

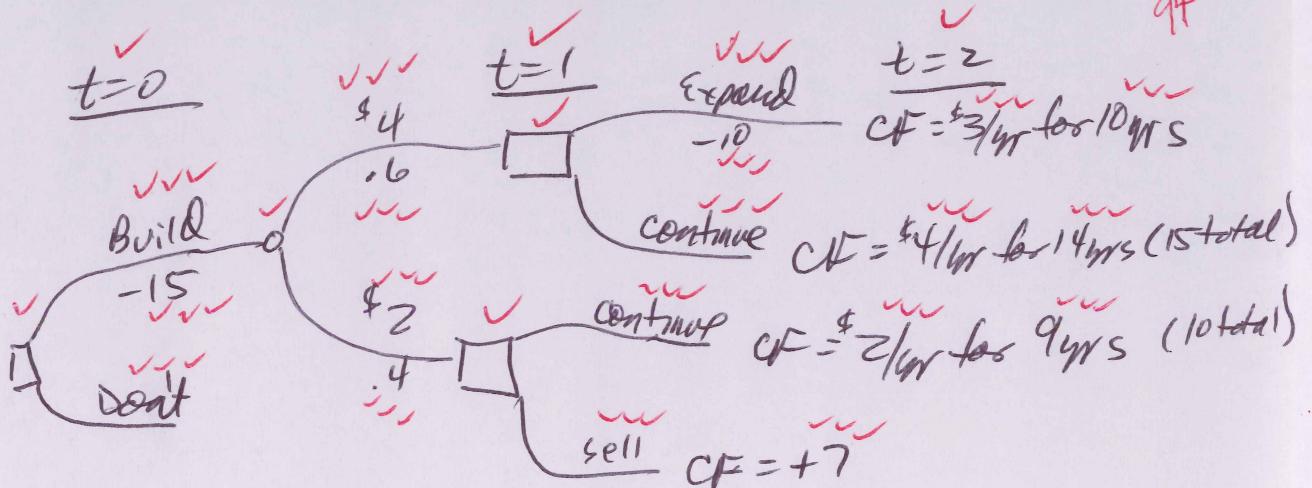
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Quiz A for 11:30 Class: 08/09/13

Name Key

Your firm is considering investing \$15 million in a new facility to produce Wi-Fi phones. There is a 40% chance that the facility would produce net, after-tax cash flows of \$2 million per year for 10 years beginning one year from today and a 60% chance that the facility would produce net, after-tax cash flows of \$4 million per year for 15 years beginning one year from today. If sales are low, the facility could be sold one year from today for \$7 million. If sales are high, the facility can be expanded at a cost of \$10 million one year from today. This expansion would produce net, after-tax cash flows of \$3 million per year for 10 years beginning one year after the expansion. The cost of capital for the project and any expansions is 9% per year.

- Sketch a decision tree for deciding whether to build the facility.
- Set up the calculations needed to determine whether the facility should be expanded in one year. How would you use this calculation to make a decision? You do not need to solve anything.
- Set up the calculations needed to determine whether the facility should be sold in one year. How would you use this calculation to make a decision? You do not need to solve anything.



$$b. NPV = -10 + \frac{3}{.09} \left(1 - \left(\frac{1}{1.09} \right)^{10} \right)$$

⇒ Expand if $NPV > 0$

$$c. PV(\text{Continue}) = \frac{2}{.09} \left(1 - \left(\frac{1}{1.09} \right)^9 \right)$$

⇒ Sell if $PV(\text{Continue}) < 7$

90 = 72
 82 = 65
 81 = 65
 78 = 62
 76 = 61 a.
 66 = 53
 61 = 49
 57 = 45
 57 = 40
 7 = 35