

Compound Interest

Unit: Comparing Quantities - Student Practice Worksheet

Overview: Meera invested Rs. 10,000 at 10% for 2 years. Arjun computed simple interest and got Rs. 2,000. Meera's bank statement showed Rs. 2,100. The extra Rs. 100 wasn't a bank error — it was interest earning interest.

Practice Questions (30 Total)

Section A - Easy

Q1. Teal 1000 plus a 10% maroon strip for 1 year. Amount?



- ☐ A. Rs. 1,010
- ☐ B. Rs. 1,200
- ☐ C. Rs. 1,100
- ☐ D. Rs. 1,000

Q2. What is the compound interest formula for Amount?

- ☐ A. $A = P(1 + R/100)^n$
- ☐ B. $A = P + RT/100$
- ☐ C. $A = PRT/100$
- ☐ D. $A = P \times R \times n$

Q3. Under compound interest, is each year's interest amount the same?

- ☐ A. Yes, always the same
- ☐ B. No, it grows each year
- ☐ C. No, it shrinks each year
- ☐ D. Only for the first year

Q4. Two stacked years at 10% on 1000. Amount after 2 years?



2 years at 10%

- ☐ A. Rs. 1,200
- ☐ B. Rs. 1,100
- ☐ C. Rs. 1,220
- ☐ D. Rs. 1,210

Q5. What does 'n' represent in the compound interest formula?

- ☐ A. The interest rate
- ☐ B. The principal amount
- ☐ C. The number of compounding periods
- ☐ D. The final amount

Q6. Rs. 2,000 is invested at 5% per year, compounded annually, for 1 year. Find the CI.

- ☐ A. Rs. 200
- ☐ B. Rs. 50
- ☐ C. Rs. 2,100
- ☐ D. Rs. 100

Q7. Teal 500 plus a 20% maroon strip for 1 year. Amount?



500 at 20% for 1 year

- ☐ A. Rs. 520
- ☐ B. Rs. 600
- ☐ C. Rs. 100
- ☐ D. Rs. 550

Q8. What is CI in terms of Amount and Principal?

- ☐ A. $CI = \text{Amount} - \text{Principal}$
- ☐ B. $CI = \text{Amount} + \text{Principal}$
- ☐ C. $CI = \text{Amount} \times \text{Principal}$
- ☐ D. $CI = \text{Principal} - \text{Amount}$

Q9. For the same P, R, T (positive rate), which is generally larger: CI or SI?

- ☐ A. SI is always larger
- ☐ B. CI is always larger or equal
- ☐ C. They are always exactly equal
- ☐ D. Neither can be compared

Q10. Is each year's CI taken on the original principal, and why not?

- ☐ A. No, on the growing accumulated amount
- ☐ B. Yes, always
- ☐ C. Only in year 1
- ☐ D. Only in the final year

Section B - Medium

Q11. 10000 grown by 1.10 squared. Amount after 2 years?

$$10000 \rightarrow \times 1.10^2$$

- ☐ A. Rs. 12,100
- ☐ B. Rs. 12,000
- ☐ C. Rs. 11,000
- ☐ D. Rs. 12,200

Q12. If a sum doubles in value under compound interest after n years, what does $A = P(1+R/100)^n$ tell you about the ratio A/P?

- ☐ A. $A/P = 1$
- ☐ B. $A/P = n$
- ☐ C. $A/P = R$
- ☐ D. $A/P = 2$

Q13. Find the CI on Rs. 8,000 at 5% per year, compounded annually, for 3 years.

- ☐ A. Rs. 1,200
- ☐ B. Rs. 1,261
- ☐ C. Rs. 1,250

☐ **D.** Rs. 1,000

Q14. 15000 grown by 1.08 squared. Amount after 2 years?

15000 $\rightarrow \times 1.08^2$

☐ **A.** Rs. 17,400

☐ **B.** Rs. 16,200

☐ **C.** Rs. 17,600

☐ **D.** Rs. 17,496

Q15. For a 1-year deposit, is compound interest ever different from simple interest?

☐ **A.** Yes, CI is always higher

☐ **B.** No, they're always identical for exactly 1 year

☐ **C.** Yes, SI is always higher

☐ **D.** It depends on the rate

Q16. Compare CI and SI on Rs. 8,000 at 5% per year for 3 years. What is the difference between them?

