Exercises: Set B

E12-1B Allen Corporation is considering purchasing a new delivery truck. The truck has many advantages over the company's current truck (not the least of which is that it runs). The new truck would cost $48,000. Because of the increased capacity, reduced maintenance costs, and increased fuel economy, the new truck is expected to generate cost savings of $8,000. At the end of 8 years the company will sell the truck for an estimated $20,000. Traditionally the company has used a rule of thumb that a proposal should not be accepted unless it has a payback period that is less than 70% of the asset's estimated useful life. Achin Ceban, a new manager, has suggested that the company should not rely solely on the payback approach, but should also employ the net present value method when evaluating new projects. The company's cost of capital is 9%.

Compute cash payback and net present value. (SO 2, 3)

Instructions

(a) Compute the cash payback period and net present value of the proposed investment.
(b) Does the project meet the company's cash payback criteria? Does it meet the net present value criteria for acceptance? Discuss your results.

E12-2B Kogama Manufacturing Company is considering three new projects, each requiring an equipment investment of $25,000. Each project will last for 3 years and produce the following cash inflows.

Compute cash payback period and net present value. (SO 2, 3)

Year	AA	BB	CC
1	$ 7,000	$ 9,600	$13,000
2	9,000	9,600	9,000
3	12,000	9,600	11,000
Total	$28,000	$28,800	$33,000

The equipment's salvage value is zero. Kogama uses straight-line depreciation. Kogama will not accept any project with a payback period over 2.5 years. Kogama's minimum required rate of return is 12%.

Instructions

(a) Compute each project's payback period, indicating the most desirable project and the least desirable project using this method. (Round to two decimals.)
(b) Compute the net present value of each project. Does your evaluation change? (Round to nearest dollar.)

E12-3B SWC Corp. is considering purchasing one of two new diagnostic machines. Either machine would make it possible for the company to bid on jobs that it currently isn't equipped to do. Estimates regarding each machine are provided below.

Compute net present value and profitability index. (SO 3, 5)

	Machine A	Machine B
Original cost	$98,000	$170,000
Estimated life	8 years	8 years
Salvage value	–0–	–0–
Estimated annual cash inflows	$25,000	$40,000
Estimated annual cash outflows	$5,000	$12,000

Instructions

Calculate the net present value and profitability index of each machine. Assume a 10% discount rate. Which machine should be purchased?

E12-4B Valdez Inc. manufactures snowsuits. Valdez is considering purchasing a new sewing machine at a cost of $2.4 million. Its existing machine was purchased five years ago at a price of $1.8 million; six months ago, Valdez spent $55,000 to keep it operational. The existing sewing machine can be sold today for $260,000. The new sewing machine would require a one-time, $85,000 training cost. Operating costs would decrease by the following amounts for years 1 to 7:

Calculate net present value and apply decision rule. (SO 3)

Year 1	$390,000
2	400,000
3	411,000
4	426,000
5	434,000
6	435,000
7	436,000

The new sewing machine would be depreciated according to the declining-balance method at a rate of 20%. The salvage value is expected to be $380,000. This new equipment would require maintenance costs of $95,000 at the end of the fifth year. The cost of capital is 10%.

Instructions

Use the net present value method to determine whether Valdez should purchase the new machine to replace the existing machine, and state the reason for your conclusion.

(CGA adapted)

Calculate payback period, internal rate of return, and apply decision rules. (SO 2, 7)

E12-5B BTMS Inc. wants to purchase a new machine for $30,000, excluding $1,500 of installation costs. The old machine was bought five years ago and had an expected economic life of 10 years without salvage value. This old machine now has a book value of $2,000, and BTMS Inc. expects to sell it for that amount. The new machine would decrease operating costs by $8,000 each year of its economic life. The straight-line amortization method would be used for the new machine, for a five-year period with no salvage value.

