

**RD SHARMA**  
**Solutions**  
**Class 8 Maths**  
**Chapter 14**  
**Ex 14.3**

**Q1) On what sum will the compound interest at 5% per annum for 2 years compounded annually be Rs 164?**

**Solution:**

Let the sum be Rs x.

We know that:

$$CI = A - P$$

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

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

$$164 = x\left[\left(1 + \frac{5}{100}\right)^2 - 1\right]$$

$$164 = x[(1.05)^2 - 1]$$

$$x = \frac{164}{0.1025}$$

$$x = 1600$$

Thus, the required sum is Rs 1600.

**Q2) Find the principal if the interest compounded annually at the rate of 10% for two years is Rs 210.**

**Solution:**

Let the sum be Rs x.

We know that:

$$CI = A - P$$

$$210 = P\left(1 + \frac{R}{100}\right)^n - P$$

$$210 = P\left[\left(1 + \frac{R}{100}\right)^n - 1\right]$$

$$210 = x\left[\left(1 + \frac{10}{100}\right)^2 - 1\right]$$

$$210 = x[(1.10)^2 - 1]$$

$$x = \frac{210}{0.21}$$

$$x = 1000$$

Thus, the required sum is Rs 1000.

**Q3) A sum amounts to Rs 756.25 at 10% per annum in 2 years, compounded annually. Find the sum.**

**Solution:**

Let the sum be Rs x.

Then,

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

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

$$756.25 = x\left[\left(1 + \frac{10}{100}\right)^2\right]$$

$$756.25 = x[(1.10)^2]$$

$$x = \frac{756.25}{1.21}$$

$$x = 625$$

Thus, the required sum is Rs 625.

**Q4) What sum will amount to Rs 4913 in 18 months, if the rate of interest is  $12\frac{1}{2}$ % per annum, compounded half-yearly?**

**Solution:**

Let the sum be Rs x.

Given:

$$A = \text{Rs } 4913$$

$$R = 12.5 \%$$

$$n = 18 \text{ months} = 1.5 \text{ years}$$

We know that:

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

$$4913 = P \left(1 + \frac{R}{200}\right)^{2n}$$

$$4913 = x \left(1 + \frac{12.5}{200}\right)^3$$

$$4913 = P [(1.0625)^3]$$

$$x = \frac{4913}{1.1995}$$

$$x = 4096$$

Thus, the required sum is Rs 4096.

**Q5) The difference between the compound interest and simple interest on a certain sum at 15% per annum for 3 years is Rs 283.50. Find the sum.**

**Solution:**

Given:

$$CI - SI = \text{Rs } 283.50$$

$$R = 15 \%$$

$$n = 3 \text{ years}$$

Let the sum be Rs x.

We know that:

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

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

$$= x(1.15)^3 \dots\dots(1)$$

Also,

$$SI = \frac{PRT}{100} = \frac{x(15)(3)}{100} = 0.45x$$

$$A = SI + P = 1.45x \dots\dots(2)$$

Thus, we have:

$$x(1.15)^3 - 1.45x = 283.50 \quad \text{[From (1) and (2)]}$$

$$1.523x - 1.45x = 283.50$$

$$0.070875x = 283.50$$

$$x = \frac{283.50}{0.070875}$$

$$= 4000$$

Thus, the sum is Rs 4000.

**Q6) Rachana borrowed a certain sum at the rate of 15% per annum. If she paid at the end of two years Rs 1290 as interest compounded annually, find the sum she borrowed.**

**Solution:**

Let the money borrowed by Rachana be Rs x.

Then, we have:

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

$$1290 = x \left[\left(1 + \frac{15}{100}\right)^2 - 1\right]$$

$$1290 = x[0.3225]$$

$$x = \frac{1290}{0.3225}$$

$$= 4000$$

Thus, Rachana borrowed Rs 4000.

**Q7) The interest on a sum of Rs 2000 is being compounded annually at the rate of 4% per annum. Find the period for which the compound interest is Rs 163.20.**

**Solution:**

Let the time period be n years.

Then, we have:

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

$$163.20 = 2000 \left(1 + \frac{4}{100}\right)^n - 2000$$

$$2163.20 = 2000(1.04)^n$$

$$(1.04)^n = \frac{2163.20}{2000} \quad (1.04)^n = 1.0816 \quad (1.04)^n = (1.04)^2$$

On comparing both the sides, we get:

$$n = 2$$

Thus, the required time is two years.

