E355 Engineering Economics Spring 2022
Homework #1

"I pledge my honor that I have abided by the Stevens Honor System"

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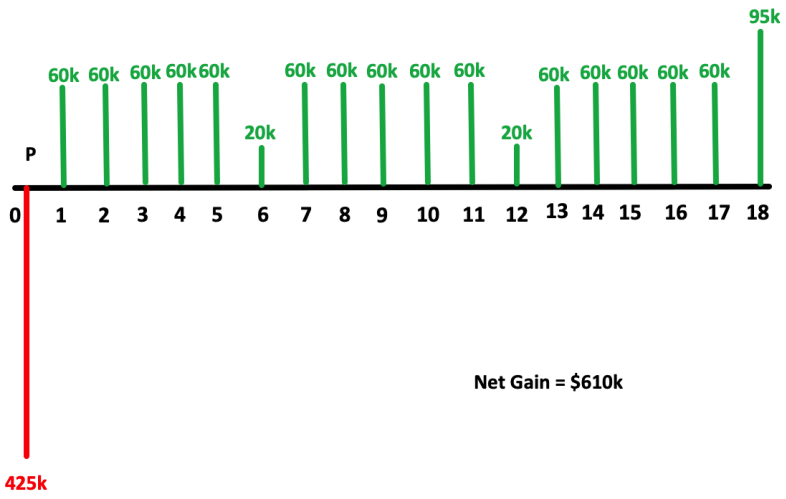
1.1 A new project has an initial cost of $425,000. The annual maintenance costs are estimated at $80,000 over the useful life of 18 years, at which time, the salvage value is $75,000. Periodic overhauls will be required every 6 years, which are estimated to cost $40,000. In addition to this, the system will generate revenue of $140,000 per year for 18 years and then it will be sold.

Draw the cash flow diagram. Assume EOP discrete cash flows. [6 point]



Net Gain = $610k

1.2 You decide to invest $75,000, in a pool of stocks and bonds. Your broker says that you will get a nominal rate of 8% per year, compounded quarterly.

a) Calculate the periodic rate and the effective annual rate. [4 points]

Periodic Rate = [8%•(1/4)] = 2%

Effective Annual Rate = ([1+(0.08/4)]^4)-1 = 0.0824
Effective Annual Rate = 8.24%

b) How much money will accumulate in the account at the end of 4 years? [4 points]

A = P(1 + (r/n))^(nt) = (75000)(1 + (0.08/4))^((4)(4))
A = $102,958.93