Chapter 2. Compound Interest (Without using formula)

Exercise 2(A)

Solution 1:

(i) Principal for 1st year = Rs. 3500
R = 10%

Interest for 1st year = $\frac{3500 \times 10 \times 1}{100}$

= Rs. 350

Amount after 1st year = Rs. 3500 + 350
= Rs. 3850

Principal for 2nd year = 3850

Interest for 2nd year = $\frac{3850 \times 10 \times 1}{100} = 385$

Amount after 2nd year = 3850 + 385
= 4235

Compound interest = 350 + 385
= Rs. 735

(ii) Principal for 1st year = Rs. 6000
R = 5%

Interest for 1st year = $\frac{6000 \times 5 \times 1}{100} = \text{Rs. } 300$

Amount after 1st year = 6000 + 300 = 6300

Principal for 2nd years = Rs. 6300

Interest for 2nd year = $\frac{63000 \times 5 \times 1}{100} = \text{Rs. } 315$

Amount after 2nd year = 6300 + 315 = Rs. 6615

Principal for 3rd year = 6615

Interest for 3nd year = $\frac{6615 \times 5 \times 1}{100}$

Amount after 3rd year $= \frac{33075}{100} = 330.75.$

= 6615 + 330.75 = Rs. 6945.75

Compound interest = 300 + 315 + 330.75
= Rs. 945.75

Solution 2:

(i) for 1st year

P = Rs. 8000

R = 15%

T = 1 year.

Interest = $\frac{8000 \times 15 \times 1}{100} = Rs.1200$

Amount = 8000 + 1200 = Rs. 9200

For 2nd year.

P = Rs. 9200, R = 15%, T = 1 year.

$I = \frac{9200 \times 15 \times 1}{100} = Rs.1380$

Amount = 9200 + 1380 = 10580

For final $\frac{1}{2}$ year

P = Rs. 10580, R = 15%, T = $\frac{1}{2}$ year

$I = \frac{10580 \times 15 \times 1}{100 \times 2} = \frac{79350}{100} = 793.50$

Amount = 10580 + 793.50

= Rs. 11373.50

Amount in $2\frac{1}{2}$ years = Rs. 11373.50

P = 8000

Compound interest = 11373.50 - 8000

= Rs. 3373.50

(ii) for 1st years

P = Rs. 20000, R = 10%, T = 1 year

Interest (I) = $\frac{20000 \times 10 \times 1}{100} = Rs.2000$

Amount (A) = 20000 + 2000
= Rs. 22,000 for 2nd year =

P = Rs. 22000,R = 10%,and T = 1 year.

$$I = \frac{22000 \times 10 \times 1}{100} = Rs.2200$$

A = 22000 + 2200 = Rs. 24200
For final $\frac{1}{4}$ th fo year.

P = 24200,R = 10%,T = $\frac{1}{4}$ year

$$I = \frac{24200 \times 10 \times \frac{1}{4}}{100 \times 4} = \frac{60500}{100} = Rs.605$$

A = 24200 + 605 = Rs. 24805.
Amount in $2\frac{1}{4}$ years. = Rs. 24805.
Compound interest = 24805 - 20000
= Rs. 4805

Solution 3:

(i)
For 1st year
P = Rs. 4600
R = 10%
T = 1 year.

$$I = \frac{4600 \times 10 \times 1}{100} = Rs.460$$

A = 4600 + 460 = Rs. 5060
For 2nd year
P = Rs. 5060
R = 12%
T = 1 year.

$$I = \frac{5060 \times 12 \times 1}{100} = \frac{60720}{100} = 607.20$$

A= 5060 + 607.20 = Rs. 5667.20
Compound interest = 5667.20 - 4600
= Rs. 1067.20
Amount after 2 years = Rs. 5667.20
(ii)
For 1st year
P = Rs. 16000
R = 10%
T = 1 year

$$I = \frac{16000 \times 10 \times 1}{100} = Rs.1600$$

A = 16000 + 1600 = 17600
For 2nd year,
P = Rs. 17600
R = 14%
T = 1 year

$$I = \frac{17600 \times 14 \times 1}{100} = \frac{246400}{100} = Rs.2464.$$

A = 1760 + 24654 = Rs. 20064
For 3rd year,
P = Rs. 20064
R = 15%
T = 1 year

$$I = \frac{20064 \times 15 \times 1}{100} = 3009.60$$

Amount after 3 years = 20064 + 3009.60
= Rs. 23073.60
Compound interest = 23073.60 - 16000
= Rs. 7073.60

Solution 4:

For 1st years
P = Rs. 2400
R = 5%
T = 1 year

$$I = \frac{2400 \times 5 \times 1}{100} = 120$$

A = 2400 + 120 = Rs. 2520
For 2nd year
P = Rs. 2520
R = 5%
T = 1 year

$$I = \frac{2520 \times 5 \times 1}{100} = Rs.126$$

A = 2520 + 126 = Rs. 2646
For final $\frac{1}{2}$ year,
P = Rs. 2646
R = 5%
T = $\frac{1}{2}$ year

$$I = \frac{2646 \times 5 \times 1}{100 \times 2} = Rs.66.15$$

Amount after $2\frac{1}{2}$ years = 2646 + 66.15
= Rs. 2712.15
Compound interest = 2712.15 - 2400
= Rs. 312.15

