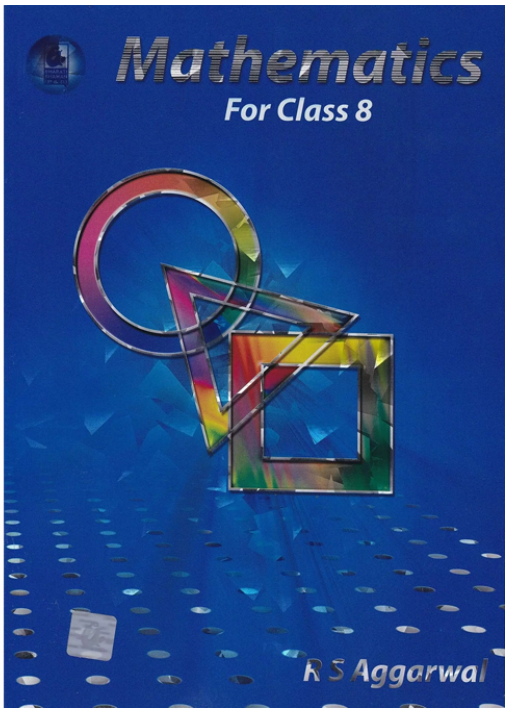
RS Aggarwal Solutions for Class 8 Maths Chapter 11–Compound Interest

Class 8 - Chapter 11 Compound Interest



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RS Aggarwal Solutions for Class 8 Maths Chapter 11–Compound Interest

Class 8: Maths Chapter 11 solutions. Complete Class 8 Maths Chapter 11 Notes.

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Ex 11A

Q1.

Answer :

$$\text{Principal for the first year} = \text{Rs. } 2500$$

$$\text{Interest for the first year} = \text{Rs. } \left(\frac{2500\times10\times1}{100}\right) = \text{Rs. } 250$$

$$\text{Amount at the end of the first year} = \text{Rs. } \left(2500 + 250\right) = \text{Rs. } 2750$$

$$\text{Principal for the second year} = \text{Rs. } 2750$$

$$\text{Interest for the second year} = \text{Rs. } \left(\frac{2750\times10\times1}{100}\right) = \text{Rs. } 275$$

$$\text{Amount at the end of the second year} = \text{Rs. } \left(2750 + 275\right) = \text{Rs. } 3025$$

$$\therefore \text{ Compound interest} = \text{Rs. } (3025 - 2500) = \text{Rs. } 525$$

Q2.

Answer :

Principal for the first year = Rs. 15625

Interest for the first year = Rs. $\left(\frac{15625\times12\times1}{100}\right)$ = Rs. 1875

Amount at the end of the first year = Rs. $\left(15625 + 1875\right)$ = Rs. 17500

Principal for the second year = Rs. 17500

Interest for the second year = Rs. $\left(\frac{17500\times12\times1}{100}\right)$ = Rs. 2100

Amount at the end of the second year = Rs. $\left(17500 + 2100\right)$ = Rs. 19600

Principal for the third year = Rs. 19600

Interest for the third year = Rs. $\left(\frac{19600\times12\times1}{100}\right)$ = Rs. 2352

Amount at the end of the second year = Rs $\left(19600 + 2352\right)$ = Rs. 21952

$\therefore$ Compound interest = Rs. $(21952 - 15625)$ = Rs. 6327

Ex 11B

Q1.

Answer :

Principal amount, P = Rs 6000

Rate of interest, R = 9% per annum

Time, n = 2 years.

The formula for the amount including the compound interest is given below :

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

$\Rightarrow A$ = Rs. $6000\left(1+\frac{9}{100}\right)^{2}$

$\Rightarrow A$ = Rs. $6000\left(\frac{100+9}{100}\right)^{2}$

$\Rightarrow A$ = Rs. $6000\left(\frac{109}{100}\right)^{2}$

$\Rightarrow A$ = Rs. $6000\,(1.09\times1.09)^{2}$

$\Rightarrow A$ = Rs. 7128.6

i.e., the amount including the compound interest is Rs 7128.6.

$\therefore$ Compound interest = Rs $(7128.6 - 6000)$ = Rs 1128.6

Ex 11C

Q1.

Answer :

Principal, P = Rs. 8000
Time, n = 1 year = 2 half years
Rate of interest per annum = 10%
Rate of interest for half year, $R = \frac{10\%}{2} = 5\%$
The amount with the compound interest is given by

$$\text{Amount} = \text{Rs. } P \times \left(1 + \frac{R}{100}\right)^2$$

$$= \text{Rs. } 8000 \times \left(1 + \frac{5}{100}\right)^2$$

$$= \text{Rs. } 8000 \times \left(\frac{105}{100}\right)^2$$

$$= \text{Rs. } 8000 \times \left(\frac{21}{20}\right)^2$$

$$= \text{Rs. } 8000 \times \left(\frac{21}{20}\right) \times \left(\frac{21}{20}\right)$$

$$= \text{Rs. } (20 \times 21 \times 21)$$

$$= \text{Rs. } 8820$$

$$\therefore \text{Compound interest} = \text{amount} - \text{principal} = \text{Rs. } \left(8820 - 8000\right) = \text{Rs. } 820$$

Ex 11D

Q1.

