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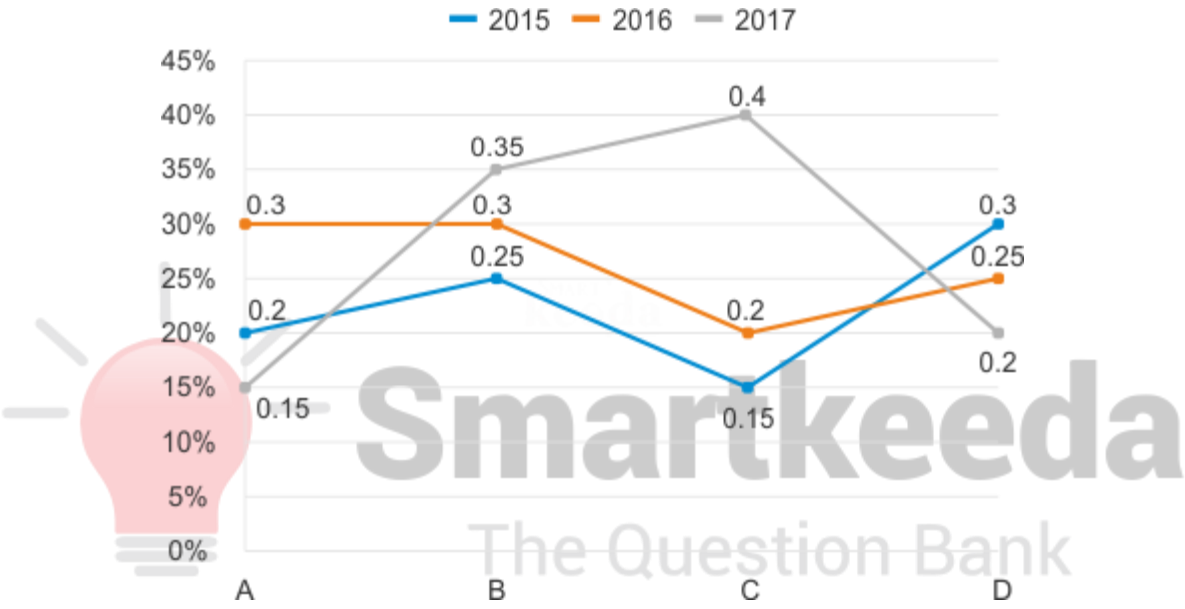
DI Line Chart Questions for SBI PO Mains, IBPS PO Mains and RBI Grade B Exams.

DI Line Chart No 37

Directions : Study the following line chart carefully and answer the questions given beside.

A battery is sold by four different shops A, B, C and D. The chart given below shows the percentage of discount offered by each shop for in three different years 2015, 2016 and 2017. Marked price, as well as the cost price of the battery, is the same for each shop in a particular year unless mentioned otherwise.



1. Marked price of battery increases by 20% every year with respect to previous year. Average of marked price of battery for the year 2014, 2015 and 2016 is Rs. 1820. Profit percent earned by shop D on selling a battery in 2017 was 38.24%. Find the difference between profit percentage of shop B and C in 2015 if cost price of battery increases by Rs. 150 with respect to previous year.

A. 12% B. 10% C. 15% D. 20% E. 16%

2. Profit earned by shop C each year was same. Increase in marked price of battery from 2016 to 2017 was twice the increase in marked price of battery from 2015 to 2016. Both selling price and cost price for shop C increased by Rs. 100 from 2016 to 2017. Battery is marked up Rs. 700 and Rs. 1600 above the cost price in 2016 and 2017 respectively. What is the profit earned by shop A in 2015?

