

# CDS-AFCAT 1 2025

SSBCrack  
EXAMS

LIVE

# MATHS

# PROFIT & LOSS

CLASS 1



NAVJYOTI SIR



## 26 Sep 2024 Live Classes Schedule

8:00AM	26 SEP 2024 DAILY CURRENT AFFAIRS	RUBY MA'AM
9:00AM	26 SEP 2024 DAILY DEFENCE UPDATES	DIVYANSHU SIR

### NDA 1 2025 LIVE CLASSES

11:30AM	GK - CLIMATOLOGY	RUBY MA'AM
1:00PM	BIOLOGY - HUMAN BODY - CLASS 3	SHIVANGI MA'AM
4:00PM	MATHS - INEQUALITIES - CLASS 1	NAVJYOTI SIR
5:30PM	ENGLISH - PARTS OF SPEECH - CLASS 2	ANURADHA MA'AM

### CDS 1 2025 LIVE CLASSES

11:30AM	GK - CLIMATOLOGY	RUBY MA'AM
1:00PM	BIOLOGY - HUMAN BODY - CLASS 3	SHIVANGI MA'AM
2:30PM	MATHS - INEQUALITIES - CLASS 1	NAVJYOTI SIR
5:30PM	ENGLISH - PARTS OF SPEECH - CLASS 2	ANURADHA MA'AM

### AFCAT 1 2025 LIVE CLASSES

10:00AM	REASONING - VENN DIAGRAMS	RUBY MA'AM
2:30PM	MATHS - PROFIT & LOSS - CLASS 1	NAVJYOTI SIR
4:00PM	STATIC GK - KNOW YOUR ARMED FORCES	DIVYANSHU SIR
5:30PM	ENGLISH - PARTS OF SPEECH - CLASS 2	ANURADHA MA'AM



# COST PRICE AND SELLING PRICE

CP — price to buy some item. ↗ (money going out of pocket)

SP — " " sell " " ↗ (money comes in)

# PROFIT

$$\underline{SP} > CP \Rightarrow \text{Profit}$$

$$\underline{\text{Profit}} = \underline{SP - CP}$$

$$\underline{\text{profit \%}} = \frac{\text{profit}}{CP} \times 100 \quad | \quad \underline{\text{profit}} = \text{profit \% on } \underline{CP}$$

$$= \left( \frac{P\%}{100} \right) \times \underline{CP}$$

CP, profit %

$$SP = CP + \underline{\text{profit}}$$

$$= \underline{CP} + \frac{P\%}{100} \times \underline{CP} \Rightarrow CP \left( 1 + \frac{P\%}{100} \right)$$

CDS & AFCAT 1 2025 LIVE CLASS - MATHS - PART 1

CP, P%

$$\underline{SP} = CP \left( 1 + \frac{P\%}{100} \right) = \underline{\underline{CP \left( \frac{100 + P\%}{100} \right)}}$$

SP = CP  $\left( \frac{100 + P\%}{100} \right)$

$$CP = SP \left( \frac{100}{100 + P\%} \right)$$

# PROFIT

$$\underline{15\% \text{ profit}} = \frac{15}{100} = \frac{3}{20}$$

profit
=
3  
cp
=
20

$$\frac{SP}{CP} = \frac{20+3}{20} = \frac{23}{20} \Rightarrow \left( \frac{23}{20} \right) \times 5$$

$$\frac{115}{100}$$

SP
CP  
↑
→

$$\text{profit} = 115 - 100 = \underline{15\%}$$

# LOSS

$$CP > SP \Rightarrow \text{Loss}$$

$$\underline{\text{Loss} = CP - SP} \rightarrow$$

$$\text{Loss} = \text{Loss}\% \text{ of } CP$$

$$\text{Loss}\% = \frac{\text{Loss}}{CP} \times 100 = \frac{CP - SP}{CP} \times 100$$

$$\underline{\text{Loss} = \frac{L\%}{100} \times CP}$$

$$\underline{L\%, CP}$$

$$SP = CP - \text{Loss}$$

$$= CP - \frac{L\%}{100} \times CP = CP \left( 1 - \frac{L\%}{100} \right)$$

CDS & AFCAT 1 2025 LIVE CLASS - MATHS - PART 1

$$SP = CP \left( 1 - \frac{L\%}{100} \right)$$

$$SP = CP \left( \frac{100 - L\%}{100} \right)$$

$$CP = SP \left( \frac{100}{100 - L\%} \right)$$



# LOSS

$$20\% \text{ Loss} = \frac{20}{100} = \frac{1}{5} \begin{matrix} \nearrow \text{loss} \\ \longrightarrow \text{CP} \end{matrix}$$

$$\frac{SP}{CP} = \frac{5-1}{5} = \frac{4}{5} = \frac{4:5}{80:100}$$

$\begin{matrix} SP & CP \\ \uparrow & \end{matrix}$   
20% loss ✓

# EXAMPLE

A cycle was purchased for Rs 1600 and sold at 20% loss. Find S.P.

