**Quiz B: 7/16/12** Name Key

Note: There are no points for solving this problem. All points are for setting up the equations, plugging in the relevant numbers, and stating what you want to solve for.

Assume that your firm is considering whether or not to invest in a new factory. The factory will be built on land that your firm purchased two years ago for $500,000. The land could be sold today for $550,000. The cost to build the factory would be $2,000,000. If your firm builds the factory, half of the $2,000,000 cost would be paid today and half would be paid a year from today. Assume that the factory would start being depreciated a year from today and will fall into the 7-year MACRS class. When deciding whether or not to build the factory, your boss conducted a marketing study of whether there will be sufficient demand for the product. This study cost $100,000 and payment is due today. If the factory is built, revenues will equal $3,000,000 a year from today. Revenues will grow at a rate of 3% per year after these initial sales and will continue through 20 years from today. Operating the factory will generate fixed costs (mostly due to salaries) of $1,000,000 per year and variable costs (mostly due to cost of goods sold and electricity) equal to 45% of sales. Accounts receivable are expected to equal 25% of the current year's sales and Inventory is expected to equal 35% of the next year's sales. Accounts payable will equal 55% of inventory. If the factory is built, the cash balances the firm will need to hold will remain at $1,500,000. The factory will be funded with equity and with $1,500,000 of new bonds that will be issued at an interest rate of 8%. The firm's tax rate equals 35%.

Set up to calculate the factory's unlevered net income and free cash flow one year from today.

+3 $UNI_1 = (R_1 - E_1 - D_1)(1 - T_c)$

+3 $FCF_1 = UNI_1 + D_1 - CE_1 - \Delta NWC_1$

+3 $\Delta NWC_1 = NWC_1 - NWC_0$

+3 $NWC_t = C_t + I_t + AR_t - AP_t$

+3 $R_1 = 3{,}000{,}000$

+9 $E_1 = 1{,}000{,}000 + .45(3{,}000{,}000) = 2{,}350{,}000$

+6 $D_1 = 2{,}000{,}000(.1429) = 285{,}800$

+3 $T_c = .35$

+3 $CE_1 = 1{,}000{,}000$

$C_1 = 0$

+6 $AR_1 = .25(3{,}000{,}000) = 750{,}000$

+6 $I_1 = .35(R_2) = .35(3{,}090{,}000) = 1{,}081{,}500$

+6 $R_2 = 3{,}000{,}000(1.03) = 3{,}090{,}000$

+6 $AP_1 = .55(I_1) = .55(1{,}081{,}500) = 594{,}825$

$C_0 = 0$

+3 $AR_0 = 0$

+6 $I_0 = .35(R_1) = .35(3{,}000{,}000) = 1{,}050{,}000$

+6 $AP_0 = .55(I_0) = .55(1{,}050{,}000) = 577{,}500$