

CAPSTONE

Math Lecture#05

পেট্রোবাংলা স্পেশাল কোর্স

Topic: Arithmetic

- Profit Loss
- Interest

১২/১০

লাভ-ক্ষতি (Profit-Loss)

ক্রয়মূল্য (Cost Price বা C.P) : জিনিসপত্র বা দ্রব্য কেনা বা তৈরির সময় যে ব্যয় হয় তাকে ক্রয়মূল্য বলা হয়।

বিক্রয়মূল্য (Selling Price বা S.P) : জিনিসপত্র বা দ্রব্য বিক্রয় করলে যে দাম পাওয়া যায় তাকে বিক্রয়মূল্য বলা হয়।

মুদ্রিত মূল্য (List price বা L.P) : দ্রব্য বা পণ্যের গায়ে বা প্রাইস ট্যাগে যে দাম লেখা থাকে তাকে মুদ্রিত মূল্য বলা হয়। মুদ্রিত মূল্য থেকে ডিসকাউন্ট বা ছাড় বাদ দিলে ক্রয়মূল্য পাওয়া যায়।

Marked

◆ ক্রয়মূল্য অপেক্ষা বিক্রয়মূল্য বেশি হলে লাভ Profit হয়। লাভ (P) = বিক্রয়মূল্য (SP) - ক্রয়মূল্য (CP)

◆ ক্রয়মূল্য অপেক্ষা বিক্রয়মূল্য কম হলে ক্ষতি বা Loss হয়। ক্ষতি (L) = ক্রয়মূল্য (CP) - বিক্রয়মূল্য (SP)

$$\begin{array}{r} \text{CP} \\ \hline 65,000 \end{array} \begin{array}{l} \leftarrow \\ \leftarrow \\ \leftarrow \end{array} \begin{array}{r} 15\% \\ \hline 72900 \\ \hline 65,000 \end{array} \begin{array}{l} \rightarrow \text{Selling Price} \\ \rightarrow \text{Marked Priced} \\ \rightarrow \text{Selling Price} \end{array}$$

$$P = SP - CP$$

$$\text{Loss (Neg)} = \underline{SP} - \underline{CP}$$

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

7. A manufacturer sells an article to a wholesale dealer at a profit of 10%. The wholesale dealer sells it to a shopkeeper at 20% profit. The shopkeeper sells it to a customer for 5610 Tk at a loss of 15%. Then what is the cost price of article to the manufacturer?

A. 4000

B. 4500

C. 5000

D. 5500

Solution: $x(1.1)(1.2)(0.85) = 5610 \Rightarrow 1.122x = 5610 \Rightarrow x = \frac{5610}{1.122} \Rightarrow x = 5000$ (Answer: C. 5000)

<u>M</u>	<u>WD</u>	<u>Sh.</u>
x	$\frac{110x}{100}$	$\left\{ \frac{110x}{100} \times \frac{120}{100} \right\}$

<u>C</u>
5610 Tk
$\frac{110x}{100} \times \frac{120}{100} \times \frac{85}{100}$

←—————→

8. The selling price of 15 items equals the cost of 20 items. What is the % profit earned by the seller?
A. 15 B. 2 C. 25 D. 33.3

Solution: $15 \times SP = 20 \times CP$ — ①

$$\frac{SP}{CP} = \frac{20}{15} = \frac{4}{3}$$

Since $SP > CP$, we can say its profit and profit % would be same as you are buying a product for 3\$ and selling it for 4\$.

$$P\% = \frac{4 - 3}{3} \times 100 = 33.3\%$$

Shortcut: $P\% = \frac{100}{n} (m - n) = \frac{100}{15} (20 - 15)\% = \frac{100 \times 5}{15} \% = 33.3\%$ (Answer: D. 33.3%)

$$\frac{SP}{CP} = \frac{20}{15} = \frac{4}{3}$$

$SP : CP = 4 : 3$
Let, $SP \rightarrow 4x$
 $CP \rightarrow 3x$

$$P = SP - CP = 4x - 3x = x$$

$$\text{Profit \%} = \frac{P}{CP} \times 100\% = \frac{x}{3x} \times 100\% = 33.3\%$$

10. The cost price of 20 articles is the same as the selling price of x articles. If the profit is 25%, then the value of x ?

