

FINC 430
TA Review Session 1 Solutions

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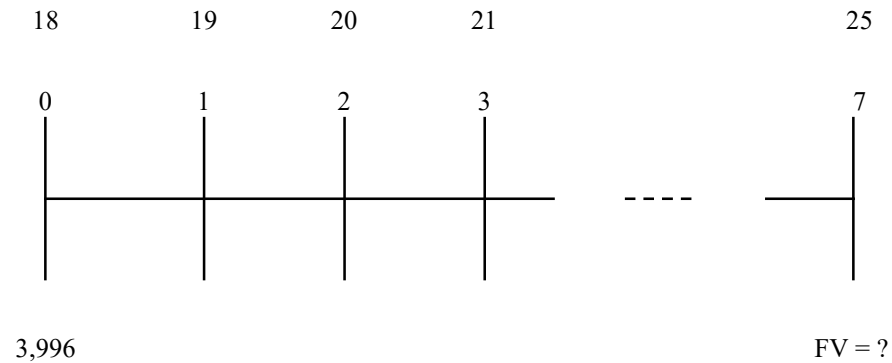
Question 1 (4-10 in the Textbook)

Your grandfather put some money in an account for you on the day you were born. You are now 18 years old and are allowed to withdraw the money for the first time. The account currently has \$3996 in it and pays an 8% interest rate.

- a. How much money would be in the account if you left the money there until your 25th birthday?**
- b. What if you left the money until your 65th birthday?**
- c. How much money did your grandfather originally put in the account?**

Part a

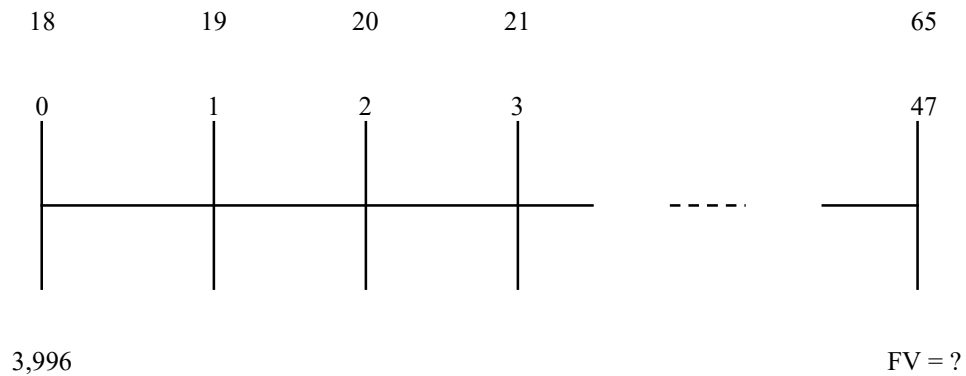
- Timeline:



$$\begin{aligned} FV &= 3,996(1.08)^7 \\ &= 6848.44 \end{aligned}$$

Part b

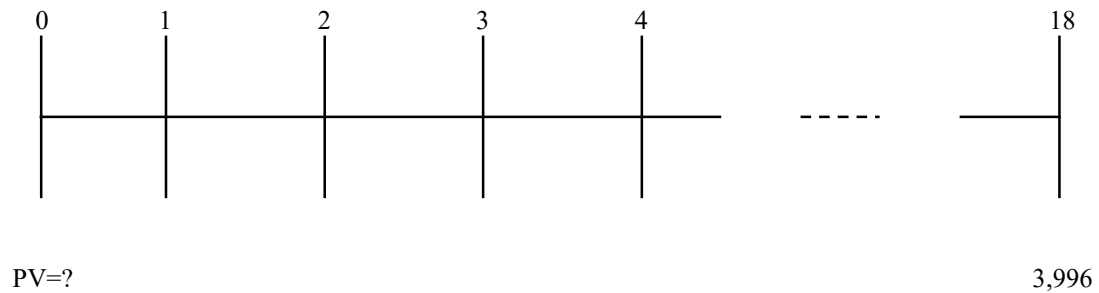
- Timeline:



$$\begin{aligned} FV &= 3,996(1.08)^{47} \\ &= 148,779 \end{aligned}$$

Part c

- Timeline:

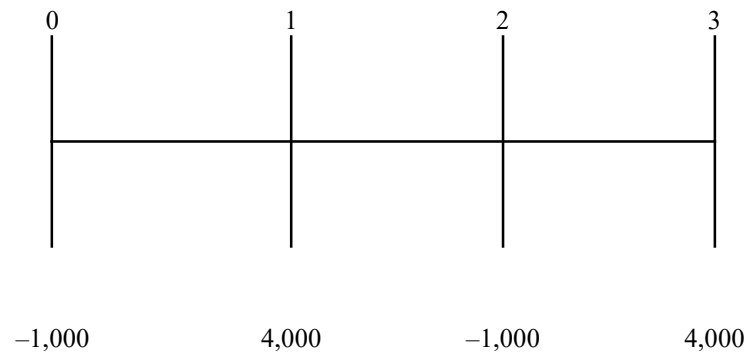


$$PV = \frac{3,996}{1.08^{18}} = 1,000$$

Question 2 (4-15 in the Textbook)

Marian Plunket owns her own business and is considering an investment. If she undertakes the investment, it will pay \$4000 at the end of each of the next three years. The opportunity requires an initial investment of \$1000 plus an additional investment at the end of the second year of \$5000. What is the NPV of this opportunity if the interest rate is 2% per year? Should Marian take it?

- Timeline:



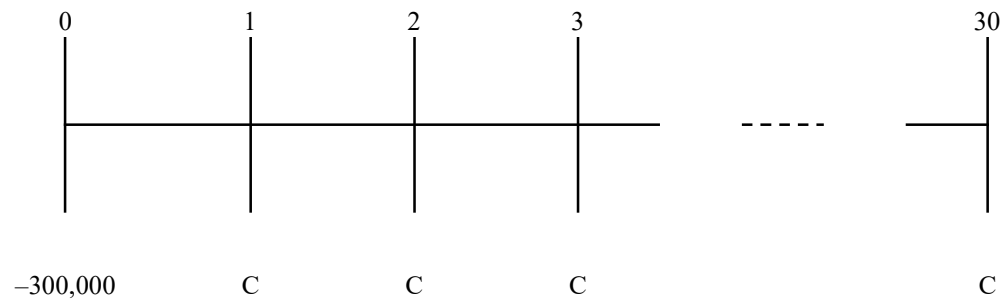
$$\begin{aligned} \text{NPV} &= -1,000 + \frac{4,000}{1.02} - \frac{1,000}{1.02^2} + \frac{4,000}{1.02^3} \\ &= -1,000 + 3,921.57 - 961.67 + 3769.29 \\ &= 5,729.69 \end{aligned}$$

Yes, make the investment

Question 3 (4-37 in the Textbook)

You are thinking of purchasing a house. The house costs \$350,000. You have \$50,000 in cash that you can use as a down payment on the house, but you need to borrow the rest of the purchase price. The bank is offering a 30-year mortgage that requires annual payments and has an interest rate of 7% per year. What will your annual payment be if you sign up for this mortgage?

- Timeline (From the perspective of the bank):



$$C = \frac{300,000}{\frac{1}{0.07} \left(1 - \frac{1}{1.07^{30}} \right)} = \$24,176$$