Key to Quiz: 2/13/12

Quiz: Assume your firm is considering whether or not to invest $5,000,000 into a new factory to produce batteries for electric and hybrid cars. The factory will fall into the 7-year MACRS class. Sales from the new factory are expected to equal $6,000,000 a year from today and are expected to grow by 20% per year for 5 years. The cost of producing these sales will be 60% of sales and salaries at the plant will equal $1,000,000 per year. Seventy percent of all sales will be on credit that will be collected one year after the sale. Inventory will equal 25% of sales and will be purchased for cash. If the factory is built, the firm will need to increase its cash balances from $500,000 to $600,000 one year from today. The firm's cash holdings would fall back to $500,000 when it sells the factory ten years from today for an estimated $750,000. Set up to calculate the firm's unlevered net income and free cash flow three years from today if the firm's marginal tax rate is 35%.

Note: You don't have to solve anything, just set everything up.

$$UNI_3 = (R_3 - E_3 - D_3)(1 - .35)$$

$$FCF_3 = UNI_3 + D_3 - CE_3 - \Delta NWC_3$$

$$R_3 = 6,000,000(1.2)^2$$

$$E_3 = .6(R_3) + 1,000,000$$

$$D_3 = 5,000,000(.1749)$$

$$\Delta NWC_3 = NWC_3 - NWC_2$$

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

$$C_3 = C_2 = 600,000$$

$$I_3 = .25(R_3); \quad I_2 = .25(R_2)$$

$$AR_3 = .7(R_3); \quad AR_2 = .7(R_2)$$

$$AP_3 = AP_2 = 0$$

$$R_2 = 6,000,000(1.2)$$

Worked out (not necessary):

$+4$

$+8$

$R_2 = 7{,}200{,}000$, $R_3 = 8{,}640{,}000$

$+4$ $+2$

$E_3 = .6(8{,}640{,}000) + 1{,}000{,}000 = 6{,}184{,}000$ $\;(6)$

$+6$

$D_3 = 874{,}500$

$\times 2$ $\times 2$

$I_2 = 1{,}800{,}000$, $I_3 = 2{,}160{,}000$

$\times 2$ $\times 2$

$AR_2 = 5{,}040{,}000$, $AR_3 = 6{,}048{,}000$

$+2$

$\times 5 \;(\; UNI_3 = (8{,}640{,}000 - 6{,}184{,}000 - 874{,}500)(1 - .35) = 1{,}027{,}975$

$+3$

$\times 3 \;(\; \Delta NWC_3 = (600{,}000 + 2{,}160{,}000 + 6{,}048{,}000) - (600{,}000 + 1{,}800{,}000 + 5{,}040{,}000) = 1{,}368{,}000$

$\times 5 \;(\; FCF_3 = 1{,}027{,}975 + 874{,}500 - 0 - 1{,}368{,}000 = 534{,}475$

Note: don't have to include cash in calculation of change in NWC since it doesn't change.