A. 15

B. 16

C. 18

D. 25

Solution: Let, CP of each article be tk. 1 (CP of x articles = x tk.)

SP of x articles = 20

Profit = (20 - x)

$$\therefore \frac{20-x}{x} \times 100 = 25$$

$$\Rightarrow 2000 - 100x = 25x$$

$$\Rightarrow 125x = 2000$$

$$\Rightarrow x = 16 \text{ (Answer: B. 16)}$$

$$\frac{P}{CP} = \frac{20-x}{x} \times 100\% = 25\%$$

সুদ/ মুনাফা (Interest)

P = আসল বা মূলধন (Principal/ Capital) = প্রথমে যে টাকা জমা রাখা হয় বা ঋণ দেয়া হয়।

I = মুনাফা বা সুদ (Interest) = মূলধনের অতিরিক্ত যে টাকা বিনিয়োগকারীকে দেয়া হয়।

r = মুনাফার হার (rate of interest) = নির্দিষ্ট পরিমাণ টাকার উপর নির্দিষ্ট সময়ের জন্য মুনাফা দেওয়া হয়। সাধারণত ১০০ টাকার ১ বছরের মুনাফাকে মুনাফার হার বলে।

n = সময়। (মতন সুদ)

A = সুদ-আসল/ মুনাফা-মূলধন।

$$\frac{1000}{10000} + r = \text{সুদ - আসল}$$

সরল মুনাফা (Simple Interest):

$$1. I = Pnr\% = \frac{Pnr}{100} \quad 2. n = \frac{I \times 100}{Pr} \quad 3. r = \frac{I \times 100}{Pn} \quad 4. A = I + P = Pnr + P = P(1 + nr) = P \left(1 + \frac{nr}{100} \right)$$

↓
I =

$$I = \frac{Pnr}{100} \rightarrow r = \frac{I \times 100}{Pn}$$

$$5\% = \frac{5}{100}$$

$$4 \rightarrow 12\%$$

সুদ/ মুনাফা (Interest)

যৌগিক বা চক্রবৃদ্ধি মুনাফা (Compound Interest):

যৌগিক বা চক্রবৃদ্ধি মুনাফায় প্রত্যেক বছর আসলের সাথে মুনাফা যোগ করা হয়। ফলে যৌগিক মুনাফায় প্রতিবছর আসল বা মূলধন বৃদ্ধি পায়।

চক্রবৃদ্ধি মূলধন, $C = P \left(1 + \frac{r}{100}\right)^t$ $\rightarrow 3\%$

চক্রবৃদ্ধি মুনাফা, $I = C - P$

বাৎসরিকভাবে চক্রবৃদ্ধি না হলে, $C = P \left(1 + \frac{r}{100 \times n}\right)^{t \times n}$ ✓✓

r = সুদের হার; C = চক্রবৃদ্ধি মূলধন; P = প্রারম্ভিক মূলধন; t = সময়/বছর; n = বছরে চক্রবৃদ্ধির সংখ্যা

প্রতি মাসে চক্রবৃদ্ধি মুনাফা হিসাব করলে, $n = 12$

প্রতি 3 মাসে চক্রবৃদ্ধি মুনাফা হিসাব করলে, $n = 4$

প্রতিদিন চক্রবৃদ্ধি মুনাফা হিসাব করলে, $n = 365$

$r = \text{annual int}$
3%

$\frac{২০০০}{২০০}$

$n \rightarrow$ বছর, বছর বা
Int change /
দিন

$\frac{t = 5}{n = 4}$

$\frac{J - M}{C_1} \quad \frac{A - II}{C_2} \quad \frac{J - S}{C_3} \quad \frac{O - D}{C_4}$

11. শতকরা বার্ষিক কত হার সুদে ৪৫০ টাকার ১২ বছরের সুদ ১৬২ টাকা হবে?

