

 TARGET CAT 2025 



MBA FASTRACK

QUANT : Arithmetic

Percentage

Lecture No.- 02

By- VINIT KAKRIYA SIR



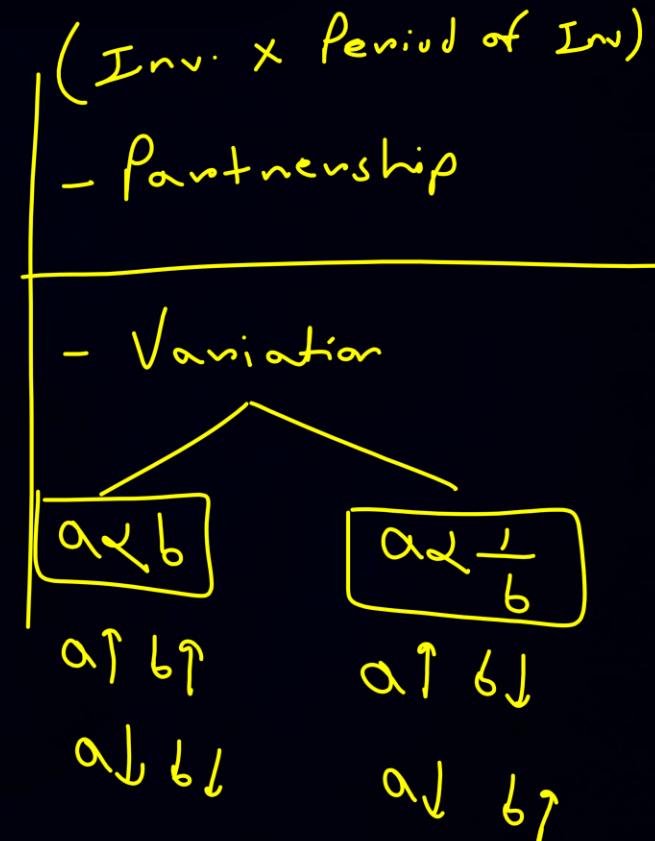
Recap of Previous Lecture :

Same {

$$\begin{aligned} & \boxed{a:b:c} \\ & = 2a:2b:2c \\ & = \frac{a}{3} : \frac{b}{3} : \frac{c}{3} \end{aligned}$$

$$\frac{a}{b} \times \frac{c}{d}$$

$$(a \times d) = (b \times c)$$



TOPICS *to be covered*



- 1) Meaning & Basic Concept of "Percentage"
- 2) Applications of Percentage
- 3) Problems for Practice & CAT PYQs

QUESTION- 1

#Q. Rajesh and Vimal own 20 hectares and 30 hectares of agricultural land, respectively, which are entirely covered by wheat and mustard crops. The cultivation area of wheat and mustard in the land owned by Vimal are in the ratio of 5 : 3. If the total cultivation area of wheat and mustard are in the ratio 11 : 9, then the ratio of cultivation area of wheat and mustard in the land owned by Rajesh is

- A** 1:1
- B** 7:9
- C** 4:3
- D** 3:7

$$R = 20$$

$$V = 30$$

$$\frac{W}{M} = \frac{x}{(20-x)} = \frac{8.75}{11.25} = \frac{7}{9}$$

$$V = 30$$

$$\frac{W}{M} = \frac{5}{3} = 8$$

$$W = \frac{5}{8} \times 30 = 18.75$$

$$M = 30 - 18.75 = 11.25$$

[CAT 2024 : Slot 3]

$$\frac{(W)_T}{(M)_T} = \frac{11}{9}$$

$$\frac{x+18.75}{20-x+11.25} = \frac{11}{9}$$

$$\frac{(x+18.75)}{(31.25-x)} = \frac{11}{9}$$

$$175 = 20x$$

$$8.75 = x$$

$$(343.75 - 11x) = (9x + 168.75)$$



Percentage

Meaning & Basic Concept of Percentage:

