Supplementary exercises on CH12

The management of Sonate Company, a wholesale distributor of fashion products, is considering the purchase of a $72,000 machine that would reduce operating costs in its warehouse by $16,000 per year. At the end of the machine's 5-year useful life, it will have no scrap value. The company's required rate of return is 5%.

***Required**:*
(Ignore income taxes.)

1. Determine the **net** present value of the investment in the machine.
2. Will the management of Sonate Company accept the investment?

[EX.01]

Requirement 1: Determine the net present value of the investment in the machine.

	Now	Years 1-5
Purchase of machine	$ (72,000)	
Reduced operating costs		$16,000
Total cash flows (a)	(72,000)	$16,000
Discount factor (5%) (b)	1.00	4.329
Present value (a)×(b)	(72,000)	$69,264
Net present value	$ (2,736)	

Burns Manufacturing is investigating the purchase of new equipment that would save $300,000 each year in materials and labor costs. This equipment costs $1,500,000 and is expected to have a 6-year useful life with no salvage value. The company's required rate of return is 8% on all equipment purchases. This equipment would provide intangible benefits such as greater flexibility and higher-quality output that are difficult to estimate and yet are quite significant.

***Required**:*
(Ignore income taxes.)

1. What is the net present value of the piece of equipment *before* considering its intangible benefits?

[EX.02]

***Requirement 1**:* What is the net present value of the piece of equipment *before* considering its intangible benefits?

Item	Year(s)	Amount of Cash Flows	8% Factor	Present Value of Cash Flows
Cost of the equipment	Now	$(1,500,000)	1.000	$(1,500,000)
Annual cash savings	1-6	$300,000	4.623	1,386,900
Net present value				$ (113,100)

B2B is considering the purchase of new TVs to place in its stores. The games would cost a total of $850,000, have an three-year useful life, and have a total salvage value of $8,000. The company estimates that annual revenues and expenses associated with the TVs would be as follows:

Revenues		$800,000
Less operating expenses:		
Insurance	$80,000	
Depreciation	$320.000,00	
Maintenance	$220.000,00	$620.000,00
Net operating income		$180.000,00

Required:

1. What is the payback period for the new TVs? Assume that B2B will not purchase new Tvs unless they provide a payback period of two years or less. Would the company purchase the TVs?
2. What is the simple rate of return promised by the games? If the company requires a simple rate of return of at least 7%, will the games be purchased?

[EX.03]

***Requirement 1**:* What is the payback period for the new TVs? Assume that B2B will not purchase new TVs unless they provide a payback period of two years or less. Would the company purchase the new games?

Net operating income	$180,000
Add: noncash deduction for depreciation	320,000
Annual net cash inflow	$500,000

$$\text{Payback period} = \frac{\text{Investment required}}{\text{Annual net cash inflow}} = \frac{\$850{,}000}{\$500{,}000} = 1.7 \text{ years}$$

Yes

***Requirement 2**:* What is the simple rate of return promised by the TVs? If the company requires a simple rate of return of at least 7%, will the TVs be purchased?

$$\text{Simple rate of return} = \frac{\text{Annual incremental net income}}{\text{Initial investment}} = \frac{\$180{,}000}{\$850{,}000} = 21{,}18\%$$

Yes

Janel Industries has $150,000 to invest. The company is trying to decide between two alternative uses of the funds. The alternatives are:

	Project A	Project B
Cost of equipment required	$150,000	$0
Working capital investment required	$0	$150,000
Annual cash inflows	$31,000	$16,000
Salvage value of equipment in six years	$25,000	$0
Life of the project	5 years	5 years

The working capital needed for project B will be released at the end of five years for investment elsewhere. Janel Industries' discount rate is 8%.

Required:

1. Compute the net present value of Project A.
2. Compute the net present value of Project B.
3. Which investment alternative (if either) would you recommend that the company accept?

[EX.04]

Requirement 1: Compute the net present value of Project A.

	Now	Years 1-5	Year 5
Purchase of equipment	$(150,000)		
Annual cash inflows		$31,000	
Salvage value	_____	_____	$25,000
Total cash flows (a)	$(150,000)	$31,000	$25,000
Discount factor (8%) (b)	1.000	3.993	0.681
Present value (a)×(b)	$(150,000)	$123,783	$17,025
Net present value	$(9,192)		

Requirement 2: Compute the net present value of Project B.

	Now	Years 1-5	Year 5
Working capital invested	$(150,000)		
Annual cash inflows		$16,000	
Working capital released	_____	_____	$150,000
Total cash flows (a)	$(150,000)	$16,000	$150,000
Discount factor (8%) (b)	1.000	3.993	0.681
Present value (a)×(b)	$(150,000)	$63,888	$102,150
Net present value	$16,038		

Requirement 3: Which investment alternative (if either) would you recommend that the company accept?

Project B has a positive NPV, so we would accept that one.