**Q8) In how much time would Rs 5000 amount to Rs 6655 at 10% per annum compound interest?**

**Solution:**

Let the time period be n years.

Then, we have:

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

$$6655 = 5000 \left(1 + \frac{10}{100}\right)^n - 5000$$

$$11655 = 5000(1.10)^n$$

$$(1.1)^n = \frac{11655}{5000} \quad (1.1)^n = 2.331 \quad (1.1)^n = (1.1)^3$$

On comparing both the sides, we get:

$$n = 3$$

Thus, the required time is three years.

**Q9) In what time will Rs 4400 become Rs 4576 at 8% per annum interest compounded half-yearly?**

**Solution:**

Let the time period be n years.

$$R = 8\% = 4\% \text{ (Half-yearly)}$$

Thus, we have:

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

$$4576 = 4400 \left(1 + \frac{4}{100}\right)^n$$

$$4576 = 4400(1.04)^n$$

$$(1.04)^n = \frac{4576}{4400} (1.04)^n = 1.04 (1.04)^n = (1.04)^1$$

On comparing both the sides, we get:

$$n = 1$$

Thus, the required time is half year.

**Q10) The difference between the S.I. and C.I. on a certain sum of money for 2 years at 4% per annum is Rs 20. Find the sum.**

**Solution:**

Given:

$$CI - SI = \text{Rs } 20$$

$$\left[ P \left( 1 + \frac{4}{100} \right)^2 - P \right] - \frac{P \times 4 \times 2}{100} = 20 \quad P [(1.04)^2 - P] - 0.08P = 20$$
$$0.0816P - 0.08P = 20$$

$$0.0016P = 20$$

$$P = \frac{20}{0.0016}$$

$$P = 12500$$

Thus, the required sum is Rs 12500.

**Q11) In what time will Rs 1000 amount to Rs 1331 at 10% per annum, compound interest?**

**Solution:**

Let the time be n years.

Then,

$$A = P \left( 1 + \frac{10}{100} \right)^n$$

$$1331 = 1000 \left( 1 + \frac{10}{100} \right)^n$$

$$(1.1)^n = \frac{1331}{1000} (1.1)^n = 1.331 (1.1)^n = (1.1)^3$$

On comparing both the sides, we get:

$$n = 3$$

Thus, the required time is three years.

**Q12) At what rate percent compound interest per annum will Rs 640 amount to Rs 774.40 in 2 years?**

**Solution:**

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

$$774.40 = 640 \left( 1 + \frac{R}{100} \right)^2$$

$$\left( 1 + \frac{R}{100} \right)^2 = \frac{774.40}{640} \left( 1 + \frac{R}{100} \right)^2 = 1.21 \left( 1 + \frac{R}{100} \right)^2 = (1.1)^2 \left( 1 + \frac{R}{100} \right) = 1.1 \frac{R}{100} = 0.1$$
$$R = 10$$

Thus, the required rate of interest is 10 % per annum.

**Q13) Find the rate percent per annum if Rs 2000 amount to Rs 2662 in  $1\frac{1}{2}$  years, interest being compounded half-yearly?**

**Solution:**

Let the rate of interest be R %.

Then,

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

$$2662 = 2000\left(1 + \frac{R}{100}\right)^3$$

$$\left(1 + \frac{R}{100}\right)^3 = \frac{2662}{2000} \left(1 + \frac{R}{100}\right)^3 = 1.331 \left(1 + \frac{R}{100}\right)^3 = (1.1)^3 \left(1 + \frac{R}{100}\right) = 1.1 \frac{R}{100} = 0.1$$

$$R = 10$$

Because the interest rate is being compounded half-yearly, it is 20 % per annum.

**Q14) Kamala borrowed from Ratan a certain sum at a certain rate for two years simple interest. She lent this sum at the same rate to Hari for two years compound interest. At the end of two years, she received Rs 210 as compound interest but paid Rs 200 only as simple interest. Find the sum and the rate of interest.**

**Solution:**

Let the sum be Rs P and the rate of interest be R%.

