

Annuities

Objectives:

- Calculate the future value of an ordinary annuity.
- Calculate the amount of interest earned in an ordinary annuity.
- Calculate the total contributions to an ordinary annuity.
- Calculate monthly payments that will produce a given future value.

Suggested Problems:

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problems 1a, 2a, 5, 6, 9, 11, 13,
14, 19, 21, 22, 27, 33, 34, 35a/b,
36

Vocabulary:

- ordinary annuity
- simple annuity
- Christmas club
- tax-deferred annuity
- sinking fund
- present value of an annuity

Formulas:

Ordinary Annuity Formula:

Present Value of Annuity Formula

Possible Classroom Examples:

On March 19, Rachael Westlake joined a Christmas club. Her bank will automatically deduct \$110 from her checking account at the end of each month, and deposit it into her Christmas club account, where it will earn $6\frac{7}{8}\%$ interest. The account comes to term on December 1. Find the

following:

- a. the future value of the account.
- b. Rachael's total contribution to the account.
- c. the total interest

Art Dull recently set up a tax-deferred annuity to save for his retirement. He arranged to have \$50 taken out of each of his biweekly checks; it will earn $9\frac{1}{8}\%$ interest. He just had his thirtieth birthday, and his ordinary

annuity comes to term when he is sixty-five. Find the following:

- a. the future value of the account.
- b. Art's total contribution to the account.
- c. the total interest

Susan and Bill Stamp want to set up a TDA that will generate sufficient interest at maturity to meet their living expenses, which they project to be \$1,200 per month.

- a. Find the amount needed at maturity to generate \$1,200 per month interest if they can get $7\frac{1}{4}\%$ interest compounded monthly.
- b. Find the monthly payment they would have to put into an ordinary annuity to obtain the future value found in (a) if their money earns $9\frac{3}{4}\%$ and the term is 25 years.

Beth's daughter Katie will be a freshman in college in twelve years. To help cover her extra expenses, Beth decides to set up a sinking fund of \$100,000. If the account pays 7.25% interest and she wants to make quarterly payments, find the size of each payment.