

Chapter Two Exercises

1. Vincent Van Gogh sold only one painting during his lifetime, for about \$30. In 1987, a sunflower still life he painted in 1888 sold for \$39.85 million, more than three times the highest price paid previously for any work of art. Observers attributed the record price in part to the fact that his other sunflower paintings are all in museums and most likely will never be available for sale. If this painting had been purchased for \$30 in 1888 and sold in 1987 for \$39.85 million, what would have been the annual rate of return?

2. A developer is contemplating a 4-year investment in a skate board emporium in Cucamonga, California. Since she firmly believes that inflation will average 2 percent over the next five years, she says that 2 percent is the appropriate rate to use in discounting the projected cash flows. A financial adviser says that her required rate return should be 4 percent since she could earn 4 percent by investing in government bonds. Explain why both are wrong.

3. It was recently reported that Gene Sukie cashed in 1,407,550 pennies that he had collected over the previous 34 years. If he collected an equal number of pennies each year and, on the last day of the year, invested these pennies in stocks that earned a 10% annual return, how much would he have had at the end of 34 years? (You do not need to calculate a numerical value, but you must explicitly show the equation that would be used to calculate a numerical answer.)

4. It has been argued that nominal interest rates move up and down with inflation so as to hold real interest rates constant at, say, 2 percent. If a 5 percent fall in prices is anticipated, what nominal rate of return will give a 2 percent real return? How much does a \$100 investment have to pay a year from now to give this nominal return? Why will people be reluctant to make such an investment?

5. A Spring 1992 publication by Rensselaer Polytechnic Institute showed a “smart option” in which the family of a student enrolling in the Fall of 1992 could save \$4,931 by pre-paying four years of tuition with an amount equal to four times the current \$15,900 tuition:

Year	Annual Tuition (5% annual increase)	Prepayment Tuition
1992–1993	\$15,900	\$63,600
1993–1994	16,695	0
1994–1995	17,530	0
1995–1996	18,406	0
	\$68,531	\$63,600

Explain why this “smart option” may not be so smart.