We know that Kamla paid Rs 200 as simple interest.

$$\therefore 200 = \frac{PR(2)}{100}$$

$$PR = 10000 \dots (1)$$

Also, Kamla received Rs 210 as compound interest.

$$\therefore 210 = P\left(1 + \frac{R}{100}\right)^2 - 1 \quad 210(10000) = P(R^2 + 200R)$$

$$210R = R^2 + 200R \quad \text{[From (1)]}$$

$$R = 10\% \text{ p.a.}$$

Putting the equation in (1), we get:

$$P = 1000$$

Thus, the required sum is Rs 1000 and the rate of interest is 10%.

**Q15) Find the rate percent per annum, if Rs 2000 amount to Rs 2315.25 in a year and a half, interest being compounded six monthly.**

**Solution:**

Let the rate percent per annum be R.

Because interest is compounded every six months, n will be 3 for 1.5 years.

Now,

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

$$2315.25 = 2000\left(1 + \frac{R}{200}\right)^3$$

$$\left(1 + \frac{R}{200}\right)^3 = \frac{2315.25}{2000} \left(1 + \frac{R}{200}\right)^3 = 1.157625 \left(1 + \frac{R}{200}\right)^3 = (1.05)^3 \left(1 + \frac{R}{200}\right) = 1.05 \frac{R}{200} = 0.05$$

$$R = 10$$

Thus, the required rate is 10 % per annum.

**Q16) Find the rate at which a sum of money will double itself in 3 years if the interest is compounded annually.**

**Solution:**

Let the rate percent per annum be R.

Then,

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

$$2P = P\left(1 + \frac{R}{100}\right)^3$$

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

$$\left(1 + \frac{R}{100}\right) = 1.2599$$

$$\frac{R}{100} = 0.2599$$

$$R = 25.99$$

Thus, the required rate is 25.99 % per annum.

**Q17) Find the rate at which a sum of money will become four times the original amount in 2 years if the interest is compounded half-yearly.**

**Solution:**

Let the rate percent per annum be R.

Then,

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

$$4P = P \left(1 + \frac{R}{200}\right)^4$$

$$\left(1 + \frac{R}{200}\right)^4 = 4$$

$$\left(1 + \frac{R}{200}\right) = 1.4142$$

$$\frac{R}{200} = 0.4142$$

$$R = 82.84$$

Thus, the required rate is 82.84 %.

**Q18) A certain sum amounts to Rs 6832 in 2 years at 8% compounded interest. Find the sum.**

**Solution:**

Let the sum be P.

Thus, we have:

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

$$5832 = P \left(1 + \frac{8}{100}\right)^2$$

$$5832 = 1.1664P$$

$$P = \frac{5832}{1.1664}$$

$$= 5000$$

Thus, the required sum is Rs 5000.

**Q19) The difference between the compound interest and simple interest on a certain sum for 2 years at 7.5% per annum is Rs 360. Find the sum.**

**Solution:**

Let the sum be P.

Thus, we have:

$$CI - SI = 360$$

$$\left[P \left(1 + \frac{R}{100}\right)^n - P\right] - \frac{P \times 7.5 \times 2}{100} = 360$$

$$P \left[\left(1 + \frac{7.5}{100}\right)^2 - 1\right] - \frac{P \times 7.5 \times 2}{100} = 360$$

$$P [1.155625 - 1] - 0.15P = 360$$

$$0.155625P - 0.15P = 360$$

$$P = \frac{360}{0.005625}$$

$$P = 64000$$

Thus, the required sum is Rs 64000.

**Q20) The difference in simple interest and compound interest on a certain sum of money at  $6\frac{2}{3}\%$  per annum for 3 years is Rs 46. Determine the sum.**

**Solution:**

Given:

$$CI - SI = 46$$

$$P \left[ \left( 1 + \frac{R}{100} \right)^n - 1 \right] - \frac{PRT}{100} = 46 \quad P \left[ \left( 1 + \frac{20}{100} \right)^3 - 1 \right] - \frac{P \times 20 \times 3}{100} = 46 \quad \frac{4096}{3375}P - \frac{P}{5} - P = 46 \quad \frac{(4096 - 3375 - 675)P}{3375} = 46$$

$$P = 46 \times \frac{3375}{46}$$

$$= 3375$$

Thus, the required sum is Rs 3375.

