Quiz D: 4/11/12 Name & Time Key

Quiz: Suspend Campaign Company has a current stock price of $40. For the next two years, Suspend's stock price will either rise by $5 per share or fall by $3 per share.
a. Set up the calculations needed to determine the value of a call today with a strike price of $40 if the risk-free interest rate is 2% per year and is not expected to change.
b. Set up the calculations needed to determine how many bonds would you need to buy or sell a year from today if Suspend's stock price rises by $5 per share next year?

Note: Bonus WSJ Questions on back of page

a. $S_u = 40+5 = 45$; $S_d = 40-3 = 37$

$S_{uu} = 40+5+5 = 50$; $S_{ud} = S_{du} = 40+5-3 = 42$; $S_{dd} = 40-3-3 = 34$

$K = 40$

$C_{uu} = 50-40 = 10$; $C_{ud} = C_{du} = 42-40 = 2$; $C_{dd} = 0$

$t = 1$

$\Delta_u = \frac{10-2}{50-42} = 1$; $B_u = \frac{2-(1)(42)}{1.02} = -39.2157$ (5)

$C_u = 45(1) - 39.2157 = 5.7843$

$\Delta_d = \frac{2-0}{42-34} = .25$ (5); $B_d = \frac{0-(.25)34}{1.02} = -8.3333$ (5)

$C_d = 37(.25) - 8.3333 = 0.9167$ (4)

$t = 0$

$\Delta = \frac{5.7843 - 0.9167}{45-37} = 0.6085$ (5); $B = \frac{0.9167 - (.6085)(37)}{1.02} = -21.174$ (5)

$C = .6085(40) - 21.174 = 3.166$ (4)

b. 1) Change in stock: $|-.6085| = +.3915$ (+2)

=> buy .3915 shares for $.3915(45) = 17.6175$

(+2) => short-sell 17.6175 of bonds

or 2) Bonds if do nothing $= -21.174(1.02) = -21.5975$ (+2)

=> change in bonds $= |-39.2157 - (-21.5975)|$

$= -17.618$

(+2) => short sell 17.618 of bonds