 45

**Direction (11-15): Read the data carefully and answer the following questions.**

There are four types of telecommunications operator in Delhi (i.e. Airtel, Reliance Jio, Vodafone and BSNL) and each company works at two time slots i.e. Day shift and Night shift. Total employees work in Airtel at day shift is 2 times more than that in Airtel at night shift. While number of employees in BSNL at night shift is 40% of number of employees in Airtel at day shift and number of employees in BSNL at day shift and night shift is in the ratio of 5:2. Average of number of employees in Airtel at night shift and that of in BSNL at Day shift is 380. Number of employees in Reliance Jio at day shift and Vodafone in night shift is 50% more and 40% less than number of employees in Reliance Jio at Night Shift respectively. Total number of employees working (i.e in Day Shift and Night Shift) in Reliance Jio is 2500. While number of employees in Reliance Jio at night Shift and that of in Vodafone in Days shift are same.

Q11. If ratio of number of male to number of female working at night shift in Reliance Jio is 3 : 2, then find total number of male employees in Reliance Jio at night shift is what percent of total number of employee working at Day shift in Vodafone?

- (a)  $33\frac{1}{3}\%$
- (b) 35%
- (c) 30%
- (d) 60%
- (e) 50%

Q12. Find the ratio of total number of employees working in Airtel at Day shift to total number of employees working in BSNL at Night shift?

- (a) 2 : 5
- (b) 5 : 7
- (c) 6 : 5
- (d) 5 : 3
- (e) 5 : 2

Q13. Total number of employees working at Day shift in BSNL is what percent more/less than total number of employees at night shift in Reliance Jio?

- (a) 35%
- (b) 43%
- (c) 51%
- (d) 47%
- (e) 59%

Q14. Find the average number of employees working at each shift in Reliance Jio and Vodafone?

- (a) 980
- (b) 1080

- (c) 1025  
 (d) 890  
 (e) 1060

Q15. Find the difference between the largest number of employees worked at Days shift and 2<sup>nd</sup> Smallest number of employees at night shift?

- (a) 1272  
 (b) 1428  
 (c) 1528  
 (d) 980  
 (e) 1724

### Solutions

#### S (1-5)

##### 2016:

Let pairs of shoes sold by Nike are  $100x$ .

$$\begin{aligned} \text{So, pairs of shoes sold by Reebok} &= 100x \times \frac{55}{100} \\ &= 55x \end{aligned}$$

$$\begin{aligned} \text{Pairs of shoes sold by Woodland} &= 55x \times \frac{80}{100} \\ &= 44x \end{aligned}$$

$$\begin{aligned} \text{Pairs of shoes sold by ADIDAS} &= 100x \times \frac{3}{5} \\ &= 60x \end{aligned}$$

ATQ,

$$\text{Total pairs of shoes sold by all 5 companies} = 6,310 \times 5$$

$$100x + 55x + 44x + 60x + 7722 = 31,550$$

$$259x = 23,828$$

$$x = 92$$

$$\begin{aligned} \text{Hence, pairs of shoes sold by Nike} &= 100x \\ &= 9,200 \end{aligned}$$

$$\begin{aligned} \text{Pairs of shoes sold by Reebok} &= 55x \\ &= 5,060 \end{aligned}$$

$$\begin{aligned} \text{Pairs of shoes sold by Woodland} &= 44x \\ &= 4,048 \end{aligned}$$

$$\begin{aligned} \text{Pairs of shoes sold by ADIDAS} &= 60x \\ &= 5,520 \end{aligned}$$

##### 2017:

$$\begin{aligned} \text{Total pairs of shoes sold} &= 31,550 \times \frac{120}{100} \\ &= 37,860 \end{aligned}$$

$$\begin{aligned} \text{Pairs of shoes sold by Nike} &= 9,200 \times \frac{120}{100} \\ &= 11,040 \end{aligned}$$

$$\text{Pairs of shoes sold by Puma} = 11,040 - 2,040$$

$$= 9,000$$

Let pairs of shoes sold by ADIDAS and Puma be '23x' and '30x' respectively.

$$\text{So, } 30x = 9,000$$

$$x = 300$$

Hence, pairs of shoes sold by ADIDAS = 23x

$$= 6,900$$

Total pairs of shoes sold by Reebok and Woodland = 37,860 – 11,040 – 9,000 – 6,900

$$= 10,920$$

Let pairs of shoes sold by Reebok and Woodland be (y+2236) and 'y' respectively.

