

If an amount of P dollars grows at an annual rate of r (usually given as a percent), then after t years, the total amount, A , will be

$$A = P(1 + r)^t, \text{ where } r \text{ has been converted to a decimal}$$

Examples:

- [a] Amir deposits \$500 into a savings account which earns 3.1% interest annually. What is the value of his account 4 years later ?

$$A = \qquad P = \qquad r = \qquad t =$$

- [b] Blanca deposits \$700 into a certificate of deposit (CD) which earns 2.9% interest annually. How many years later will the value of the CD be \$1000 ?

$$A = \qquad P = \qquad r = \qquad t =$$

- [c] Carla buys a bond which earns 3.4% interest annually. She wants the bond to have a value of \$900 five years later. What is the value of the bond now ?

$$A = \qquad P = \qquad r = \qquad t =$$

- [d] Dinh deposits \$5000 into a speculative investment, and 6 years later, the investment is worth \$8000. What is the annual growth rate of the investment ?

$$A = \qquad P = \qquad r = \qquad t =$$

HOMEWORK (DUE IN CLASS ON MON NOV 28)

- [1] Show your work clearly and neatly.**
- [2] Summarize each answer in a sentence.**
- [3] All final answers which represent money should be rounded to the nearest cent.**
- [4] All final answers which represent time should be rounded to 2 decimal places.**
- [5] All final answers which represent rate should be percentages rounded to 4 decimal places.**

[1] You buy a bond that is currently worth \$40,000. If the bond grows by 2.7% each year, what will be its value twenty years from now ?

[2] You put \$5,800 into an investment that grew to \$8,900 after 4 years. What was your investment's annual growth rate ?

[3] Six years ago, you invested in a venture that grew by 5.1% annually. If your investment is now worth \$7,400, how much did you originally invest ?

- [4] You bought \$11,300 of a stock that is now worth \$17,000. If the stock's value increased 11.4% each year, how long ago did you buy the stock ?
- [5] Your gold jewelry tripled in value in 4 years. How much did its value increase each year ?
- [6] Jamie and Terry just bought their first house together. They expect to do a \$24,000 remodel 7 years from now. How much should they deposit into an investment now to cover the cost of the future remodel, if the annual growth rate of the investment is 9.3% ?
- [7] When Lee and Taylor got married in June 2008, Lee's mother gave them a \$5,700 painting as a wedding present. As they celebrate their anniversary in June 2011, the painting is now worth \$8,900. What was the annual growth rate of the painting ?

- [8] Morgan and Reese just deposited \$32,000 into an investment which grows 7.6% each year. They plan to quit their current jobs and open their own business when the investment reaches \$51,000. When will they be opening their new business ?
- [9] When she graduated from high school, Bailey charged \$9,000 to her credit card to cover a lavish party, then didn't bother to look at or pay her bill. The interest, fees and fines caused her credit card balance to grow by 29% each year. If Bailey graduated 5 years ago, what is the current balance on her credit card ?
- [10] When Dana and Chris got married at the age of 27, Chris gave Dana an antique watch, which grew in value by 4.3% each year. By the time their son entered college, the watch had doubled in value. How old were they when their son entered college ?

In addition, do the related problems on the Midterm 3 review packet to make sure you are prepared for the finance problems on Midterm 3