

- How much must you deposit 1 year from now to have a balance of \$1,000 at Year 4?
- If you want to make equal payments at the end of Years 1 through 4 to accumulate the \$1,000, how large must each of the 4 payments be?
- If your father were to offer either to make the payments calculated in part b (\$221.92) or to give you a lump sum of \$750 one year from now, which would you choose?
- If you will have only \$750 at the end of Year 1, what interest rate, compounded annually, would you have to earn to have the necessary \$1,000 at Year 4?
- Suppose you can deposit only \$186.29 each at the end of Years 1 through 4, but you still need \$1,000 at the end of Year 4. What interest rate, with annual compounding, is required to achieve your goal?
- To help you reach your \$1,000 goal, your father offers to give you \$400 one year from now. You will get a part-time job and make 6 additional deposits of equal amounts each 6 months thereafter. If all of this money is deposited in a bank that pays 8%, compounded semiannually, how large must each of the 6 deposits be?
- What is the effective annual rate being paid by the bank in part f?

(ST-3)
Effective Annual
Rates

Bank A pays 8% interest, compounded quarterly, on its money market account. The managers of Bank B want its money market account's effective annual rate to equal that of Bank A, but Bank B will compound interest on a monthly basis. What nominal, or quoted, rate must Bank B set?

Problems

Answers Appear in Appendix B

EASY PROBLEMS 1-8

- (4-1)** If you deposit \$10,000 in a bank account that pays 10% interest annually, how much will be in your account after 5 years?
Future Value of a Single Payment
- (4-2)** What is the present value of a security that will pay \$5,000 in 20 years if securities of equal risk pay 7% annually?
Present Value of a Single Payment
- (4-3)** Your parents will retire in 18 years. They currently have \$250,000, and they think they will need \$1 million at retirement. What annual interest rate must they earn to reach their goal, assuming they don't save any additional funds?
Interest Rate on a Single Payment
- (4-4)** If you deposit money today in an account that pays 6.5% annual interest, how long will it take to double your money?
Number of Periods of a Single Payment
- (4-5)** You have \$42,180.53 in a brokerage account, and you plan to deposit an additional \$5,000 at the end of every future year until your account totals \$250,000. You expect to earn 12% annually on the account. How many years will it take to reach your goal?
Number of Periods for an Annuity
- (4-6)** What is the future value of a 7%, 5-year ordinary annuity that pays \$300 each year? If this were an annuity due, what would its future value be?
Future Value: Ordinary Annuity versus Annuity Due
- (4-7)** An investment will pay \$100 at the end of each of the next 3 years, \$200 at the end of Year 4, \$300 at the end of Year 5, and \$500 at the end of Year 6. If other investments of equal risk earn 8% annually, what is this investment's present value? Its future value?
Present and Future Value of an Uneven Cash Flow Stream