Lecture No 11th - PCFM

Economic/Financial Analysis of Projects

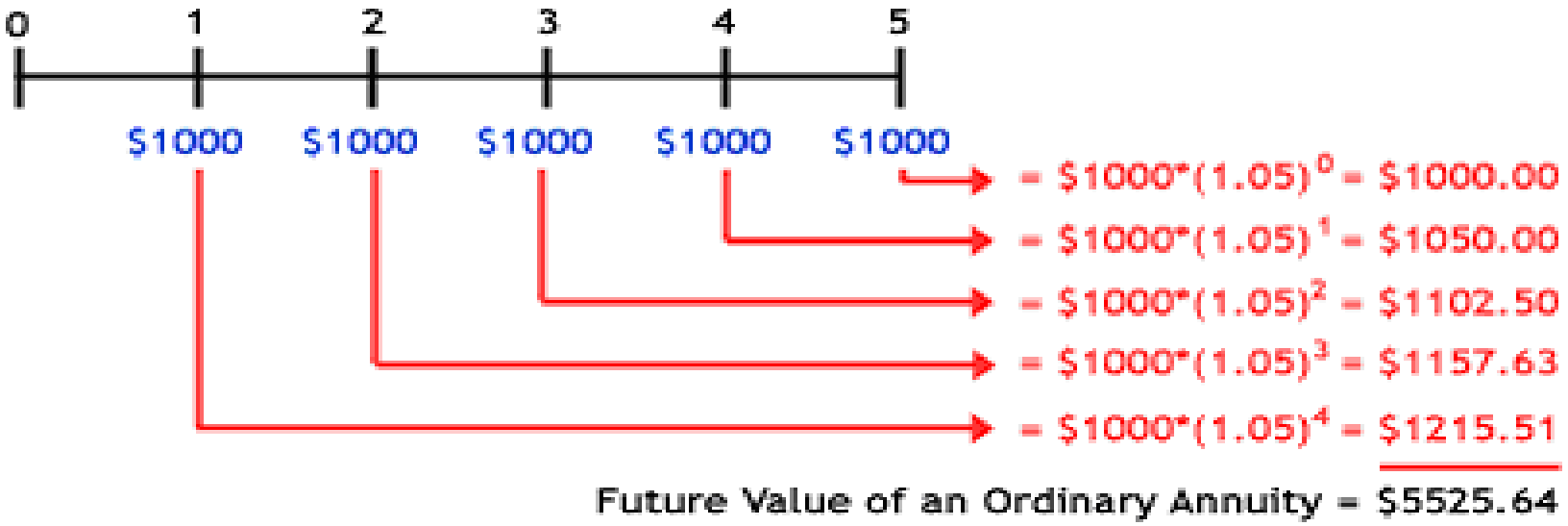
Future Value of Annuity (Ordinary).

