



NCERT Solutions for class 8 maths chapter 8 comparing quantities
Ex-8.3

Q1. Calculate the amount and compound interest on:

(a) Rs.10,800 for 3 years at $12\frac{1}{2}\%$ per annum compounded annually.

(b) Rs.18,000 for $2\frac{1}{2}$ years at 10% per an1.

Calculate the amount and compound interest on:

(a) Rs.10,800 for 3 years at $12\frac{1}{2}\%$ per annum compounded annually.

(b) Rs.18,000 for $2\frac{1}{2}$ years at 10% per annum compounded annually.

(c) Rs.62,500 for $1\frac{1}{2}$ years at 8% per annum compounded annually.

(d) Rs.8,000 for 1 years at 9% per annum compounded half yearly. (You could the year by year calculation using S.I. formula to verify).

(e) Rs.10,000 for 1 years at 8% per annum compounded half yearly.

Ans. (a) Here, Principal (P) = Rs. 10800, Time (n) = 3 years,

$$\text{Rate of interest (R)} = 12\frac{1}{2}\% = \frac{25}{2}\%$$

$$\text{Amount (A)} = P \left(1 + \frac{R}{100} \right)^n$$

$$= 10800 \left(1 + \frac{25}{2 \times 100} \right)^3 = 10800 \left(1 + \frac{1}{2 \times 4} \right)^3$$

$$= 10800 \left(1 + \frac{1}{8} \right)^3 = 10800 \left(\frac{9}{8} \right)^3$$

$$= 10800 \times \frac{9}{8} \times \frac{9}{8} \times \frac{9}{8}$$

$$= \text{Rs. } 15,377.34$$

$$\text{Compound Interest (C.I.)} = A - P$$

$$= \text{Rs. } 10800 - \text{Rs. } 15377.34 = \text{Rs. } 4,577.34$$

(b) Here, Principal (P) = Rs. 18,000, Time (n) = $2\frac{1}{2}$

years, Rate of interest (R)

= 10% p.a.

$$\text{Amount (A)} = P \left(1 + \frac{R}{100} \right)^n$$

$$= 18000 \left(1 + \frac{10}{100} \right)^2 = 18000 \left(1 + \frac{1}{10} \right)^2$$

$$= 18000 \left(\frac{11}{10} \right)^2 = 18000 \times \frac{11}{10} \times \frac{11}{10}$$

$$= \text{Rs. } 21,780$$

Interest for $\frac{1}{2}$ years on Rs. 21,780 at rate of 10% =

$$\frac{21780 \times 10 \times 1}{100} = \text{Rs. } 1,089$$

Total amount for $2\frac{1}{2}$ years

$$= \text{Rs. } 21,780 + \text{Rs. } 1089 = \text{Rs. } 22,869$$

$$\text{Compound Interest (C.I.)} = A - P$$

$$= \text{Rs. } 22869 - \text{Rs. } 18000 = \text{Rs. } 4,869$$

(c) Here, Principal (P) = Rs. 62500, Time (n) = $1\frac{1}{2}$ =

$\frac{3}{2}$ years = 3 years (compounded half yearly)

Rate of interest (R) = 8% = 4% (compounded half yearly)

$$\text{Amount (A)} = P \left(1 + \frac{R}{100}\right)^n$$

$$= 62500 \left(1 + \frac{4}{100}\right)^2$$

$$= 62500 \left(1 + \frac{1}{25}\right)^3$$

$$= 62500 \left(\frac{26}{25}\right)^3$$

$$= 62500 \times \frac{26}{25} \times \frac{26}{25} \times \frac{26}{25}$$

$$= \text{Rs. } 70,304$$

$$\text{Compound Interest (C.I.)} = A - P$$

$$= \text{Rs. } 70304 - \text{Rs. } 62500 = \text{Rs. } 7,804$$

(d) Here, Principal (P) = Rs. 8000, Time (n) = 1 years = 2 years(compounded half yearly)

Rate of interest (R) = $9\% = \frac{9}{2}\%$ (compounded half yearly)

$$\text{Amount (A)} = P \left(1 + \frac{R}{100} \right)^n$$

$$= 8000 \left(1 + \frac{9}{2 \times 100} \right)^2$$

$$= 8000 \left(1 + \frac{9}{200} \right)^2$$

$$= 8000 \left(\frac{209}{200} \right)^2$$

$$= 8000 \times \frac{209}{200} \times \frac{209}{200}$$

$$= \text{Rs. } 8,736.20$$

$$\text{Compound Interest (C.I.)} = A - P$$

$$= \text{Rs. } 8736.20 - \text{Rs. } 8000$$

$$= \text{Rs. } 736.20$$

(e) Here, Principal (P) = Rs. 10,000, Time (n) = 1 years = 2 years (compounded half yearly)

Rate of interest (R) = $8\% = 4\%$ (compounded half yearly)

$$\text{Amount (A)} = P \left(1 + \frac{R}{100} \right)^n$$

$$= 10000 \left(1 + \frac{4}{100} \right)^2$$

$$= 10000 \left(1 + \frac{1}{25} \right)^2$$

$$= 10000 \left(\frac{26}{25} \right)^2$$

$$= 10000 \times \frac{26}{25} \times \frac{26}{25}$$

$$= \text{Rs. } 10,816$$

$$\text{Compound Interest (C.I.)} = A - P$$

$$= \text{Rs. } 10,816 - \text{Rs. } 10,000 = \text{Rs. } 816$$

Q2. Kamala borrowed Rs.26,400 from a Bank to buy a scooter at a rate of 15% p.a. compounded yearly. What amount will she pay at the end of 2 years and 4 months to clear the loan?