Per - Cent

A

$$T = 5000$$

$$\text{Male} = 2000$$

$$(Male)_A \% = \frac{2000}{5000} \times 100 \\ = \frac{200}{500} = 40\%$$

B

$$T = 3000$$

$$M = 1500$$

$$= 50\%$$

$$\% = \frac{\text{Favourable Event}}{\text{Total}} \times 100$$

Meaning & Basic Concept of Percentage:

$$N = 720$$

$$100\% \rightarrow \underline{\underline{720}}$$

$$50\% \rightarrow 360$$

$$10\% \rightarrow 72$$

$$5\% \rightarrow 36$$

$$1\% \rightarrow 7.2$$

$$0.5\% \rightarrow 3.6$$

720

$$20\% \text{ of } 245 = \frac{20}{100} \cdot 245 = 49$$

$$\begin{aligned} & 22\% \text{ of } 245 \\ &= \frac{22}{100} \times 245 \end{aligned}$$

$$\begin{aligned} & 10\% \rightarrow 24.5 \\ & 1\% \rightarrow 2.45 \end{aligned}$$

$$\begin{aligned} & 20\% + 2\% \\ &= 49 + 4.9 \\ &= 53.9 \end{aligned}$$

$$\begin{aligned} & 61\% \text{ of } 388 \\ &= 50\% + 10\% + 1\% \\ &= 194 + 38.8 + 3.88 \\ &= 236.68 \end{aligned}$$



Application of Percentage :

(1) Finding 'Percentage' from 'Actual Data'

Example: A student appeared in an exam with maximum marks 700. He got 165 marks and failed by 45 marks. Find Passing Percentage.

$$\boxed{\text{Total} = 700}$$
$$\text{Passing Marks} = 165 + 45 = \boxed{210}$$

$$\% = \frac{\text{Passing Marks}}{\text{Total}} \times 100$$
$$= \frac{210}{700} \times 100$$
$$= 30\%$$

Application of Percentage :

(2) Finding 'Actual Data' from 'Percentage'

Example: If 75% of the students in a school are boys and the number of girls is 420, the number of boys is

$$\begin{array}{c} \text{Total} = 100\% \\ \swarrow \quad \searrow \\ \boxed{\text{Boys} = 75\%} \quad \boxed{\text{Girls} = 25\%} \end{array}$$

$$\begin{aligned} & 25\% \text{ of Total} = \text{Girls} \\ & \frac{25}{100} \cdot (\text{Total}) = 420 \\ & \text{Total} = 1680 \\ & \therefore \text{Boys} = 75\% \text{ of Total} \end{aligned}$$

$$= \frac{75}{100} \times 1680 = \boxed{1260}$$

$$\begin{aligned} 25\% &\rightarrow 420 \\ 75\% &\rightarrow \boxed{B = 1260} \end{aligned}$$

$$\begin{array}{r} 25\% \xrightarrow{\quad} 420 \\ 75\% \xrightarrow{\quad} B \end{array}$$

