

CHAPTER 6

ACCOUNTING AND THE TIME VALUE OF MONEY

Intermediate Accounting

Presented By;

Ratna Candra Sari

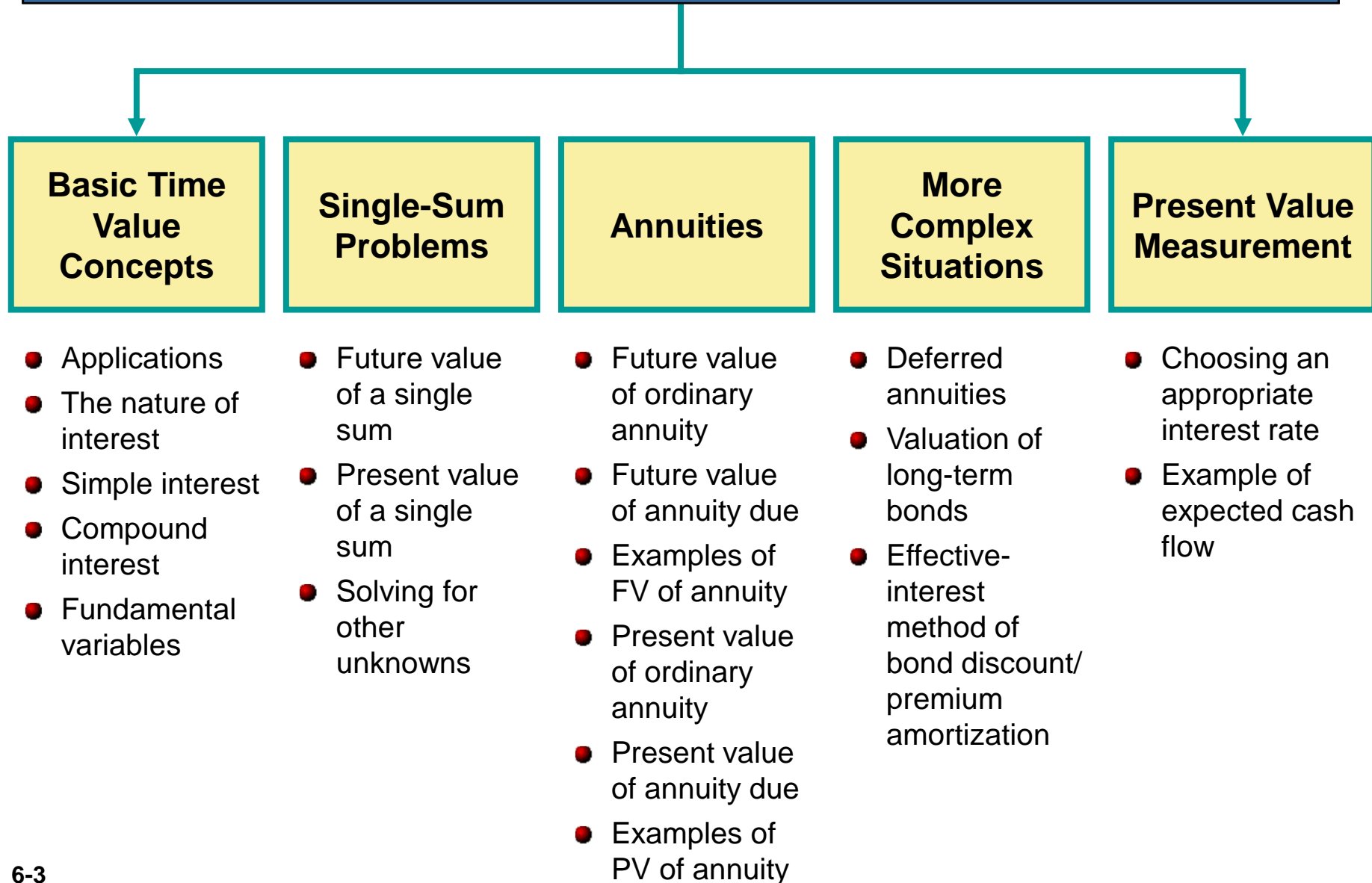
Email:

ratna_candrasari@uny.ac.id

Learning Objectives

1. Identify accounting topics where the time value of money is relevant.
2. Distinguish between simple and compound interest.
3. Use appropriate compound interest tables.
4. Identify variables fundamental to solving interest problems.
5. Solve future and present value of 1 problems.
6. Solve future value of ordinary and annuity due problems.
7. Solve present value of ordinary and annuity due problems.
8. Solve present value problems related to deferred annuities and bonds.
9. Apply expected cash flows to present value measurement.

