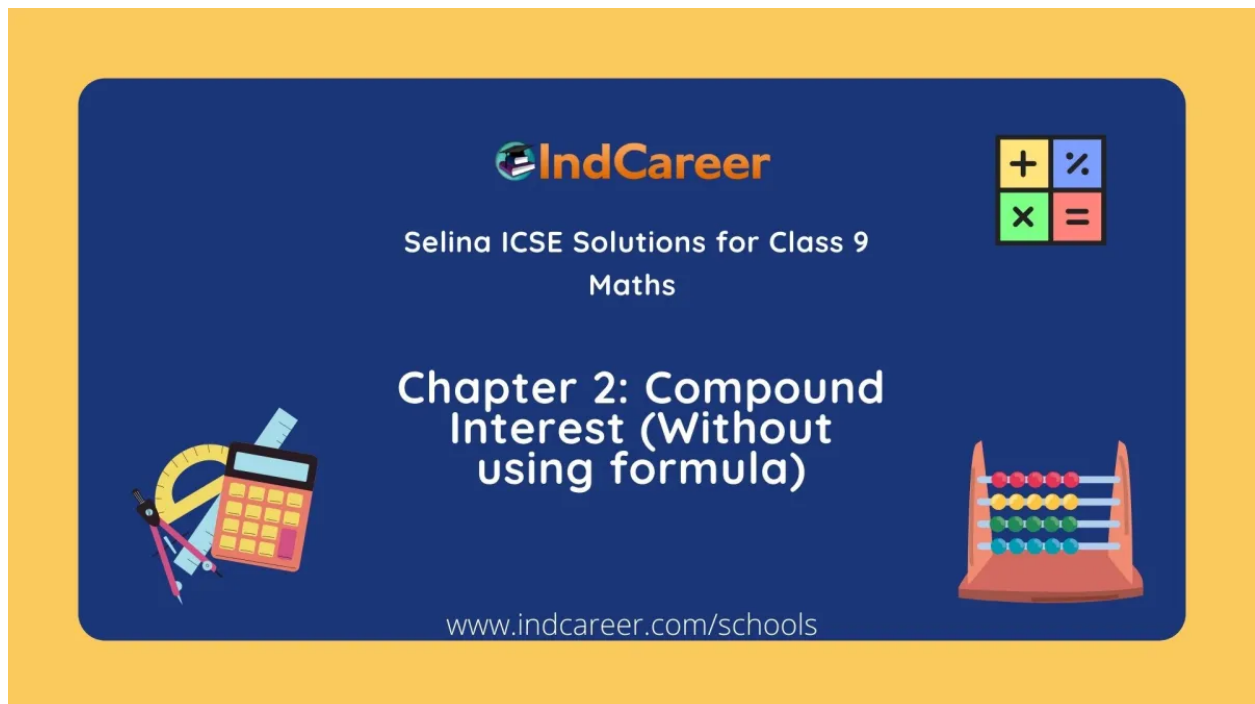


Selina Class 9 ICSE Solutions Mathematics :

Chapter 2- Compound Interest (Without using formula)



For any clarifications or questions you can write to **info@indcareer.com**

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<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>



Selina Class 9 ICSE Solutions Mathematics : Chapter 2- Compound Interest (Without using formula)

Class 9: Maths Chapter 2 solutions. Complete Class 9 Maths Chapter 2 Notes.

Selina Class 9 ICSE Solutions Mathematics : Chapter 2- Compound Interest (Without using formula)

Selina 9th Maths Chapter 2, Class 9 Maths Chapter 2 solutions

Exercise 2(A)

Solution 1:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

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

R = 10%

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

= Rs. 350

Amount after 1st year = Rs. 3500 + 350

= Rs. 3850

Principal for 2nd year = 3850

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

Amount after 2nd year = 3850 + 385

= 4235

Compound interest = 350 + 385

= Rs. 735

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

R = 5%

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

Amount after 1st year = 6000 + 300 = 6300

Principal for 2nd years = Rs. 6300

$$\text{Interest for 2}^{\text{nd}} \text{ year} = \frac{6300 \times 5 \times 1}{100} = \text{Rs. 315}$$

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

Principal for 3rd year = 6615

$$\text{Interest for 3}^{\text{rd}} \text{ year} = \frac{6615 \times 5 \times 1}{100}$$

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

= 6615 + 330.75 = Rs. 6945.75

Compound interest = 300 + 315 + 330.75

= Rs. 945.75

Solution 2:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

(i) for 1st year

P = Rs. 8000

R = 15%

T = 1 year.

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

Amount = 8000 + 1200 = Rs. 9200

For 2nd year.

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

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

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

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

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

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

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

A = 22000 + 2200 = Rs. 24200

For final $\frac{1}{4}$ th fo year.

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

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

A = 24200 + 605 = Rs. 24805.

Amount in $2\frac{1}{4}$ years. = Rs. 24805.

Compound interest = 24805 - 20000
= Rs. 4805

Solution 3:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

(i)

For 1st year

P = Rs. 4600

R = 10%

T = 1 year.

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

$$A = 4600 + 460 = \text{Rs. } 5060$$

For 2nd year

P = Rs. 5060

R = 12%

T = 1 year.