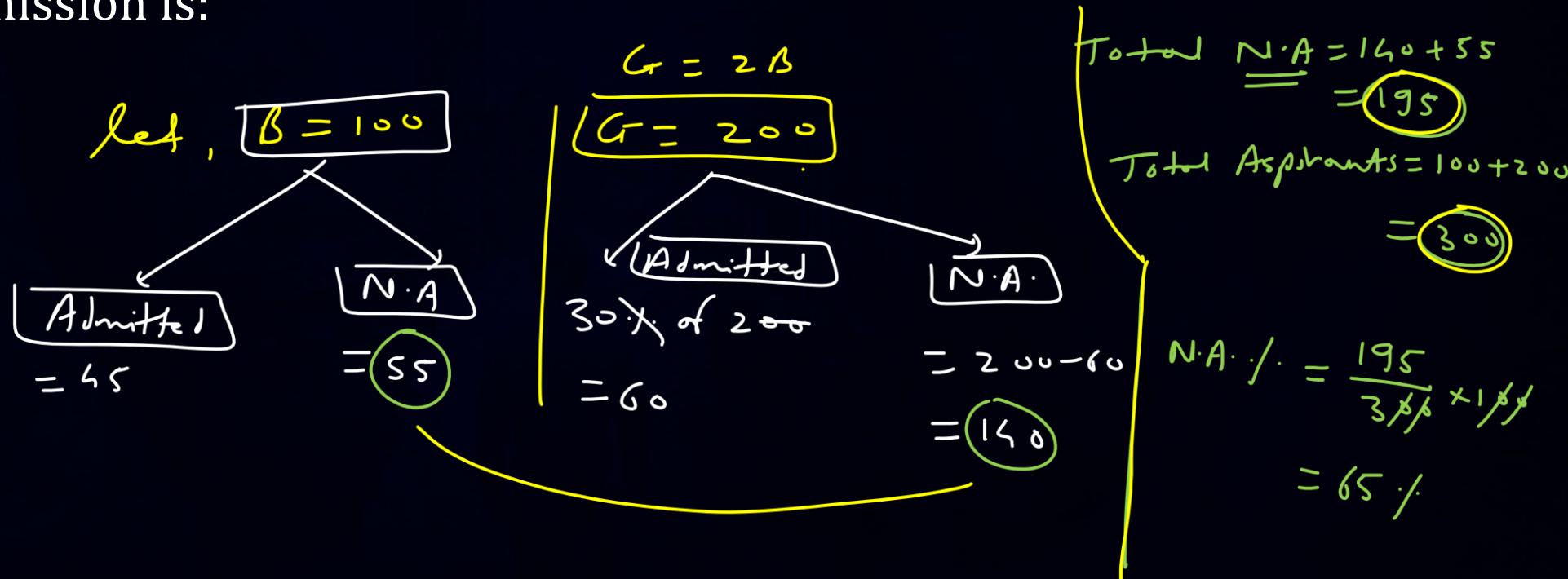
$$\begin{aligned} 25\% &= \frac{3}{4} \\ B &= \frac{3}{4} \times 420 \\ B &= 1260 \end{aligned}$$

QUESTION- 02



#Q. The number of girls appearing for an admission test is twice the number of boys. If 30% of the girls and 45% of the boys get admission, the percentage of candidates who do not get admission is:

- A 35
- B 50
- C 60
- D 65 ✓



QUESTION- 03

#Q. A man, to reach his office, has to spend 70% of his travelling time in a train, 15% in a bus and 10% in walking. If he spends 5 minutes waiting at the bus stop or the railway station, how many minutes does he spend travelling by bus and train?

- A 1 hr 10 min

- B 1 hr 25 min = 85 min

- C 2 hr 5 min

- D 2 hr 15 min

$$\begin{aligned}
 & 85 \text{ min} \leftarrow \left\{ \begin{array}{l} T = 70\% \\ B = 15\% \\ W = 10\% \end{array} \right\} 95 \text{ min} \\
 & WT = 5 \text{ min}
 \end{aligned}$$

$$\begin{aligned}
 & 5 \times \cancel{x} \rightarrow 5 \text{ min} \\
 & 85 \times \cancel{x} \rightarrow x \\
 & 5x = 85 \\
 & x = 85 \text{ min}
 \end{aligned}$$

Application of Percentage :

Applying Percentage

A is 20% of B

$$A = \frac{20}{100} \cdot B$$

e.g. A is 20% of 750

$$A = \frac{20}{100} \cdot 750 \\ = 150$$

A is 20% more than B

$$20\% \uparrow$$

A = 120% of B

$$A = \frac{120}{100} \cdot B$$

e.g. A is 20% more than 750

$$A = \frac{120}{100} \times 750 = 900$$

A is 20% less than B

$$20\% \downarrow$$

$$A = 80\% \text{ of } B$$

$$A = \frac{80}{100} \cdot B$$



Application of Percentage :

(3) Applying Percent Increase or Percent Decrease :

\downarrow \downarrow \downarrow

Example : A's salary is Rs. 100. B's salary is 40% less than that of A & C's salary is 50% more than the sum of salary of A & B, then find the salary of C ?

$$\begin{aligned} A &= 100 \\ B &= 60\% \text{ of } A \\ &= \frac{60}{100} \times 100 \\ B &= 60 \end{aligned}$$

$$\begin{aligned} C &= 150\% \text{ of } (A+B) \\ &= \frac{150}{100} \cdot (100+60) \\ &= \frac{3}{2} \times 160 \\ &= 240 \end{aligned}$$