$$\text{So, } y + y + 2236 = 10920$$

$$2y = 8,684$$

$$y = 4,342$$

Hence, pairs of shoes sold by Reebok = y + 2236

$$= 6,578$$



**2018:**

$$\text{Pairs of shoes sold by Puma} = 9,000 \times \frac{130}{100}$$

$$= 11,700$$

$$\text{Pairs of shoes sold by Woodland} = 11,700 \times \frac{60}{100}$$

$$= 7,020$$

Let total pairs of shoes sold by Nike and ADIDAS be '3x' and '2x' respectively.

ATQ,

$$5x - 16,900 = 3,100$$

$$x = 4,000$$

Hence, pairs of shoes sold by Nike = 3x

$$= 12,000$$

Total pairs of shoes sold by ADIDAS = 2x

$$= 8,000$$

Pairs of shoes sold by Reebok = 16,900 – 8,000

$$= 8,900$$

Company	2016	2017	2018
Reebok	5,060	6,578	8,900
Nike	9,200	11,040	12,000

ADIDAS	5,520	6,900	8,000
Puma	7,722	9,000	11,700
Woodland	4,048	4,342	7,020

S1. Ans.(d)

Sol.

$$\begin{aligned} \text{Required ratio} &= \frac{9200}{8000} = \frac{23}{20} \\ &= 23 : 20 \end{aligned}$$

S2. Ans.(b)

Sol.

Average number of pairs of shoes sold by Nike, Puma and Woodland in 2018

$$= \frac{12,000 + 11,700 + 7,020}{3}$$

$$= 10,240$$

$$\text{Required \%} = \frac{10,240}{8,000} \times 100$$

$$= 128\%$$

S3. Ans.(a)

Sol.

$$\text{Required \%} = \frac{(9,000 + 6,900) - 8,900}{8,900} \times 100$$

$$= \frac{7,000}{8,900} \times 100$$

$$= \frac{7,000}{89} \%$$

$$= 78 \frac{58}{89} \%$$

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S4. Ans.(e)

Sol.

$$\text{Average number of pairs of shoes sold by puma in 2016, 2017 \& 2018} = \frac{7,722 + 9,000 + 11,700}{3}$$

$$= 9,474$$

$$\text{Required difference} = 9,474 - 6,578$$

$$= 2,896$$

S5. Ans.(b)

Sol.

$$\begin{aligned} \text{Required difference} &= \left( \frac{8,900+12,000+8,000+11,700+7,020}{5} \right) - \left( \frac{6,578+11,040+6,900+9,000+4,342}{5} \right) \\ &= \left( \frac{47,620}{5} \right) - \left( \frac{37,860}{5} \right) \\ &= 9,524 - 7,572 \\ &= 1,952 \end{aligned}$$

**S (6-10)**

**Shop A:**

**Product X**

$$\text{Number of units sold} = \frac{1800}{24} = 75$$

Let the number of units produced that remains unsold be 'a'

ATQ

$$\begin{aligned} 180 &= 1800 - (75 + a) \times 18 \\ a &= 15 \end{aligned}$$

$$\begin{aligned} \text{Total number of units produced} &= 75 + a \\ &= 90 \end{aligned}$$

$$\begin{aligned} \text{Cost incurred on production of all units} &= (1800-180) \\ &= \text{Rs } 1620 \end{aligned}$$

$$\text{Profit}\% = \frac{180}{1620} \times 100 = 11\frac{1}{9}\%$$

**Product Y**

$$\text{Per unit cost price of product Y} = 18 \times \frac{11}{9} = \text{Rs } 22$$