$$CP = ₹ 1600$$

$$L\% = 20\%$$

$$SP = CP \left( \frac{100 - L\%}{100} \right)$$

$$= 1600 \left( \frac{80}{100} \right) = 16 \times 80 \\ = \underline{\underline{1280}}$$

# SUCCESSIVE TRANSACTIONS

When there are two successive event of  $a\%$  and  $b\%$ , then resultant profit/loss

percent is given  $\left(\pm a \pm b + \frac{\pm a \pm b}{100}\right)\%$ , according to (+) sign for profit and (-)

sign for loss.

profit

loss

①  $a\%$  profit, then  $b\%$  loss,

$$\begin{aligned}\text{Overall \%} &= +a - b + \frac{(+a)(-b)}{100} \\ &= \left(a - b - \frac{ab}{100}\right)\%\end{aligned}$$

# EXAMPLE

A trader get 10% profit first and then 15% profit, find overall gain/loss percent.

$$10 + 15 + \frac{(10)(15)}{100} = 25 + 1.5 = +26.5\%$$

(overall gain of 26.5%)

# EXAMPLE

If a man sells two similar objects one at a loss of  $x\%$  and another at a gain of  $x\%$ , then he always incurs loss in this transaction and loss% is

$$\left[ \cancel{+x} \quad \cancel{-x} \quad + \frac{(+x)(-x)}{100} \right]$$

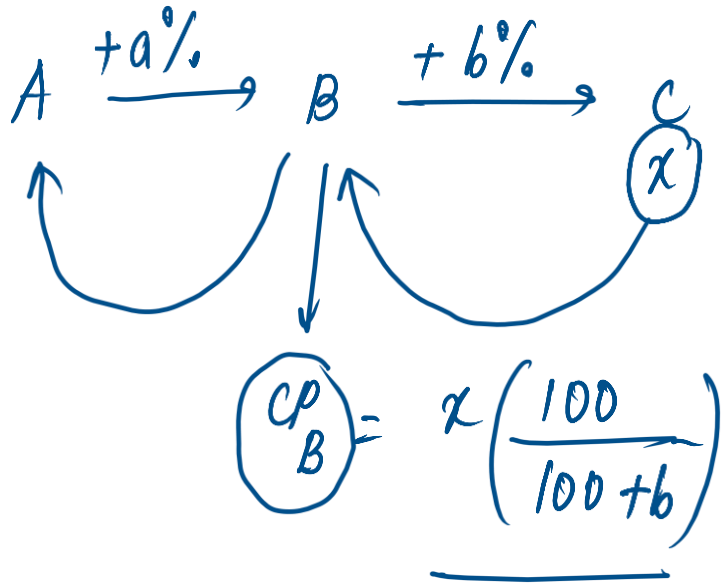
$$\left[ \frac{-x^2}{100} \right] \rightarrow$$

(-ve sign) represents loss and loss% =  $\left( \frac{x^2}{100} \right)\%$

## CDS & AFCAT 1 2025 LIVE CLASS - MATHS - PART 1

If A sells an article to B at a% profit and B sells it to C at b% profit and if C paid Rs. x, then amount

paid by A =  $x \times \left(\frac{100}{100+a}\right) \left(\frac{100}{100+b}\right)$



$$CP_A = \left[ x \left( \frac{100}{100+b} \right) \right] \left[ \frac{100}{100+a} \right]$$

CDS & AFCAT 1 2025 LIVE CLASS - MATHS - PART 1

If a man buys  $x$  items for ₹  $y$  and sells  $z$  items for ₹  $w$ , then

the gain or loss percent made by him is  $\left(\frac{xw}{zy} - 1\right) \times 100\%$

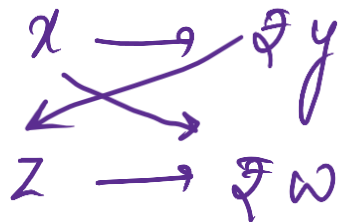
$$\frac{\frac{w}{z} - \frac{y}{x}}{\frac{y}{x}} \times 100$$

$$\begin{array}{l} x \rightarrow \text{₹ } y \\ 1 \rightarrow \text{₹ } \frac{y}{x} \text{ (CP for 1 article)} \end{array}$$

$$\begin{array}{l} z \rightarrow \text{₹ } w \\ 1 \rightarrow \text{₹ } \frac{w}{z} \text{ (SP for 1 article)} \end{array}$$

$$\left( \frac{wx - yz}{yz} \times \frac{x}{y} \right) \times 100$$

$$\left[ \left( \frac{wx}{yz} - 1 \right) \times 100 \right] \%$$



$$(wx > yz)$$

Some articles were bought at 6 for ₹ 5 and sold at 5 for ₹ 6. Calculate the gain percent.