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

$$A = 5060 + 607.20 = \text{Rs. } 5667.20$$

$$\text{Compound interest} = 5667.20 - 4600$$

$$= \text{Rs. } 1067.20$$

$$\text{Amount after 2 years} = \text{Rs. } 5667.20$$

(ii)

For 1st year

P = Rs. 16000

R = 10%

T = 1 year

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

$$A = 16000 + 1600 = 17600$$

For 2nd year,

P = Rs. 17600

R = 14%

T = 1 year

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

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

$$A = 1760 + 2464 = \text{Rs. } 20064$$

For 3rd year,

$$P = \text{Rs. } 20064$$

$$R = 15\%$$

$$T = 1 \text{ year}$$

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

$$\text{Amount after 3 years} = 20064 + 3009.60$$

$$= \text{Rs. } 23073.60$$

$$\text{Compound interest} = 23073.60 - 16000$$

$$= \text{Rs. } 7073.60$$

Solution 4:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

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

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

A = 2520 + 126 = Rs. 2646

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

P = Rs. 2646

R = 5%

T = $\frac{1}{2}$ year

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

Amount after $2\frac{1}{2}$ years = 2646 + 66.15

= Rs. 2712.15

Compound interest = 2712.15 - 2400

= Rs. 312.15

Solution 5:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

For 1st year

P = Rs. 8000

R = 10%

T = 1 year

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

$$A = 8000 + 800 = \text{Rs. } 8800$$

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

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

$$\text{Amount} = 2500 + 300 = \text{Rs. } 2800$$

For 2nd year

P = Rs. 2800

R = 12%

T = 1 year

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

$$\text{Amount} = 2800 + 336 = \text{Rs. } 3136$$

Amount repaid by A to B = Rs. 2936

The amount of watch = Rs. 3136 - Rs. 2936 = Rs. 200

Solution 7:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

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

$$\text{Amount for the first year} = \text{Rs. } 50,000 + \text{Rs. } 3,000 = \text{Rs. } 53,000$$

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

$$\text{Amount for the second year} = \text{Rs. } 53,000 + \text{Rs. } 4,240 = \text{Rs. } 57,240$$

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

$$\text{Amount for the third year} = \text{Rs. } 57,240 + \text{Rs. } 5,724 = \text{Rs. } 62,964$$

Hence, the amount will be Rs. 62,964.

Solution 8:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

$$\begin{aligned}\text{Interest for the first year} &= \frac{P \times R \times T}{100} \\ &= \frac{75,000 \times 15 \times 1}{100} \\ &= \text{Rs. } 11,250\end{aligned}$$

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

$$\begin{aligned}\text{Interest for the second year} &= \frac{P \times R \times T}{100} \\ &= \frac{86,250 \times 15 \times 1}{100} \\ &= \text{Rs. } 12,937.5\end{aligned}$$

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

$$\begin{aligned}\text{Interest for the third year} &= \frac{P \times R \times T}{100} \\ &= \frac{99,187.5 \times 16 \times 1}{100} \\ &= \text{Rs. } 15,870\end{aligned}$$

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

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

Solution 9:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

To calculate S.I.

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

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

To calculate C.I.

For 1st half- year

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

$$\text{Interest} = \text{Rs } \frac{18,000 \times 10 \times 1}{100 \times 2} = \text{Rs}900$$

$$\text{Amount} = \text{Rs}18,000 + \text{Rs}900 = \text{Rs}18,900$$

For 2nd year

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

$$\text{Interest} = \text{Rs } \frac{18,900 \times 10 \times 1}{100 \times 2} = \text{Rs}945$$

$$\text{Amount} = \text{Rs}18,900 + \text{Rs}945 = \text{Rs}19,845$$

$$\therefore \text{Compound interest} = \text{Rs}19,845 - \text{Rs}18,000 = \text{Rs}1,845$$

$$\therefore \text{His gain} = \text{Rs}1,845 - \text{Rs}1,800 = \text{Rs}45$$

Solution 10:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

$$\begin{aligned}\text{Interest for the first year} &= \frac{P \times R \times T}{100} \\ &= \frac{4,000 \times 8 \times 1}{100} \\ &= \text{Rs. } 320\end{aligned}$$

$$\text{Amount for the first year} = \text{Rs. } 4,000 + \text{Rs. } 320 = \text{Rs. } 4,320$$

$$\begin{aligned}\text{Interest for the second year} &= \frac{P \times R \times T}{100} \\ &= \frac{4,320 \times 10 \times 1}{100} \\ &= \text{Rs. } 432\end{aligned}$$

$$\text{Amount for the second year} = \text{Rs. } 4,320 + \text{Rs. } 432 = \text{Rs. } 4,752$$

$$\begin{aligned}\text{Interest for the third year} &= \frac{P \times R \times T}{100} \\ &= \frac{4,752 \times 10 \times 1}{100} \\ &= \text{Rs. } 475.20\end{aligned}$$

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

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

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

Exercise 2(B)

Solution 1:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

For 1st year

P = Rs. 4000

R = 8

T = 1 year

$$I = \frac{4000 \times 8 \times 1}{100} = 320$$

A = 4000 + 320 = Rs. 4320

For 2nd year

P = Rs. 4320

R = 8%

T = 1 year

$$I = \frac{4320 \times 8 \times 1}{100} = \text{Rs. } 345.60$$

A = 4320 + 345.60 = 4665.60

Compound interest = Rs. 4665.60 - Rs. 4000

= Rs. 665.60

$$\text{Simple interest for 2 years} = \frac{4000 \times 8 \times 2}{100}$$

= Rs. 640

Difference of CI and SI = 665.60 - 640

= Rs 25.60

Solution 2:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

For 1st year

P = Rs. 12500

R = 12%

T = 1 year

$$I = \frac{12500 \times 12 \times 1}{100} = \text{Rs. } 1500$$

$$A = 12500 + 1500 = \text{Rs. } 14000$$

For 2nd year

P = Rs. 14000

R = 15%

T = 1 year

$$I = \frac{14000 \times 15 \times 1}{100} = \text{Rs. } 2100$$

$$A = 14000 + 2100 = \text{Rs. } 16100$$

For 3rd year

P = Rs. 16100

R = 18%

T = 1 year

$$I = \frac{16100 \times 18 \times 1}{100} = \text{Rs. } 2898$$

$$A = 16100 + 2898 = \text{Rs. } 19000$$

Difference between the compound interest of the third year and first year

$$= \text{Rs. } 2898 - \text{Rs. } 1500$$

$$= \text{Rs. } 1398$$

Solution 3:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

Let money be Rs100

For 1st year

P=Rs100; R=8% and T= 1year

Interest for the first year= Rs $\frac{100 \times 8 \times 1}{100}$ = Rs8

Amount= Rs100+ Rs8= Rs108

For 2nd year

P=Rs108; R=8% and T= 1year

Interest for the second year= Rs $\frac{108 \times 8 \times 1}{100}$ = Rs8.64

Difference between the interests for the second and first year = Rs8.64 - Rs8 = Rs0.64

