

CHAPTER TEST: COMPOUND INTEREST

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

Time: 1.5 Hours

Max. Marks: 40

General Instructions:

- All questions are compulsory.
- Section A contains 8 MCQs of 1 mark each.
- Section B contains 4 questions of 2 marks each.
- Section C contains 3 questions of 3 marks each.
- Section D contains 2 questions of 5 marks each.
- Use of calculators is strictly prohibited.

Section A: Multiple Choice Questions (8 Marks)

1. The compound interest on Rs 5000 for 1 year at 8% per annum compounded semi-annually is:
 - (a) Rs 400
 - (b) Rs 408
 - (c) Rs 200
 - (d) Rs 5408
2. If the principal is P and the rate of interest is $r\%$ p.a., then the amount A after n years, interest compounded annually, is:
 - (a) $P(1 - r/100)^n$
 - (b) $P(1 + r/100)^n$
 - (c) $P(1 + r/200)^n$
 - (d) $P(1 + r/100) \times n$
3. A sum of Rs 8000 at 10% p.a. compounded half-yearly for 1 year yields an interest of:
 - (a) Rs 800
 - (b) Rs 820
 - (c) Rs 400
 - (d) Rs 410
4. The time in which Rs 1000 becomes Rs 1331 at 10% p.a. compounded annually is:
 - (a) 2 years
 - (b) 2.5 years
 - (c) 3 years

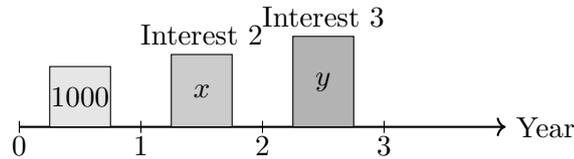
- (d) 4 years
5. If the interest is compounded annually, the compound interest for the second year is:
- (a) Same as the first year
 - (b) Less than the first year
 - (c) Interest on the amount at the end of the first year
 - (d) Simple interest on the original principal
6. The difference between CI and SI on Rs 2000 for 2 years at 10% p.a. is:
- (a) Rs 20
 - (b) Rs 10
 - (c) Rs 2
 - (d) Rs 40
7. If the amount is Rs 1323 and the principal is Rs 1200 for 2 years, the rate of interest p.a. is:
- (a) 5%
 - (b) 10%
 - (c) 8%
 - (d) 6%
8. When interest is compounded half-yearly, the time n in the formula $A = P(1 + r/100)^n$ becomes:
- (a) $n/2$
 - (b) $2n$
 - (c) n
 - (d) $4n$

Section B: Very Short Answer Questions (8 Marks)

1. Find the amount of Rs 6250 for 2 years at 4% per annum compounded annually.
2. Calculate the compound interest on Rs 10000 for 1 year at 10% p.a. compounded half-yearly.
3. At what rate percent per annum will Rs 625 amount to Rs 676 in 2 years compounded annually?
4. The simple interest on a sum of money for 2 years at 10% p.a. is Rs 500. Find the compound interest on the same sum at the same rate and for the same period.

Section C: Short Answer Questions (9 Marks)

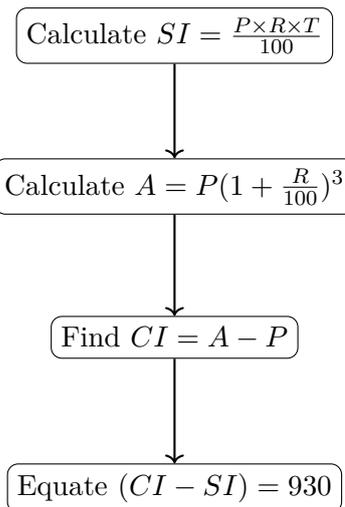
1. A sum of Rs 15500 is lent out at compound interest. The rate of interest for the first year is 8% and for the second year is 10%. Find the total amount to be paid after 2 years.
2. The following diagram shows the accumulation of interest over three periods. If the principal is Rs 10000 and the rate is 10% p.a. compounded annually, calculate the values of x and y representing the interest for the 2nd and 3rd years respectively.



3. Find the difference between the compound interest compounded yearly and half-yearly on Rs 10000 for 1 year at 10% per annum.

