1. Suppose that the interest rate is zero. A new machine costs $1,000 and lasts for one year. How much would the machine have to add to profits over the next year to justify its purchase?

2. How would your answer above be different if the interest rate was 5%?

3. With the interest rate at 5%, what would be the net present value of investing in the machine if it adds $1,100 to profit in its year of operation?

4. Use the formula $0 = B_0 - C_0 + \sum_t \frac{B_t - C_t}{(1+R)^t}$ to set up an equation to calculate the present value of a factory expansion with the following specifications:

   a. The factory currently produces $30,000 per year in profit.
   b. Expanding the factory would cost $50,000 per year in expenditures for four years, during which the factory would be shut down.
   c. Once completed, the expanded factory would produce a profit of $45,000 per year for 50 years, then disappear.

What would the flow of C and B values look like?