Answer :

(c) Rs. 832

$$A = P \times \left(1 + \frac{R}{100}\right)^n$$
$$= \text{Rs. } 5000 \times \left(1 + \frac{8}{100}\right)^2$$
$$= \text{Rs. } 5000 \times \left(\frac{108}{100}\right)^2$$
$$= \text{Rs. } 5000 \times \left(\frac{27}{25}\right)^2$$
$$= \text{Rs. } 5000 \times \left(\frac{27}{25}\right) \times \left(\frac{27}{25}\right)$$
$$= \text{Rs. } (8 \times 27 \times 27)$$
$$= \text{Rs. } 5832$$
$$\therefore \text{Interest} = \text{amount} - \text{principal} = \text{Rs}\left(5832 - 5000\right) = \text{Rs } 832$$

Q2.

Answer :

(b) Rs. 3310

$$A = P \times \left(1 + \frac{R}{100}\right)^n$$
$$= \text{Rs. } 10000 \times \left(1 + \frac{10}{100}\right)^3$$
$$= \text{Rs. } 10000 \times \left(\frac{110}{100}\right)^3$$
$$= \text{Rs. } 10000 \times \left(\frac{11}{10}\right)^3$$
$$= \text{Rs. } 10000 \times \left(\frac{11}{10}\right) \times \left(\frac{11}{10}\right) \times \left(\frac{11}{10}\right)$$
$$= \text{Rs. } (10 \times 11 \times 11 \times 11)$$
$$= \text{Rs. } 13310$$
$$\therefore \text{Compound interest} = \text{amount} - \text{principal} = \text{Rs}\left(13310 - 10000\right) = \text{Rs } 3310$$

Q3.

Answer :

(a) Rs 1872

$$\text{Here, } A = P \times \left(1+\frac{R}{100}\right)^1 \times \left(1+\frac{\frac{1}{2}R}{100}\right)$$

$$= \text{Rs } 10000 \times \left(1+\frac{12}{100}\right) \times \left(1+\frac{\frac{1}{2}\times 12}{100}\right)$$

$$= \text{Rs } 10000 \times \left(\frac{100+12}{100}\right) \times \left(\frac{100+6}{100}\right)$$

$$= \text{Rs } 10000 \times \left(\frac{112}{100}\right) \times \left(\frac{106}{100}\right)$$

$$= \text{Rs } 10000 \times \left(\frac{28}{25}\right) \times \left(\frac{53}{50}\right)$$

$$= \text{Rs } (8 \times 28 \times 53)$$

$$= \text{Rs } 11872$$

$$\therefore \text{ Compound interest } = \text{amount } - \text{principal} = \text{ Rs } \left(11872 - 10000\right) = \text{ Rs } 1872$$

Q4.

Answer :

(c) Rs 961

$$\text{Here, } A = P \times \left(1+\frac{R}{100}\right)^2 \times \left(1+\frac{\frac{1}{4}R}{100}\right)$$
$$= \text{Rs. } 4000 \times \left(1+\frac{10}{100}\right)^2 \times \left(1+\frac{\frac{1}{4}\times 10}{100}\right)$$
$$= \text{Rs. } 4000 \times \left(\frac{100+10}{100}\right)^2 \times \left(\frac{40+1}{40}\right)$$
$$= \text{Rs. } 4000 \times \left(\frac{110}{100}\right)^2 \times \left(\frac{41}{40}\right)$$
$$= \text{Rs. } 4000 \times \left(\frac{11}{10}\right) \times \left(\frac{11}{10}\right) \times \left(\frac{41}{40}\right)$$
$$= \text{Rs. } (11 \times 11 \times 41)$$
$$= \text{Rs. } 4961$$
$$\therefore \text{ Compound interest } = \text{ amount } - \text{principal} = \text{ Rs } \left(4961 - 4000\right) = \text{ Rs } 961$$

Q5.