Given that interest for the second year exceeds the first year by Rs.96

When the difference between the interests is Rs0.64, principal is Rs100

When the difference between the interests is Rs96, principal=Rs $\frac{96 \times 100}{0.64}$ =Rs15,000

Solution 4:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

Given that the amount for the first year = Rs. 5,000

Rate per annum = 12%

$$\text{Interest on Rs. 5,000} = \frac{12}{100} \times \text{Rs. 5,000} = \text{Rs. 600}$$

So, amount at the end of the first 6 months

$$= \text{Rs. 5,000} + \text{Rs. 600}$$

$$= \text{Rs. 5,600}$$

$$\text{Amount left to be paid} = \text{Rs. 5,600} - \text{Rs. 1,800}$$

$$= \text{Rs. 3,800}$$

$$\text{Interest on Rs. 3,800} = \frac{12}{100} \times \text{Rs. 3,800} = \text{Rs. 456}$$

So, amount at the end of the next 6 months

$$= \text{Rs. 3,800} + \text{Rs. 456}$$

$$= \text{Rs. 4,256}$$

$$\text{Amount left to be paid} = \text{Rs. 4,256} - \text{Rs. 1,800}$$

$$= \text{Rs. 2,456}$$

$$\text{Interest on Rs. 2,456} = \frac{12}{100} \times \text{Rs. 2,456} = \text{Rs. 294.72}$$

So, amount at the end of the next 6 months

$$= \text{Rs. 2,456} + \text{Rs. 294.72}$$

$$= \text{Rs. 2750.72}$$

Hence, the third payment he has to make at the end of 18 months in order to clear the entire loan is Rs. 2750.72.

[*Note: The solution has been solved as per the question [that is rate per 6 months].

However, the answer at the back is solved with 'rate per annum'.

So, the answers do not match.]

Solution 5:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

Given that the amount borrowed = Rs. 6,000

Rate per annum = 5%

$$\text{Interest on Rs. 6,000} = \frac{5}{100} \times \text{Rs. 6,000} = \text{Rs. 300}$$

So, amount at the end of the first year

$$= \text{Rs. 6,000} + \text{Rs. 300}$$

$$= \text{Rs. 6,300}$$

$$\text{Amount left to be paid} = \text{Rs. 6,300} - \text{Rs. 1,200}$$

$$= \text{Rs. 5,100}$$

$$\text{Interest on Rs. 5,100} = \frac{5}{100} \times \text{Rs. 5,100} = \text{Rs. 255}$$

So, amount at the end of the second year

$$= \text{Rs. 5,100} + \text{Rs. 255}$$

$$= \text{Rs. 5,355}$$

$$\text{Amount left to be paid} = \text{Rs. 5,355} - \text{Rs. 1,200}$$

$$= \text{Rs. 4,155}$$

Hence, the amount of the loan outstanding at the beginning of the third year is Rs. 4,155.

Solution 6:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

Let principal (p = Rs. 100

R = 10%

T = 1 year

$$SI = \frac{100 \times 10 \times 1}{100} = \text{Rs. } 10$$

Compound interest payable half yearly

R = 5% half yearly

$T = \frac{1}{2}$ year = 1 half year

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

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

$A = 100 + 5 = \text{Rs. } 105$

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

$P = \text{Rs. } 105$

$$I = \frac{105 \times 5 \times 1}{100} = \text{Rs. } 5.25$$

Total compound interest = $5 + 5.25$

= Rs. 10.25

Difference of CI and SI = $10.25 - 10$

= Rs. 0.25

When difference in interest is Rs. 10.25, sum = Rs. 100

$$\text{If the difference is Rs. } 1, \text{ sum} = \frac{100}{0.25}$$

$$\text{If the difference is Rs. } = 180, \text{ sum} = \frac{100}{0.25} \times 180$$

= Rs. 72000

Solution 7:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

Let the original cost of the machine = Rs. 100

∴ Depreciation during the 1st year = 15% of Rs. 100 = Rs. 15

Value of the machine at the beginning of the 2nd year

= Rs. 100 – Rs. 15

= Rs. 85

∴ Depreciation during the 2nd year = 15% of Rs. 85 = Rs. 12.75

Now, when depreciation during 2nd year = Rs. 12.75, original cost = Rs. 100

⇒ when depreciation during 2nd year = Rs. 5,355

original cost = Rs. $\frac{100}{12.75} \times 5,355$ = Rs. 42,000

Hence, original cost of the machine is Rs. 42,000.

Solution 8:

(i) For 1st years

P = Rs. 5600

R = 14%

T = 1 year

$$I = \frac{5600 \times 14 \times 1}{100} = \text{Rs. } 784$$

(ii) Amount at the end of the first year

= 5600 + 784

= Rs. 6384

(iii) For 2nd year

P = 6384

R = 14%

T = 1 year

$$I = \frac{6384 \times 14 \times 1}{100}$$

= Rs. 803.76

= Rs. 894 (nearly)

Solution 9(i):

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

The principal, $P = \text{Rs. } 48,000$

$$\begin{aligned}\text{Interest for the first year} &= \frac{P \times R \times T}{100} \\ &= \frac{48,000 \times 10 \times 1}{100} \\ &= \text{Rs. } 4,800\end{aligned}$$