ক. ২%

খ. ৩%

গ. ৩.৫%

ঘ. ৫%

সমাধান: ৪৫০ টাকার ১২ বছরের সুদ ১৬২ টাকা।

$$\begin{array}{ccccccc} 1 & " & 1 & " & " & \frac{162}{850 \times 12} & " \\ 100 & " & 1 & " & " & \frac{162 \times 100}{850 \times 12} & = 3\% \end{array}$$

সূত্র প্রয়োগে: $r = \frac{I \times 100}{p \times n} = \frac{162 \times 100}{450 \times 12} = 3\%$ (উত্তর: খ. ৩%)

12. কোনো আসল ৩ বছরে সরল মুনাফাসহ ৪৬০ টাকা এবং ৫ বছরে সরল মুনাফাসহ ৬০০ টাকা হলে শতকরা মুনাফার হার কত?

ক. ২০%

খ. ২৫%

গ. ২৮%

ঘ. ৫০%

সমাধান: ৫ বছরে সুদ + আসল = ৬০০ টাকা

৩ বছরে সুদ + আসল = ৪৬০ টাকা

⇒ ২ বছরের সুদ = ১৪০ টাকা [বিয়োগ করে]

১ " " = $\frac{140}{2}$ টাকা

৩ " " = $\frac{140}{2} \times 3 = ২১০$ টাকা।

∴ আসল, P = ৪৬০ - ২১০ = ২৫০ টাকা।

২৫০ টাকার ১ বছরের সুদ = ৭০ টাকা

১০০ " ১ " " " $\frac{৭০ \times ১০০}{২৫০} = ২৮\%$ (উত্তর: গ. ২৮%)

আমল = ৩ বছর গণ্য সুদ - আসল

৬ বছর গণ্য সুদ

= ৪৬০ - ২০০

= ২৬০

২৫০, ৩ → ২১০

২, ২ → $\frac{২১০}{২৫০ \times ৩}$

১০০, ১ →

$\frac{৭০}{২৫০} \times ১০০ = ২৮\%$

16. Johnny borrows tk. 30,000 from Tony at 2% daily interest compounded daily. How much does Johnny owe Tony after 8 weeks?

ক. $30000 \times (1.02)^{56}$ খ. 30000×1.12 গ. $30000 \times (0.02)^{56}$ ঘ. 30000×2.12

সমাধান: $P = 30000$

$t = 8 \text{ weeks} = (8 \times 7) \text{ days} = 56 \text{ days}$ [Time period is in days as the interest is compounded daily]

$r = 2\%$

$\therefore C = P \left(1 + \frac{r}{100}\right)^t = 30000 \left(1 + \frac{2}{100}\right)^{56} = 30000 \times (1.02)^{56}$ (উত্তর: ক. $30000 \times (1.02)^{56}$)

$P = 30,000$

$t = 8 \times 7 = 56d$

$r = 2\%$

$\frac{1.02}{1.02}$

$C = P \left(1 + \frac{r}{100}\right)^t$
 $= 30000 \left(1 + \frac{2}{100}\right)^{56}$
 $= 30000 \times (1.02)^{56}$

1. The interest charged in loan is 'P' per Tk. 1,000 for the first quarter (3 months), and 'Q' per Tk. 1,000 for each month after the first quarter. How much interest will be charged for the first year on Tk. 10,000?
- A. $10(P+Q)$ B. $10(P+9Q)$ C. $4P+9Q$ D. None [BB AD 2022]

২৫০ ১০০০ → int → P

$$12 - 3 = 9$$

$$\frac{1st \ Q \ (3 \ mo)}{P \ \rightarrow \ 1000}$$

each month
Q → 1000

$$\frac{P \times 10000}{1000} + \frac{9 \times Q \times 10000}{1000}$$

$$= 10P + 90Q$$

$$= 10(P + 9Q)$$

3. In a certain store the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant. approximately what percentage of the selling price is the profit?