Answer :

(b) Rs. 5051

$$\text{Here, } A = \text{ Rs. } P \times \left(1+\frac{p}{100}\right) \times \left(1+\frac{q}{100}\right) \times \left(1+\frac{r}{100}\right)$$
$$= \text{Rs. } 25000 \times \left(1+\frac{5}{100}\right) \times \left(1+\frac{6}{100}\right) \times \left(1+\frac{8}{100}\right)$$
$$= \text{Rs. } 25000 \times \left(\frac{105}{100}\right) \times \left(\frac{106}{100}\right) \times \left(\frac{108}{100}\right)$$
$$= \text{Rs. } 25000 \times \left(\frac{21}{20}\right) \times \left(\frac{53}{50}\right) \times \left(\frac{27}{25}\right)$$
$$= \text{Rs. } (21 \times 53 \times 27)$$
$$= \text{Rs. } 30051$$
$$\therefore \text{ Compound interest } = \text{ amount } - \text{principal} = \text{ Rs. } \left(30051 - 25000\right) = \text{ Rs. } 5051$$

Q6.

Answer :

(b) Rs. 510

$$\text{Rate of interest compounded half yearly} = \frac{8}{2}\% = 4\%$$

$$\text{Time} = 1 \text{ year} = 2 \text{ half years}$$

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

$$= \text{Rs. } 6250 \times \left(1 + \frac{4}{100}\right)^2$$

$$= \text{Rs. } 6250 \times \left(\frac{104}{100}\right)^2$$

$$= \text{Rs. } 6250 \times \left(\frac{26}{25}\right) \times \left(\frac{26}{25}\right)$$

$$= \text{Rs. } (10 \times 26 \times 26)$$

$$= \text{Rs. } 6760$$

$$\therefore \text{ Compound interest } = \text{amount} - \text{principal} = \text{Rs. } \left(6760 - 6250\right) = \text{Rs. } 510$$

Q7.

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Answer :

(a) Rs.1209

$$\text{Time} = 6 \text{ months} = 2 \text{ quater years}$$
$$\text{Rate compounded quarter yearly} = \frac{6}{4}\% = \frac{3}{2}\%$$
$$\text{Now, } A = P \times \left(1 + \frac{R}{100}\right)^n$$
$$= \text{Rs. } 40000 \times \left(1 + \frac{3}{100 \times 2}\right)^2$$
$$= \text{Rs. } 40000 \times \left(\frac{203}{200}\right)^2$$
$$= \text{Rs. } 40000 \times \left(\frac{203}{200}\right) \times \left(\frac{203}{200}\right)$$
$$= \text{Rs. } (203 \times 203)$$
$$= \text{Rs. } 41209$$
$$\therefore \text{ Compound interest } = \text{amount} - \text{principal} = \text{Rs. } 41209 - \text{Rs. } 40000 = \text{Rs. } 1209$$

Q8.

Answer :

(b) 26460

$$\text{Here, } A = P \times \left(1 + \frac{R}{100}\right)^n$$
$$= \text{Rs. } 24000 \times \left(1 + \frac{5}{100}\right)^2$$
$$= \text{Rs. } 24000 \times \left(\frac{105}{100}\right)^2$$
$$= \text{Rs. } 24000 \times \left(\frac{21}{20}\right) \times \left(\frac{21}{20}\right)$$
$$= \text{Rs. } (60 \times 21 \times 21)$$
$$= \text{Rs. } 26460$$

Q9.

Answer :

(c) Rs. 43740

$$\text{Here, } A = \text{Rs. } P \times \left(1 - \frac{R}{100}\right)^n$$
$$= \text{Rs. } 60000 \times \left(1 - \frac{10}{100}\right)^3$$
$$= \text{Rs. } 60000 \times \left(\frac{90}{100}\right)^3$$
$$= \text{Rs. } 60000 \times \left(\frac{9}{10}\right) \times \left(\frac{9}{10}\right) \times \left(\frac{9}{10}\right)$$
$$= \text{Rs. } (60 \times 9 \times 9 \times 9)$$
$$= \text{Rs. } 43740$$

Q10.

Answer :

(b) Rs. 62500

$$\text{Here, } A = P \times \left(1 - \frac{R}{100}\right)^n$$
$$= P \times \left(1 - \frac{20}{100}\right)^2$$
$$= P \times \left(\frac{80}{100}\right)^2$$
$$= P \times \left(\frac{4}{5}\right) \times \left(\frac{4}{5}\right)$$
$$\Rightarrow 40000 = \frac{16P}{25}$$
$$\therefore P = \frac{40000 \times 25}{16} = \text{Rs } 62500$$

Q11.

Answer :

(a) 25000

Let P be the popultion 3 years ago.
Now, present population $= 33275$

$$\Rightarrow 33275 = P \times \left(1 + \frac{10}{100}\right)^3$$

$$\Rightarrow 33275 = P \times \left(\frac{110}{100}\right)^3$$

$$\Rightarrow 33275 = P \times \left(\frac{11}{10}\right) \times \left(\frac{11}{10}\right) \times \left(\frac{11}{10}\right)$$

$$\Rightarrow 33275 = \frac{1331P}{1000}$$

$$\therefore P = \frac{33275 \times 1000}{1331} = 25000$$

Q12.