(Hint: Find A for 2 years with interest is compounded yearly and then find SI on the 2nd year amount for $\frac{4}{12}$ years).

Ans. Here, Principal (P) = Rs. 26,400, Time (n) = 2 years 4 months, Rate of interest (R) = 15% p.a.

$$\text{Amount for 2 years (A)} = P \left(1 + \frac{R}{100} \right)^n$$

$$= 26400 \left(1 + \frac{15}{100} \right)^2 = 26400 \left(1 + \frac{3}{20} \right)^2$$

$$= 26400 \left(\frac{23}{20} \right)^2 = 26400 \times \frac{23}{20} \times \frac{23}{20}$$

$$= \text{Rs. } 34,914$$

$$\text{Interest for 4 months} = \frac{4}{12} = \frac{1}{3} \text{ years at the rate of}$$

$$15\% = \frac{34914 \times 15 \times 1}{100}$$

$$= \text{Rs. } 1745.70$$

$$\therefore \text{Total amount} = \text{Rs. } 34,914 + \text{Rs. } 1,745.70$$

$$= \text{Rs. } 36,659.70$$

Q3. Fabina borrows Rs.12,500 per annum for 3 years at simple interest and Radha borrows the same amount for the same time period at 10% per annum, compounded annually. Who pays more interest and by how much?

Ans. Here, Principal (P) = Rs.12,500, Time (T) = 3 years, Rate of interest (R)

= 12% p.a.

$$\text{Simple Interest for Fabina} = \frac{P \times R \times T}{100}$$

$$= \frac{12500 \times 12 \times 3}{100} = \text{Rs. } 4,500$$

Amount for Radha, P = Rs. 12,500, R = 10% and $n = 3$ years

$$\text{Amount (A)} = P \left(1 + \frac{R}{100} \right)^n$$

$$= 12500 \left(1 + \frac{10}{100} \right)^3 = 12500 \left(1 + \frac{1}{10} \right)^3$$

$$= 12500 \left(\frac{11}{10} \right)^3 = 12500 \times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10}$$

$$= \text{Rs. } 16,637.50$$

$$\therefore \text{C.I. for Radha} = A - P$$

$$= \text{Rs. } 16,637.50 - \text{Rs. } 12,500 = \text{Rs. } 4,137.50$$

Here, Fabina pays more interest

$$= \text{Rs. } 4,500 - \text{Rs. } 4,137.50 = \text{Rs. } 362.50$$

Q4. I borrows Rs. 12,000 from Jamshed at 6% per annum simple interest for 2 years. Had I borrowed this sum at 6% per annum compound interest, what extra amount would I have to pay?

Ans. Here, Principal (P) = Rs. 12,000, Time (T) = 2 years, Rate of interest (R) = 6% p.a.

$$\text{Simple Interest} = \frac{P \times R \times T}{100}$$

$$= \frac{12000 \times 6 \times 2}{100} = \text{Rs. } 1,440$$

Had he borrowed this sum at 6% p.a., then

$$\text{Compound Interest} = P \left(1 + \frac{R}{100} \right)^n - P$$

$$= 12000 \left(1 + \frac{6}{100} \right)^2 - 12000$$

$$\begin{aligned}
&= 12000 \left(1 + \frac{3}{50} \right)^2 - 12000 \\
&= 12000 \left(\frac{53}{50} \right)^2 - 12000 \\
&= 12000 \times \frac{53}{50} \times \frac{53}{50} - 12000 \\
&= \text{Rs. } 13,483.20 - \text{Rs. } 12,000 \\
&= \text{Rs. } 1,483.20
\end{aligned}$$

Difference in both interests

$$= \text{Rs. } 1,483.20 - \text{Rs. } 1,440.00 = \text{Rs. } 43.20$$

Q5. Vasudevan invested Rs.60,000 at an interest rate of 12% per annum compounded half yearly. What amount would he get:

(i) after 6 months?

(ii) after 1 year?

Ans. (i) Here, Principal (P) = Rs. 60,000,

Time (n) = 6 months = 1 year(compounded half yearly)

Rate of interest (R) = 12% = 6% (compounded half yearly)

$$\text{Amount (A)} = P \left(1 + \frac{R}{100} \right)^n$$

$$= 60000 \left(1 + \frac{6}{100} \right)^1$$

$$= 60000 \left(1 + \frac{3}{50} \right)^1$$

$$= 60000 \left(\frac{53}{50} \right)^1$$

$$= 60000 \times \frac{53}{50}$$

$$= \text{Rs. } 63,600$$

After 6 months Vasudevan would get amount Rs. 63,600.

(ii) Here, Principal (P) = Rs. 60,000,

Time (n) = 1 year = 2 year(compounded half yearly)

Rate of interest (R) = 12% = 6% (compounded half yearly)

$$\text{Amount (A)} = P \left(1 + \frac{R}{100} \right)^n$$

$$= 60000 \left(1 + \frac{6}{100} \right)^2$$

$$= 60000 \left(1 + \frac{3}{50} \right)^2$$

$$= 60000 \left(\frac{53}{50} \right)^2$$

$$= 60000 \times \frac{53}{50} \times \frac{53}{50}$$

$$= \text{Rs. } 67,416$$

After 1 year Vasudevan would get amount Rs. 67,416.

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