☐ **A.** Rs. 100

☐ **B.** Rs. 200

☐ **C.** Rs. 61

☐ **D.** Rs. 1

Q17. 12000 at 10% for 2 years. Compound interest, not the amount?



12000, 10%, 2 years

☐ **A.** Rs. 2,520

☐ **B.** Rs. 2,400

☐ **C.** Rs. 2,200

☐ **D.** Rs. 1,200

Q18. Find the compound interest on Rs. 20,000 at 10% per year, compounded annually, for 1 year, and compare it to the simple interest for the same period.

- ☐ A. CI is Rs. 2,200, SI is Rs. 2,000
- ☐ B. Both equal Rs. 2,000
- ☐ C. CI is Rs. 2,000, SI is Rs. 2,200
- ☐ D. Both equal Rs. 2,200

Q19. Find the amount on Rs. 6,000 at 4% per year, compounded annually, for 2 years.

- ☐ A. Rs. 6,480
- ☐ B. Rs. 6,240
- ☐ C. Rs. 6,489.60
- ☐ D. Rs. 6,500

Q20. 4000 grows to 4410 in 2 years. Find R from the square root of A/P.

- ☐ A. 5%
- ☐ B. 10%
- ☐ C. 2.5%
- ☐ D. 7.5%

Section C - Challenge

Q21. 10000 at 10% per year, compounded half-yearly for 1 year. Amount?

H1: 5%

H2: 5%

- ☐ A. Rs. 11,025
- ☐ B. Rs. 11,000
- ☐ C. Rs. 11,100
- ☐ D. Rs. 10,500

Q22. A sum P grows to A1 after 2 years and to A2 after 3 years under the same compound rate. Express the rate R using A1 and A2 only.

- ☐ A. $R = (A_2 - A_1)$
- ☐ B. $R = (A_2/A_1) \times 100$
- ☐ C. $R = ((A_2/A_1) - 1) \times 100$
- ☐ D. $R = A_2 - A_1 \times 100$

Q23. A sum invested at compound interest amounts to Rs. 9,261 after 3 years at 5% per year. Find the original principal.

- ☐ **A.** Rs. 8,500
- ☐ **B.** Rs. 8,000
- ☐ **C.** Rs. 7,500
- ☐ **D.** Rs. 9,000

Q24. 5000: year 1 at 10%, year 2 at 20%. Amount after 2 years?

Y1 10%

Y2 20%

- ☐ **A.** Rs. 6,050
- ☐ **B.** Rs. 6,500
- ☐ **C.** Rs. 7,000
- ☐ **D.** Rs. 6,600

Q25. For a 3-year investment, is the ratio of CI to SI on the same principal and rate always exactly the same regardless of the rate value?

- ☐ **A.** No, the ratio changes with the rate
- ☐ **B.** Yes, always exactly the same ratio
- ☐ **C.** Yes, but only for whole-number rates
- ☐ **D.** The ratio is always exactly 1

Q26. The difference between CI and SI on a sum for 2 years at 8% per year is Rs. 64. Find the principal.

- ☐ **A.** Rs. 8,000
- ☐ **B.** Rs. 6,400
- ☐ **C.** Rs. 10,000
- ☐ **D.** Rs. 5,000

Q27. 20000 grows to 24200 in 2 years. Annual rate R?

20000 → 24200 in 2 years

- ☐ A. 8%
- ☐ B. 10%
- ☐ C. 12%
- ☐ D. 5%

Q28. Rs. 15,000 amounts to Rs. 19,965 in 3 years under compound interest at a fixed annual rate. Verify: is the rate closest to 10%?

- ☐ A. No, the rate is 15%
- ☐ B. No, the rate is 20%
- ☐ C. No, the rate is 5%
- ☐ D. Yes, $19965/15000=1.331=1.1^3$

Q29. A sum is invested at 10% per year, compounded annually. After how many full years will it first exceed double the original principal?

- ☐ A. 7 years
- ☐ B. 8 years
- ☐ C. 10 years
- ☐ D. 5 years

Q30. A sum doubles in 5 years under CI. After 10 years at the same rate, how many times the original?

- ☐ A. 4 times the original, not merely 3 times
- ☐ B. Exactly 3 times the original
- ☐ C. Exactly 2 times the original
- ☐ D. Exactly 2.5 times the original

Answer Key

Q1: (C) (c) Rs. 1,100. $A = 1000 \times 1.10 = 1100$.

