

Name Pettier Period \_\_\_\_\_ Date \_\_\_\_\_

### Compound Interest Practice Problems

1. The Johnson's bought a house for \$296,000 in 1995. Real estate values in their area increase approximately 4% each year. What is the value of the house in 2020?

$$A = 296,000 (1 + 0.04)^{25}$$
$$= \$789,087.55$$

2. Determine the final account balance of an investment if \$300 is invested at an interest rate of 6.75% compounded semiannually for 20 years.

$$A = 300 \left(1 + \frac{0.0675}{2}\right)^{20 \cdot 2}$$
$$= \$1131.73$$

3. Jasmine invests \$2,658 in a retirement account with a fixed annual interest rate of 9% compounded quarterly. What will the account balance be after 15 years?

$$A = 2658 \left(1 + \frac{0.09}{4}\right)^{15 \cdot 4}$$
$$= \$10,100.76$$

4. A \$10,000 Treasury Bill earned 16% compounded monthly. If the bill matured in 2 years, what was it worth at maturity?

$$A = 10,000 \left(1 + \frac{0.16}{12}\right)^{2 \cdot 12}$$
$$= \$13,742.19$$

5. How much money would you have if you invested \$3500 at 6% compounded quarterly for 12 years.

$$A = 3500 \left(1 + \frac{0.06}{4}\right)^{12 \cdot 4}$$
$$= \$7152.17$$

6. Brenda invests \$4,848 in a savings account with a fixed annual interest rate of 5% compounded 2 times per year. What will the account balance be after 6 years?

$$A = 4848 \left(1 + \frac{0.05}{2}\right)^{6 \cdot 2}$$
$$= \$6520.02$$

7. You borrow \$25,000 at 12.25% interest compounded monthly. If you are unable to make any payments the first year, how much do you owe, excluding penalties?

$$A = 25,000 \left(1 + \frac{0.1225}{12}\right)^{12}$$

$$= \$28,240.43$$

8. The Fresh and Green Company has a savings plan for employees. If an employee makes an initial deposit of \$1000, the company pays 8% interest compounded quarterly. If an employee withdraws the money after 5 years, how much is in the account?

$$A = 1000 \left(1 + \frac{0.08}{4}\right)^{4 \cdot 5}$$

$$= \$1485.95$$

How much would it be worth if the employee left the money in the account and withdrew it after 35 years?

$$A = 1000 \left(1 + \frac{0.08}{4}\right)^{4 \cdot 35}$$

$$= \$15,996.47$$

9. Determine the amount of interest earned on a \$100,000 investment if it is invested at 5.25% annual interest compounded quarterly for 12 years.

$$A = 100,000 \left(1 + \frac{0.0525}{4}\right)^{4 \cdot 12}$$

$$= \$186,993.08$$

$$\text{Interest} = \$86,993.08$$

10. Ryan invests a sum of money in a savings account with a fixed annual interest rate of 4.31% compounded 12 times per year. After 10 years, the balance reaches \$12,855.94. What was the amount of the initial investment?

$$\frac{\$12,855.94}{\left(1 + \frac{0.0431}{12}\right)^{120}} = \frac{P \left(1 + \frac{0.0431}{12}\right)^{120}}{\left(1 + \frac{0.0431}{12}\right)^{120}}$$

$$\$8361 = P$$

11. Ndiba invests a sum of money in a savings account with a fixed annual interest rate of 4.61% compounded 3 times per year. After 6 years, the balance reaches \$5,485.85. What was the amount of the initial investment?

$$\frac{\$5485.85}{\left(1 + \frac{0.0461}{3}\right)^{18}} = \frac{P \left(1 + \frac{0.0461}{3}\right)^{18}}{\left(1 + \frac{0.0461}{3}\right)^{18}}$$

$$\$4169.00 = P$$

12. Stephanie wants to make an investment so she will have \$100,000 after 25 years. If she can get a 4% interest rate compounded weekly, how much money does she need to invest?

$$\frac{100,000}{\left(1 + \frac{0.04}{52}\right)^{1300}} = \frac{P \left(1 + \frac{0.04}{52}\right)^{1300}}{\left(1 + \frac{0.04}{52}\right)^{1300}}$$

$$\$36,802.09 = P$$