

Week five questions

[Finance](#)



Week Five Questions: Finance and Accounting, Math Problem Chapter 8

Exercise 1. Basic present value calculations Calculate the present value of the following cash flows, rounding to the nearest dollar:

Solution:

The present value is calculated using the formula:

a. A single cash inflow of \$12, 000 in five years, discounted at a 12% rate of return.

$$= \$6, 809. 12$$

b. An annual receipt of \$16, 000 over the next 12 years, discounted at a 14% rate of return.

$$= \$3, 320. 95$$

c. A single receipt of \$15, 000 at the end of Year 1 followed by a single receipt of \$10, 000 at the end of Year 3. The company has a 10% rate of return.

$$= \$13, 636. 36 + \$7, 513. 15$$

$$= \$21, 149. 51$$

d. An annual receipt of \$8, 000 for three years followed by a single receipt of \$10, 000 at the end of Year 4. The company has a 16% rate of return.

$$= \$5, 125. 26 + \$5, 522. 91$$

$$= \$10, 648. 17$$

Chapter 8 Exercise 4:

4. Cash flow calculations and net present value

On January 2, 19X1, Bruce Greene invested \$10, 000 in the stock market and purchased 500 shares of Heartland Development, Inc. Heartland paid cash dividends of \$2. 60 per share in 19X1 and 19X2; the dividend was raised to \$3. 10 per share in 19X3. On December 31, 19X3, Greene sold his holdings

<https://assignbuster.com/week-five-questions/>

and generated proceeds of \$13, 000. Greene uses the net-present- value method and desires a 16% return on investments.

a. Prepare a chronological list of the investments cash flows. Note: Greene is entitled to the 19X3 dividend.

List of Investment's Cash Flows

19X1 Dividends = $\$2.60 * 500 = \$1,300.00$

19X2 Dividends = $\$2.60 * 500 = \$1,300.00$

19X3 Dividends = $\$3.10 * 500 = \$1,550.00$

19X3 Sale of holdings = $\$13,000.00$

b. Compute the investments net present value, rounding calculations to the nearest dollar.

= $\$1,408.37$

Therefore, the NPV of the investment is \$1, 408 to the nearest dollar

c. Given the results of part (b), should Greene have acquired the Heartland stock? Briefly explain.

Since the NPV is positive, Greene was right to have acquired the Heartland stock. A positive NPV would mean that the investor has been able to recover all the costs associated with initial investments and added additional revenue. Hence, Greene was right to have acquired Heartland stock.

Chapter 8 exercise 5:

5. Straightforward net present value and internal rate of return

The City of Bedford is studying a 600-acre site on Route 356 for a new landfill. The start up cost has been calculated as follows:

Purchase cost: \$450 per acre

Site preparation: \$175, 000

The site can be used for 20 years before it reaches capacity. Bedford, which

<https://assignbuster.com/week-five-questions/>

shares a facility in Bath Township with other municipalities, estimates that the new location will save \$40, 000 in annual operating costs.

a. Should the landfill be acquired if Bedford desires an 8% return on its investment? Use the net-present-value method to determine your answer.

NB: The cash flows are constant for the 20 years.

Therefore, NPV is obtained by (Megginson & Smart, 2007)

$$NPV = R \times$$

$$\frac{1 - (1 + i)^{-n}}{i}$$

– Initial Investment

i

Initial Cost = Purchase cost = \$270, 000

Site Preparation = \$175, 000

Total Start-up costs= \$445, 000

Costs Savings for the 20 years = \$40, 000

$$NPV = -\$52, 274. 10$$

Since the NPV is negative, Bedford should not acquire the landfill

b. Compute the internal rate of return on this project.

IRR is calculated as the r that makes the NPV = 0 (Megginson & Smart, 2007)

From the above information, the IRR of the project of acquiring landfill by Bedford is given by

6. 38%

Chapter 8 Problem 1:

Straightforward net-present-value and payback computations

STL Entertainment is considering the acquisition of a sight-seeing boat for summer tours along the Mississippi River. The following information is

<https://assignbuster.com/week-five-questions/>

available:

Cost of boat \$500, 000

Service life 10 summer seasons

Disposal value at the end of 10 seasons \$100, 000

Capacity per trip 300 passengers

Fixed operating costs per season (including straight-line depreciation) \$160, 000

Variable operating costs per trip \$1, 000

Ticket price \$5 per passenger

All operating costs, except depreciation, require cash outlays. On the basis of similar operations in other parts of the country, management anticipates that each trip will be sold out and that 120, 000 passengers will be carried each season. Ignore income taxes.

Instructions:

By using the net-present-value method, determine whether STL

Entertainment should acquire the boat. Assume a 14% desired return on all investments,- round calculations to the nearest dollar.

Total Costs of Acquisition

Cost of the boat= \$500, 000

Net cash flow from the operations

Total Revenue per year = \$600, 000

Less Fixed Operating Costs = (\$160, 000)

Less Variable Costs = (\$400, 000)

Net cash flow from the operations =\$40, 000

Other cash flows:

Disposal Value = \$100, 000

<https://assignbuster.com/week-five-questions/>

NPV = \$-264, 381 (to the nearest dollar)

Since the NPV is negative, STL Entertainment should not acquire the boat

Chapter 8 Problem 4:

4. Equipment replacement decision

Columbia Enterprises is studying the replacement of some equipment that originally cost \$74, 000. The equipment is expected to provide six more years of service if \$8, 700 of major repairs are performed in two years.

Annual cash operating costs total \$27, 200. Columbia can sell the equipment now for \$36, 000; the estimated residual value in six years is \$5, 000.

New equipment is available that will reduce annual cash operating costs to \$21, 000. The equipment costs \$103, 000, has a service life of six years, and has an estimated residual value of \$13, 000. Company sales will total \$430, 000 per year with either the existing or the new equipment. Columbia has a minimum desired return of 12% and depreciates all equipment by the straight-line method.

Instructions:

a. By using the net-present-value method, determine whether Columbia should keep its present equipment or acquire the new equipment. Round all calculations to the nearest dollar, and ignore income taxes

Old Equipment

Costs associated the old equipment

Original cost \$74, 000 + Repairs \$8, 700

Total costs of the equipment \$82, 700

Net Cash flows from the old equipment

Annual Sales \$430, 000

Annual cash operating costs \$27, 200

<https://assignbuster.com/week-five-questions/>

Net Cash flows \$402, 800

Other cash flows; Residual value \$5, 000 after 6 years

NPV for the old equipment:

The Net NPV is therefore = \$1, 372, 140. 99

New Equipment

Costs associated the new equipment

Original cost \$103, 000

Net Cash flows from the old equipment

Annual Sales \$430, 000

Annual cash operating costs \$21, 000

Net Cash flows \$409, 000

Other cash flows; Residual value \$13, 000 after 6 years

NPV for the old equipment:

The Net NPV is therefore = \$1, 378, 730. 02

Reference

Meggison, W. L. & Smart, S. B. (2007). Introduction to Corporate Finance.

Mason, OH: South-Cengage Learning