Let the total number of units produced of product Y be 'b'

$$\text{ATQ } \frac{250}{11} = \frac{240}{\frac{3}{5}b \times 22} \times 100$$

$$b = 80$$

$$\text{Number of units sold} = 80 \times \frac{3}{5} = 48$$

$$\text{Total cost incurred on production of all the units} = 80 \times 22 = \text{Rs } 1760$$

$$\text{Profit per unit} = \frac{240}{48} = \text{Rs } 5$$

$$\text{Per unit selling price of product Y} = \text{Rs } 27$$

$$\text{Revenue on selling all the units produced} = 80 \times 27 = \text{Rs } 2160$$

$$\text{Total profits on selling all the units} = 80 \times 5 = \text{Rs } 400$$

**Shop B:**

**Product X**

$$\text{Number of units produced} = 90 \times 0.8 = 72$$

$$\text{Profit}\% = 180\% = 125\% \text{ more than that of Y}$$

$$\text{Given, profit for product Y was} = \text{Rs } 480$$

$$\text{Then, Profit} = \frac{225}{100} \times 480 = \text{Rs } 1080$$

$$\text{Total cost incurred in producing all the units} = \frac{1080}{180} \times 100 = \text{Rs } 600$$

$$\text{Revenue} = 1080 + 600 = \text{Rs } 1680$$

$$\text{Selling price per unit} = \frac{1680}{72} = \text{Rs } \frac{70}{3}$$

**Product Y**

$$\text{Revenue} = 64 \times 45 = \text{Rs } 2880$$

$$\text{Total cost incurred on production of all the units} = 2880 - 480 = \text{Rs } 2400$$

$$\text{Profit}\% = \frac{480}{2400} \times 100 = 20\%$$

$$\text{Cost price per unit} = \frac{2400}{64} = \text{Rs } 37.5$$

S6. Ans.(c)

Sol.

$$\text{Required \%} = \frac{15}{48} \times 100 = \frac{125}{4} = 31\frac{1}{4}\%$$

S7. Ans.(e)

Sol.

$$\text{Required \%} = \frac{2160 - 600}{600} \times 100 = 260\%$$

S8. Ans.(a)

Sol.

$$\text{Required ratio} = \frac{70}{3} : \frac{2400}{64} = 28 : 45$$

S9. Ans.(d)

Sol.

$$\text{Required difference} = 1620 + 1760 - (600 + 2400) = \text{Rs } 380$$

S10. Ans.(b)

Sol.

$$\text{Per unit cost price of product X produced by shop A} = 18 \times 0.75 = \text{Rs } 13.5$$

$$\text{Total cost incurred} = (13.5 \times 90 + 1760) = \text{Rs } 2975$$

$$\text{Total revenue generated} = 60 \times 24 + 60 \times 27 = \text{Rs } 3060$$

$$\text{Profit} = \text{Rs } 85$$

**S (11 - 15)**

Let total number of employees in Airtel at night shift = a

So, total number of employees in Airtel at day shift = 3a

$$\text{total number of employees in BSNL at night shift} = \frac{40}{100} \times 3a = 1.2a$$

$$\text{so, total number of employees in BSNL at day shift} = \frac{5}{2} \times 1.2a = 3a$$

ATQ,

Average of total employee in Airtel at night shift and that of in BSNL at days shift

$$\frac{a + 3a}{2} = 380$$

$$a = 190$$

let number of employees at night shift in Reliance Jio = b

so, Number of employees in Reliance Jio at Days shift = 1.5b

and Number of employees in Vodafone at night shift =  $0.6b$

ATQ,

Total number of employees in Reliance Jio = 2500

$$b + 1.5b = 2500$$

$$b = 1000$$

and number of employees at day shift in Vodafone = 1000

Telecommunication operator	Day shift	Night shift
Airtel	570	190
Reliance Jio	1500	1000
Vodafone	1000	600
BSNL	570	228

S11. Ans(d)

Sol.

Total number of male employees in Reliance Jio at night shift =  $1000 \times \frac{3}{5} = 600$

$$\begin{aligned} \text{Required percentage} &= \frac{600}{1000} \times 100 \\ &= 60\% \end{aligned}$$

S12. Ans(e)

Sol.

$$\text{Required ratio} = \frac{570}{228} = 5 : 2$$

S13. Ans(b)

Sol.

$$\begin{aligned} \text{Required percentage} &= \frac{1000 - 570}{1000} \times 100 \\ &= \frac{430}{1000} \times 100 \\ &= 43\% \end{aligned}$$

S14. Ans(c)

Sol.

$$\begin{aligned} \text{Required average} &= \frac{1500 + 1000 + 1000 + 600}{4} \\ &= \frac{4100}{4} \\ &= 1025 \end{aligned}$$

S15. Ans(a)

Sol.

$$\text{Required Difference} = 1500 - 228$$

=1272

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