Application of Percentage :

(4) Finding Percent Increase or Percent Decrease :

Example : A's salary is Rs. 100. B's salary is 40% less than that of A & C's salary is 50% more than the sum of salary of A & B, then by [what percent is C's salary more than B]?

$$\boxed{A = 100}$$

$B = 60$ % of A

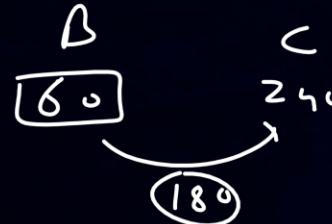
$$\boxed{B = 60}$$

$$C = \frac{180}{2} (A+B)$$

$$= \frac{3}{2} (100+60)$$

$$\boxed{C = 240}$$

C's salary more than B

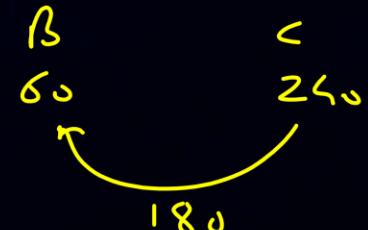


$$\therefore \text{increase} = \frac{180}{B} \times 100$$

$$= \frac{3}{60} \times 100$$

$$= 300\%$$

B's salary less than C



$$\therefore \text{decrease} = \frac{180}{C} \times 100$$

$$= \left(\frac{180}{240} \times 100 \right) \times \frac{25}{100} = 75\%$$

QUESTION- 04

#Q. Vicky's salary is 75% more than Ashu's. [Vicky got a raise of 40% on his salary while Ashu got a raise of 25% on his salary. By what percent is Vicky's salary more than Ashu's?

A 96 %

B 51.1 %

C 90 %

D 52.1 %

Let, $\boxed{A = 100}$

$$V = \frac{175}{100} \cdot A$$

$$V = \frac{175}{100} \times 100$$

$$\boxed{V = 175}$$

New

$$A = \frac{125}{100} \times 100 = \boxed{125}$$

$$V = \frac{175}{100} \times 175 = \boxed{245}$$

$$\text{diff} = 245 - 125$$

$$= \boxed{120}$$

∴ increase is than (A)

$$= \frac{120}{125} \times 100 = 96$$



Application of Percentage :

(5) Successive Percentage

Example : The population of a village is 10000 and it increases by 20% for first year, again increases by 30 percent for second year and then decreases by 20% for third year, then the population after 3 years will be

$$\text{I} \rightarrow \text{II} \rightarrow \text{III}$$
$$\begin{aligned} & 10000 \times \frac{120}{100} \times \frac{130}{100} \times \frac{80}{100} = \text{New} \\ & 12 \times 13 \times 80 = \text{New} \\ & \frac{12 \times 1040}{12480} = \text{New} \end{aligned}$$

QUESTION- 05

#Q. The population of the village of Gavas is 10000 at this moment. It increases by 10% in the first year. However, in the second year, due to immigration, the population drops by 5%. Find the population at the end of the third year if in the third year the population increases by 20%

A 12340

B ~~12540~~

C 12750

D 12740

$$10000 \times \frac{110}{100} \times \frac{95}{100} \times \frac{120}{100} = \text{New}$$