A. Rs. 120 B. Rs. 100 C. Rs. 140 D. Rs. 50 E. Rs. 200

3. **Ratio of cost price of battery in 2015 : 2016 : 2017 was 2 : 4 : 5. Ratio of selling price at shop D in 2015 :2 016:2017 was 7 : 12 : 16. Average of profit earned by A and C in 2016 was Rs. 400 and total profit earned by B in three years is Rs. 970. Find the difference of discount offered by C in 2015 and 2017.**

A. Rs. 650 B. Rs. 450 C. Rs. 750 D. Rs. 700 E. Rs. 550

4. **Marked price in 2017 was Rs. 8000 and marked price in 2016 was same as the selling price at shop A in 2017. Cost price in 2016 was same as the selling price at shop D in 2015. Profit percent earned by A in 2016 was 36%. If cost price in 2015 was Rs. 2295 then find the ratio of profit earned by shop B in 2015 to shop C in 2016.**

A. 5 : 8 B. 1 : 3 C. 2 : 3 D. 3 : 4 E. 7 : 9

5. **Selling price at shop B in 2015 and 2016 was Rs. 2400 and Rs. 2800 respectively and selling price at shop D in 2017 was Rs. 3840. Ratio of profit earned by A to C in 2016 was 2:3. If cost prices were in an increasing AP with passing years with a common difference of Rs. 400, find the difference between profit earned by A in 2015 and in 2017.**

A. Rs. 840 B. Rs. 800 C. Rs. 780 D. Rs. 720 E. Rs. 700

Correct Answers:

1	2	3	4	5
C	B	A	D	D

Explanations :

1. Let marked price of battery in 2014 was Rs. x

Marked price of battery in 2015 was 120% of x = Rs. 1.2x

Marked price of battery in 2016 was 120% of 1.2x = Rs. 1.44x

So $\frac{x + 1.2x + 1.44x}{3} = 1820$

3.64x = 5460

x = 1500

Marked price of battery in 2017 = 120% of 1.44x = 1.728x = Rs. 2592

Selling price of battery at shop D in 2017 = 80% of 2592 = Rs. 2073.6

Let cost price of battery in 2017 was Rs. y

So y + 38.24% of y = 2073.6

$y = \frac{2073.6}{138.24} \times 100 = \text{Rs. } 1500$

Cost price of battery in 2015 = 1500 – 150 – 150 = Rs. 1200

Marked price of battery in 2015 = 1.2x = Rs. 1800

For shop B in 2015:

Selling price = 75% of 1800 = Rs. 1350

$\text{Profit \%} = \frac{1350 - 1200}{1200} \times 100 = 12.5\%$

For shop C in 2015:

Selling price = 85% of 1800 = Rs. 1530

$\text{Profit \%} = \frac{1530 - 1200}{1200} \times 100 = 27.5\%$

Difference in profit percentage = 27.5 – 12.5 = 15%
Hence, option C is correct.

2. Let marked price of battery in 2015 was Rs. x
Increase in marked price of battery in 2016 from 2015 was Rs. y
Marked price of battery in 2016 = Rs. (x + y)
According to question:
Increase in marked price of battery in 2017 from 2016 was Rs. 2y
Marked price of battery in 2017 = Rs. (x + y + 2y) = Rs. (x + 3y)
Let selling price of battery in 2016 was Rs. b
Selling price of battery in 2017 was Rs. (b + 100)
Selling price of battery in 2016 = 80% of (x + y)
Selling price of battery in 2017 = 60% of (x + 3y)
So 80% of (x + y) = b -------(1)
And 60% of (x + 3y) = b + 100
60% of (x + 3y) – 100 = b -----(2)
From (1) and (2)
0.8x + 0.8y = 0.6x + 1.8y – 100
y – 0.2x = 100
Let cost price of battery in 2016 was Rs. a
Cost price of battery in 2017 was Rs. (a + 100)
Marked cost price of battery in 2016 = Rs. (a + 700)
Marked cost price of battery in 2017 = Rs. (a + 100 + 1600) = Rs. (a + 1700)
So x + y = a + 700
x + y – 700 = a -----(3)
And x + 3y = a + 1700
x + 3y – 1700 = a ----(4)
From (3) and (4)
x + y – 700 = x + 3y – 1700
2y = 1000
y = 500

$$x = \frac{y - 100}{0.2} = 2000$$

a = x + y – 700 = 1800
b = 80% of (x + y) = 2000
Profit earned by shop C in 2017 = 2000 – 1800 = Rs. 200
marked price of battery in 2015 = Rs. 2000
Selling price of battery at shop C in 2015 = 85% of 2000 = Rs. 1700
Selling price of battery in 2015 = 1700 – 200 = Rs. 1500
Selling price of battery at shop A in 2015 = 80% of 2000 = Rs. 1600
Profit earned by shop A in 2015 = 1600 – 1500 = Rs. 100

Hence, option B is correct.

