RD SHARMA

Solutions

Class 8 Maths

Chapter 14

Ex 14.1

Q1) Find the compound interest when principal = Rs 3000, rate = 5% per annum and time = 2 years.

Solution:

Principal for the first year = Rs 3,000

Interest for the first year=Rs3,000 x 5 x $\frac{1}{100}$ = Rs 150

Amount at the end of the first year = Rs 3,000 + Rs 150 = Rs 3,150

Principle Interest for the second year=Rs 3,150 x 5 x $\frac{1}{100}$ = Rs 157.50

Amount at the end of the second year = Rs 3307.50

Compound interest=Rs 3,307.50 – 3,000 = Rs 307.50

Q2) What will be the compound interest on Rs 4000 in two years when the rate of interest is 5% per annum?

Solution:

We know that amount A at the end of n years at the rate of R% per annum is given by $A = P \left(1 + \frac{R}{100}\right)^n$

Giver P = Rs 4,000

R = 5% p.a

n = 2 years

Now,

$A = 4000(1 + \frac{5}{100})^2$

$= 4000(\frac{105}{100})^2$

= Rs 4410

And, CI = A − P = Rs 4,410 − Rs 4,000 = Rs 410

Q3) Rohit deposited Rs 8000 with a finance company for 3 years at an interest of 15% per annum. What is the compound interest that Rohit gets after 3 years?

Solution:

We know that amount A at the end of n years at the rate of R% per annum is given by $= A = P \left(1 + \frac{R}{100}\right)^n$

Given:

P = Rs 8,000

R = 15% p.a.

n = 3 years.

Now,

$A = 8000(1 + \frac{15}{100})^3$

$A = 8000(\frac{115}{100})^3$

A = Rs. 12,167

And, CI = A − P = Rs 12,167 − Rs 8,000 = Rs 4,167

Q4) Find the compound interest on Rs 1000 at the rate of 8% per annum for $1\frac{1}{2}$ years when interest is compounded half-yearly.

Solution:

Given:

P = Rs 1,000

R = 8% p.a.

n = 1.5 years

We know that:

$A = P(1 + \frac{R}{200})^{2n}$

$A = 1000(1 + \frac{8}{200})^3$

$A = 1000(\frac{208}{200})^3$

A = Rs 1,124.86

Now, CI = A − P = Rs 1,124.86 − Rs 1,000 = Rs 124.86

Q5) Find the compound interest on Rs 160000 for one year at the rate of 20% per annum, if the interest is compounded quarterly.

Solution:

Given:

P = Rs 160,000

R = 20 % p. a.

n = 1 year

We know that:

$A = P(1 + \frac{R}{400})^{4n}$

$A = 160000(1 + \frac{20}{400})^4$

$A = 160000(1.05)^4$

A = Rs 19,4481

Now, CI = A − P = Rs 19,448.1 − Rs 16,000 = Rs 3,4481

Q6) Swati took a loan of Rs 16000 against her insurance policy at the rate of $12\frac{1}{2}$% per annum. Calculate the total compound interest payable by Swati after 3 year.

Solution:

Given:

P = 16,000

R = 12.5% p.a.

n = 3 years

We know that:

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

$A = 16000(1 + \frac{12.5}{100})^3$

$A = 16000(\frac{112.5}{100})^3$

A = Rs 22,781.25

Now, CI = A − P = Rs 22,781.25 − Rs 16,000 = Rs 6,781.25

Q7) Roma borrowed Rs 64000 from a bank for $1\frac{1}{2}$ years at the rate of 10% per annum. Compute the total compound interest payable by Roma after $1\frac{1}{2}$ years, if the interest is compounded half-yearly.

Solution:

Given:

P = 64,000

R = 10% p.a.

n = 1.5 years

Amount after n years:

$A = P(1 + \frac{R}{200})^{2n}$

$A = 64000(1 + \frac{10}{200})^3$

$A = 64000(\frac{210}{200})^3$

A = Rs 74,088

Now, CI = A − P = Rs 74,088 − Rs 64,000 = Rs 10,088

Q8) Mewa Lal borrowed Rs 20000 from his friend Rooplal at 18% per annum simple interest. He lent it to Rampal at the same rate but compounded annually. Find his gain after 2 years.

