# GATE

## CRASH COURSE

### ALL BRANCH

Subject

General Aptitude

Profit Loss (Lec 03)

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# Topics *to be covered*

1. Profit Loss

# PROFIT and LOSS

Investment → C.P. → Return → S.P. → M.P.

gain / profit

g% / P%

loss

l%

M.P. → discount

d%

## The Concept:

$\frac{S.P.}{C.P.}$

$C.P < S.P \Rightarrow$ Profit

$C.P > S.P \Rightarrow$ loss

$C.P = S.P \Rightarrow$ No Profit No Loss

$\frac{S.P}{C.P} > 1$

$\frac{S.P}{C.P} < 1$

$\frac{S.P}{C.P.} = 1$

Profit or Loss percentage is to be applied always on the COST PRICE only.

Whereas,

Discount percentage is to be applied always to the MARKED PRICE only.

## Question

A shopkeeper advertises for selling cloth at 4% loss. However by using a false meter scale he actually gains 25%. What is actual length of scale?

A. 77.8 cm

B. 76.8 cm

C. 74.8 cm

D. 75.8 cm

$$\frac{S.P}{C.P} = 0.96 \times \frac{100}{x} = 1.25$$

$$\Rightarrow \frac{96}{x} = 1.25$$

$$\therefore x = \frac{96}{1.25} = \frac{9600}{125} = 76.8$$

(B)

## Question

An article was sold at a profit of 20%. If both cost price and selling price are ₹100 less each, then magnitude of the percentage of profit would have been 4 percentage points more than that in the first case. Then the cost price is

24%

A ₹ 600

B ₹ 300

C ₹ 450

D ₹ 800

$$\frac{S.P}{C.P} = 1.2$$

$$\Rightarrow S.P = 1.2\,C.P$$

$$\frac{S.P-100}{C.P-100} = 1.24$$

$$1.2C.P-100 = 1.24C.P-124$$

$$\Rightarrow 0.04C.P = 24$$

$$C.P = \frac{24}{0.04} = \frac{2400}{4} = 600$$

## Question

Price of an item is increased by 20% of its cost price and is then sold at 10% discount for Rs. 2160. What is its cost price?

A 1680

B 1700

C 1980

D 2000

$M.P. = 1.2\,C.P.$

$S.P = 0.9\,M.P. = 2160$

$M.P = \frac{2160}{0.9} = \frac{21600}{9} = 2400$

$2400 = 1.2\,C.P$

$C.P. = \frac{2400}{1.2} = \frac{24000}{12} = 2000$

## Question

By selling two items at the same price, a person gains 20% on one item and loses 20% on the other. Then over all

$1.2 \times 0.8 = 0.96$

$0.04$

(A) he neither loses nor gains.

(B) he loses 5%.

(C) he loses 4%.

(D) he gains 4%.

4% loss

$SP_1 = SP_2$

$\frac{SP_1}{CP_1} = 1.2$

$SP_1 = 1.2\,CP_1$

$\frac{SP_2}{CP_2} = 0.8$

$SP_2 = 0.8\,CP_2$

$1.2\,CP_1 = 0.8\,CP_2$

$\frac{CP_1}{CP_2} = \frac{0.8}{1.2} = \frac{8}{12} = \frac{2}{3}$

$CP_1 = 2x$

$CP_2 = 3x$

$\frac{\text{Total SP}}{\text{Total CP}} =$

$\frac{(1.2 \times 2x) + (0.8 \times 3x)}{5x}$

4% loss $= \frac{2.4x + 2.4x}{5x} = \frac{4.8x}{5x}$

.04

$\frac{48}{50} = 0.96$

## Question

A cycle bought at ₹ 1400 is sold at a loss of 15%. What is selling the price?

A ₹ 1090

B ₹ 1190

C ₹ 1385

D ₹ 1290

$$\frac{S.P}{C.P} = 0.85$$

$$S.P = 0.85 \times 1400$$

$$S.P = 1190$$

## Question

A loss of 25% is incurred in selling an item for ₹ 2400. What should be the selling price if there should be the profit of 25%?

$0.75 \rightarrow 2400$

$1.25 \Rightarrow ?$

$800 \quad 5$

$2400 \times \frac{1.25}{0.75}$

$3$

$= 4000$

A ₹ 3600

B ₹ 2700

C ₹ 4000

D ₹ 4200

## Question

By selling 64 articles, a trader gets profit which is equivalent to selling price of 4 articles. Find his profit percent?

$$\text{Profit} = S.P - C.P$$

$$4SP = 64SP - 64CP$$

$$\Rightarrow 60SP = 64CP$$

$$\frac{SP}{CP} = \frac{64}{60} = \frac{16}{15} = 1.0\overline{6}$$

$0.\overline{6}$

$6.\overline{6}\%$ Profit

OR

$6\frac{2}{3}\%$ Profit

A 6.25%

B 8.33%

C 16.33%

D 6.66%

Question

$33\frac{1}{3}\% = \frac{1}{3} = 0.\overline{3}$

$\frac{\text{eq ii)}}{\text{eq (i)}}$

When the selling price is increased to twice its original value, the loss percentage turns into the profit percentage. Determine the value of this percentage.

