

#1

- 9.3 The Rango Company is considering a capital investment for which the initial outlay is \$20,000. Net annual cash inflows (before taxes) are predicted to be \$4,000 for 10 years. Straight-line depreciation is to be used, with an estimated salvage value of zero. Ignoring income taxes, compute the items listed below.

1. Payback period
2. Accounting rate of return (ARR)
3. Net present value (NPV), assuming a cost of capital (before tax) of 12 percent
4. Internal rate of return (IRR)

- 9.4 Consider an investment which has the following cash flows:

Year	Cash Flows
0	\$(31,000)
1	10,000
2	20,000
3	10,000
4	10,000
5	5,000

1. Compute the following:
 - (a) Payback period
 - (b) Net present value (NPV) at 14 percent cost of capital
 - (c) Internal rate of return (IRR)
2. Based on (b) and (c) in part 1, make a decision.

- 9.9 Data relating to three investments are given below:

	A	B	C
Investment (I)	\$30,000	\$20,000	\$50,000
Useful life	10	4	20
Annual cash savings	\$ 6,207	\$ 7,725	\$ 9,341

Rank the projects according to their attractiveness using the following:

- (a) Payback period
- (b) IRR
- (c) NPV at 14 percent cost of capital

- 9.10 Rand Corporation is considering five different investment opportunities. The company's cost of capital is 12 percent. Data on these opportunities under consideration are given below.

Project	Investment	PV at 12%	NPV	IRR	Profitability Index (rounded)
(a)	\$35,000	\$39,325	\$4,325	16%	1.12
(b)	20,000	22,930	2,930	15	1.15
(c)	25,000	27,453	2,453	14	1.10
(d)	10,000	10,854	854	18	1.09
(e)	9,000	8,749	(251)	11	0.97

1. Rank these five projects in descending order of preference, according to
 - NPV
 - IRR
 - Profitability index

CAPITAL BUDGETING

- 9.11 A medium-sized manufacturing company is considering the purchase of a small computer in order to reduce the cost of its data processing operations. At the present time, the manual bookkeeping system in use involves the following direct cash expenses per month:

Salaries	\$7,500
Payroll taxes and fringe benefits	1,700
Forms and supplies	600
	<u>\$9,800</u>

Existing furniture and equipment are fully depreciated in the accounts and have no salvage value. The cost of the computer, including alterations, installation, and accessory equipment, is \$100,000. This entire amount is depreciable for income tax purposes on a double-declining basis at the rate of 20 percent per annum.

Estimated annual costs of computerized data processing are as follows:

Supervisory salaries	\$15,000
Other salaries	24,000
Payroll taxes and fringe benefits	7,400
Forms and supplies	7,200
	<u>\$53,600</u>

The computer is expected to be obsolete in three years, at which time its salvage value is expected to be \$20,000. The company follows the practice of treating salvage value as inflow at the time that it is likely to be received.

1. Compute the savings in annual cash expenses after taxes. Assume a 50 percent tax rate.
2. Decide whether or not to purchase the computer, using the net present value method. Assume a minimum rate of return of 10 percent after taxes.

(SMA, adapted)

- 9.12 The Michener Company purchased a special machine one year ago at a cost of \$12,500. At that time, the machine was estimated to have a useful life of six years and a \$500 disposal value. The annual cash operating cost is approximately \$20,000.

A new machine that has just come on the market will do the same job but with an annual cash operating cost of only \$17,000. This new machine costs \$16,000 and has an estimated life of five years with a \$1,000 disposal value. The old machine could be used as a trade-in at an allowance of \$5,000. Straight-line depreciation is used, and the company's income tax rate is 50 percent. Compute the internal rate of return on the new investment.

(CGA, adapted)

- 9.20 The Baxter Company manufactures toys and other short-lived-fad-type items. The research and development department came up with an item that would make a good promotional gift for office equipment dealers. Aggressive and effective effort by Baxter's sales personnel has resulted in almost firm commitments for this product for the next three years. It is expected that the product's value will be exhausted by that time.

In order to produce the quantity demanded, Baxter will need to buy additional machinery and rent some additional space. It appears that about 25,000 square feet will be needed; 12,500 square feet of presently unused, but leased, space is available now. (Baxter's present lease with 10 years to run costs \$3.00 a foot.) There is another 12,500 square feet adjoining the Baxter facility which Baxter will rent for three years at \$4.00 per square foot per year if it decides to make this product.

The equipment will be purchased for about \$900,000. It will require \$30,000 in modifications, \$60,000 for installation, and \$90,000 for testing; all of these activities will be done by a firm of engineers hired by Baxter. All of the expenditures will be paid for on January 1, 19X1.

The equipment should have a salvage value of about \$180,000 at the end of the third year. No additional general overhead costs are expected to be incurred.

The following estimates of revenues and expenses for this product for the three years have been developed.

	19X1	19X2	19X3
Sales	<u>\$1,000,000</u>	<u>\$1,600,000</u>	<u>\$800,000</u>
Material, labor, and incurred overhead	\$ 400,000	\$ 750,000	\$350,000
Assigned general overhead	40,000	75,000	35,000
Rent	87,500	87,500	87,500
Depreciation	450,000	300,000	150,000
	<u>\$ 977,500</u>	<u>\$1,212,500</u>	<u>\$622,500</u>
Income before tax	\$ 22,500	\$ 387,500	\$177,500
Income tax (40%)	9,000	155,000	71,000
	<u>\$ 13,500</u>	<u>\$ 232,500</u>	<u>\$106,500</u>

1. Prepare a schedule which shows the incremental after-tax cash flows for this project.
2. If the company requires a two-year payback period for its investment, would it undertake this project? Show your supporting calculations clearly.
3. Calculate the after-tax accounting rate of return for the project.
4. A newly hired business-school graduate recommends that the company consider the use of net present value analysis to study this project. If the company sets a required rate of return of 20 percent after taxes, will this project be accepted? Show your supporting calculations clearly. (Assume all operating revenues and expenses occur at the end of the year.)

(CMA, adapted)