So, amount at the end of the first year

$$= \text{Rs. } 48,000 + \text{Rs. } 4,800$$

$$= \text{Rs. } 52,800$$

$$\begin{aligned}\text{Interest for the second year} &= \frac{P \times R \times T}{100} \\ &= \frac{52,800 \times 10 \times 1}{100} \\ &= \text{Rs. } 5,280\end{aligned}$$

So, amount at the end of the second year

$$= \text{Rs. } 52,800 + \text{Rs. } 5,280$$

$$= \text{Rs. } 58,080$$

$$\begin{aligned}\text{Interest for the third year} &= \frac{P \times R \times T}{100} \\ &= \frac{58,080 \times 10 \times 1}{100} \\ &= \text{Rs. } 5,808\end{aligned}$$

Hence, the difference between the interest for the second and third year is

$$\text{Rs. } 5,808 - \text{Rs. } 5,280 = \text{Rs. } 528.$$

Solution 9(ii):

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

$$\begin{aligned}\text{Interest for the first year} &= \frac{P \times R \times T}{100} \\ &= \frac{50,000 \times 10 \times 1}{100} \\ &= \text{Rs. } 5,000\end{aligned}$$

$$\begin{aligned}\text{Amount at the end of the first year} \\ &= \text{Rs. } 50,000 + \text{Rs. } 5,000 \\ &= \text{Rs. } 55,000\end{aligned}$$

$$\begin{aligned}\text{Interest for the second year} &= \frac{P \times R \times T}{100} \\ &= \frac{55,000 \times 12 \times 1}{100} \\ &= \text{Rs. } 6,600\end{aligned}$$

$$\begin{aligned}\text{Amount at the end of the second year} \\ &= \text{Rs. } 55,000 + \text{Rs. } 6,600 \\ &= \text{Rs. } 61,600\end{aligned}$$

$$\begin{aligned}\text{Interest for the third year} &= \frac{P \times R \times T}{100} \\ &= \frac{61,600 \times 14 \times 1}{100} \\ &= \text{Rs. } 8,624\end{aligned}$$

$$\begin{aligned}\text{Total of the interests earned during first and third years} \\ &= \text{Rs. } 5,000 + \text{Rs. } 8,624 \\ &= \text{Rs. } 13,624\end{aligned}$$

Solution 10:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

Savings at the end of every year = Rs. 3000

For 2nd year

P = Rs. 3000

R = 10%

T = 1 year

$$I = \frac{3000 \times 10 \times 1}{100} = 300$$

A = 3000 + 300 = Rs. 3300

For third year, savings = 3000

P = 3000 + 3300 = Rs. 6300

R = 10%

T = 1 year

$$I = \frac{6300 \times 10 \times 1}{100} = \text{Rs. } 630$$

A = 6300 + 630 = Rs. 6930

Amount at the end of 3rd year

= 6930 + 3000

= Rs. 9930

Solution 11:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

The amount borrowed = Rs. 10,000

$$\begin{aligned}\text{Interest for the first year} &= \frac{P \times R \times T}{100} \\ &= \frac{10,000 \times 5 \times 1}{100} \\ &= \text{Rs. 500}\end{aligned}$$

So, amount at the end of the first year

$$= \text{Rs. 10,000} + \text{Rs. 500}$$

$$= \text{Rs. 10,500}$$

The man pays 35% of Rs. 10,500 at the end of the first year

$$= \frac{35}{100} \times 10,500 = \text{Rs. 3,675}$$

So, amount left to be paid

$$= \text{Rs. 10,500} - \text{Rs. 3,675} = \text{Rs. 6,825}$$

$$\begin{aligned}\text{Interest for the second year} &= \frac{P \times R \times T}{100} \\ &= \frac{6,825 \times 5 \times 1}{100} \\ &= \text{Rs. 341.25}\end{aligned}$$

So, amount at the end of the second year

$$= \text{Rs. 6,825} + \text{Rs. 341.25}$$

$$= \text{Rs. 7,166.25}$$

The man pays 42% of Rs. 7,166.25 at the end of the second year

$$= \frac{42}{100} \times 7,166.25 = \text{Rs. 3,009.825}$$

So, amount left to be paid

$$= \text{Rs. 7,166.25} - \text{Rs. 3,009.825} = \text{Rs. 4,156.425}$$

$$\begin{aligned}\text{Interest for the third year} &= \frac{P \times R \times T}{100} \\ &= \frac{4,156.425 \times 5 \times 1}{100} \\ &= \text{Rs. 207.82125}\end{aligned}$$

So, amount at the end of the third year

$$= \text{Rs. 4,156.425} + \text{Rs. 207.82125}$$

$$= \text{Rs. 4,364.24625}$$

Hence, he must pay Rs. 4,364.24625 at the end of the third year in order to clear the debt.

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

Solution 12:

For 1st year

P= Rs8,000; R=10% and T= 1year

$$\text{Interest} = \text{Rs} \frac{8000 \times 10 \times 1}{100} = \text{Rs}800$$

$$\text{Amount} = \text{Rs}8,000 + \text{Rs}800 = \text{Rs}8,800$$

For 2nd year

P= Rs8,800+Rs8,000=Rs16,800; R=10% and T= 1year

$$\text{Interest} = \text{Rs} \frac{16,800 \times 10 \times 1}{100} = \text{Rs}1,680$$

$$\text{Amount} = \text{Rs}16,800 + \text{Rs}1,680 = \text{Rs}18,480$$

∴ Total saving at the beginning of 3rd year

$$= \text{Rs}18,480 + \text{Rs}8,000$$

$$= \text{Rs}26,480 \text{ Ans.}$$

Exercise 2(C)**Solution 1:**

$$\begin{aligned} \text{Rate of interest} &= \frac{\text{Difference in the interest of the} \\ &\quad \text{two consecutive periods} \times 100}{\text{C.I. of preceeding year} \times \text{Time}} \% \\ &= \frac{(7410 - 5700) \times 100}{5700 \times 1} \% \\ &= 30\% \end{aligned}$$

Solution 2:

