

Name: _____ Answer Key _____

Mr. Bennett's Compound Interest Activity

Directions: Use the exponential formula $A = P * (1 + (r/n))^{(n * t)}$ where A represents the final value, P represents the initial principal, r represents the interest rate as a decimal, n represents the number of times per year interest is compounded, and t represents the time in years, to answer the questions below.

- 1) A coin had a value of \$1.17 in 2016. Its value has been increasing a 9% per year. What is the value after 5 years?

$$A = \$1.17 \times (1 + .09)^5 = \$1.80$$

- 2) Gina deposited \$1,500 in an account that pays 4% interest compounded quarterly. What will the balance be in 2 years?

$$A = \$1,500 \times (1 + (.04/4))^{(2 \times 4)} = \$1,624.29$$

- 3) The Garcia's have \$12,000 in a savings account. The bank pays 3.5% interest on savings accounts, compounded monthly. Find the total balance after three years.

$$A = \$12,000 \times (1 + (.035/12))^{(3 \times 12)} = \$13,326.49$$

- 4) Determine the amount of **interest** earned on a \$2,500 investment if it is invested at 5.25% annual interest compounded monthly for four years.

$$A = \$2,500 \times (1 + (.0525/12))^{(4 \times 12)} = \$3,082.78$$

$$\$3,082.78 - \$2,500 = \$582.78$$

- 5) Determine the amount of **interest** earned on a \$100,000 investment if it is invested at 5.2% annual interest compounded quarterly for 12 years.

$$A = \$100,000 \times (1 + (.052/4))^{(12 \times 4)} = \$185,888.87$$

$$\$185,888.87 - \$100,000 = \$85,888.87$$

- 6) The Fresh and Green Company has a savings plan for employees. If an employee makes an initial deposit of \$1,000, the company pays 8% interest compounded quarterly. If an employee withdraws the money after five years, how much is in the account?

$$A = \$1,000 \times (1 + (.08/4))^{(5 \times 4)} = \$1,485.95$$

- 7) Using the information in Question #6, find the **interest** earned if the money is withdrawn after 35 years?

$$A = \$1000 \times (1 + (.08/4))^{(35 \times 4)} - \$1000 = \$14,996.47$$

- 8) Mr. and Mrs. Boyce bought a house for \$96,000 in 2004. Real estate values in their area increase approximately 4% each year. What was the value of their house in 2016?

$$A = \$96,000 \times (1 + .04)^{(12)} = \$153,699.09$$

- 9) Determine the amount of **interest** earned if \$500 is invested at an interest rate of 4.25% compounded quarterly for 12 years.

$$A = \$500 \times (1 + (.0425/4))^{(12 \times 4)} - \$500 = \$330.41$$

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

$$A = \$300 \times (1 + (.0675/2))^{(2 \times 20)} = \$1,131.73$$

- 11) The Greens bought a condo for \$110,000 in 2016. If its value appreciates at 6% per year, what will the value be in 2023?

$$A = \$110,000 \times (1 + .06)^7 = \$165,399.33$$