Solution:

SI for Mewa Lal = $\frac{PRT}{100}$ = $\frac{20000 \times 18 \times 21}{100}$ = Rs 7,200

Thus, he has to pay Rs 7,200 as interest after borrowing CI for Mewa Lal = A − P

$= 20000(1 + \frac{18}{100})^2 - 20,000$

$= 20000(1.18)^2 - 20,000$

$= 27,848 - 20,000$

$= $ Rs 7,848

He gained Rs 7,848 as interest after lending. His gain in the whole transaction

= Rs 7,848 − Rs 7,200

= Rs 648

Q9) Find the compound interest on Rs 8000 for 9 months at 20% per annum compounded quarterly.

Solution:

P = Rs 8,000

T = 9 months = 3 quarters

R = 20% per annum = 5% per quarter

$A = 8000(1 + \frac{5}{100})^3$

$A = 8000(1.05)^3$

A = 9,261

The required amount is Rs 9,261.

Now,

CI = A − P = Rs 9,261 − Rs 8,000 = Rs 1,261

Q10) Find the compound interest at the rate of 10% per annum for two years on that principle which in two years at the rate of 10% per annum gives Rs 200 as simple interest.

Solution:

SI = $\frac{PRT}{100}$

∴ P = $\frac{SI \times 100}{RT}$

P = $\frac{200 \times 100}{10 \times 2}$

P = Rs 1,000

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

$A = 1000(1 + \frac{10}{100})^2$

$A = 1000(1.1)^2$

A = Rs 1,210

Now,

CI = A − P = Rs 1,210 − Rs 1,000 = Rs 210

Q11) Find the compound interest on Rs 64000 for 1 year at the rate of 10% per compounded quarterly.

Solution:

To calculate the interest compounded quarterly,

We have:

$A = P(1 + \frac{R}{400})^{4n}$

$A = 64000(1 + \frac{10}{400})^{4 \times 1}$

$A = 64000(1.025)^4$

A = 70,644.03

Thus,

The required amount is Rs 70,644.03.

Now, CI = A − P = Rs 70,644.025 − Rs 64,000 = Rs 6,644.03

Q12) Ramesh deposited Rs 7500 in a bank which pays him 12% interest per annum compounded quarterly. What is the amount which he receives after 9 months?

Solution:

Given:

P = Rs 7,500

R = 12% p.a = 3% quarterly

T = 9 months = 3 quarters

We know that:

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

$A = 7500(1 + \frac{3}{100})^3$

$A = 7500(1.03)^3$

A = 8,195.45

Thus,

The required amount is Rs 8,195.45.

Q13) Anil borrowed a sum of Rs 9600 to install a hand pump in his dairy. If the rate of 1 interest is $5\frac{1}{2}$% per annum compounded annually, determine the compound interest which Anil will have to pay after 3 years.

Solution:

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

$A = 9600(1 + \frac{5.5}{100})^3$

$A = 9600(1.055)^3$

A = Rs 11,272.72

Now,

CI = A − P = Rs 11,272.72 − Rs 9,600 = Rs 1,672.72

Q14) Surabhi borrowed a sum of Rs 12000 from a finance company to purchase a refrigerator. If the rate of interest is 5% per annum compounded annually, calculate the compound interest that Surabhi has to pay to the company after 3 years.

Solution:

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

$A = 12000\left(1 + \frac{5}{100}\right)^3$

$A = 12000(1.05)^3$

A = Rs 13,891.50

Thus,

The required amount is Rs 13.891.50.

Now,

CI = A − P = Rs 13.891.50 − Rs 12,000 = Rs 1,891.50

Q15) Daljit received a sum of Rs. 40000 as a loan from a finance company. If the rate of interest is 7% per annum corn compounded annually, calculate the compound interest that Daljit pays after 2 years.

Solution:

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

$A = 40000\left(1 + \frac{7}{100}\right)^2$

$A = 40000(1.07)^2$

A = Rs 45,796

Thus,

The required amount is Rs 45,796.

Now,

CI = A − P = Rs 45.796 − Rs 40,000 = Rs 5,796