[তিতাস গ্যাস ট্রান্সমিশন অ্যান্ড ডিস্ট্রিবিউশন কো. লি. (সহকারী ব্যবস্থাপক) 2021]

A. 30

B. 70

C. 100

D. 250

$$\underline{CP} = 100$$

$$\underline{SP} = 100 + 100 \times 320\%$$

$$= 100 + \frac{100 \times 320}{100}$$

$$\underline{SP} = 420$$

$$420 \rightarrow 295$$

$$7.02 \times 10$$

$$= 70.2$$

$$1 \rightarrow \frac{295}{420}$$

$$100 \rightarrow \frac{295 \times 100}{420}$$

+ 25%

$$CP^{\oplus} = 125$$

$$420 \rightarrow 125$$

$$100 \rightarrow \frac{125 \times 100}{420}$$

$$P^{\oplus} = 420 - 125$$

$$= 295$$

$$= 295$$

$$42 \overline{) 295} \quad 7.02$$

$$= \frac{100}{84}$$

4. If 5 bananas are bought for 1 taka and 4 is sold for 1 taka then what is the profit or loss percentage?

[আরডিএ বগুড়া (সহকারী পরিচালক) ২০২১]

A. Profit 20%

B. Profit 25%

C. Loss 20%

D. Loss 25%

$$\textcircled{1B} \rightarrow CP = \frac{1}{5} = \textcircled{0.2}$$

$$\textcircled{4B} \rightarrow SP = \frac{1}{4} = 0.25$$

$$\begin{aligned} \textcircled{1B} \rightarrow \text{Profit} &= SP - CP \\ &= 0.25 - 0.2 \\ &= \textcircled{0.05} \end{aligned}$$

$$\begin{array}{l} 0.2 \rightarrow \\ 100 \rightarrow \end{array} \frac{0.05}{0.2} \times 100 \% = \frac{5 \times 100}{20} \% = 25\%$$

5. A tradesman sold an article at a loss of 20%. If the selling price had been increased by 100 taka, there would have been a gain of 5%. What was the cost price of the article?

[দি সিকিউরিটি প্রিন্টিং কর্পোরেশন (সহকারী ব্যবস্থাপক) ২০২১]

