

Section 7.2 The Compound Interest Formula

1. Substitute the values of P , i , and n into the formula $A = P(1 + i)^n$ to evaluate the final amount of each investment.
 - a) \$500 at 4% per year, compounded annually, for 7 years
 - b) \$1800 at 4.5% per year, compounded semi-annually, for $3\frac{1}{2}$ years
 - c) \$2500 at 3.2% per year, compounded monthly, for 20 months
 - d) \$20 500 at 3.8% per year, compounded quarterly, for 12 years
2. Find the final amount of a \$3500 investment after 4 years if interest is paid at 1% per year, compounded
 - a) annually
 - b) semi-annually
 - c) quarterly
 - d) bi-monthly
 - e) monthly
 - f) weekly
3. Use the compound interest formula to calculate each final amount.
 - a) \$10 000 at 3.75% per year, compounded semi-annually, for 3 years
 - b) \$8500 at 1.5% per year, compounded quarterly, for 5 years
 - c) \$4500 at 0.45% per year, compounded weekly, for $1\frac{1}{2}$ years
 - d) \$9000 at 1.05% per year, compounded quarterly, for 15 months
 - e) \$12 500 at 0.95% per year, compounded daily, from January 1 to March 31 of a non-leap year, inclusive.
4. When Celine was 6 years old, her parents invested \$7500 in an education fund that earns 5.25% interest per year, compounded quarterly. How much will the investment be worth when Celine is
 - a) 13 years old
 - b) 18 years old
5. Jon borrowed \$8000 for his college expenses. He plans to pay back the amount owed after 3 years. Which plan requires Jon to pay the least amount of interest? How much less?
Plan A: 3.2% per year, compounded semi-annually
Plan B: 2.6% per year, compounded quarterly
6. To purchase a laptop computer, Wendy borrows \$3500 from a computer firm that offers students an interest rate of 2.88% per year, compounded semi-annually. The student has to pay the full amount after 2 years. How much will Wendy have to pay for her computer?
7. Katie invested \$25 000 in a plan that paid 4% per year, compounded quarterly, for 3 years. At the end of the 3 years, she re-invested the total amount earned in the previous plan into a new investment that paid 3.8% per year, compounded monthly, for 3 years.
 - a) How much did she have at the end of the first investment?
 - b) How much did she have at the end of the second investment?
 - c) How much interest did she earn in total?
8. The amount due on Carl's credit card is \$120. Interest is charged at 1.9% per year, compounded daily, on overdue balance.
 - a) How much interest will be charged if Carl's payment is 30 days overdue?
 - b) Carl has a savings account that pays interest at 2.5% per year, compounded monthly. Will \$120 in this account earn enough interest to pay for the charge on the overdue balance? Explain.