$$FV_{Ordinary\ Annuity} = A * \left[\frac{(1+i)^n - 1}{i} \right]$$

FV Ordinary Annuity = A * FVFA i,n

FV Ordinary Annuity = 1000 * 5.52564

FV Ordinary Annuity = $ 5525.64



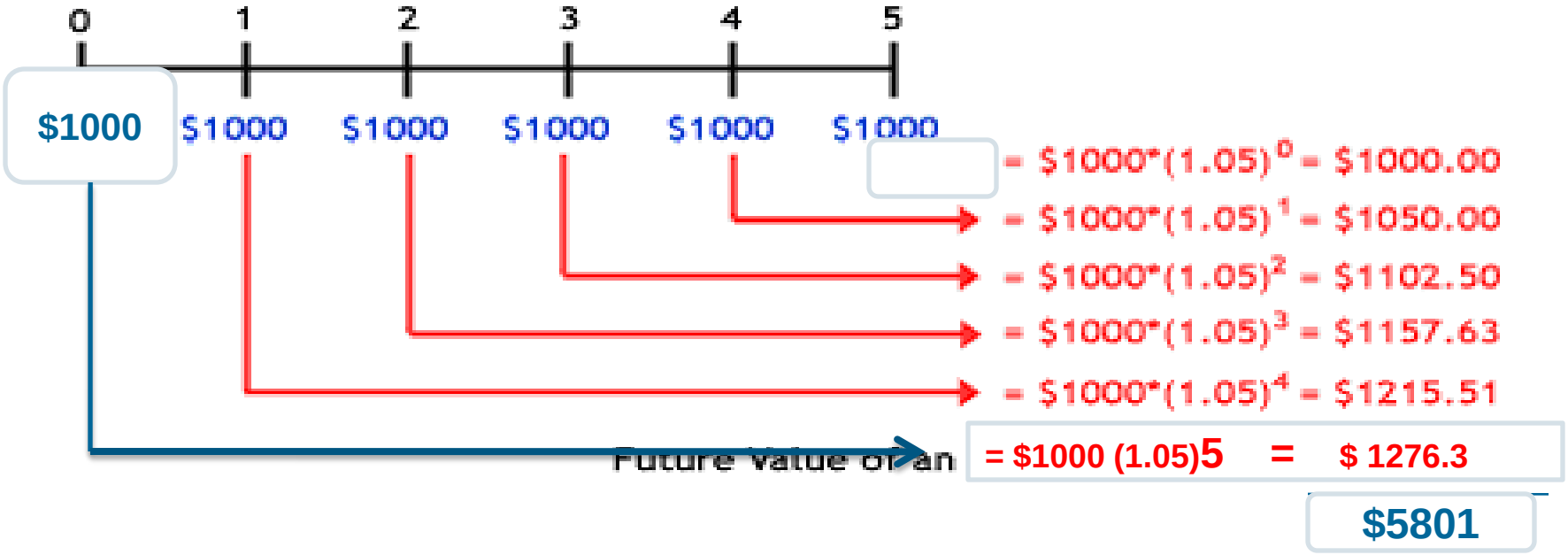
Future Value of Annuity (Due).

$$FV_{\text{Annuity Due}} = A * \left[\frac{(1+i)^n - 1}{i}\right] * (1+i)$$

FV Ordinary Annuity = A * FVFA i,n * (1+i)

FV Ordinary Annuity = 1000 * 5.52564 * (1+ 5%)

FV Ordinary Annuity = $ 5,801



PV =Present Value.

PV is the value today of a future cash flow.

