ECN134(SEC-A03): HW1

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1)

Category	2014	2015	Category	2015
Current Assets	\$1,000	\$1,200	Sales	\$10,000
Net Fixed Assets	5,000	5,600	Cost of Goods Sold	\$4,800
Accounts Payable	600	800	Interest Expense	\$0
Accrued Expenses	500	600	Depreciation	\$1,200
Long-term Debt	3,000	3,300	Tax Rate	30%

(a) We calculate the Net Working Capital (NWC) for 2015.

NWC_{2015}=Current Assets−(Accounts Payable Accrued + Expenses)= \$1200 − (\$800+\$600)=\$ − 200.

(b) We calculate the Operating Cash Flow for 2015. Operating cash flow is defined to be

earnings before interest and taxes times$(1 -$ tax rates)+depreciation.

So, Operating Cash Flow_{2015}=(\$10000 − \$4800)(1 − 0.30)+1200=\$4840.

(c) We calculate the Free Cash Flow for 2015. Free Cash Flow is defined to be

operating cash flow − Δgross fixed asset−ΔNWC.

So, Free Cash Flow_{2015}=\$4840−600−(−200 − (−100))=\$4340.

(d) I believe the junior staffer left out the sharer equity information of the balance sheet for 2014 & 2015. This variable should be equal to the Expenses variable for 2014 & 2015. I.e., Shareholder Equity := *Expenses* for 2014 & 2015.

2)

(a) We find how much Nana can withdraw from her retirement savings at the end of each month if she plans to spend her last penny on the morning of her death. She initally has \$402,000 in her retirement savings account; Interest is 6 percent.
To find this monthly withdraw value, we divide the present value by the annuity factor, from the given variables. I.e., Monthly withdraws=$\frac{\text{PV}}{\text{annuity factor}}$.

We have Monthly withdraws=$\frac{402000}{\frac{1}{0.06/12}-\frac{1}{(0.06/12)(1.005)^{276}}}$=\$2688.77.

So, Nana can withdraw \$2688.77 from her retirement savings at the end of each month if she plans to spend her last penny on the morning of her death. She better

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spend it fast before she dies #yolo#MakeItRainLikeLilWayne.

(b) We find how much additional money will we have to gift to our grandchildren if we can earn an average of 8.5 percent annually instead of just 8 percent annually on our savings.
The difference between the future value calculations of 8 percent and 8.5 percent are $(3000(1+.085)^{50})-(3000(1+.08)^{50})$=36554.11.
So, \$36554.11 is the additional money will we have to gift to our grandchildren if we can earn an average of 8.5 percent annually instead of just 8 percent annually on our savings.

(c) Given the quoted APR loan percent of 8.6 over 48 months, the effective interest rate on the loan is 8.972 percent, from the calculation:
$(1+\frac{i}{n})^n=(1+\frac{0.086}{48})^{48}$=.089722, where i is the intitial rate and n is the number of monthly cycles.

3)

(a) If the corporate tax rate is 40% and the individual tax rate is 20% (and these are the only taxes), if a corporation has $\$50,000$ of operating income, the after income tax for its owners is \$24000. The result is reached from the following calculation:
$(50000-(50000*(.40)))$=\$30000.
$30000-(30000*.2)$=24000.

(b) The tax rate is 15% between $\$0-\$50,000$ and 25% between $\$50,001-\$100,000$. If I earn $\$60,000$, then my marginal tax and average tax rates are 25% and 16.7%, respectively.

The marginal tax rate is the highest tax bracket we are being taxed for every additional dollar; which is clearly 25 percent.
The average tax rate is calculated as $\frac{7500+2500}{60000}$, where value 7500 is from bracket calculation .15∗10000, and value 2500 is from tax bracket 25 percent calculation .25∗10000.

(c) A bank has quoted to me a monthly rate of 0.25% on a short-term loan. The stated annual rate of that loan is 0.25 percent

(d) The future value of \$8 in three years, if the interest rate is 20% and the compounding is continuous, is \$14.58 , from calculation $\$8*e^{0.20*3}$=\$14.58.

(e) The future value of a 3-year annuity due with \$50 cash flows if the annually compounded interest rate is 6% is $\$50*\frac{(1+.06)^3-1}{0.06}(1+.06)=\frac{(1+.06)^3-1}{0.06}(53)$=\$168.73

(f) If we need to find the future value of a current cash flow and interest is compounded quarterly, 10 periods of compounding occur in two and half years, assuming quarterly means every 3 months.

(g) The difference between the present value of a 3-year ordinary annuity with a \$20 cash flow and the present value of a 3-year annuity due with a \$20 cash flow when

the interest rate is 3.5% is the additional multiplication factor into the annuity due calculation compared to the ordinary annuity calculation.

I.e. In ordinary annuity, the calculated procedure would be $\frac{\$20}{0.035}[1 - \frac{1}{(1+.035)^3}]$=\$56.03
Whereas in the annuity due calculation, we get $\frac{\$20}{0.035}[1 - \frac{1}{(1+.035)^3}](1 + 0.035)$=\$57.99