$$\begin{array}{l} 6 \longrightarrow \text{₹ } 5 \text{ ————— } 5 \times 5 = 25 \\ \swarrow \quad \searrow \\ 5 \longrightarrow \text{₹ } 6 \text{ ————— } 6 \times 6 = \underline{36} \end{array} \quad \text{then } \underline{\text{profit}}$$

$$\begin{aligned} & \left( \frac{36}{25} - 1 \right) \times 100 \\ &= \frac{11}{25} \times 100 = \underline{44\%} \end{aligned}$$



## EXAMPLE

A dishonest shopkeeper sells his goods at CP but uses **750 gm** weight instead of 1000 gm. Find his profit percent ?

act as cp

act as sp

$$\text{profit \%} = \frac{1000 - 750}{750} \times 100$$

$$= \frac{250}{750} \times 100 = \underline{33\frac{1}{3}\%}$$

Q) A horse is sold at a profit of 25%. If both the cost price and selling price are ₹ 200 less, the profit will be 5% more. The cost price is

- (a) ₹ 1100                      (b) ₹ 1200  
(c) ₹ 1000                      (d) ₹ 900

CP  $\rightarrow$  let ₹  $x$

$$SP \rightarrow x \times \left( \frac{100 + 25}{100} \right) = \frac{5}{4}x$$

$$\text{profit \%} = \frac{SP - CP}{CP} \times 100$$

$$30 = \frac{\left( \frac{5}{4}x - 200 \right) - \left( x - 200 \right)}{x - 200} \times 100$$

$$\begin{array}{l} \text{New CP} = x - 200 \\ \text{SP} = \frac{5}{4}x - 200 \end{array} \left. \vphantom{\begin{array}{l} \text{New CP} \\ \text{SP} \end{array}} \right) (25 + 5)\% = \underline{30\%}$$

$$\frac{3}{10} = \frac{\frac{1}{4}x}{x - 200}$$

$$\frac{3}{10} = \frac{x}{4(x - 200)}$$

$$12x - 2400 = 10x$$

$$2x = 2400$$

$$x = 1200$$

- Q) A horse is sold at a profit of 25 %. If both the cost price and selling price are ₹ 200 less, the profit will be 5 % more. The cost price is
- (a) ₹ 1100                      (b) ₹ 1200  
(c) ₹ 1000                      (d) ₹ 900

**Ans: (b)**

Q) By selling a chair for ₹ 368, a man lost 8%. For how much should he have sold it to gain 15%?

(a) ₹ 450

(b) ₹ 475

(c) ₹ 460 ✓

(d) ₹ 500

SP, L%

$$CP = SP \left( \frac{100}{100 - L\%} \right) = 368 \times \frac{100}{100 - 8} = \frac{368 \times 100}{92} = \underline{400}$$

CP, P%

$$SP = CP \left( \frac{100 + P\%}{100} \right) = \frac{400 \times 115}{100} = \underline{460}$$

Q) By selling a chair for ₹ 368. a man lost 8 %. For how much should he have sold it to gain 15 %?

(a) ₹ 450

(b) ₹ 475

(c) ₹ 460

(d) ₹ 500

Ans: (c)

Q) A man sold two steel chairs for ₹ 500 each. On one he gains 20% and on other, he loses 12%. How much does he gain or lose in the whole transaction?

- (a) 1.5% gain ✓                      (b) 2% gain  
 (c) 1.5% loss ✗                      (d) 2% loss ✗

Overall SP =  $\underline{500} + 500 = \underline{1000}$

Overall CP =  $\underline{500} \times \left(\frac{100}{120}\right) + \underline{500} \left(\frac{100}{88}\right)$

$= \frac{5000}{12} + \frac{6250}{11}$

$= 416.66 + 568.18$

$= \underline{984.84}$

SP > CP  
profit

$$\frac{1000 - 984.84}{984.84} \times 100$$

$$\approx \frac{16}{1000} \times 100 \approx \underline{1.6}$$

**Q)** A man sold two steel chairs for ₹ 500 each. On one he gains 20% and on other, he loses 12%. How much does he gain or lose in the whole transaction?

- |               |             |
|---------------|-------------|
| (a) 1.5% gain | (b) 2% gain |
| (c) 1.5% loss | (d) 2% loss |

**Ans: (a)**

# CDS-AFCAT 1 2025

SSBCrack  
EXAMS

LIVE

# MATHS

# PROFIT & LOSS

CLASS 2



NAVJYOTI SIR