

Additional Question on TVM

1. If \$100 is placed in an account that earns a nominal 4 percent, compounded quarterly, what will it be worth in 5 years?
2. Assume you are to receive a 20-year annuity with annual payment of \$50. The first payment will be received at the end of Year 1, and the last payment will be received at the end of Year 20. You will invest each payment in an account that pays 10 percent. What will be the value in your account at the end of Year 30?
3. Steaks Galore needs to arrange financing for its expansion program. One bank offers to lend the required \$1,000,000 on a loan which requires interest to be paid at the end of each quarter. The quoted rate is 10 percent, and the principal must be repaid at the end of the year. A second lender offers 9 percent, daily compounding (365-day year), with interest and principal due at the end of the year. What is the difference in the effective annual rate (EAR%) charged by the two banks?
4. Hillary is trying to determine the cost of health care to college students, and the parents' ability to cover those costs. She assumes that the cost of one year of health care for a college student is \$1,000 today, that the average student is 18 when he or she enters college, that inflation in health care cost is rising at the rate of 10 percent per year, and that parents can save \$100 per year to help cover their children's costs. All payments occur at the end of the relevant period, and the \$100/year savings will stop the day the child enters college (hence 18 payments will be made). Savings can be invested at a nominal rate of 6 percent, annual compounding. Hillary wants a health care plan which covers the fully inflated cost of health care for a student for 4 years, during Year 19 through 22 (with payments made at the end of years 19 through 22). How much would the government have to set aside now (when a child is born), to supplement the average parent's share of a child's college health care cost? The lump sum the government sets aside will also be invested at 6 percent, annual compounding.
5. You have just taken out a 30-year mortgage on your new home for \$120,000. This mortgage is to be repaid in 360 equal monthly installments. If the stated (nominal) annual interest rate is 14.75 percent, what is the amount of each of the monthly installments?
6. You want to buy a Honda S2000 on your 27th birthday. You have priced these cars and found that they currently sell for \$25,000. You believe that the price will increase by 10 percent per year until you are ready to buy. You can presently invest to earn 14 percent. If you just turned 20 years old, how much must you invest at the end of each of the next 7 years to be able to purchase the Nissan in 7 years?
7. Your subscription to Jogger's World Monthly is about to run out and you have the choice of renewing it by sending in the \$10 a year regular rate or of getting a lifetime subscription to the magazine by paying \$100. Your cost of capital is 7 percent. How many years would you have to live to make the lifetime subscription the better buy? Payments for the regular subscription are made at the beginning of each year.