Q2: (A) (a) $A = P(1 + R/100)^n$. Principal times one plus the rate fraction, raised to the number of periods.

Q3: (B) (b) No, it grows each year. Each year's interest is calculated on the larger accumulated amount.

Q4: (D) (d) Rs. 1,210. $A = 1000 \times 1.10^2 = 1000 \times 1.21 = 1210$.

Q5: (C) (c) The number of compounding periods. Usually the number of years, for annual compounding.

Q6: (D) (d) Rs. 100. $A = 2000 \times 1.05 = 2100$, $CI = 2100 - 2000 = 100$.

Q7: (B) (b) Rs. 600. $A = 500 \times 1.20 = 600$.

Q8: (A) (a) $CI = \text{Amount} - \text{Principal}$. The interest is the total growth over the original sum.

Q9: (B) (b) CI is always larger or equal. Compounding lets interest earn interest, which SI never does.

Q10: (A) (a) No, on the growing accumulated amount. This is what distinguishes compound from simple interest.

Q11: (A) (a) Rs. 12,100. $A = 10000 \times 1.10^2 = 10000 \times 1.21 = 12100$.

Q12: (D) (d) $A/P = 2$. Doubling means the final amount is exactly twice the principal, so the ratio is 2.

Q13: (B) (b) Rs. 1,261. $A = 8000 \times 1.05^3 = 8000 \times 1.157625 = 9261$, $CI = 9261 - 8000 = 1261$.

Q14: (D) (d) Rs. 17,496. $A = 15000 \times 1.08^2 = 15000 \times 1.1664 = 17496$.

Q15: (B) (b) No, they're always identical for exactly 1 year. The compounding effect only shows up from the second period onward.

Q16: (C) (c) Rs. 61. $CI = 1261$ (from Q13), $SI = (8000 \times 5 \times 3)/100 = 1200$, $\text{difference} = 1261 - 1200 = 61$.

Q17: (A) (a) Rs. 2,520. $A = 12000 \times 1.21 = 14520$, $CI = 14520 - 12000 = 2520$.

Q18: (B) (b) Both equal Rs. 2,000. For exactly 1 year, CI and SI are always identical, since compounding hasn't had a chance to apply yet.

Q19: (C) (c) Rs. 6,489.60. $A = 6000 \times 1.04^2 = 6000 \times 1.0816 = 6489.60$.

Q20: (A) (a) 5%. $4410/4000 = 1.1025$, and $\sqrt{1.1025} = 1.05$, so $R = 5\%$.

Q21: (A) (a) Rs. 11,025. Half-yearly rate = 5%, periods = 2:
 $A = 10000 \times 1.05^2 = 10000 \times 1.1025 = 11025$ — compounding more often gives slightly more than annual compounding's Rs. 11,000.

Q22: (C) (c) $R = ((A_2/A_1) - 1) \times 100$. The ratio of consecutive years' amounts is exactly $(1 + R/100)$, since one more year of compounding is applied.

Q23: (B) (b) Rs. 8,000. $P = 9261/1.05^3 = 9261/1.157625 = 8000$.

Q24: (D) (d) Rs. 6,600. Year 1: $5000 \times 1.10 = 5500$. Year 2: $5500 \times 1.20 = 6600$.

Q25: (A) (a) No, the ratio changes with the rate. A higher rate produces a proportionally bigger compounding effect, so the CI/SI ratio grows with the rate, not staying fixed.

Q26: (C) (c) Rs. 10,000. For 2 years, the CI-SI difference equals $P \times (R/100)^2$, so $P \times 0.0064 = 64$, giving $P = 10000$.

Q27: (B) (b) 10%. $24200/20000 = 1.21$, $\sqrt{1.21} = 1.1$, so $R = 10\%$.

Q28: (D) (d) Yes, $19965/15000 = 1.331 = 1.1^3$. $1.1^3 = 1.331$ exactly, confirming a 10% annual rate over 3 years.

Q29: (B) (b) 8 years. $1.1^8 \approx 1.949$ (not yet double), $1.1^9 \approx 2.144$ (exceeds double) — so year 8 is the first year the amount exceeds twice the principal.

Q30: (A) (a) 4 times the original, not merely 3 times. Doubling again over the next 5 years multiplies by 2 a second time: $2 \times 2 = 4$, since compound growth is exponential, not linear — a common mistake is assuming two doubling periods only triple the sum.

You've got this! Keep learning and shining! - Ruchi Math Coaching