Problem 14-17 (30 minutes)

1. The formula for the project profitability index is:

Project profitability index = $\dfrac{\text{Net present value of the project}}{\text{Investment required by the project}}$

The indexes for the projects under consideration would be:

Project 1: $66,140 ÷ $270,000 = 0.24
Project 2: $72,970 ÷ $450,000 = 0.16
Project 3: $73,400 ÷ $360,000 = 0.20
Project 4: $87,270 ÷ $480,000 = 0.18

2. a., b., and c.

	Net Present Value	Project Profitability Index	Internal Rate of Return
First preference	4	1	2
Second preference	3	3	1
Third preference	2	4	4
Fourth preference	1	2	3

Problem 14-17 (continued)

3. Which ranking is best will depend on Revco Products' opportunities for reinvesting funds as they are released from the project. The internal rate of return method assumes that any released funds are reinvested at the internal rate of return. This means that funds released from project #2 would have to be reinvested in another project yielding a rate of return of 19%. Another project yielding such a high rate of return might be difficult to find.

The project profitability index approach assumes that funds released from a project are reinvested in other projects at a rate of return equal to the discount rate, which in this case is only 10%. On balance, the project profitability index is the most dependable method of ranking competing projects.

The net present value is inferior to the project profitability index as a ranking device because it looks only at the total amount of net present value from a project and does not consider the amount of investment required. For example, it ranks project #1 as fourth in terms of preference because of its low net present value; yet this project is the best available in terms of the amount of cash inflow generated for each dollar of investment (as shown by the project profitability index).