∴ Difference between the C.I. of two successive half-years

$$= \text{Rs}760.50 - \text{Rs}650 = \text{Rs}110.50$$

⇒ Rs110.50 is the interest of one half-year on Rs650

$$\therefore \text{Rate of interest} = \text{Rs} \frac{100 \times I}{P \times T} \% = \frac{100 \times 110.50}{650 \times \frac{1}{2}} \% = 34\%$$

Solution 3:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

(i) Amount in two years = Rs 5,292

Amount in three years = Rs 5,556.60

∴ Difference between the amounts of two successive years

= Rs 5,556.60 - Rs 5,292 = Rs 264.60

⇒ Rs 264.60 is the interest of one year on Rs 5,292

$$\therefore \text{Rate of interest} = \text{Rs} \frac{100 \times I}{P \times T} \% = \frac{100 \times 264.60}{5,292 \times 1} \% = 5\%$$

(ii) Let the sum of money = Rs 100

∴ Interest on it for 1st year = 5% of Rs 100 = Rs 5

⇒ Amount in one year = Rs 100 + Rs 5 = Rs 105

Similarly, amount in two years = Rs 105 + 5% of Rs 105

= Rs 105 + Rs 5.25

= Rs 110.25

When amount in two years is Rs 110.25, sum = Rs 100

$$\Rightarrow \text{When amount in two years is Rs 5,292, sum} = \text{Rs} \frac{100 \times 5,292}{110.25}$$

= Rs 4,800

Solution 4:

(i) C.I. for second year = Rs 1,089

C.I. for third year = Rs 1,197.90

∴ Difference between the C.I. of two successive years

= Rs 1,197.90 - Rs 1,089 = Rs 108.90

⇒ Rs 108.90 is the interest of one year on Rs 1,089

$$\therefore \text{Rate of interest} = \text{Rs} \frac{100 \times I}{P \times T} \% = \frac{100 \times 108.90}{1,089 \times 1} \% = 10\%$$

(ii) Let the sum of money = Rs 100

∴ Interest on it for 1st year = 10% of Rs 100 = Rs 10

⇒ Amount in one year = Rs 100 + Rs 10 = Rs 110

Similarly, C.I. for 2nd year = 10% of Rs 110

= Rs 11

When C.I. for 2nd year is Rs 11, sum = Rs 100

$$\Rightarrow \text{When C.I. for 2nd year is Rs 1,089, sum} = \text{Rs} \frac{100 \times 1,089}{11} = \text{Rs 9,900}$$

Solution 5:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

For 1st year

P=Rs8,000; A=9,440 and T= 1year

Interest= Rs9,440 - Rs8,000= Rs1,440

$$\text{Rate} = \frac{I \times 100}{P \times T} \% = \frac{1,440 \times 100}{8,000 \times 1} \% = 18\%$$

For 2nd year

P= Rs9,440; R=18% and T= 1year

$$\text{Interest} = \text{Rs} \frac{9,440 \times 18 \times 1}{100} = \text{Rs}1,699.20$$

Amount= Rs9,440 + Rs1,699.20= Rs11,139.20

For 3rd year

P= Rs11,139.20; R=18% and T= 1year

$$\text{Interest} = \text{Rs} \frac{11,139.20 \times 18 \times 1}{100} = \text{Rs}2,005.06$$

Solution 6:

For 1st half-year

P= Rs15,000; A= Rs15,600 and T= $\frac{1}{2}$ year

Interest= Rs15,600 - Rs15,000= Rs600

$$\text{Rate} = \frac{I \times 100}{P \times T} \% = \frac{600 \times 100}{15,000 \times \frac{1}{2}} \% = 8\% \text{ Ans.}$$

For 2nd half-year

P= Rs15,600; R=8% and T= $\frac{1}{2}$ year

$$\text{Interest} = \text{Rs} \frac{15,600 \times 8 \times \frac{1}{2}}{100} = \text{Rs}624$$

Amount= Rs15,600 + Rs624= Rs16,224

For 3rd half-year

P= Rs16,224; R=8% and T= $\frac{1}{2}$ year

$$\text{Interest} = \text{Rs} \frac{16,224 \times 8 \times \frac{1}{2}}{100} = \text{Rs}648.96$$

Amount= Rs16,224+ Rs648.96= Rs16,872.96 Ans.

Solution 7:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

For 1st year

P=Rs12,800; R=10% and T= 1year

$$\text{Interest} = \text{Rs} \frac{12,800 \times 10 \times 1}{100} = \text{Rs}1,280$$

$$\text{Amount} = \text{Rs}12,800 + \text{Rs}1,280 = \text{Rs}14,080$$

For 2nd year

P=Rs14,080; R=10% and T= 1 year

$$\text{Interest} = \text{Rs} \frac{14,080 \times 10 \times 1}{100} = \text{Rs}1,408$$

$$\text{Amount} = \text{Rs}14,080 + \text{Rs}1,408 = \text{Rs}15,488$$

For 3rd year

P=Rs15,488; R=10% and T= 1year

$$\text{Interest} = \text{Rs} \frac{15,488 \times 10 \times 1}{100} = \text{Rs}1,548.80$$

$$\text{Amount} = \text{Rs}15,488 + \text{Rs}1,548.80 = \text{Rs}17,036.80$$

Solution 8:

(i) C.I. for second year = Rs864

C.I. for third year = Rs933.12

∴ Difference between the C.I. of two successive years

$$= \text{Rs}933.12 - \text{Rs}864 = \text{Rs}69.12$$

⇒ Rs69.12 is the interest of one year on Rs864

$$\therefore \text{Rate of interest} = \text{Rs} \frac{100 \times I}{P \times T} \% = \frac{100 \times 69.12}{864 \times 1} \% = 8\% \text{ Ans.}$$

(ii) Let the sum of money = Rs100

∴ Interest on it for 1st year = 8% of Rs100 = Rs8

$$\Rightarrow \text{Amount in one year} = \text{Rs}100 + \text{Rs}8 = \text{Rs}108$$

