In-Class Exercise Solution

To calculate the payback period, we need to find the time that the project has recovered its initial investment. The cash flows in this problem are an annuity, so the calculation is simpler.

If the initial cost is $1,800, the payback period is:
Payback = 2 + ($270 / $765) = 2.35 years.
Also, there is a shortcut to calculate the future cash flows are an annuity. Just divide the initial cost by the annual cash flow. For the $1,800 cost, the payback period is:
Payback = $1,800 / $765 = 2.35 years.

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The NPV of a project is the PV of the outflows minus the PV of the inflows.

The equation for the NPV of this project at an 11 percent required return is:

$$\text{NPV} = -\$30,000 + \frac{\$16,000}{1.11} + \frac{\$20,000}{1.11^2} + \frac{\$15,000}{1.11^3} = \$11614.73.$$

At an 11 percent required return, the NPV is positive, so we would accept the project.