$$11 \times 95 \times 12 = \text{New}$$

$$\boxed{12540 = \text{New}}$$

(I) 10 · 1 · ↑

(II) 5 · 1 · ↓

(III) 20 · 1 · ↑



CAT PYQs

QUESTION- 06

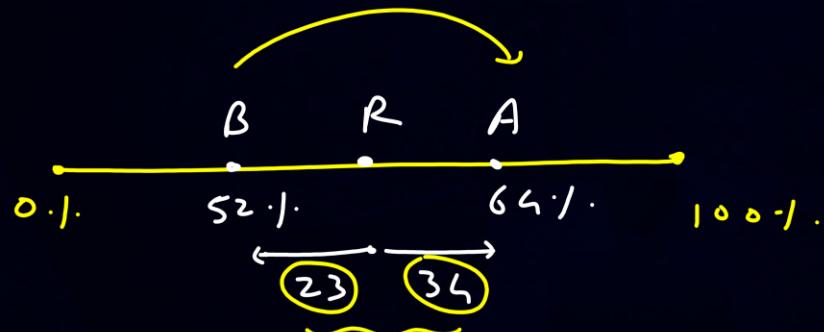
#Q. In the final examination, Bishnu scored 52% and Asha scored 64%. The marks obtained by Bishnu is 23 less, and that by Asha is 34 more than the marks obtained by Ramesh. The marks obtained by Geeta, who scored 84% is [CAT 2020 : Slot 3]

A 399

B 439

C 357

D 417



$$12\% \times 57 = 84\% \rightarrow n = 399$$

$$n = 84 \times 57 \\ n = 399$$

QUESTION- 07

15
169 84/



#Q. In September, the incomes of Kamal, Amal and Vimal are in the ratio 8 : 6 : 5. They rent a house together, and Kamal pays 15%, Amal pays 12% and Vimal pays 18% of their respective incomes to cover the total house rent in that month. In October, the house rent remains unchanged while their incomes increase by 10%, 12% and 15% respectively. In October, the percentage of their total income that will be paid as house rent, is nearest to

- A 14.84
- B 12.75
- C 13.26
- D 15.18

<u>Sept</u>	K : A : V = 8 : 6 : 5
let, K = 800	15% →
A = 600	12% →
V = 500	18% →
	Rent
	120
	72
	90
	282

[CAT 2024 : Slot 1]

$$\therefore \frac{\text{Rent}}{\text{Total Income}} = \frac{\text{Rent}}{\text{Total Income}} \times 100$$

$$= \frac{282}{2127} \times 100 \approx 13.26\%$$

$$K = \frac{110}{148} \times 888 = 880$$

$$A = \frac{112}{148} \times 644 = 672$$

$$V = \frac{115}{148} \times 566 = 575$$

$$\text{Total Income} = 2127$$

QUESTION- 08

#Q. [The income of Amala is 20% more than that of Bimala and 20% less than that of Kamala.] If Kamala's income goes down by 4% and Bimala's goes up by 10%, then the percentage by which Kamala's income would exceed Bimala's is nearest to

Let, $B = 100$

$$A = \frac{120}{100} B$$

$$A = \frac{120}{100} \times 100$$

$$\boxed{A = 120}$$

$$A = \frac{80}{100} K$$

$$120 = \frac{80}{100} K$$

$$\frac{500}{4} = K$$

$$\boxed{150 = K}$$

[CAT 2019 : Slot 1]

$$K = \frac{96}{100} \times \frac{3}{25} = 144$$

$$B = \frac{110}{100} \times 100 = 110$$

$$\begin{aligned} \text{diff} \\ &= 144 - 110 \\ &= 34 \end{aligned}$$

$\therefore K$'s income exceed than B

$$= \frac{\text{diff}}{B} \times 100 = \frac{34}{110} \times 100 = \frac{340}{11}$$

