Ch - 18

Course overview chart

4-4-21

Day-1 - Recapitulation and exercise - 18.1

Day-2 - Concepts related to Ex - 18.2-1 to 6 sums

Day-3 - Ex - 18.2 7 to 12 sums & concepts on discount

Day-4 - Ex - 18.3, 18.3 sums

Day-5 - Ex - 18.3 9 & 10 sums, concepts on sales tax (Heat), Ex - 18.4, 1 & 2 sums

Flow chart
Mathematics
↓
Arithmetic
↓
Applications of percentage

→ no. to %. Ex $7 \times \frac{100}{100} = 700\%$.

→ decimal no. to %. Ex $0.07 \times \frac{100}{100} = 7\%$.

→ fraction to %. → $\frac{2}{3} \times \frac{100}{100} = \frac{200}{3}\%$.

→ $\frac{7}{5} \times \frac{20}{20} = \frac{140}{5}\%$.

→ % to fraction, decimal

$75\% = \frac{75}{100} = \frac{3}{4} = 0.75$

Ex - 18.1

1 Total student = 25

People good in science = 52 %

not good = x

good st = $\frac{52}{100}$ × 25 = 13

∴ Not good = 25 − 13

= 12

2 Total matches = x

No. of matches won = 5

% of winning = 25

$\frac{25}{100}$ × x = 5

4x = 5 ∴ x = 5 × 4 = 20 matches

3 Chocolate = 50 %

Strawberry = 30 %

other = x

$= \frac{100}{100} - \left(\frac{50}{100} + \frac{30}{100}\right)$

$= \frac{100}{100} - \frac{80}{100} = \frac{20}{100} = 60$

Chocolate liking = $60 \times \frac{50}{100} = 30$

Strawberry liking = $60 \times \frac{30}{100} = 18$

∴ other flavour = 60 − (30 + 18) = 60 − 48 = 12

5- $x + x \times \frac{10}{100} = 330000$

$330000 \times \frac{100}{100} = 330000 + 330000 \times \frac{10}{100}$

$= 330000 + 33000$

$= ₹ 363000$

6 The room measuring $= 6m \times 5m \times 4m$

Oxygen % in the room $= 21\%$

Volume of Oxygen $= 21\% \times$ volume of room

Volume of room $= l \times b \times h = 6 \times 5 \times 4 = 120 m^3$

Volume of oxygen $= \frac{21}{100} \times 120 = 25.2 m^3$

7 Salary increased $= 10\%$

New salary $= 77000$

Previous salary $= x$

$x + x \times \frac{10}{100} = 77000$

$\frac{11x}{10} = 77000$

$x = \frac{77000}{11} \times 10$

$= 70000$ ∴ Previous salary $= ₹ 70000$

H.W sum

3 Money spent by Shubanto = 75%
Total salary = x
Money left = 6000

$x = \frac{75}{100} \times 6000$

$= \frac{3x}{4x + 600}$

$4x = 3 + 24000$
$4x - 3x = 24000$
$x = 24000$

7-9-22 Ex 18.2

a, HW Find profit or loss%.

b HW

c $CP = 2x$, $S.P = \frac{3x}{2}$

$SP > CP$
$P = SP - CP$
$= \frac{3x}{2} - \frac{x}{1}$
$= \frac{x}{2}$

$P\% = \frac{P}{CP} \times 100 = \left(\frac{x}{2} \div x\right) \times 100$
$= \frac{x}{2} \times \frac{1}{x} \times 100^{50} = 50\%$

d H.W

e $CP = \frac{₹\ 13a}{7}$, $S.P = \frac{₹\ 18a}{7}$

$SP > C.P$

$P = SP - CP$

$= \frac{18a}{7} - \frac{15a}{7}$

$= \frac{3a}{7}$

$P\% = \frac{P}{CP} \times 100$

$= \left(\frac{3a}{7} \div \frac{15a}{7}\right) \times 100$

$= \frac{3a}{1} \times \frac{7}{15a} \times 100^{20} = 20\%$

2 Find the S.P

$SP = C.P \times (100 \times P\%)$ or $\frac{CP \times (100 - L\%)}{100}$

a H.W

b $CP = ₹1200$, $L = 2\frac{1}{2}\% = \frac{5}{2}\%$

$SP = \frac{1200 \times \left(100 - \frac{5}{2}\right)}{100}$

$= \frac{12^{6} \times 195}{2_{1}}$

$= ₹1170$

c CP = ₹8x, P% = 25%.