Solution 5:

For 1st year
P = Rs. 8000
R = 10%
T = 1 year

$$I = \frac{8000 \times 10 \times 1}{100} = 800$$

A = 8000 + 800 = Rs. 8800
For 2nd year
P = Rs. 8800
R = 10%
T = 1 year

$$I = \frac{8800 \times 10 \times 1}{100}$$

Compound interest for 2nd years = Rs. 880

Solution 6:

For 1st year
P = Rs. 2500
R = 12%
T = 1 year

$$I = \frac{2500 \times 12 \times 1}{100} = Rs.300$$

Amount = 2500 + 300 = Rs. 2800
For 2nd year
P = Rs. 2800
R = 12%
T = 1 year

$$I = \frac{2800 \times 12 \times 1}{100} = Rs.336$$

Amount = 2800 + 336 = Rs. 3136
Amount repaid by A to B = Rs. 2936
The amount of watch =Rs. 3136 - Rs. 2936 = Rs. 200

Solution 7:

$$\text{Interest for the first year} = \frac{P \times R \times T}{100}$$
$$= \frac{50,000 \times 6 \times 1}{100}$$
$$= Rs.3,000$$

Amount for the first year = Rs. 50, 000 + Rs. 3, 000 = Rs. 53, 000

$$\text{Interest for the second year} = \frac{P \times R \times T}{100}$$
$$= \frac{53,000 \times 8 \times 1}{100}$$
$$= Rs.4,240$$

Amount for the second year = Rs. 53, 000 + Rs. 4, 240 = Rs. 57, 240

$$\text{Interest for the third year} = \frac{P \times R \times T}{100}$$
$$= \frac{57,240 \times 10 \times 1}{100}$$
$$= Rs.5,724$$

Amount for the third year = Rs. 57, 240 + Rs. 5, 724 = Rs. 62, 964
Hence, the amount will be Rs. 62, 964.

Solution 8:

Interest for the first year $= \frac{P \times R \times T}{100}$

$= \frac{75,000 \times 15 \times 1}{100}$

$=$ Rs. 11,250

Amount for the first year $=$ Rs. 75, 000 + Rs. 3, 000 = Rs. 86, 250

Interest for the second year $= \frac{P \times R \times T}{100}$

$= \frac{86,250 \times 15 \times 1}{100}$

$=$ Rs. 12, 937.5

Amount for the second year $=$ Rs. 86,250 + Rs. 12,937.5 = Rs. 99, 187.5

Interest for the third year $= \frac{P \times R \times T}{100}$

$= \frac{99,187.5 \times 16 \times 1}{100}$

$=$ Rs. 15,870

Amount for the third year $=$ Rs. 99, 187.5 + Rs. 15,870 = Rs. 1, 15,057.5

Hence, the sum Meenal will get at the end of the third year is Rs. 1, 15,057.5.

Solution 9:

To calculate S.I.

P=Rs18,000; R=10% and T=1year

S.I.= Rs $\frac{18,000 \times 10 \times 1}{100}$ = Rs1,800

To calculate C.I.

For 1st half- year

P= Rs18,000; R=10% and T= 1/2year

Interest= Rs $\frac{18,000 \times 10 \times 1}{100 \times 2}$ = Rs900

Amount= Rs18,000+ Rs900= Rs18,900

For 2nd year

P= Rs18,900; R= 10% and T= 1/2year

Interest= Rs $\frac{18,900 \times 10 \times 1}{100 \times 2}$ = Rs945

Amount= Rs18,900+ Rs945= Rs19,845

∴ Compound interest= Rs19,845- Rs18,000= Rs1,845

∴ His gain= Rs1,845 - Rs1,800= Rs45

Solution 10:

Interest for the first year $= \frac{P \times R \times T}{100}$

$= \frac{4,000 \times 8 \times 1}{100}$

$= Rs.320$

Amount for the first year $= Rs.4,000 + Rs.320 = Rs.4,320$

Interest for the second year $= \frac{P \times R \times T}{100}$

$= \frac{4,320 \times 10 \times 1}{100}$

$= Rs.432$

Amount for the second year $= Rs.4,320 + Rs.432 = Rs.4,752$

Interest for the third year $= \frac{P \times R \times T}{100}$

$= \frac{4,752 \times 10 \times 1}{100}$

$= Rs.475.20$

Amount for the third year $= Rs.4,752 + Rs.475.20 = Rs.5,227.20$

So, the compound interest $= Rs.\ 5,227.20 - Rs.4,000 = Rs.1,227.20$

Hence, the sum Meenal will get at the end of the third year is Rs.1,227.20.