Similarly, C.I. for 2nd year = 8% of Rs108

$$= \text{Rs}8.64$$

When C.I. for 2nd year is Rs8.64, sum = Rs100

$$\Rightarrow \text{When C.I. for 2nd year is Rs8.64, sum} = \text{Rs} \frac{100 \times 864}{8.64} = \text{Rs}10,000$$

$$\text{Interest for 1st year} = \text{Rs} \frac{10,000 \times 8 \times 1}{100} = \text{Rs}800$$

$$\text{Principal for 4th year} = \text{Rs}10,000 + \text{Rs}800 + \text{Rs}864 + \text{Rs}933.12$$

$$= \text{Rs}12,597.12$$

∴ Interest for 4th year = 8% of Rs12,597.12

$$= \text{Rs}1,007.77 \text{ Ans.}$$

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Solution 9:

(i) Amount in three years = Rs20,160

Amount in four years = Rs24,192

∴ Difference between the amounts of two successive years

= Rs24,192 - Rs20,160 = Rs4,032

⇒ Rs4,032 is the interest of one year on Rs20,160

∴ Rate of interest = $\text{Rs} \frac{100 \times I}{P \times T} \% = \frac{100 \times 4032}{20,160 \times 1} \% = 20\%$

(ii) Let amount in two years = Rs100

And amount in three years = Rs100 + 20% of Rs100

= Rs100 + Rs20

= Rs120

When amount in 3 years is Rs120, amount in two years = Rs100

⇒ When amount in 3 years is Rs20,160, sum = $\text{Rs} \frac{100 \times 20,160}{120} = \text{Rs}16,800$ Ans.

(iii) Amount in 5 years = Rs24,192 + 20% of Rs24,192

= Rs24,192 + Rs4,838.40

= Rs29,030.40

Solution 10:

(i) For 1st year

P = Rs8,000; R = 7% and T = 1 year

Interest = $\text{Rs} \frac{8,000 \times 7 \times 1}{100} = \text{Rs}560$

Amount = Rs8,000 + Rs560 = Rs8,560

Money returned = Rs3,560

Balance money for 2nd year = Rs8,560 - Rs3,560 = Rs5,000

For 2nd year

P = Rs5,000; R = 7% and T = 1 year

Interest paid for the second year = $\text{Rs} \frac{5,000 \times 7 \times 1}{100} = \text{Rs}350$ Ans.

(ii) The total interest paid in two years = Rs350 + Rs560

= Rs910 Ans.

(iii) The total amount of money paid in two years to clear the debt

= Rs8,000 + Rs910

= Rs8,910 Ans.

Solution 11:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

(i)

Difference between depreciation in value between the first and second years

$$₹4,000 - ₹3,600 = ₹400$$

$$\Rightarrow \text{Depreciation of one year on ₹4,000} = ₹400$$

$$\Rightarrow \text{Rate of depreciation} = \frac{400}{4000} \times 100\% = 10\%$$

(ii)

Let ₹100 be the original cost of the machine.

$$\text{Depreciation during the 1}^{\text{st}} \text{ year} = 10\% \text{ of ₹100} = ₹10$$

When the value depreciates by ₹10 during the 1st year, Original cost = ₹100

$$\Rightarrow \text{When the depreciation during 1}^{\text{st}} \text{ year} = ₹4,000,$$

$$\text{Original cost} = \frac{100}{10} \times 4000 = 40000$$

The original cost of the machine is ₹40,000.

(iii)

Total depreciation during all the three years

$$= \text{Depreciation in value during (1}^{\text{st}} \text{ year} + 2^{\text{nd}} \text{ year} + 3^{\text{rd}} \text{ year)}$$

$$= ₹4,000 + ₹3,600 + 10\% \text{ of } (₹40,000 - ₹7,600)$$

$$= ₹4,000 + ₹3,600 + ₹3,240$$

$$= ₹10,840$$

The cost of the machine at the end of the third year

$$= ₹40,000 - ₹10,840 = ₹29,160$$

Solution 12:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

Cost of machine = Rs32,000
Depreciation rate every year = 5%
 $\therefore$ Cost of machine after one year = Rs32,000 - 5% of Rs32,000
= Rs32,000 - Rs1,600
= Rs30,400
 $\therefore$ Cost of machine after two years = Rs30,400 - 5% of Rs30,400
= Rs30,400 - Rs1,520
= Rs28,880
 $\therefore$ Total depreciation in two years = Rs32,000 - Rs28,880
= Rs3,120 Ans.

Solution 13:

Let the sum of money be Rs 100
Rate of interest = 10% p.a.
Interest at the end of 1st year = 10% of Rs100 = Rs10
Amount at the end of 1st year = Rs100 + Rs10 = Rs110
Interest at the end of 2nd year = 10% of Rs110 = Rs11
Amount at the end of 2nd year = Rs110 + Rs11 = Rs121
Interest at the end of 3rd year = 10% of Rs121 = Rs12.10
 $\therefore$ Difference between interest of 3rd year and 1st year
= Rs12.10 - Rs10 = Rs2.10
When difference is Rs2.10, principal is Rs100
When difference is Rs252, principal = $\frac{100 \times 252}{2.10}$ = Rs12,000 Ans.

Solution 14:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

For 1st year

P= Rs10,000; R=10% and T= 1year

$$\text{Interest} = \text{Rs } \frac{10,000 \times 10 \times 1}{100} = \text{Rs}1,000$$

Amount at the end of 1st year=Rs10,000+Rs1,000=Rs11,000

Money paid at the end of 1st year=30% of Rs10,000=Rs3,000

∴ Principal for 2nd year=Rs11,000- Rs3,000=Rs8,000

For 2nd year

P=Rs8,000; R=10% and T= 1year

$$\text{Interest} = \text{Rs } \frac{8,000 \times 10 \times 1}{100} = \text{Rs}800$$

Amount at the end of 2nd year=Rs8,000+Rs800= Rs8,800

Money paid at the end of 2nd year=30% of Rs10,000= Rs3,000

∴ Principal for 3rd year=Rs8,800- Rs3,000=Rs5,800 Ans.

