Quiz B: 4/11/12   Name & Time ___*Key*___

Quiz: Suspend Campaign Company has a current stock price of $50. For the next two years, Suspend's stock price will either rise by 8% per share or fall by 4% per share.
a. Set up the calculations needed to determine the value of a <u>call</u> today with a strike price of $50 if the risk-free interest rate is 3% 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 8% next year?

Note: Bonus WSJ Questions on back of page

a)

$S_u = 50(1.08) = 54 ; S_d = 50(.96) = 48$

$S_{uu} = 50(1.08)^2 = 58.32 ; S_{ud} = 50(1.08)(.96) = S_{du} = 51.84 ; S_{dd} = 50(.96)^2 = 46.08$

$K = 50$

$C_{uu} = 58.32 - 50 = 8.32 ; C_{ud} = 51.84 - 50 = 1.84 ; C_{dd} = 0$

$\underline{t = 1}$

$\Delta_u = \dfrac{8.32 - 1.84}{58.32 - 51.84} = 1 ; \quad B_u = \dfrac{1.84 - (1)(51.84)}{1.03} = -48.5437$

$C_u = 54(1) - 48.5437 = 5.4563$

$\Delta_d = \dfrac{1.84 - 0}{51.84 - 46.08} = 0.31944 ; \quad B_d = \dfrac{0 - .31944(46.08)}{1.03} = -14.2913$

$C_d = 48(.31944) - 14.2913 = 1.0418$

$\underline{t = 0}$

$\Delta = \dfrac{5.4563 - 1.0418}{54 - 48} = 0.7357 , \quad B = \dfrac{1.0418 - (.7357)(48)}{1.03} = -33.2736$

$C = 50(.7357) - 33.2736 = 3.511$

b) 1) Change in stock $= 1 - .7357 = 0.2643$ 14.272

$\Rightarrow$ buy .2643 shares for $.2643(54) = 14.272$ of bonds

$\Rightarrow$ short-sell 14.272 of bonds

or 2) Bonds if do nothing $= -33.2736(1.03) = -34.2718$

$\Rightarrow$ change in bonds $= -48.5437 - (-34.2718) = -14.2719$

$\Rightarrow$ short sell 14.2719 of bonds