$$PV = FV * \{ 1 / (1+i)^n \}$$

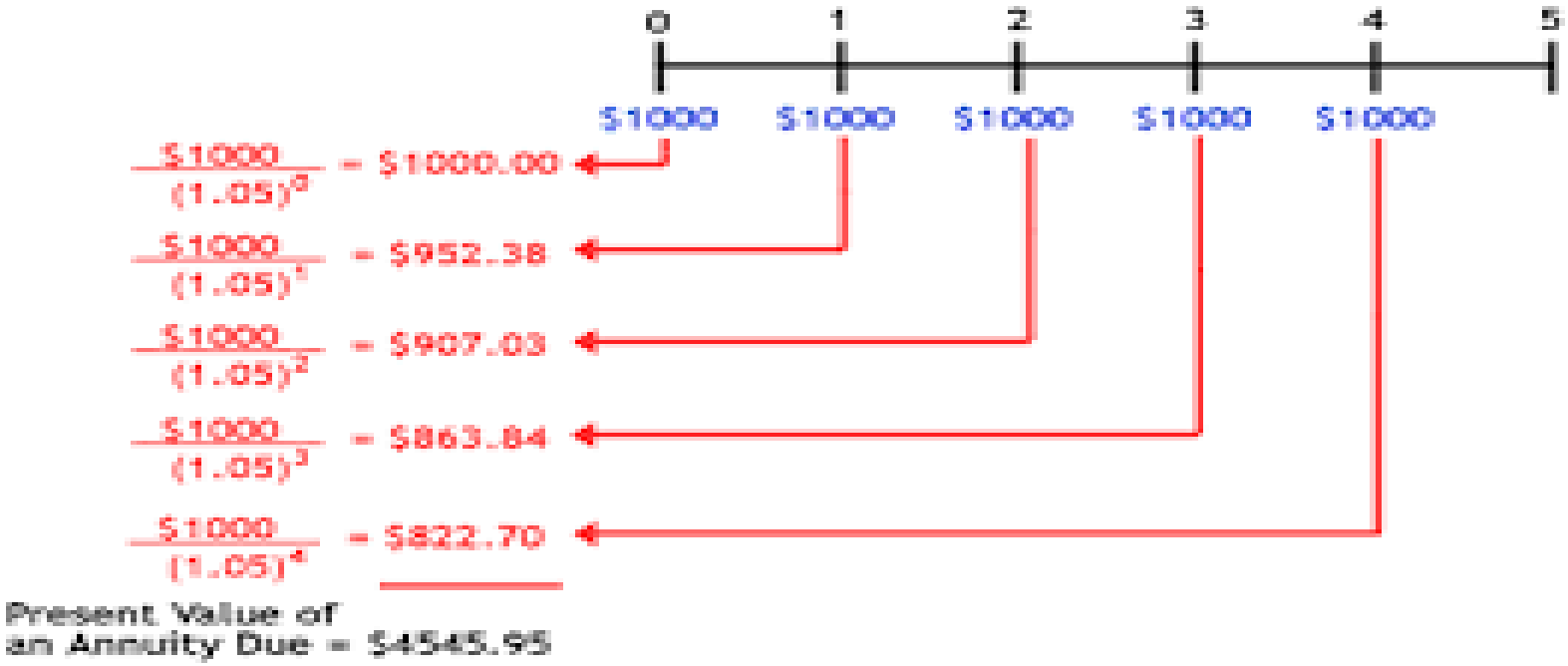
$$= FV * P V F_{i,n}$$

= FV* Present Value Factor for i and n.

PV of Annuity Ordinary and Due.

$$\text{PV of an Ordinary Annuity} = A * \frac{1-(1+i)^{-n}}{i}$$

$$\text{PV of an Annuity Due} = A * \frac{1-(1+i)^{-n}}{i} * (1+i)$$



Payback Period (Pb)

Pb is the period of time required for the cumulative expected cash flows from an investment project to equal the initial cash outflow.

Determines *how long* it takes for a project to reach a breakeven point. Lower numbers of Pb are better ***(faster payback).***

$$Payback\ Period = \frac{Investment}{Annual\ Cash\ Savings}$$

	Find Pay Back Period of following CFs.				
	19-4-14	19-4-15	19-4-16	19-4-17	19-4-18
Cash Flow	($200,000)	$60,000	$60,000	$60,000	$60,000

Payback Period For unequal cash flows

A project requires initial investment of $200,000 and is expected to generate cash savings of $85,000, 70,000, 90,000 and 40,000 respectively in coming years. What is the payback period?

Year	Cash Flow	Cumulative
0	($200,000)	($200,000)
1	$85,000	(115,000)
2	$75,000	(40,000)
3	$90,000	50,000
4	$40,000	90,000

$$2 + \frac{40{,}000}{90{,}000} = 2.44 \text{ yrs.}$$

Payback Period Practice Qs

TABLE 10.1 Capital Expenditure Data for Bennett Company

	Project A	Project B
Initial investment	$42,000	$45,000
Year	Operating cash inflows	
1	$14,000	$28,000
2	14,000	12,000
3	14,000	10,000
4	14,000	10,000
5	14,000	10,000

FIGURE 10.1

Bennett Company's Projects A and B
Time lines depicting the conventional cash flows of projects A and B

Payback Period Practice Qs

TABLE 10.2 Relevant Cash Flows and Payback Periods for DeYarman Enterprises' Projects

	Project gold	Project silver
Initial investment	$50,000	$50,000
Year	Operating cash inflows	
1	$ 5,000	$40,000
2	5,000	2,000
3	40,000	8,000
4	10,000	10,000
5	10,000	10,000
Payback period	3 years	3 years

PBP (Payback Period) Acceptance Criterion

The management of *Telenor* has set a maximum PBP of 3 years for acceptance of their projects.

If PBP of a project is 2.44yrs, Should this project be accepted?

Yes! Because the firm will receive back the initial cash outlay in less than 3 years.
[2.44 Years < 3 Year Max.]

PBP Strengths and Weaknesses

Strengths:

- Easy to use and understand
- Can be used as a measure of liquidity
- Easier to forecast ST than LT flows

Weaknesses:

- Does not account for TVM
- Does not consider cash flows beyond the PBP
- Cutoff period is subjective