A. 375 টাকা

B. 400 টাকা

C. 425 টাকা

D. 450 টাকা

Let, CP = $100x$

20% loss, \rightarrow SP = $80x$

5% profit, SP = $105x$

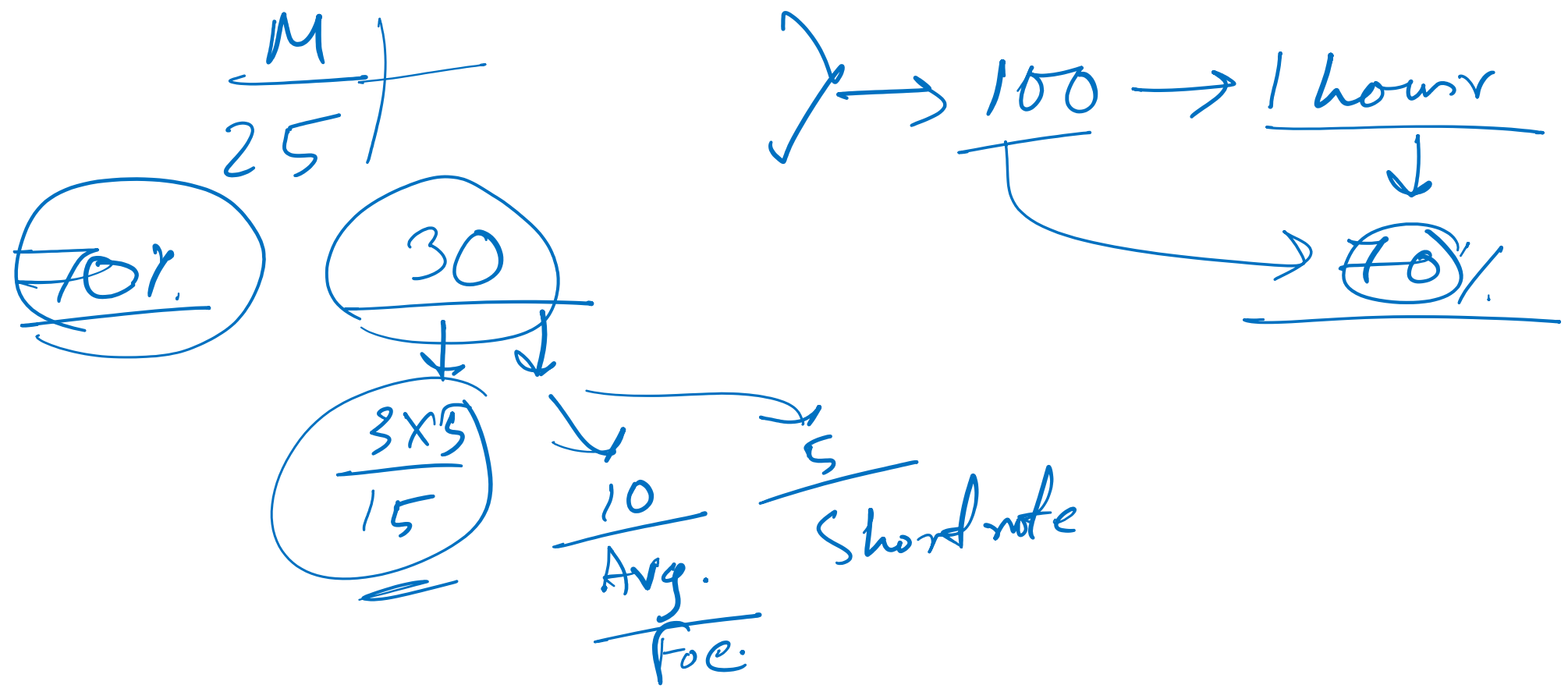
$80x + 100 = 105x$

$\Rightarrow 100 = 25x$

$\therefore x = 4$

CP $\Rightarrow 100 \times 4 = 400$

8. The profit earned by selling an article for tk. 832 is equal to the loss incurred when the same article is sold for tk. 448. What should be the sale price for making 50% profit?
- A. 860 B. 1060 C. 1020 D. 920 E. None of these



12. The price of a TV was first discounted by a certain percent and then by another 20 percent of the discounted price. If these two discounts are equivalent to single discount of 32 percent of the original price, what was the first discount? [IBA MBA June 2016]

A. 10%

B. 12.5%

C. 15%

D. 26%

E. None of these

$$(100 - x) \times \frac{80}{100} = 100 \times \frac{68}{100}$$

$$\Rightarrow (100 - x) \times 0.8 = 68$$

$$\Rightarrow 80 - 0.8x = 68$$

$$\Rightarrow 0.8x = 80 - 68 = 12$$
$$\therefore x = \frac{12}{0.8} = \frac{120}{8} = 15$$

13. A store charges tk. 52 for a video game. This price is 30% greater than the store's cost to buy the game from its supplier. As an incentive to the store's clerks, the manager allows a clerk to purchase the video game for 10% less than the store's cost. How much would a store clerk have to pay for this video game?

A. tk. 15.60

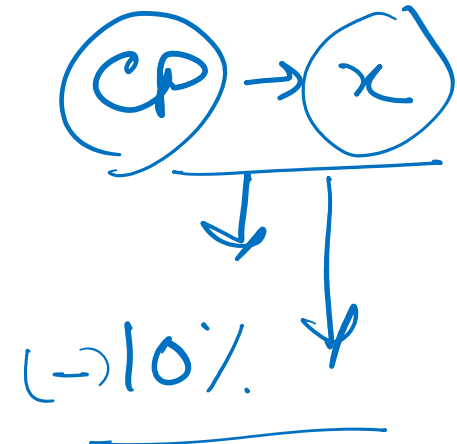
B. tk. 20.80

C. tk. 31.20

D. tk. 32.76

E. tk. 36.00

[IBA BBA 13-14]



