Week 3 DQ 2 Depreciation Methods

As we use up long-term assets we need to recognize that loss in value as an expense called depreciation expense on the income statement. There are three primary depreciation methods that we can use for stuff. There's the straight-line method, which allocates the same amount of depreciation expense each year, there's the declining balance method which is a modification of the straight-line principal that recognizes that assets commonly use more of their value in early years compared to later years, and there's the unit activity method which involves calculating depreciation expense on actual usage.

Now these different methods require that we compute some basic information for stuff. We need to know the purchase price, we need to know the useful life, which is how long we expect the assets to last, and we need to know the salvage value which is a guess at what the asset will be worth at the end of the useful life. Sometimes we need to know an estimated number of units that the asset will produce, basically trying to get a measure of how much you expect to get.

Now in this example Flanders went out and bought some equipment and needs to figure out how much to depreciate each year given the different methods. Cost includes all expenditures necessary to acquire an asset and make it ready for its intended use. This includes the purchase price, sales tax, shipping charges, and installation fees. Be careful for things that aren't explicitly necessary though, like an insurance policy to cover the asset which is included in our example. We spent ninety six thousand dollars on the asset, three thousand dollars on the installation, and a thousand dollars for shipping, so our total cost 96 plus 3 plus one for a total of 100,000.

Now let's move on to the different depreciation methods. Let's start with straight line. Straight-line depreciation is calculated based on the following formula: where we take the purchase price less the salvage value and divide that by are useful file. In this case our total purchase price cost is one hundred thousand dollars and savage value is ten thousand dollars and their estimated useful life is 6 years, so we're going to end up depreciating a total of ninety thousand dollars over the life this asset which is six years. So what this means is that we're going to have depreciation expense of fifteen thousand dollars per year under the straight line method.

Now we can move on to the double declining balance method. The double declining balance method requires that we first calculate what we call a straight line percentage. The straight-line percentage is equal to a hundred divided by the useful life and in this case the useful life is six so our straight line percentage is a hundred divided by six or 16.67. Because this is double declining balance were actually going to double that rate so 16.67 times two and we get a double declining balance rate of 33.33 percent. Now your depreciation in any given year is going to be the current book value of the asset (remember that book value is your original cost less what you have depreciated so far) times this double declining balance rate.

I think that the easiest way to keep track of things is to set up a table with five columns as follows: you want to have a column for the beginning book value at the beginning of the year, the declining balance rate, your current period depreciation expense, accumulated depreciation today, and your book value at the end of the year. So let's start filling in the table. We started off with the asset being worth one hundred thousand dollars and we know that the declining balance rate its 33.33 percent. Actually this is going to stay constant throughout all six years.

So what we do is we take our beginning book value and multiply it times our declining balance rate and that gives us depreciation expense for the year. We can take all that depreciation that has been booked to date and put that in our accumulated depreciation column and we subtract that from our beginning book value to getting ending book value. $66 667 after year one.

Continuing on we basically finished your one with our example using the double declining balance method. What we do is we take are ending book value at the end of year one and assume that's the beginning book value for year two. So we can take our ending value and carry that forward to the beginning balance of the next year. We take this beginning book value at the beginning of the year to multiply it times our declining balance and we see that depreciation expense in your two is $22,220 dollars. We add the depreciation expense in your two to the running total accumulated depreciation and we see that now we have total accumulated depreciation of 55,550 and that are ending book value at the end of the year two is 44,450.

We can take this ending book value at the end of the year two and make that our beginning book value at the beginning of year three. We then take this beginning book value and multiply it times our declining balance rate and we get depreciation expense for your three of 14,815. We add that to our running total accumulated depreciation and now we have a total accumulated depreciation of 70,365 meaning that are ending book value at the end of year 3 is 29,635.

We can take this ending book value at the end of year 3 and make that our beginning book value for year four. You take that beginning book value multiply it times our declining balance rate and get a calculation a 9,877 as a depreciation expense per year four. We once again add that to our accumulated depreciation to date for a running total of 80,242. Our ending book value in this case is then 19,758 which once again we carry forward to have the beginning book value at the beginning of the year 5 of 19,758 multiplied by a declining balance rate for depreciation expense in your five of 6,585 and total accumulated depreciation 86,827 making our ending book value 13,173.

Now one thing to be very careful about, especially under declining balance, is that you can't depreciate an asset below its salvage value so often times we have to be ready to plug in depreciation expense in the last year if our calculated depreciation expense would have things go below salvage value and so what you end up having to do is recognizing that at the end of year 6 we need to have accumulated depreciation of ninety thousand dollars so that our ending book value is ten thousand dollars. So if we had the beginning book value at the beginning at the year 6 at 13,173 then we know that the maximum amount we can depreciate is 3,173. This isn't what we actually calculate under the declining balance method but it ends up being a plug because we can't go below salvage value.

So now we can move on to the units of activity method. The units of activity method requires us to measure useful life in terms of output rather than years so that we can calculate and estimate depreciation per unit. In our example we can make this calculation by taking this same cost minus salvage value that we had before, 100,000 -10,000 dollars for our salvage value but now we made an estimate that our equipment will be able to produce 20,000 pairs of scissors so that's going to be our estimated activity. So we're going to take a total of 90,000 and divide by 20,000 so that we're going to assess depreciation at the rate of 4.5 dollars per unit of actual output.