3. Let cost price of battery in 2015, 2016 and 2017 was Rs. 2z, Rs. 4z and Rs. 5z respectively, and

Selling price of battery at shop D in 2015, 2016 and 2017 was Rs. 7y, Rs. 12y and Rs. 16y respectively.

70% of Marked price of battery in 2015 = Rs. 7y

Marked price of battery in 2015 = Rs. 10y

Similarly,

Marked price of battery in 2016 = Rs. 16y
Marked price of battery in 2017 = Rs. 20y

Selling price of battery at shop A in 2016 = 70% of 16y = 11.2y
Selling price of battery at shop C in 2016 = 80% of 16y = 12.8y

Profit of shop A in 2016 = 11.2y – 4z
Profit of shop C in 2016 = 12.8y – 4z

So 11.2y – 4z + 12.8y – 4z = 400 × 2

24y – 8z = 800
3y – z = 100 ----------(1)

Selling price of battery at shop B in 2015 = 75% of 10y = 7.5y
Selling price of battery at shop B in 2016 = 70% of 16y = 11.2y
Selling price of battery at shop B in 2017 = 65% of 20y = 13y

So 7.5y + 11.2y + 13y – 2z – 4z – 5z = 970

31.7y – 11z = 970
31.7y – 11 x (3y – 100) = 970 [from (1)]
31.7y – 33y = 970 – 1100
1.3y = 130
y = 100

z = 200

Discount offered by C in 2015 = 15% of 10y = Rs. 150
Discount offered by C in 2017 = 40% of 20y = Rs. 800
Difference = 800 – 150 = Rs. 650
Hence, option A is correct.

4. Marked price in 2016 = 85% of 8000 = Rs. 6800
Selling price at shop A in 2016 = 70% of 6800 = Rs. 4760
Let the cost price in 2016 was Rs. a
So a + 36% of a = 4760
$a = \frac{4760}{1.36}$ = Rs. 3500

Selling price at shop D in 2015 = Rs. 3500
70% of Marked price in 2015 = 3500
Marked price in 2015 = $\frac{3500}{0.7}$ = Rs. 5000
Selling price at shop B in 2015 = 75% of 5000 = Rs. 3750
Profit earned by shop B in 2015 = 3750 – 2295 = Rs. 1455
Selling price at shop C in 2016 = 80% of 6800 = Rs. 5440
Profit earned by shop C in 2016 = 5400 – 3500 = Rs. 1940
Ratio = 1455 : 1940 = 3 : 4
Hence, option D is correct.

5. 75% of Marked price in 2015 = 2400
Marked price in 2015 = $\frac{2400}{0.75}$ = Rs. 3200

70% of Marked price in 2016 = 2800
Marked price in 2016 = $\frac{2800}{0.7}$ = Rs. 4000

80% of Marked price in 2017 = 3840
Marked price in 2017 = $\frac{3840}{0.8}$ = Rs. 4800
Selling price at shop A in 2016 = 70% of 4000 = Rs. 2800
Selling price at shop C in 2016 = 80% of 4000 = Rs. 3200
Let profit earned by A and C in 2016 was 2x and 3x respectively
Let cost price in 2016 was Rs. y
So 2800 – 2x = y ------(1)
And 3200 – 3x = y -------(2)
From (1) and (2)
2800 – 2x = 3200 – 3x
x = 400
y = 2800 – 800 = 2000
For A in 2015:
Cost price = Rs. 1600
Selling price = 80% of 3200 = Rs. 2560
Profit earned = 2560 – 1600 = Rs. 960
For A in 2017:
Cost price = Rs. 2400
Selling price = 85% of 4800 = Rs. 4080
Profit earned = 4080 – 2400 = Rs. 1680
Difference = 1680 – 960 = Rs. 720
Hence, option D is correct.