SP → 30% higher,

$$\frac{x \times 130}{100} = 52$$

$$x = \frac{52 \times 100}{130}$$

$$x = 40$$

Clerk's P ⇒

$$\frac{90x}{100} = \frac{90 \times 40}{100} = 36$$

14. The interest on a certain deposit at 4.5% p.a. (per annum) is taka 202.50 in one year. How much will the additional interest in one year be on the same deposit at 5% p.a.? [পুলী সঞ্চয় ব্যাংক (ক্যাশ অফিসার) ২০১৮]

A. 22.50

B. 20.25

C. 42.75

D. 25

per annum → প্রতি বছর (p.a)

5%

additional int

20 → 4.5% → 202.5

4.5% → 20 → 202.5

5% → 20 → $\frac{2025 \times 5}{45}$

9) 2025 (225)
 18

 22
 18

 45
 45

 0

Add
 $\therefore (225 - 202.5)$
 $= 22.50$

$= 225$

16. A sum of money lent out at simple interest amount to tk. 720 after two years and to tk. 1020 after a further period of 5 years. The sum is: ? [Janata Bank (EO)-2017]

A. tk. 600

B. tk. 500

C. tk. 700

D. tk. 710

7

$$7 \text{ years' int} + \text{Prin.} = 1020$$

$$\begin{array}{r} (-) \quad 2 \text{ " " " + Prin.} = 720 \\ \hline \end{array}$$

$$5 \text{ years' int} = 300$$

$$2 \text{ " " " } = \frac{60}{300} \times 2$$

$$= 120$$

$$2 \text{ years' int} + \text{Prin.} = 720$$

$$120 + P = 720$$

$$\rightarrow P = 600$$

17. 10000 taka is invested for 2 years in a compound interest rate of 20% biannually. What is the profit interest? [43rd BCS]

A. 12^4

B. 11^4

C. 10^4

D. 9^4

$t = 2$ $n = 20$

$$C = P \left(1 + \frac{r}{100n} \right)^{n \times t}$$
$$= 10,000 \left(1 + \frac{20}{100 \times 2} \right)^{2 \times 2}$$
$$= \underline{10^4} \times \left(\underline{1.1} \right)^4 = \underline{(10 \times 1.1)^4} = \underline{(11)^4}$$

$n \rightarrow$ ২য় ২য়

$n = 2$

$a^m \cdot b^m = (ab)^m$

18. Your monthly mobile bill 420 taka. It increases 10% after 1 year and again increases 20% after 6 months. What is the bill after 18 months? [41st BCS]

A. Tk. 460.20

B. Tk. 554.40

C. Tk. 620.60

D. Tk. 730.80

$$420 \times \frac{110}{100} \times \frac{120}{100}$$

$$420 \rightarrow 420 \times \frac{110}{100} = 462$$

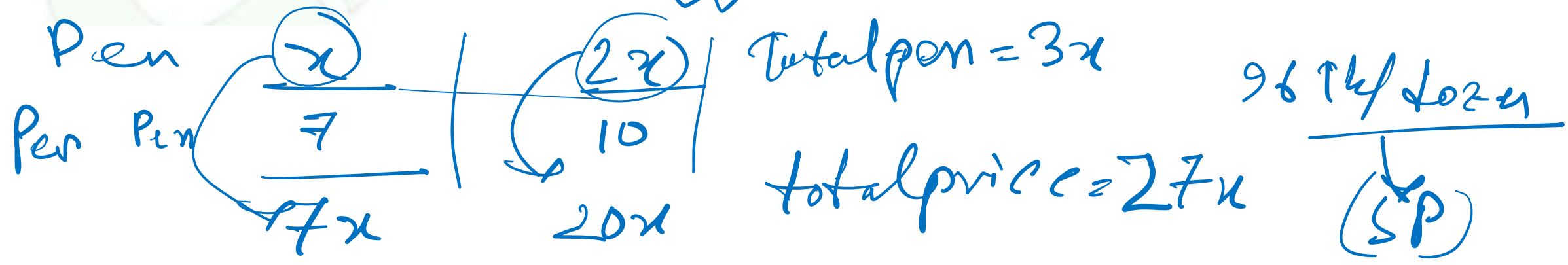
↑ 20%
462 →

$$462 \times \frac{120}{100} = \frac{5544}{10} = 554.4$$

$$\begin{array}{r} 462 \\ \times 12 \\ \hline 924 \\ 462 \times \\ \hline 5544 \end{array}$$

