$$EUAC_1 = \$50M\,(A/P, 8\%, 30) + \$1M = \$50M\,(0.0888) + \$1M = \$5.44M$$

$$EUAC_2 = \$15M\,(A/P, 8\%, 10) + \$3M = \$15M\,(0.1490) + \$3M = \$5.23M$$

Option 2 is superior.

Answer B

47.3 A company with a tax rate of 30% makes a $50,000 one time purchase that drives $8,000 of annual revenue and carries $1200 of annual maintenance costs. The salvage value after 10 years is $5000. What is the present value of the investment over 10 years at a 6% interest rate?

A. $-\$12,200$

B. $-\$6,000$

C. $\$11,700$

D. $\$52,800$

Draw a cash flow diagram or make a list of cash flows.

In Year 0, there is an initial payment of $50K (negative).

In Years 1-10, there is a net profit before tax of $\$8000 - \$1200 = \$6800$ and a net profit after tax of $\$6800\,(1 - 0.3) = \$4760$.

In Year 10, there is also a future payment for the salvage value of $5K in addition to the after-tax profit.

Note the tax rate is applied only to the annual profits and not to the initial cost or salvage value, and there is no reference to depreciation in the problem statement.

Write an expression for the present value. Use the $i = 6\%$ Factor Table to retreive the cash flow factors.

$$PV = -\$50,000 + \$4760\,(P/A, 6\%, 10) + \$5000\,(P/F, 6\%, 10)$$

$$PV = -\$50,000 + \$4760\,(7.3601) + \$5000\,(0.5584) = -\$12,174$$

Answer A

47.4 A company pays $500K for a warehouse that it plans to hold for 15 years. The warehouse will save the company $5000 per month in shipping costs, boosting profit. Maintenance and taxes cost $10,000 per year. At the end of 15 years, what sale price is needed to realize an 8% rate of return?

A. $\$23K$

B. $\$230K$

C. $\$780K$

D. $\$1.7M$

Draw a cash flow diagram or make a list of cash flows.

In Year 0, there is an initial payment of $500K (negative).

In Years 1-15, there is a monthly savings of $5K which translates to a $60K increase to the annual revenue. There is also $10K in annual costs, included taxes. Therefore, the net profit after tax is $(12)(\$5K) - \$10K = \$50K$ per year.

In Year 15, there is a salvage value of unknown magnitude which is being sought in this problem.

Write an expression for the present value. The rate of return is the interest rate that makes the present value equal to zero, in this case, $i = 8\%$. Use the $i = 8\%$ Factor Table to retreive the cash flow factors. Solve for S, the salvage value.

$$PV = -\$500K + \$50K\,(P/A, 8\%, 15) + S\,(P/F, 8\%, 15) = 0$$

$$-\$500K + \$50K\,(8.5595) + S\,(0.3152) = 0$$

$$S = \$228,506$$

Answer B