Accounting and the Time Value of Money



Basic Time Value Concepts

Time Value of Money

- A relationship between **time** and **money**.
- A dollar received today is worth more than a dollar promised at some time in the future.

Basic Time Value Concepts

Applications to Accounting Topics:

1. Notes
2. Leases
3. Pensions and Other Postretirement Benefits
4. Long-Term Assets
5. Shared-Based Compensation
6. Business Combinations
7. Disclosures
8. Environmental Liabilities

Basic Time Value Concepts

The Nature of Interest

- Payment for the use of money.
- Excess cash received or repaid over the amount borrowed (principal).

VARIABLES IN INTEREST COMPUTATION

- 1 PRINCIPAL.** The amount borrowed or invested.
- 2 INTEREST RATE.** A percentage of the outstanding principal.
- 3 TIME.** The number of years or fractional portion of a year that the principal is outstanding.

Basic Time Value Concepts

Simple Interest

- Interest computed on the principal only.

Illustration: KC borrows \$20,000 for 3 years at a rate of 7% per year. Compute the total interest to be paid for the **3 years**.

Total
Interest

$$\begin{aligned}\text{Interest} &= p \times i \times n \\ &= \$20,000 \times .07 \times 3 \\ &= \mathbf{\$4,200}\end{aligned}$$

Many regulatory frameworks require disclosure of interest rates on an **annual basis**.

Basic Time Value Concepts

Simple Interest

- Interest computed on the principal only.

Illustration: KC borrows \$20,000 for 3 years at a rate of 7% per year. Compute the total interest to be paid for the **1 year**.

Annual
Interest

$$\begin{aligned}\text{Interest} &= p \times i \times n \\ &= \$20,000 \times .07 \times 1 \\ &= \mathbf{\$1,400}\end{aligned}$$

Basic Time Value Concepts

Simple Interest

- Interest computed on the principal only.

Illustration: On **March 31, 2011**, KC borrows \$20,000 for 3 years at a rate of 7% per year. Compute the total interest to be paid for the year ended Dec. 31, 2011.

Partial
Year

$$\begin{aligned}\text{Interest} &= p \times i \times n \\ &= \$20,000 \times .07 \times 9/12 \\ &= \mathbf{\$1,050}\end{aligned}$$

Basic Time Value Concepts

Compound Interest

- Computes interest on
 - **principal** and
 - **interest** earned that has not been paid or withdrawn.
- Most business situations use compound interest.

Basic Time Value Concepts

Illustration: Tomalczyk Company deposits \$10,000 in the Last National Bank, where it will earn simple interest of 9% per year. It deposits another \$10,000 in the First State Bank, where it will earn compound interest of 9% per year compounded annually. In both cases, Tomalczyk will not withdraw any interest until 3 years from the date of deposit.

Illustration 6-1
Simple vs. Compound Interest

<i>Last National Bank</i>			<i>First State Bank</i>		
Simple Interest Calculation	Simple Interest	Accumulated Year-end Balance	Compound Interest Calculation	Compound Interest	Accumulated Year-end Balance
Year 1 $\$10,000.00 \times 9\%$	\$ 900.00	\$10,900.00	Year 1 $\\$10,000.00 \times 9\%$	\$ 900.00	\$ 10,900.00
Year 2 $\$10,000.00 \times 9\%$	900.00	\$11,800.00	Year 2 $\\$10,900.00 \times 9\%$	\$ 981.00	\$ 11,881.00
Year 3 $\$10,000.00 \times 9\%$	900.00	\$12,700.00	Year 3 $\\$11,881.00 \times 9\%$	\$1,069.29	\$ 12,950.29
	<u>\$2,700.00</u>			<u>\$2,950.29</u>	

\$250.29 Difference