$\frac{S.P.}{C.P} = 1 - x$

$\frac{2S.P}{C.P} \times \frac{C.P}{S.P} = \frac{1+x}{1-x}$

A 100%

B 33.33%

C 50%

D 66.66%

$\frac{2S.P}{C.P} = 1 + x$

$\Rightarrow 2 = \frac{1+x}{1-x}$

$\Rightarrow 2 - 2x = 1 + x$

$\therefore x = \frac{1}{3}$

$33\frac{1}{3}\%$

## Question

A shopkeeper purchases milk at Rs. 80 per litre and sells it at Rs. 70 per litre. For every 1 litre of milk, he adds 300 ml of water. While selling, he gives only 800 ml instead of 1 litre. Calculate his overall profit or loss percentage.

A. 42.19% profit

B. 9.375% profit

C. No profit No loss

D. 25% profit

$$\frac{S.P}{C.P} = \frac{70}{80} \times \frac{1300}{1000} \times \frac{1000}{800}$$

$$42\frac{4}{8} = \frac{7 \times 13}{64}$$

$$42.18\% \text{ Profit} = \frac{91}{64} = 1.4218$$

## Question

$\frac{L}{C.P} \times 100$ $\quad \frac{1}{26} \times 100 = \frac{100}{26} = 3.85\%$

A fabric dealer purchases fabric at ₹120 per meter and sells it at ₹150 per meter. As part of a special promotion, he gives 30% extra fabric free on every purchase. Calculate his profit or loss percentage.

$$\frac{S.P}{C.P} = \frac{150}{130} \times \frac{100}{130}$$

$$\frac{S.P}{C.P} = \frac{15}{13} \times \frac{10}{13}$$

$$\frac{S.P}{C.P} = \frac{150}{169}$$

$$0.0385$$

$$3.85\% = \frac{25}{26} = 0.9615$$

A. 56.12% loss

B. 8.275% profit

C. 16.66% loss

D. 3.85% Loss

## Question (PYQ GATE Exam 2022 EE)

$M = x$ $\quad S = 0.9x$

The price of an item is 10% cheaper in an online store S compared to the price at another online store M. Store S charges ₹150 for delivery. There are no delivery charges for orders from the store M. A person bought the item from the store S and saved ₹100. What is the price of the item at the online store S (in ₹) if there are no other charges than what is described above?

A. 2500

B. 2250

C. 1750

D. 1500

$$x - (0.9x + 150) = 100$$

$$\Rightarrow x - 0.9x = 250$$

$$0.1x = 250$$

$$x = \frac{250}{0.1}$$

$$\therefore x = 2500$$

$$S \Rightarrow 0.9 \times 2500$$

$$= 2250$$

## Question (PYQ GATE Exam 2021 CS)

$\frac{1000}{10000} \times 100 = 10\%$

Details of prices of two items P and Q are presented in the above table. The ratio of cost of item P to cost of item Q is 3 : 4. Discount is calculated as the difference between the marked price and the selling price. The profit percentage is calculated as the ratio of the difference between selling price and cost, to the cost.

(profit% = (selling price – cost)/ cost x 100

| Items | Cost Rs. | Profit% | Marked Price Rs. |
|---|---|---|---|
| P | 5400 | ..... | 5860 |
| Q | 7200 | 25 | 10,000 |

The discount on item Q, as a percentage on its marked price is _____.

$\frac{P}{Q} = \frac{3}{4} = \frac{5400}{Q}$

$\Rightarrow Q = 7200$

$S.P_Q = 1.25 \times 7200$

$S.P_Q = 9000$

A 25

B 12.5

C 10

D 5

## Question (PYQ GATE Exam 2019 ME)

$x$ — 47%

$100000 - x$ — 53%

A person divided an amount of Rs, 100,000 into two parts and invested in two different schemes. In one he got 10% profit and in other he got 12%. If the profit percentages are interchanged with these investments he would have got Rs. 120 less. Find the ratio between his investments in the two schemes.

A. 9 : 16

B. 11 : 14

C. 37 : 63

D. 47 : 53 ✓

$$[0.1x + 0.12(100000 - x)] - [0.12x + 0.1(100000 - x)] = 120$$

$$\Rightarrow (0.1x + 12000 - 0.12x) - (0.12x + 10000 - 0.1x) = 120$$

$$\Rightarrow 0.1x + 12000 - 0.12x - 0.12x - 10000 + 0.1x = 120$$

$$0.2x - 0.24x + 2000 = 120$$

$$x = 47000$$

## Question (PYQ GATE Exam 2018 CE)

A fruit seller sold a basket of fruits at 12.5% loss. Had he sold it for Rs. 108 more, he would have made a 10% gain. What is the loss in Rupees incurred by the fruit seller?