SP = $\frac{8x \times 125}{100}$ = 10x

3 Find CP

ans

b SP = ₹1200; L% = $1\frac{1}{4}$% = $\frac{5}{4}$%.

CP = SP × $\frac{100}{(100 - L\%)}$ = $\frac{1200 \times 100}{(100 - \frac{5}{4})}$ = $\frac{1200 \times 400}{395}$

$\frac{395}{4}$

= $\frac{1200 \times 400 \times 4}{395}$

$\frac{395}{79}$

= ₹1215 (approx)

c SP = ₹4x, P% = 25%.

SP = $\frac{SP \times 100}{(100 + P\%)}$ = $\frac{4x \times 100}{125}$ = $\frac{16x}{5}$ = ₹3.2x

4 Veera motor cycle CP = ₹23000

Repair charges = ₹1850

Total CP = 23000 + 1850 = ₹24850

SP = ₹25550

SP > CP

P = SP − CP = ₹ 25350 − ₹ 24850 = ₹ 700

P% = $\frac{P}{CP} \times 100 = \frac{700}{24850} \times 100$ = 28% (appx)

H.W sums

1

a CP = ₹ 300, SP = ₹ 350

Profit = $\frac{50}{300} \times 100 = \frac{50}{3}$ % = 16.66% (approx)

b CP = ₹ 11,02,000, SP = ₹ 10,21,500

⇒ Loss = ₹ 80500

∴ Loss % = $\frac{80500}{1102000} \times 100$ = 13.68% (approx)

2204

d CP = ₹ 100, SP = ₹ 80

Loss = ₹ 20

∴ Loss % = $\frac{20}{100_1} \times 100^1$ = 20%

2

a CP = ₹ 500, Profit = ₹ 20

SP = CP + Profit = ₹ 500 + ₹ 20 = ₹ 520

3
A SP = ₹ 5000, Profit % = 10%

$CP = \frac{100}{100 \times 10\%} \times 5000 = ₹ 500$

8-4-22

Ex 18.2

5-H.W

6

Case 1

1 sack potatoes SP = ₹ 2250

P% on them = $12\frac{1}{2}$ %

Case 2

If same 500 kg sold a) ₹ 4 per kg It is profit or loss

$CP = \frac{SP \times 100}{100 + P\%} = \frac{2250 \times 100}{\frac{100}{1} \times \frac{25}{2}} = \frac{\cancel{2250} \times 100 \times 2}{\cancel{225}_{1}}$

$= 2000$

SP in case 2 = $4 \times 500 = ₹ 2000$

No profit no loss

7 Butter cookies (B.C) = 9 @ ₹10

1 B.C C.P = ₹ $\frac{10}{9}$

Coco cookies (C.C) = 11 @ ₹10

1 C.C C.P. = ₹ $\frac{10}{11}$

SP of cookies after mixing 10 @ ₹10

SP of cookie = ₹1

Find L% of PY.

CP of 1 BC & 1 CC = $\frac{10}{9} + \frac{11}{11}$

2 cookies = $\frac{110 + 90}{99}$ = ₹ $\frac{200}{99}$

1 cookie C.P = $\frac{200}{99} \times \frac{1}{2}$ = ₹ $\frac{100}{99}$

C.P > SP ∴ Loss = CP − SP = $\frac{100}{99} - \frac{1}{1} = \frac{1}{99}$

Loss % = $\frac{\text{Loss}}{\text{CP}} \times 100 = \left(\frac{1}{99} \div \frac{100}{99}\right) \times 100$

