Quiz B: 8/9/16 Name _____

All Bad Choices (ABC) Inc. is considering building a new factory that will require an investment of $150 million today and $100 million a year from today. ABC expects that the new factory will produce its first cash flow two years from today. ABC expects this first cash flow to range between $10 and $50 million with an expected value of $35 million per year through 20 years from today. If cash flows are lower than expected, the factory can be sold any time over the next five years for $95 million. And if cash flow are greater than expected, the factory can be expanded any time over the next three years at a cost of $125 million. ABC expects that the expansion would generate cash flows between $5 million and $25 million per year with an expected cash flow of $20 million per year. These expansion cash flows would begin four years from today and would continue through 20 years from today. The standard deviation of returns on the new factory equals 35% over its entire life, 40% over the next five years, and 45% over the next three years. The standard deviation of returns on the expansion equals 50% over the life of the expansion, 60% over the next five years, and 65% over the next three years. The risk-free rate varies by maturity to maturity as follows: 1 = 0.56%; 2 = 0.72%; 3 = 0.86%; 5 = 1.13%; 7 = 1.41%; 10 = 1.59%; 20 = 1.91%; 30 = 2.32%. The cost of capital equals 10% for the project and 13% for the expansion.

How does the possibility of <u>expanding the factory</u> if sales are greater than expected affect the value of the new factory? Note: You only need to set up all the necessary equations and plug in all the variables. You don't have to solve anything.