19. One bought x number of pen at a rate of 7 tk and $2x$ number of another pen at rate of 10 tk. He sold them at 96 tk/ dozen and made loss 720 tk. How many pens he bought? [IBA MBA Dec' 2019]

- A. 700 B. 620 C. 720 D. 750 E. None of these



Price of $3x$ pen $\rightarrow 27x$

" " 12 pen $\rightarrow \frac{27x}{3x} \times 12$

Loss per 12 pen = $108 - 96 = 108$ tk (CP)

$= 12$

12 tk $\rightarrow 12$ pen

720 tk $\rightarrow 720$ pen

20. Arif sold 100 pens of which 50 are red and 50 are black, at tk. 48 per pen. he made a profit of 20% on the black pens and made a loss of 20% on the red pens. What was the net gain on this sale in tk.?

[IBA MBA June '17]

- A. 0 B. -50 C. -100 D. -200 E. None of these

$$\frac{R}{50} \quad \frac{\textcircled{B} \rightarrow CP}{50}$$

20% ⊕
 Black SP = $\frac{120 \times B}{100} = 48$ | Net gain = SP - CP = 4800 - 5000

Black pen price = 40

$$B = \frac{48 \times 100}{120} = 40$$

$$\frac{R}{60} \quad \frac{B}{40}$$

20% ⊖
 Red pen SP =

Total SP = 100 × 48 = 4800

$$\frac{80 \times R}{100} = 48$$

$$R = \frac{48 \times 100}{80} = 60$$

Total CP = 50 × 60 + 50 × 40 = 3000 + 2000 = 5000

60

21. Babu made a profit of 20% by selling a product. If he had purchased that product for 10% less and sold it at a profit of 40%, he would have received tk. 24 more. What was his original selling in taka?

A. 400

B. 480

C. 520

D. 600

E. None of these

[IBA MBA Dec'2017]

Handwritten solution:

CP $\rightarrow x$

20% profit

$$\frac{120x}{100}$$

40% P

$$CP' \rightarrow \frac{90x}{100} \rightarrow SP = \frac{90x}{100} \times \frac{140}{100}$$

40% P

$$\Rightarrow \frac{90x}{100} \times \frac{140}{100}$$

24

$$\frac{120x}{100} + 24 = \frac{90x \times 140}{100 \times 100}$$

$$24 = \frac{126x}{100} - \frac{120x}{100}$$

$$24 = \frac{6x}{100}$$

$$6x = 2400$$

$$x = 400$$

Final answer: 480

23. Nadia can buy a pen at the cost of Tk. 1. During a promotional event she would get 40% discount on the cost of 2nd pen when she buys 2 pens together. How many pens she can buy during that promotional event with Tk. 80?

[IBA MBA Dec' 2020]

A. 96

B. 100

C. 106

D. 112

E. None of these

$$\begin{aligned} \text{1st pen} &\rightarrow 1\text{TK} \\ \text{2nd pen} &\rightarrow 1 \times \frac{100 - 40}{100} = \frac{1 \times 60}{100} = 0.60\text{TK} \end{aligned}$$

$$\underline{\text{2 pens together}} \rightarrow (1 + 0.6) \rightarrow 1.6\text{TK}$$

$$\begin{aligned} \frac{80}{1.6} &= \frac{\overset{50}{\cancel{800}}}{\cancel{16}} = 50 \text{ (3) } \text{BT} \\ &= 50 \times 2 = 100 \end{aligned}$$

25. A customer came to a shop and asked the shop manager to give a discount of 20% on listed price of pen. Moreover, for 10 pens purchased he wanted two pens free of cost. The manager agreed to the customers demand because he could still make a profit of 20% on cost price. If the cost price of a pen is x , what was the list price of the pen? [IBA BBA 14-15]