Answer :

(d) Rs 1261

$$\text{Here, SI} = \frac{P \times 5 \times 3}{100}$$

$$\Rightarrow 1200 = \frac{P \times 5 \times 3}{100}$$

$$\Rightarrow P = \frac{1200 \times 100}{5 \times 3} = \text{Rs } 8000$$

$$\text{Amount at the end of 3 years} = \text{Rs } 8000 \times \left(1 + \frac{5}{100}\right)^3$$

$$= \text{Rs } 8000 \times \left(\frac{105}{100}\right)^3$$

$$= \text{Rs } 8000 \times \left(\frac{21}{20}\right) \times \left(\frac{21}{20}\right) \times \left(\frac{21}{20}\right)$$

$$= \text{Rs } (21 \times 21 \times 21)$$

$$= \text{Rs } 9261$$

$$\therefore \text{CI} = A - P = \text{Rs } \left(9261 - 8000\right) = \text{Rs } 1261$$

Q13.

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Answer :

(d) Rs 480

$$\text{We have : } 510 = \left\{P \times \left(1+\frac{25}{100\times 2}\right)^2\right\} - P$$

$$\Rightarrow 510 \Longrightarrow \left\{P \times \left(\frac{8+1}{8}\right)^2\right\} - P$$

$$\Rightarrow 510 = \left\{P \times \left(\frac{9}{8}\right) \times \left(\frac{9}{8}\right)\right\} - P$$

$$\Rightarrow 510 = \left(\frac{81\text{P}}{64} - \text{P}\right)$$

$$\Rightarrow 510 = \left(\frac{81\text{P} - 64\text{P}}{64}\right)$$

$$\Rightarrow 510 = \frac{17P}{64}$$

$$\therefore P = \frac{510\times 64}{17} = \text{Rs } 1920$$

$$\text{Now, SI} = \frac{P\times R\times T}{100}$$

$$= \text{Rs } \frac{1920\times 2\times 25}{100\times 2} = \text{Rs } 480$$

Q14.

Answer :

(d) Rs 4096

$$\text{We have Rs } 4913 = \left\{P \times \left(1+\frac{25}{100\times 4}\right)^3\right\}$$

$$\Rightarrow \text{Rs } 4913 = \left\{P \times \left(\frac{16+1}{16}\right)^3\right\}$$

$$\Rightarrow \text{Rs } 4913 = \left\{P \times \left(\frac{17}{16}\right) \times \left(\frac{17}{16}\right) \times \left(\frac{17}{16}\right)\right\}$$

$$\Rightarrow \text{Rs } 4913 = \frac{4913P}{4096}$$

$$\Rightarrow P = \text{Rs } \frac{4913\times 4096}{4913} = \text{Rs } 4096$$

Q15.

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Answer :

(c) 6%

$$\text{Here, } A = P \times \left(1+\frac{R}{100}\right)$$

$$= \text{Rs. } 7500 \times \left(1+\frac{R}{100}\right)^2$$

$$= \text{Rs. } 7500 \times \left(1+\frac{R}{100}\right)^2$$

$$\text{However, amount} = \text{Rs. } 8427$$

$$\text{Now, Rs. } 8427 == \text{ Rs. } 7500 \times \left(1+\frac{R}{100}\right)^2$$

$$\Rightarrow \frac{\text{Rs. } 8427}{\text{Rs. } 7500} = \left(1+\frac{R}{100}\right)^2$$

$$\Rightarrow \left(\frac{53}{50}\right)^2 = \left(1+\frac{R}{100}\right)^2$$

$$\Rightarrow \left(1+\frac{R}{100}\right) = \left(\frac{53}{50}\right)$$

$$\Rightarrow \frac{R}{100} = \frac{53}{50} - 1$$

$$\Rightarrow \frac{R}{100} = \frac{53-50}{50} = \frac{3}{50}$$

$$\therefore R = \frac{300}{50} = 6\%$$

RS Aggarwal Class 8 Solutions

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He was born on January 2, 1946 in a village of Delhi. He graduated from Kirori Mal College, University of Delhi. After completing his M.Sc. in Mathematics in 1969, he joined N.A.S. College, Meerut, as a lecturer. In 1976, he was awarded a fellowship for 3 years and joined the University of Delhi for his Ph.D. Thereafter, he was promoted as a reader in N.A.S. College, Meerut. In 1999, he joined M.M.H. College, Ghaziabad, as a reader and took voluntary retirement in 2003. He has authored more than 75 titles ranging from Nursery to M. Sc. He has also written books for competitive examinations right from the clerical grade to the I.A.S. level.

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