Solution 15:

For 1st year

P= Rs10,000; R=10% and T= 1year

$$\text{Interest} = \text{Rs } \frac{10,000 \times 10 \times 1}{100} = \text{Rs}1,000$$

Amount at the end of 1st year=Rs10,000+Rs1,000=Rs11,000

Money paid at the end of 1st year=20% of Rs11,000=Rs2,200

∴ Principal for 2nd year=Rs11,000- Rs2,200=Rs8,800

For 2nd year

P=Rs8,800; R=10% and T= 1year

$$\text{Interest} = \text{Rs } \frac{8,800 \times 10 \times 1}{100} = \text{Rs}880$$

Amount at the end of 2nd year=Rs8,800+Rs880= Rs9,680

Money paid at the end of 2nd year=20% of Rs9,680= Rs1,936

∴ Principal for 3rd year=Rs9,680- Rs1,936=Rs7,744 Ans.

Exercise 2(D)

Solution 1:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

Let principal (p) = Rs. 100

For 1st year

P = Rs. 100

R = 10%

T = 1 year

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

A = 100 + 10 = Rs. 110

For 2nd year

P = Rs. 110

R = 11%

T = 1 year

$$I = \frac{110 \times 11 \times 1}{100} = \text{Rs. } 12.10$$

A = 110 + 12.10 = Rs. 122.10

If Amount is Rs. 122.10 on a sum of Rs. = 100

$$\text{If amount is Rs. 1, sum} = \frac{100}{122.10}$$

$$\begin{aligned} \text{If amount is Rs. 6593.40, sum} &= \frac{100}{122.10} \times 6593.40 \\ &= \text{Rs. } 5400 \end{aligned}$$

Solution 2:

Let the value of machine in the beginning = Rs. 100

For 1st year depreciation = 10% of Rs. 100 = Rs. 10

Value of machine for second year = 100 - 10
= Rs. 90

For 2nd year depreciation = 10% of 90 = Rs. 9

Value of machine for third year = 90 - 9
= Rs. 81

For 3rd year depreciation = 15% of 81
= Rs. 12.15

Value of machine at the end of third year = 81 - 12.15
= Rs. 68.85

Net depreciation = Rs. 100 - Rs. 68.85
= Rs. 31.15

Or 31.15%

Solution 3:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

For 1st half-year

P=Rs12,000; R=10% and T=1/2 year

$$\text{Interest} = \text{Rs} \frac{12,000 \times 10 \times 1}{100 \times 2} = \text{Rs}600$$

$$\text{Amount} = \text{Rs}12,000 + \text{Rs}600 = \text{Rs}12,600$$

Money paid at the end of 1st half year=Rs4,000

Balance money for 2nd half-year= Rs12,600- Rs4,000=Rs8,600

For 2nd half-year

P=Rs8,600; R=10% and T=1/2 year

$$\text{Interest} = \text{Rs} \frac{8,600 \times 10 \times 1}{100 \times 2} = \text{Rs}430$$

$$\text{Amount} = \text{Rs}8,600 + \text{Rs}430 = \text{Rs}9,030$$

Money paid at the end of 2nd half-year=Rs4,000

Balance money for 3rd half-year= Rs9,030- Rs4,000=Rs5,030

For 3rd half-year

P=Rs5,030; R=10% and T=1/2 year

$$\text{Interest} = \text{Rs} \frac{5,030 \times 10 \times 1}{100 \times 2} = \text{Rs}251.50$$

$$\text{Amount} = \text{Rs}5,030 + \text{Rs}251.50 = \text{Rs}5,281.50$$

Solution 4:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

Let Principal = Rs 100

For 1st year

P = Rs 100; R = 10% and T = 1 year

$$\text{Interest} = \text{Rs } \frac{100 \times 10 \times 1}{100} = \text{Rs } 10$$

Amount = Rs 100 + Rs 10 = Rs 110

For 2nd year

P = Rs 110; R = 10% and T = 1 year

$$\text{Interest} = \text{Rs } \frac{110 \times 10 \times 1}{100} = \text{Rs } 11$$

Amount = Rs 110 + Rs 11 = Rs 121

For 3rd year

P = Rs 121; R = 10% and T = 1 year

$$\text{Interest} = \text{Rs } \frac{121 \times 10 \times 1}{100} = \text{Rs } 12.10$$

Sum of C.I. for 1st year and 3rd year = Rs 10 + Rs 12.10 = Rs 22.10

When sum is Rs 22.10, principal is Rs 100

$$\text{When sum is Rs 2,652, principal} = \text{Rs } \frac{100 \times 2652}{22.10} = \text{Rs } 12,000 \text{ Ans.}$$

Solution 5:

Let original value of machine = Rs 100

For 1st year

P = Rs 100; R = 12% and T = 1 year

$$\text{Depreciation in 1st year} = \text{Rs } \frac{100 \times 12 \times 1}{100} = \text{Rs } 12$$

Value at the end of 1st year = Rs 100 - Rs 12 = Rs 88

For 2nd year

P = Rs 88; R = 12% and T = 1 year

$$\text{Depreciation in 2nd year} = \text{Rs } \frac{88 \times 12 \times 1}{100} = \text{Rs } 10.56$$

When depreciation in 2nd year is Rs 10.56, original cost is Rs 100

$$\text{When depreciation in 2nd year is Rs 2,640, original cost} = \frac{100 \times 2640}{10.56}$$

= Rs 25,000

Solution 6:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

Let ₹x be the sum.

$$\text{Simple Interest(I)} = \frac{x \times 8 \times 1}{100} = 0.08x$$

Compound interest

For 1st year:

P = ₹x, R = 8% and T=1

$$\Rightarrow \text{Interest(I)} = \frac{x \times 8 \times 1}{100} = 0.08x$$

For 2nd year:

P = ₹x+₹0.08x = ₹1.08x

$$\Rightarrow \text{Interest(I)} = \frac{1.08x \times 8 \times 1}{100} = 0.0864x$$

The difference between the simple interest and compound interest at the rate of 8% per annum compounded annually should be ₹64 in 2 years.

$$\Rightarrow ₹0.08x - ₹0.0864x = ₹64$$

$$\Rightarrow ₹0.0064x = ₹64$$

$$\Rightarrow x = ₹10000$$

Hence the sum is ₹10000.