A. $1.75x$

B. $1.8x$

C. $19x$

D. $2x$

E. None of these

80)
$$\begin{array}{r} 144(1.8) \\ 80 \\ \hline 640 \\ 640 \\ \hline x \end{array}$$

12 pens CP \rightarrow $12x$

$10 \rightarrow 2$

\therefore SP $\rightarrow 12x \times \frac{120}{100} = \frac{144x}{10}$

Listed price $\rightarrow y \rightarrow 10y \xrightarrow{20\% \text{ d}} 10y \times \frac{80}{100}$

$\frac{144x}{10} = 8y \Rightarrow y = \frac{144x}{10 \times 8}$
 $y = 1.8x$

SP

26. By selling an article at 80% of its marked price, a merchant makes a loss of 12%. What will be the profit/ loss made by the merchant if he sells the article at 95% of its marked price? [IBA MBA Dec' 15]

A. 5% profit B. 1% loss C. 5.5% profit ~~D. 4.5% profit~~ E. None of these

$$\frac{\text{MP}}{x}$$

$$\frac{\text{CP}}{100} = \frac{100x}{110}$$

$$\text{SP}' = \frac{95x}{100}$$

$$\frac{\text{SP}}{0.8x}$$

$$\frac{\text{SP}}{88}$$

$$0.8x$$

$$\frac{\text{CP}}{100}$$

$$\frac{100 \times 8x}{880}$$

$$\text{Profit \%} = \frac{\text{Profit}}{\text{CP}} = \frac{45x}{1100} \times \frac{110}{100x} \times 100\%$$

$$= 4.5\%$$

↪ =

$$\begin{array}{r} 95 \\ \times 11 \\ \hline 95 \\ 950 \\ \hline 1045 \end{array}$$

28. If an amount kept for a year gives 12.5% interest, then in how many years the cumulative interest generated will be equal to the principal amount? [IBA MBA Dec' 2020]

A. 3

B. 5

C. 6

D. 7

~~E. None of these~~

$$P \rightarrow 100 \quad \rightarrow \quad \underline{12.5 \times n = 100}$$

$$\Rightarrow \quad n = \frac{100}{12.5} = 8$$

29. An investor made a profit of tk. 420 plus 30% of the amount originally paid for a stock. If the cost of the stock was originally tk. 2800 what percent of the cost was the total profit? [IBA MBA June 2015]

- A. 35 B. 50 C. 45 D. 30 E. None of these

Stock CP \rightarrow (x) \rightarrow 2800

$$\text{Total profit} = 420 + \frac{30 \times 2800}{100}$$

$$\Rightarrow 420 + 840$$

$$\Rightarrow 1260$$

$$\text{Profit \%} = \frac{\text{T.P}}{\text{CP}} = \frac{1260}{2800} \times 100\%$$
$$= 45\%$$

$$\begin{array}{r} 28 \overline{) 1260} \\ \underline{112} \\ 140 \\ \underline{140} \\ 0 \end{array}$$

30. Tk 2000 is deposited in a savings account which pays 6% annual interest compounded semi-annually. To the nearest tk, how much is in the account at the end of the year?

- A. 2423 B. 2356 C. 2122 D. 2247 E. 2365

$r = 6\%$

$P = 2000$

$t = 1$

$n = 2$

$$C = P \left(1 + \frac{r}{100 \times n} \right)^{n \times t}$$

$$= 2000 \left(1 + \frac{6}{100 \times 2} \right)^{2 \times 1}$$

$$= 2000 \times (1.03)^2$$

$$= \frac{21218}{10} = 2121.8 = 2122$$

$$\begin{array}{r} 10609 \\ \times 2 \\ \hline 21218 \end{array}$$

$$\begin{array}{r} 1.03 \\ 1.03 \\ \hline 309 \\ 000 \times \\ 183 \times \times \\ \hline 1.0609 \end{array}$$

2122, 2800

HW

④ Practice Math \Rightarrow Skipped problems

④ Home work Math \rightarrow 30

④ Written Math \rightarrow 10

Deadline \rightarrow 9 May, \rightarrow 4:30 - 12:00