$= \frac{1}{99} \times \frac{99}{100} \times 100$

L% = 1%

8 Mr Ambani purchased 3 transistor's @ ₹222 each
Repairs on each ₹75

Total CP = 300 × 3 = ₹900

Sold 1 transistor @ L% = 5%.
If he wants overall P% = 10%.
$SP_2 + SP_3 = ?$

$SP_1 = \frac{CP \times (100 - L\%)}{100} = \frac{300 \times 95}{100} = ₹285$

Total SP of 3 sets = Total $\frac{CP \times (100 + P\%)}{100} = \frac{900 \times 110}{100}$

= ₹990

$SP_2 + SP_3 = 990 - SP_1 = 990 - 285 = ₹705$

9 SP of 2 pups = ₹7000 (each)
∴ Total SP = ₹14000
L% on pup 1 = 10%
P% on pup 2 = 10%

L% or P% = ?

CP_1 of pup 1 $= \frac{SP \times 100}{(100 - L\%)} = \frac{7000 \times 100}{90} = \frac{70000}{9}$

CP_2 of pup 2 $= \frac{SP \times 100}{(100 + P\%)} = \frac{7000 \times 100}{110}$

= ₹7000

Total CP = $CP_1 + CP_2$ = $\frac{70000}{9} + \frac{70000}{11}$

$= \frac{770000 + 630000}{99}$

$= \frac{1400000}{99}$

$= CP > SP$

$\therefore L = CP - SP$

$\frac{1400000}{99} - 14000 = \frac{1400000 - 1386000}{99}$

$L = \frac{14000}{99}$

$L\% = \frac{L}{CP} \times 100 = \left(\frac{14000}{99} \div \frac{1400000}{99}\right)$

$= \frac{14000}{99} \times \frac{99}{1400000} \times 100$

$= 1\%$

Loss

11 CP of 13 choco = SP of 14 choco

Let CP of 13 choco = ₹13

SP of 14 choco = ₹13

CP of choco = ₹1

SP of choco = ₹$\frac{13}{14}$

$CP > SP \therefore L = CP - SP = 1 - \frac{13}{14}$

$L = ₹\frac{1}{14}$ or $\quad L\% = \frac{L}{CP} \times 100 = \left(\frac{1}{14} \div 1\right) \times 100$

$= \frac{1}{14} \times 100^{50}$

$L\% = \frac{50}{7} = 7\frac{1}{7}\%$

12 CP of 10 candies ₹ 10

∴ CP of 1 candy = ₹1

SP of 8 candies = ₹ 10

∴ SP of 1 candy $= \frac{₹10^{5}}{8_{4}} = ₹\frac{5}{4}$

SP > CP

$P = SP - CP = \frac{5}{4} - \frac{1}{1} = \frac{1}{4}$

$P\% = \frac{P}{CP} \times 100 = \left(\frac{1}{4} \div 1\right) \times 100 = \frac{1}{4} \times 100^{25}$

$= 25\%$

H.W sums ex-18.2

5 CP = ₹ 1800

P% = 25%

$P = \frac{25 \times 1800}{100}$ = ₹ 410

$\begin{array}{r} 25 \\ \times 18 \\ \hline 160 \\ +250 \\ \hline 410 \end{array}$

10 CP = ₹1450

D% = 15%

SP = $\frac{100+15}{100} \times 1450 = \frac{115}{100} \times 1450 = 1667.5$

11-3-22

Ex-18.3

1 D% = 25%

SP = ?

HW

MRP / MP = ₹1725

SP = $\frac{MP \times (100 - D\%)}{100} = \frac{1725 \times 75}{100} = ₹1293.75$

(C to f) HW

2 HW MP-SP formula

3 Successive discount

$D_1\% = 25\%$

$D_2\% = 5\%$

Single D% = $(D_1 + D_2) - \frac{D_1 \times D_2}{100} = 30 - \frac{125}{100}$

$= \frac{115}{4}$

D% = 28.75%

4 SP = ₹5760

Successive discounts = $D_1 = 10\%$, $D_2 = 20\%$

Single D% $= (D_1 + D_2) - \frac{D_1 D_2}{100} = 30 - \frac{200}{100} = 28\%$

$MP = \frac{SP \times 100}{100 - D\%} = \frac{5760 \times 100}{72} = 8000$

$\therefore MP = ₹8000$

5 D% = 10%

P% = 20%

P = ₹45

MP = ?