Solution 7:

For 1st year

P=Rs13,500; R=16% and T= 1year

$$\text{Interest} = \text{Rs} \frac{13,500 \times 16 \times 1}{100} = \text{Rs}2,160$$

$$\text{Amount} = \text{Rs}13,500 + \text{Rs}2,160 = \text{Rs}15,660$$

For 2nd year

P=Rs15,660; R=16% and T= 1year

$$\text{Interest} = \text{Rs} \frac{15,660 \times 16 \times 1}{100} = \text{Rs}2,505.60$$

$$= \text{Rs}2,506$$

Solution 8:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

For 1st year

P=Rs48,000; R=10% and T= 1year

$$\text{Interest} = \text{Rs} \frac{48,000 \times 10 \times 1}{100} = \text{Rs}4,800$$

$$\text{Amount} = \text{Rs}48,000 + \text{Rs}4,800 = \text{Rs}52,800$$

For 2nd year

P=Rs52,800; R=10% and T= 1year

$$\text{Interest} = \text{Rs} \frac{52,800 \times 10 \times 1}{100} = \text{Rs}5,280$$

$$\text{Amount} = \text{Rs}52,800 + \text{Rs}5,280 = \text{Rs}58,080$$

For 3rd year

P=Rs58,080; R=10% and T= 1year

$$\text{Interest} = \text{Rs} \frac{58,080 \times 10 \times 1}{100} = \text{Rs}5,808$$

Solution 9:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

Let $x\%$ be the rate of interest charged.

For 1st year:

$P = ₹12,000$, $R = x\%$ and $T = 1$

$$\Rightarrow \text{Interest}(I) = \frac{12000 \times x \times 1}{100} = 120x$$

For 2nd year:

After a year, Ashok paid back ₹4,000.

$P = ₹12,000 + ₹120x - ₹4,000 = ₹8,000 + ₹120x$

$$\Rightarrow \text{Interest}(I) = \frac{(8000 + 120x) \times x \times 1}{100} = (80x + 1.20x^2)$$

The compound interest for the second year is ₹920

$$₹(80x + 1.20x^2) = ₹920$$

$$\Rightarrow 1.20x^2 + 80x - 920 = 0$$

$$\Rightarrow 3x^2 + 200x - 2300 = 0$$

$$\Rightarrow 3x^2 + 230x - 30x - 2300 = 0$$

$$\Rightarrow x(3x + 230) - 10(3x + 230) = 0$$

$$\Rightarrow (3x + 230)(x - 10) = 0$$

$$\Rightarrow x = -230/3 \text{ or } x = 10$$

As rate of interest cannot be negative so $x = 10$.

Therefore the rate of interest charged is 10%.

(ii)

For 1st year:

$$\text{Interest} = ₹120x = ₹1200$$

For 2nd year:

$$\text{Interest} = ₹(80x + 1.20x^2) = ₹920$$

The amount of debt at the end of the second year is equal to the addition of principal of the second year and interest for the two years.

$$\text{Debt} = \text{Rs.}8,000 + \text{Rs.}1200 + \text{Rs.}920 = \text{Rs.}10,120$$

Solution 10:

<https://www.indcareer.com/schools/selina-class-9-icse-solutions-mathematics-chapter-2-compound-interest-without-using-formula/>

Total interest obtained in the first year = Rs. 1500

Interest for the second year – Total interest obtained in the first year

$$= \text{Rs. } 1,725 - \text{Rs. } 1,500$$

$$= \text{Rs. } 225$$

Rate of interest for the second year

$$= \frac{\text{Rs. } 225}{\text{Rs. } 1,500} \times 100 = 15\%$$

Interest for the third year – Interest for the second year

$$= \text{Rs. } 2,070 - \text{Rs. } 1,725$$

$$= \text{Rs. } 345$$

Rate of interest for the third year

$$= \frac{\text{Rs. } 345}{\text{Rs. } 1,725} \times 100 = 20\%$$

So, rate of interest for the second year and third year are 15% and 20% respectively.



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- Chapter 8- Logarithms
- Chapter 9- Triangles [Congruency in Triangles]
- Chapter 10- Isosceles Triangles
- Chapter 11- Inequalities
- Chapter 12- Mid-point and Its Converse [Including Intercept Theorem]
- Chapter 13- Pythagoras Theorem [Proof and Simple Applications with Converse]
- Chapter 14- Rectilinear Figures [Quadrilaterals: Parallelogram, Rectangle, Rhombus, Square and Trapezium]
- Chapter 15- Construction of Polygons
- Chapter 16- Area Theorems [Proof and Use]

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- Chapter 17- Circle
- Chapter 18- Statistics
- Chapter 19- Mean and Median
- Chapter 20 - Area and Perimeter of Plane Figures
- Chapter 21- Solids [Surface Area and Volume of 3-D Solids]
- Chapter 22- Trigonometrical Ratios
- Chapter 23- Trigonometrical Ratios of Standard Angles
- Chapter 24- Solution of Right Triangles
- Chapter 25- Complementary Angles
- Chapter 26- Co-ordinate Geometry
- Chapter 27- Graphical Solution (Solution of Simultaneous Linear Equations, Graphically)
- Chapter 28- Distance Formula

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