$$= 30.9 \approx 31\%$$

A 28

B 29

C 31

D 32

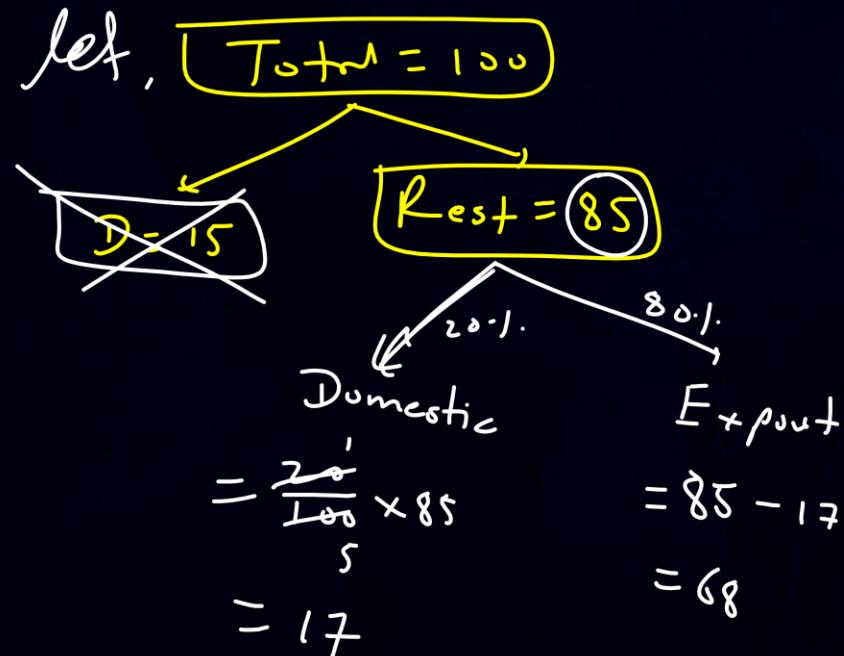
QUESTION- 09



#Q. Out of the shirts produced in a factory, 15% are defective, while 20% of the rest are sold in the domestic market. If the remaining 8840 shirts are left for export, then the number of shirts produced in the factory is

[CAT 2017 : Slot 2]

- A 13600
- B 13000
- C 13400
- D 14000



$$68 \rightarrow 8840$$

$$\cancel{100} \rightarrow \cancel{\text{ }}$$

$$68k = 8840$$

$$k = \frac{8840}{68}$$

$$= 130$$

QUESTION- 10

$$A = 72, D = ?.$$

#Q. In an examination, the score of A was 10% less than that of B, the score of B was 25% more than that of C, and the score of C was 20% less than that of D. If A scored 72, then the score of D was [TITA]

[CAT 2019 : Slot 2]

$$A = \frac{9}{10} B$$

$$72 = \frac{9}{10} \times B$$

$$\frac{720}{9} = B$$

$$B = 80$$

$$B = \frac{125}{100} C$$

$$80 = \frac{5}{4} C$$

$$\frac{320}{5} = C$$

$$C = 64$$

$$C = \frac{80}{100} D$$

$$64 = \frac{4}{5} D$$

$$\frac{320}{4} = D$$

$$D = 80$$

OR

$$D \times \frac{8}{10} \times \frac{125}{100} \times \frac{9}{10} = A$$

$$D \times \frac{9}{10} = 72$$

$$D = \frac{720}{9} = 80$$

QUESTION- 11

Average = Mean

$$\frac{a+b}{2} \quad \left| \begin{array}{l} a, b \\ a+b \end{array} \right. \quad \frac{a+b+c}{3} \quad \left| \begin{array}{l} a, b, c \\ a+b+c \end{array} \right.$$



#Q. The salaries of three friends Sita, Gita and Mita are initially in the ratio $5 : 6 : 7$, respectively. In the first year, they get salary hikes of 20% , 25% and 20% respectively. In the second year, Sita and Mita get salary hikes of 40% and 25% , respectively, and the salary of Gita becomes equal to the mean salary of the three friends. The salary hike of Gita in the second year is

- A 25%
- B 30%
- C 28%
- D 26%

Original

$$S = 500$$

$$G = 600$$

$$M = 700$$

$$G = \frac{5}{120} \times 500 = 600$$

$$G = \frac{125}{100} \times 600 = 750$$

$$M = \frac{120}{100} \times 700 = 840$$

$$3x = 840 + x + 1050$$

$$2x = 1890$$

$$x = 945$$

Ist yr

IInd yr

[CAT 2023 : Slot 1]

$$S = \frac{140}{100} \times 600 = 840$$

$$G = x \rightarrow 945$$

$$M = \frac{125}{100} \times 840 = 1050$$



$$\text{Diff} = 195$$

(hike)

∴ increase

$$= \frac{195}{750} \times 100$$

$$= 260 \times \frac{10}{100} = 26\%$$

A blue target icon with three concentric circles and a yellow arrow pointing to the center.

2 Mins Summary

- 1) Meaning & Basic Concept of "Percentage"
- 2) Applications of Percentage
- 3) Problems for Practice & CAT PYQs



Thank
You