$P\% = \frac{P}{CP} \times 100$

$20\% = \frac{45}{CP} \times 100$

$CP = \frac{45}{20} \times 100 = ₹225$

SP = CP + P = 225 + 45 = 270

$MP = \frac{SP \times 100}{100 - D\%} = ₹300$

6 CP = ₹980

D% = 12.5%

P% = 10%

MP = ?

$SP = \frac{CP \times (100 + P\%)}{100} = \frac{980 \times 110}{100} = ₹1078$

$MP = \frac{SP \times 100}{(100 - D\%)} = \frac{1078 \times 100}{87.5} = ₹1232$

7 HW

H.W sums

1

a MRP / MP = ₹5-32.50

$SP = \frac{MP \times (100 - 25)}{100} = \frac{5-32.50 \times (100 - 25)}{100} = \frac{133.125 \times 3}{4_1}$

$= 133.125 \times 3$

$= ₹399.375$

c MRP / MP = ₹1300

$SP = \frac{1300 \times (100 - 25)}{100} = \frac{1300 \times 75}{100} = ₹975$

d MRP / MP = ₹880

$SP = \frac{880 \times (100 - 25)}{100} = \frac{220 \times 75^3}{4_1} = ₹660$

e MRP/MP = ₹2200

$SP = \frac{2200 \times (100-25)}{100} = \frac{2200 \times 75}{100} = ₹1650$

f MRP/MP = ₹5000

$SP = \frac{5000 \times (100-25)}{100} = \frac{5000 \times 75}{100} = ₹3750$

2 MP = ₹15000

SP = ₹10000

D = ₹5000

$D\% = \frac{5000}{15000} \times 100 = 33\frac{1}{3}\% = 33.33\%$

7 MP = ₹875

D% = 22%

$SP = \frac{875(100-22)}{100} = \frac{875 \times 78}{100} = ₹682.5$

12-4-22 Practice 18.3

8 D = 12%

P = 10%

MP = ₹3800

SP = ?

$SP = MP \times D\% = \frac{3800 \times 12}{100} = ₹456$

$MP = \frac{SP \times 100}{(100-D\%)}$

$P = \frac{3800 \times 10}{100} = 380 = ₹380$

$SP = \frac{3800 \times (100+10)}{100}$

$= 38 \times 110$

38 × 12 = 76 + 380 = 456

$$MP = \frac{SP_1(100)}{100 - P\%} = \frac{4180 \times 100}{100 - 12} = \frac{4180 \times 100}{88} = 2190 \times 2$$

$$= 2475$$

9 Complete the Table

S.No	Marked price	Discount %	Selling price
1	₹ 2200	22%	? ₹1760
2	₹250	?	₹200
3	?	2%	₹1960
4	₹3000	13%	?
5	₹1000	?	₹950

MP / SP

1 SP = x

~~SP = MP × D = ₹2200 × 22/100 = ₹484~~

$SP = \frac{2200 \times 78}{100} = 22 \times 78 = ₹1760$

22 × 22 = 44 + 440 = 484

2 $D\% = \frac{D}{MP} = \frac{MP - SP}{MP} = \frac{50}{250} \times 100 = 20\%$

~~18-4-22~~

3 $MP = \frac{SP \times 100}{(100 - D\%)} = \frac{1960 \times 100}{98} = ₹ 2000$

10 $D\% = 10\% \& 5\%$

$MP = ₹ 4500$

$SP = ?$

$D\% \pm (D_1 + D_2) - \left(\frac{D_1 \times D_2}{100}\right) = 10 + 5 - \left(\frac{10 \times 5}{100}\right) = 15 - \frac{50}{100}$

$= 15 - \frac{1}{2}$

$= 15 - 0.5 = 14.5$

$SP = MP \times (100 - D\%) = \frac{45 \times (100 - 14.5)}{100} = \frac{45 \times 85.5}{}$

$= 3849.5$