

Finance 2 Homework

1. Calculate how much interest you would earn on a deposit of \$8000 invested at 2.5%, compounded annually for a term of 5 years.

$$\begin{aligned} A &= P\left(1 + \frac{r}{n}\right)^{nt} \\ &= 8000\left(1 + \frac{0.025}{1}\right)^5 \quad 9051.27 - 8000 \\ &= \$9051.27 \quad = \$1051.27 \end{aligned}$$

2. An investment offers a rate of 2.8% per annum, compounded annually. Use the rule of 72 to determine about how long it will take for the value to double.

$$72 \div 2.8 = 25.7 \text{ yrs.}$$

3. Which is the better investment over 5 years?
a) An investment that offers a rate of 1.9% per annum, compounded annually
b) An investment that offers at rate of 1.75% per annum, compounded monthly

Assume we invested \$1000

$$\begin{aligned} \text{a) } A &= 1000\left(1 + \frac{0.019}{1}\right)^{1 \times 5} \\ &= \$1098.68 \end{aligned}$$

$$\begin{aligned} \text{b) } A &= 1000\left(1 + \frac{0.0175}{12}\right)^{12 \times 5} \\ &= \$1091.37 \end{aligned}$$

option A is better.

4. The day Ian was born, his grandparents deposited \$10000 into a trust account for college yielding 9% compounded quarterly. On his 18th birthday, how much money did Ian have for college? *4 times a year.*

$$\begin{aligned} A &= 10000\left(1 + \frac{0.09}{4}\right)^{4 \times 18} \\ &= \$49631.66 \end{aligned}$$

5. An investment opportunity of \$50000 for 10 years has two options: the first pays 7% compounded annually, the second pays 6.8% compounded monthly. Which is the better investment, and by how much?

$$a) 50000 \left(1 + \frac{0.07}{1}\right)^{10} = \$98357.57$$

$$b) 50000 \left(1 + \frac{0.068}{12}\right)^{12 \times 10} = \$98504.63$$

$$98504.63 - 98357.57 = \$147.06$$

Second option is better by \$147.06

6. A couple deposits \$6000 in a savings account paying 4.5% compounded monthly. After 3 years, the credit union lowers the interest rate to 3% compounded daily. How much is in the account after 5 years?

$$A_3 = 6000 \left(1 + \frac{0.045}{12}\right)^{12 \times 3} = \$6865.49$$

$$A_5 = 6865.49 \left(1 + \frac{0.03}{365}\right)^{365 \times 2} = \$7290.01$$

7. Brad must pay \$30000 in settlement of an obligation in 3 years. How much must he deposit today at 8% compounded quarterly to have enough to pay the settlement?

$$30000 = P \left(1 + \frac{0.08}{4}\right)^{4 \times 3}$$

$$30000 = 1.268P$$

$$\div 1.268 \quad \div 1.268$$

$$P = \$23654.80$$