$\frac{S.P}{C.P} = 0.875 \Rightarrow S.P = 0.875\ C.P$

$\frac{S.P+108}{C.P} = 1.1$

$0.875\ C.P + 108 = 1.1\ C.P$

$0.225\ C.P = 108$

$C.P = \frac{108}{0.225} = 480$

$108 = 0.125 \times 480$

$= 60$

A 48

B 52

C 60

D 108

## Question (PYQ GATE Exam 2013 CE)

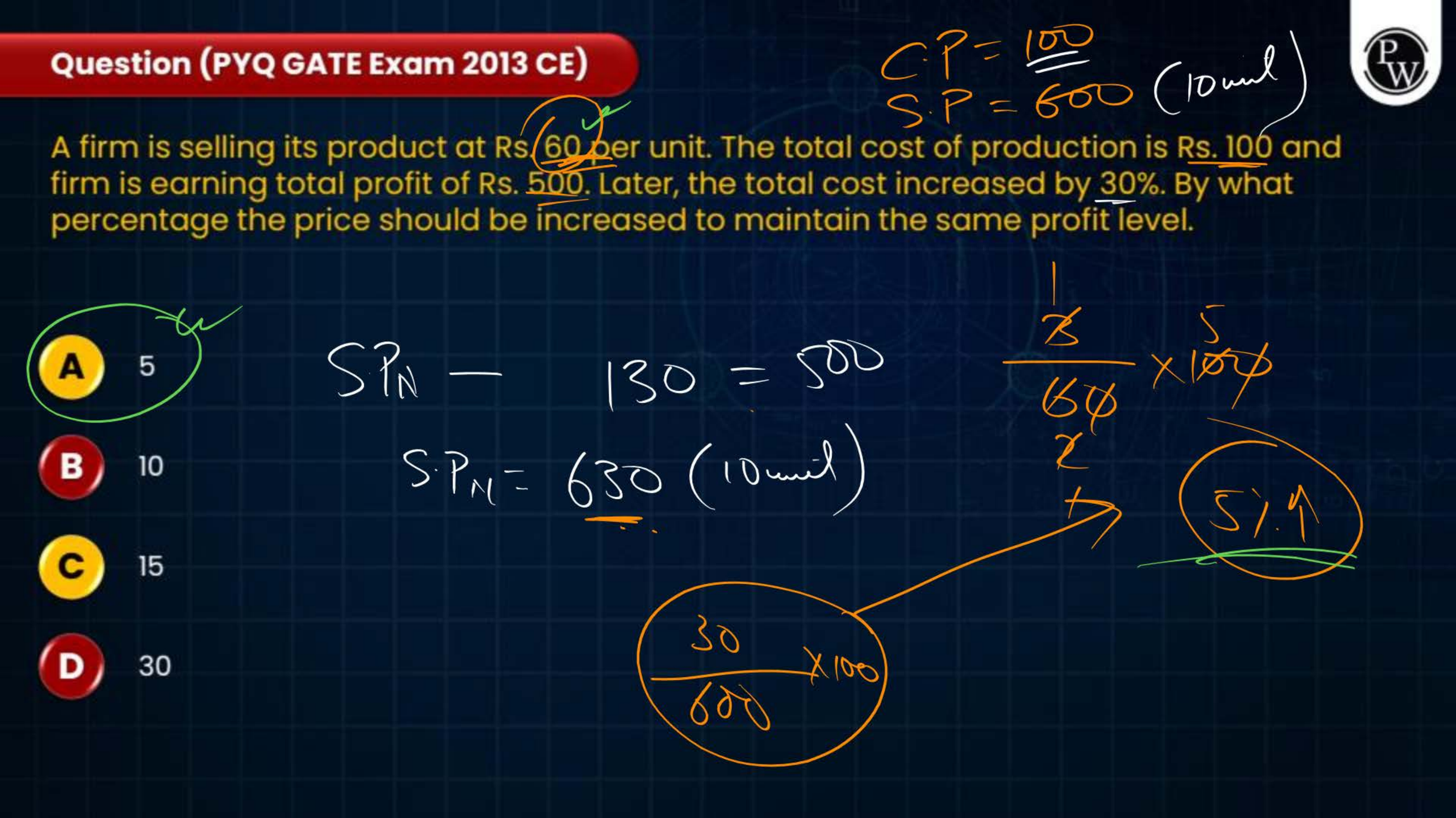
A firm is selling its product at Rs. 60 per unit. The total cost of production is Rs. 100 and firm is earning total profit of Rs. 500. Later, the total cost increased by 30%. By what percentage the price should be increased to maintain the same profit level.

A. 5

B. 10

C. 15

D. 30



# Summary

Profit & Loss


Thank
THANK
Keep Hustling!