

## SOLUTIONS

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# SOLUTIONS: COMPOUND INTEREST

Mathematics | Class IX (2026/COMINT/09/003-SOL)

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## Section A: Multiple Choice Questions

1. (b) **Rs 408**.  $P = 5000, r = 4\%(8/2), n = 2$ .  $A = 5000(1.04)^2 = 5408$ .  $CI = 5408 - 5000 = 408$ .
2. (b)  $P(1 + r/100)^n$ . This is the standard formula for annual compounding.
3. (b) **Rs 820**.  $P = 8000, r = 5\%, n = 2$ .  $A = 8000(1.05)^2 = 8820$ .  $CI = 820$ .
4. (c) **3 years**.  $1331 = 1000(1.1)^n \implies 1.331 = (1.1)^n \implies (1.1)^3 = (1.1)^n \implies n = 3$ .
5. (c).  $CI$  for the 2nd year is the interest calculated on the amount (Principal + Interest) of the 1st year.
6. (a) **Rs 20**.  $SI = (2000 \times 10 \times 2)/100 = 400$ .  $CI = 2000[(1.1)^2 - 1] = 420$ .  $Diff = 20$ .
7. (a) **5%**.  $1323/1200 = (1 + r/100)^2 \implies 441/400 = (1 + r/100)^2 \implies 21/20 = 1 + r/100$ .
8. (b)  $2n$ . In  $n$  years, there are  $2n$  half-yearly conversion periods.

## Section B: Very Short Answer Questions

1.  $A = 6250(1 + 4/100)^2 = 6250(26/25)^2 = 6250 \times 676/625 = \mathbf{Rs\ 6760}$ .
2.  $n = 2, r = 5\%$ .  $A = 10000(1.05)^2 = 11025$ .  $CI = 11025 - 10000 = \mathbf{Rs\ 1025}$ .
3.  $676/625 = (1 + r/100)^2 \implies (26/25)^2 = (1 + r/100)^2 \implies 1.04 = 1 + r/100 \implies r = \mathbf{4\%}$ .
4.  $500 = (P \times 10 \times 2)/100 \implies P = 2500$ .  $CI = 2500[(1.1)^2 - 1] = 2500 \times 0.21 = \mathbf{Rs\ 525}$ .

## Section C: Short Answer Questions

1.  $A = 15500(1 + 8/100)(1 + 10/100) = 15500 \times 1.08 \times 1.1 = \mathbf{Rs\ 18414}$ .
2. **Year 1 Interest:** 1000. **Amount 1:** 11000.  
 $x$  (**Year 2 Int**): 10% of 11000 = **1100**. **Amount 2:** 12100.  
 $y$  (**Year 3 Int**): 10% of 12100 = **1210**.
3. **Yearly:**  $CI = 10\%$  of 10000 = 1000.  
**Half-yearly:**  $r = 5, n = 2$ .  $CI = 10000[(1.05)^2 - 1] = 1025$ .  
**Difference:**  $1025 - 1000 = \mathbf{Rs\ 25}$ .

## Section D: Long Answer Questions

- (a)  $I_1 = (12500 \times 12 \times 1)/100 = \mathbf{Rs\ 1500}$ .  
(b)  $A_2 = 12500(1.12)^2 = 12500 \times 1.2544 = \mathbf{Rs\ 15680}$ .  
(c)  $I_3 = 12\%$  of 15680 = **Rs 1881.60**.
- $SI = 0.3P$ .  $CI = P[(1.1)^3 - 1] = 0.331P$ .  
 $Diff = 0.031P = 930$ .  
 $P = 930/0.031 = \mathbf{Rs\ 30,000}$ .

## Section E: Case Study Solutions

- d) **3%**. 12% annual  $\div$  4 quarters = 3%.
- c) **3**. 18 months contains three 6-month (half-yearly) periods.
- b)  $45000(1 - 7.5/100)^3$ .  $r = 15/2 = 7.5$  and  $n = 3$ .
- b) **Rs 20,600**. Interest for Q1 = 3% of 20000 = 600. New  $P = 20600$ .
- c) **Exponential growth and decay**. Compounding creates non-linear curves.