Name _____ Date _____

# 3-5 Compound Interest Formula

## Exercises

**Round to the nearest cent wherever necessary.**

1. Mr. Mady opens a savings account with principal *P* dollars that pays 4.11% interest compounded quarterly. Express his ending balance after one year algebraically.

2. Jeff deposits $2,300 at 3.13% interest compounded weekly. What will be his ending balance after one year?

3. Nancy has $4,111 in an account that pays 3.07% interest compounded monthly. What is her ending balance after two years?

4. Mr. Weinstein has a savings account with a balance of $19,211.34. It pays 4% interest compounded daily. What is his ending balance after three years, if no other deposits or withdrawals are made? How much interest does he earn over the three years?

5. If you invested $10,000 at 3.8% compounded hourly for five years, what would be your ending balance?

6. Danielle has a CD at Crossland Bank. She invests $22,350 for four years at 4.55% interest, compounded monthly. What is her ending balance? How much interest did she make?

7. Ms. Santoro is opening a one-year CD for $16,000. The interest is compounded daily. She is told by the bank representative that the annual percentage rate (APR) is 4.8%. What is the annual percentage yield (APY) for this account?

8. Knob Hill Savings Bank offers a one-year CD at 3.88% interest compounded daily. What is the APY for this account? Round to the nearest hundredth of a percent.

9. Kings Park Bank is advertising a special 5.08% APR for CDs. Kevin takes out a one-year CD for $24,000. The interest is compounded daily. Find the APY for Kevin's account.

10. Imagine that you invest $100,000 in an account that pays 5.9% annual interest compounded monthly. What will your balance be at the end of 18 years?

11. Yurik invests $88,000 in a CD that is locked into a 4.75% interest rate compounded monthly, for seven years. How much will Yurik have in the account when the CD matures?

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12. Stephanie has created a study tool to help her study compound interest. She writes the compound interest formula with letters different than the traditional representations.

$$X = M\left(1 + \frac{Q}{K}\right)^{KB}$$

a. If $Q$ is increased, does the new balance increase or decrease? Explain your answer.

b. If $K$ is decreased, does the new balance increase or decrease? Explain.

c. If $B$ is increased, does the new balance increase or decrease? Explain.

d. Is it possible that $M > X$? Explain.

e. Using Stephanie's variable representation, express the amount of interest earned on the account.

13. Compare the simple interest for one year on a principal of 1 million dollars at an interest rate of 6.3% to compounding every second for the same principal and interest rate.

a. How many seconds are in an hour?

b. How many seconds are in a day?

c. How many seconds are in a year?

d. How much interest does $1,000,000 earn in one year at 6.3% interest, compounded every second?

e. How much does the same $1,000,000 earn at 6.3% in one year, under simple interest?

f. How much more interest did the compounded account earn when compared to the simple-interest account?

14. Britney invested $4,000 in a CD at TTYL Bank that pays 3.4% interest compounded monthly.

a. How much will Britney have in her account at the end of one year?

b. What is the APY for this account? Round to the nearest hundredth of a percent.

15. How much more would $5,000 earn in ten years, compounded daily at 6%, when compared to the interest on $5,000 over ten years, at 6% compounded semiannually?