HM321 Engineering Economics
Fall 2024 – Lecture 4

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Bring Calculator Always

- Always bring your calculator with you in lectures
- Without practice you will not be able to do the calculations in your exams

Uniform Series Factors *P*/*A* and *A*/*P*

- A denotes a series of *n* equal consecutive payments of amount *A*
- The following relations hold between *P* and *A*

$$\frac{P}{A} = \frac{(1+i)^n - 1}{i(1+i)^n} \quad \text{and} \quad \frac{A}{P} = \frac{i(1+i)^n}{(1+i)^n - 1}$$

- **Important:** Amount *P* occurs one interest period before the first payment in the uniform series *A*

Uniform Series Factors *F*/*A* and *A*/*F*

- The following relations hold between *A* and *F*

$$\frac{F}{A} = \frac{(1+i)^n - 1}{i} \quad \text{and} \quad \frac{A}{F} = \frac{i}{(1+i)^n - 1}$$

- **Important:** Single amount *F* coincides with the last payment in the uniform series *A*

Tables for Factors

- See Tables 1 to 26 in the textbook
  - *A*/*F* factor is called sinking fund factor
  - *F*/*A* factor is called compound amount factor
  - *A*/*P* factor is called capital recovery factor
  - *P*/*A* factor is called present worth factor

Cash Flow Diagrams for *P*/*A* and *A*/*P* Factors

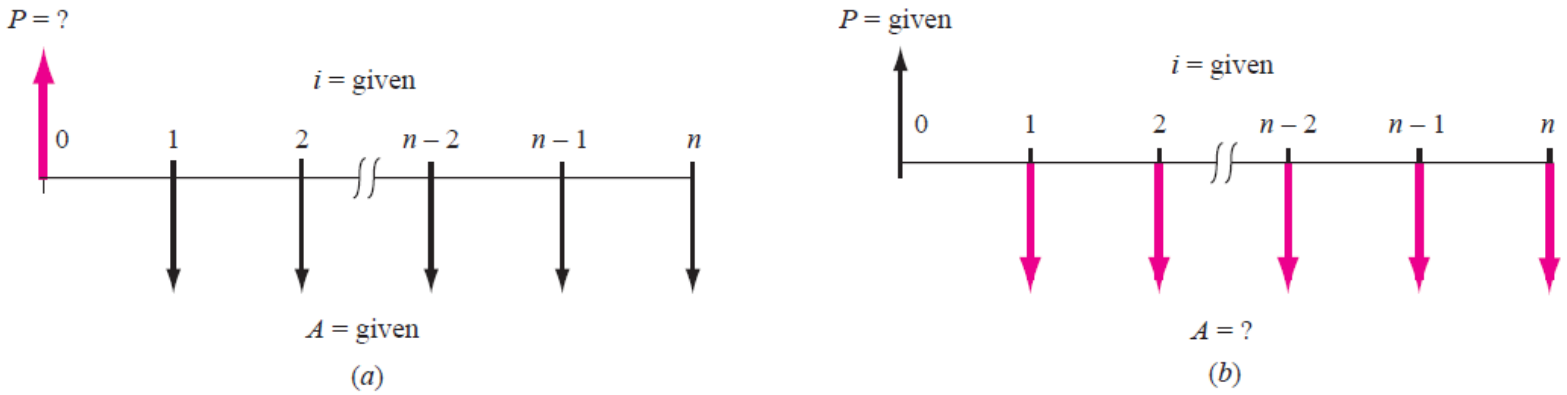

FIGURE 2.5 Cash flow diagrams used to determine (*a*) *P* of a uniform series and (*b*) *A* for a present worth.

$P = A(P/A, i, n)$

$A = P(A/P, i, n)$

Cash Flow Diagrams for *F*/*A* and *A*/*F* Factors

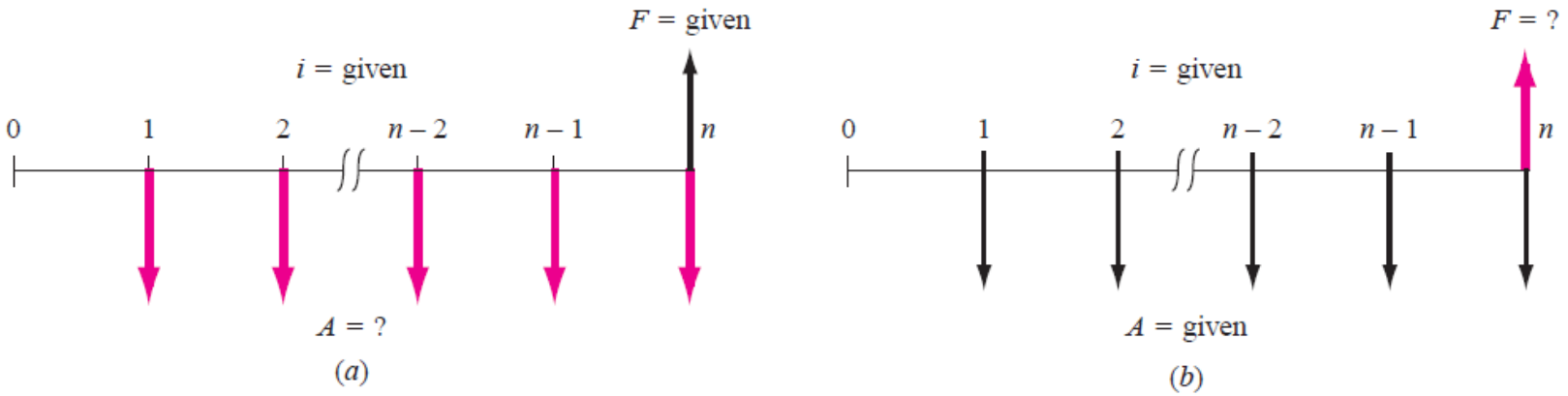

FIGURE 2.7 Cash flow diagrams to (*a*) find *A*, given *F*, and (*b*) find *F*, given *A*.

$A = F(A/F, i, n)$

$F = A(F/A, i, n)$

- A number of problems at the end of Chapter 2 were done on the whiteboard

Read Examples

- Read examples 2.4, 2.5 and 2.6
- Study Tables 2.2 and 2.3

Reference

- Basics of Engineering Economy by Leland Blank and Anthony Tarquin, 2nd edition, McGraw-Hill