Compound Interest Primer Problem Set

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Compound interest problem set

Round all answers to the nearest whole dollar, or to the nearest 0.01%.

**Problem 1.** (i) $56,000 is invested at 3.56%, compounded quarterly. What is the account’s value after 5 years and 3 months?
(ii) What is the effective annual yield on the investment?

**Problem 2.** (i) $110,000 is invested at 5.25%, compounded monthly. What is the value of the account after 4 years?
(ii) What is the effective annual yield on the investment?

**Problem 3.** (i) $74,000 is invested at 4.8%, compounded daily. What is the value of the account after 6 years and 6 months?
(ii) What is the effective annual yield on the investment?

**Problem 4.** A certificate of deposit pays interest at 3.60%, compounded quarterly. What is the effective annual yield?

**Problem 5.** A certificate of deposit pays interest at 4.25%, compounded monthly. What is the effective annual yield?

**Problem 6.** A certificate of deposit pays interest at 5.10%, compounded daily. What is the effective annual yield?

**Problem 7.** A certificate of deposit pays interest at rate \( r \), compounded quarterly. If the effective annual yield is 3.35%, what is the value of \( r \)?

**Problem 8.** A certificate of deposit pays interest at rate \( r \), compounded monthly. If the effective annual yield is 5.80%, what is the value of \( r \)?

**Problem 9.** A certificate of deposit pays interest at rate \( r \), compounded daily. If the effective annual yield is 3.58%, what is the value of \( r \)?

**Problem 10.** A certificate of deposit pays interest at rate \( r \), compounded annually. If the effective annual yield is 4.15%, what is the value of \( r \)?

**Problem 11.** (i) $35,000 is invested at 3.4%, compounded continuously. What is the value of the account after 7 years?
(ii) What is the effective annual yield on the investment?

**Problem 12.** (i) $120,000 is invested at 5.02%, compounded continuously. What is the value of the account after 2 years and six months?
(ii) What is the effective annual yield on the investment?
**Problem 13.** Two certificates of deposit have the same effective annual yield. The first pays a rate of \( r \), compounded monthly. The second pays 6.03%, compounded continuously. What is the value of \( r \)?

**Problem 14.** Two certificates of deposit have the same effective annual yield. The first pays a rate of 4%, compounded quarterly. The second pays a rate of \( r \), compounded continuously. What is the value of \( r \)?

**Problem 15.** $5000 is invested in an account paying 5.5%, compounded quarterly. How long will it take for the value of the account to reach $6000? Round your answer to the nearest hundredth of a year.

**Problem 16.** $12,000 is invested in an account paying 3.85%, compounded monthly. How long will it take for the value of the account to reach $16,000? Round your answer to the nearest hundredth of a year.

**Problem 17.** $3000 is invested in an account paying 3.2%, compounded daily. How long will it take for the value of the account to reach $5000? Round your answer to the nearest hundredth of a year.

**Problem 18.** $3000 is invested in an account paying 3.2%, compounded continuously. How long will it take for the value of the account to reach $5000? Round your answer to the nearest hundredth of a year.

**Problem 19.** A deposit account pays interest of \( r \), compounded continuously. If the effective annual yield is 3.91%, what is \( r \)?

**Problem 20.** A deposit account pays interest of \( r \), compounded continuously. If the effective annual yield is 7.12%, what is \( r \)?

**Problem 21.** Suppose money earns at an annual rate of 3.65%, compounded quarterly. What is the present value of a $30,000 payment 4 years from now?

**Problem 22.** Suppose money earns at an annual rate of 5%, compounded monthly. What is the present value of a $5000 payment 6 years from now?

**Problem 23.** Suppose money earns at an annual rate of 4.5%, compounded daily. What is the present value of a $125,000 payment 3 years and 6 months from now?

**Problem 24.** Suppose money earns at an annual rate of 5.2%, compounded continuously. What is the present value of a $23,000 payment 5 years from now?

**Problem 25.** Suppose money earns at an annual rate of 7.15%, compounded monthly. What is the future value of $13,000 after 3 years?

**Problem 26.** Suppose money earns at an annual rate of 4.6%, compounded continuously. What is the future value of $2000 after 7 years and 6 months?
Problem 27. What is the yearly ratio of future value to present value that corresponds to an annual rate of 7.6%, compounded continuously?

Problem 28. What is the annual rate of interest \( r \), compounded continuously, that corresponds to a yearly ratio of future value to present value of 1.10?

Problem 29. A mortgage of $120,000 is to be paid off in 360 equal monthly payments, beginning one month after the purchase date. The interest on the mortgage is 5.78%, compounded continuously.
(i) What is the amount of each payment?
(ii) What is the total amount of all the payments?

Problem 30. A sofa costing $899.99 can be paid for in 24 equal monthly payments, beginning one month after the purchase date. The interest on the unpaid balance is 21.5%, compounded continuously.
(i) What is the amount of each payment?
(ii) What is the total amount of all the payments?