Section D: Long Answer Questions (10 Marks)

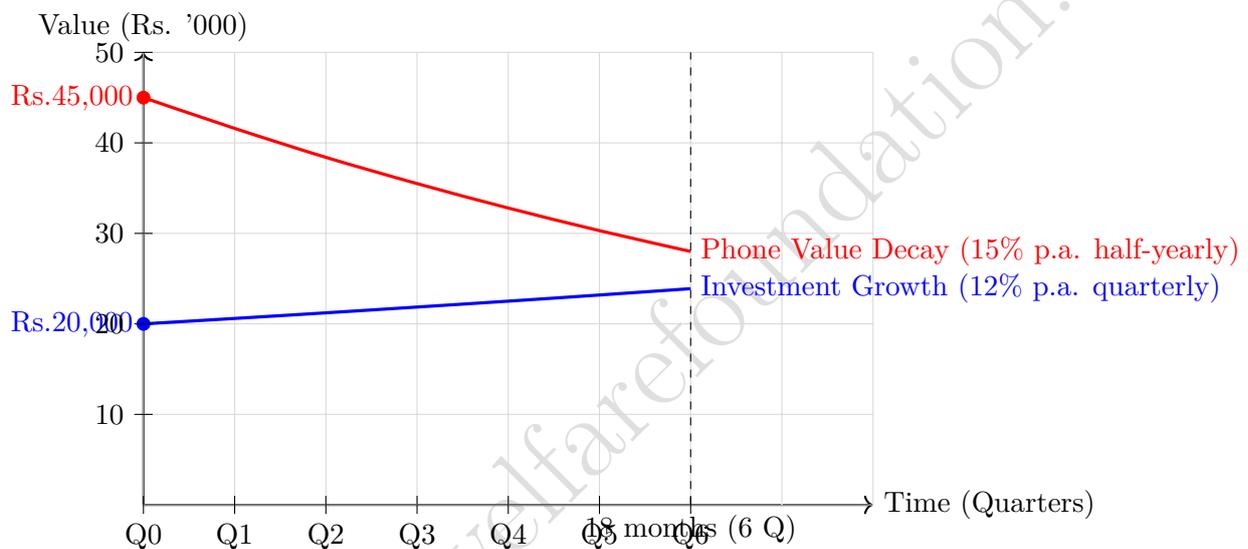
1. A man lends Rs 12500 at 12% for 3 years, compound interest. Find:
 - (a) The interest for the first year.
 - (b) The amount at the end of the second year.
 - (c) The interest for the third year.
2. The difference between the compound interest and simple interest on a certain sum of money at 10% per annum for 3 years is Rs 930. Find the sum. Use the following logic flow as a guide for your derivation:



Section E

Case Study:

Rohan invested Rs.20,000 in a tech startup fund that develops smartphone camera sensors. The fund appreciates at a rate of 12% per annum, compounded quarterly. Simultaneously, he purchased a premium smartphone for Rs.45,000, whose value depreciates at 15% per annum, compounded half-yearly. He wants to compare the fund's growth against the phone's depreciation over 18 months. The quarterly appreciation uses a rate of 3% ($12\%/4$) over 6 periods (18 months = 6 quarters). The half-yearly depreciation uses a rate of 7.5% ($15\%/2$) over 3 periods. This scenario illustrates how compounding works for both growth (investment) and decay (asset value), requiring calculation of final amounts using $A = P(1 + \frac{r}{100})^n$ and its decay counterpart.



1. What is the quarterly interest rate used for the investment appreciation?
 - (a) 12%
 - (b) 6%
 - (c) 4%
 - (d) 3%
2. After 18 months, how many compounding periods are used for the phone's depreciation calculation?
 - (a) 1.5
 - (b) 2
 - (c) 3
 - (d) 6
3. Which formula correctly calculates the phone's value after 18 months?
 - (a) $45000 \left(1 - \frac{15}{100}\right)^{1.5}$
 - (b) $45000 \left(1 - \frac{7.5}{100}\right)^3$

(c) $45000 \left(1 + \frac{7.5}{100}\right)^3$

(d) $45000 \left(1 - \frac{15}{100}\right)^3$

4. If Rohan wanted to find the investment's value after 18 months using the simple interest method in successive steps (instead of the formula), what would be the principal for the *second* quarter's calculation?
- (a) Rs.20,000
(b) Rs.20,600
(c) Rs.21,200
(d) Rs.21,836
5. What key mathematical concept is illustrated by the divergence of the blue and red curves in the diagram?
- (a) Simple interest growth
(b) Linear decay
(c) Exponential growth and decay via compounding
(d) Arithmetic progression