Instructions

(a) Determine the cash payback period.
(b) Determine the approximate internal rate of return.
(c) Assuming the company has a required rate of return of 10%, state your conclusion on whether the new machine should be purchased.

(CGA adapted)

Determine internal rate of return. (SO 7)

E12-6B Hines Corporation is involved in the business of injection molding of plastics. It is considering the purchase of a new computer-aided design and manufacturing machine for $436,000. The company believes that with this new machine it will improve productivity and increase quality, resulting in an increase in net annual cash flows of $115,000 for the next 5 years. Management requires a 12% rate of return on all new investments.

Instructions

Calculate the internal rate of return on this new machine. Should the investment be accepted?

Determine internal rate of return. (SO 7)

E12-7B Omega Company is considering three capital expenditure projects. Relevant data for the projects are as follows.

Project	Investment	Annual Income	Life of Project
22A	$231,000	$11,400	6 years
23A	270,000	17,000	8 years
24A	288,000	20,000	9 years

Annual income is constant over the life of the project. Each project is expected to have zero salvage value at the end of the project. Omega Company uses the straight-line method of depreciation.

Instructions

(a) Determine the internal rate of return for each project. Round the internal rate of return factor to three decimals.
(b) If Omega Company's minimum required rate of return is 9%, which projects are acceptable?

Calculate annual rate of return. (SO 8)

E12-8B Funtado Company is considering opening a new hair salon in Tucson, Arizona. The cost of building a new salon is $400,000. A new salon will normally generate annual revenues of $87,500, with annual expenses (including depreciation) of $40,000. At the end of 20 years the salon will have a salvage value of $100,000.

Instructions
Calculate the annual rate of return on the project.

E12-9B Thorstad Service Center just purchased an automobile hoist for $18,600. The hoist has a 5-year life and an estimated salvage value of $1,400. Installation costs were $3,900, and freight charges were $900. Thorstad uses straight-line depreciation.

Compute cash payback period and annual rate of return.
(SO 2, 8)

The new hoist will be used to replace mufflers and tires on automobiles. Thorstad estimates that the new hoist will enable his mechanics to replace five extra mufflers per week. Each muffler sells for $75 installed. The cost of a muffler is $35, and the labor cost to install a muffler is $15.

Instructions
(a) Compute the payback period for the new hoist.
(b) Compute the annual rate of return for the new hoist. (Round to one decimal.)

E12-10B Solano Company is considering a capital investment of $210,000 in additional productive facilities. The new machinery is expected to have a useful life of 5 years with no salvage value. Depreciation is by the straight-line method. During the life of the investment, annual net income and cash inflows are expected to be $20,000 and $60,000, respectively. Solano has a 12% cost of capital rate, which is the minimum acceptable rate of return on the investment.

Computer annual rate of return, cash payback period, and net present value.
(SO 2, 3, 8)

Instructions
(Round to two decimals.)
(a) Compute (1) the cash payback period and (2) the annual rate of return on the proposed capital expenditure.
(b) Using the discounted cash flow technique, compute the net present value.

E12-11B MCA Corporation is reviewing an investment proposal. The initial cost and estimates of the book value of the investment at the end of each year, the net cash flows for each year, and the net income for each year are presented in the schedule below. All cash flows are assumed to take place at the end of the year. The salvage value of the investment at the end of each year is equal to its book value. There would be no salvage value at the end of the investment's life.

Calculate payback, annual rate of return, and net present value.
(SO 2, 3, 8)

Investment Proposal

Year	Initial Cost and Book Value	Annual Cash Flows	Annual Net Income
0	$105,000		
1	70,000	$45,000	$16,000
2	42,000	40,000	18,000
3	21,000	35,000	20,000
4	7,000	30,000	22,000
5	0	25,000	24,000

MCA Corporation uses a 15% target rate of return for new investment proposals.

Instructions
(a) What is the cash payback period for this proposal?
(b) What is the annual rate of return for the investment?
(c) What is the net present value of the investment?

(CMA-Canada adapted)