**Q21) Ishita invested a sum of Rs 12000 at 5% per annum compound interest. She received an amount of Rs 13230 after years. Find the value of n.**

**Solution:**

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

$$13230 = 12000 \left( 1 + \frac{5}{100} \right)^n$$

$$(1.05)^n = \frac{13230}{12000} \quad (1.05)^n = 1.1025 \quad (1.05)^n = (1.05)^2$$

On comparing both the sides, we get:

$$n = 2$$

Thus, the value of n is two years.

**Q22) At what rate percent per annum will a sum of Rs 4000 yield compound interest of Rs 410 in 2 years?**

**Solution:**

Let the rate percent be R.

We know that:

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

$$410 = 4000 \left( 1 + \frac{R}{100} \right)^2 - 4000$$

$$4410 = 4000 \left( 1 + \frac{R}{100} \right)^2$$

$$\left( 1 + \frac{R}{100} \right)^2 = \frac{4410}{4000}$$

$$\left( 1 + \frac{R}{100} \right)^2 = 1.1025$$

$$\left( 1 + \frac{R}{100} \right)^2 = (1.05)^2$$

$$1 + \frac{R}{100} = 1.05$$

$$\frac{R}{100} = 0.05$$

$$R = 5$$

Thus, the required rate percent is 5.

**Q23) A sum of money deposited at 2% per annum compounded annually becomes Rs 10404 at the end of 2 years. Find the sum deposited.**

**Solution:**

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

$$10404 = P \left( 1 + \frac{2}{100} \right)^2$$

$$10404 = P(1.02)^2$$

$$P = \frac{10404}{1.0404}$$

$$P = 10000$$

Thus, the required sum is Rs 10000.



**Q24) In how much time will a sum of Rs 1600 amount to Rs 1852.20 at 5% per annum compound interest?**

**Solution:**

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

$$1852.20 = 1600\left(1 + \frac{5}{100}\right)^n$$

$$(1.05)^n = \frac{1852.20}{1600} \quad (1.05)^n = 1.157625 \quad (1.05)^n = (1.05)^3$$

On comparing both the sides, we get:

$$n = 3$$

Thus, the required time is three years.

**Q25) At what rate percent will a sum of Rs 1000 amount to Rs 1102.50 in 2 years at compound interest?**

**Solution:**

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

$$1102.50 = 1000\left(1 + \frac{R}{100}\right)^2$$

$$(1 + 0.01R)^2 = \frac{1102.50}{1000} \quad (1 + 0.01R)^2 = 1.1025 \quad (1 + 0.01R)^2 = (1.05)^2$$

On comparing both the sides, we get:

$$1 + 0.01R = 1.05$$

$$0.01R = 0.05$$

$$R = 5$$

Thus, the required rate percent is 5.

**Q26) The compound interest on Rs 1800 at 10% per annum for a certain period of time is Rs 378. Find the time in years.**

**Solution:**

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

$$378 = 1800\left(1 + \frac{10}{100}\right)^n - 1800$$

$$2178 = 1800\left(1 + \frac{10}{100}\right)^n$$

$$\left(1 + \frac{10}{100}\right)^n = \frac{2178}{1800}$$

$$(1.1)^n = 1.21$$

$$(1.1)^n = (1.1)^2$$

On comparing both the sides, we get:

$$n = 2$$

Thus, the required time is two years.

**Q27) What sum of money will amount to Rs 45582.25 at  $6\frac{3}{4}$ % per annum in two years, interest being compounded annually?**

**Solution:**

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

$$45582.25 = P\left(1 + \frac{27}{400}\right)^2$$

$$P(1.0675)^2 = 45582.25$$

$$P = \frac{45582.25}{1.13955625}$$

$$P = 40000$$

Thus, the required sum is Rs 40000.

**Q28) Sum of money amounts to. Rs 453690 in 2 years at 6.5% per annum compounded annually. Find the sum.**

**Solution:**

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

$$453690 = P \left(1 + \frac{6.5}{100}\right)^2$$

$$P(1.065)^2 = 453690$$

$$P = \frac{453690}{1.134225}$$

$$P = 400000$$

Thus, the required sum is Rs 400000.