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What-if Analysis with Goal Seek

Goal Seek is probably one of the most useful tools in financial modelling. It is fantastic for What-If analysis, for looking at hypothetical outcomes and also quite useful for breakeven analysis as well. Let's have a look at some examples.

Here you were wanting to calculate what the monthly repayments were so you would use a PMT function for that. We were going to calculate our interest rate; we will do this on a monthly basis so we will say that our interest rate on an annual basis is 6.5%. Divide that by twelve to make it monthly. The number of periods is going to be fifteen years and multiply that by twelve to also make it monthly. The present value is a million dollars and you can leave the other two blank because we don't have a future value. That's \$8,711. If I want to make that positive, I just put a minus sign in front of it. That is what your monthly repayments would be at that interest rate.

What I want to work out hypothetically is how much can I afford for my interest rates to go up by such that my monthly repayments don't exceed \$10,000 a month. I can do this using Goal Seek. In order for Goal Seek to work, what you need is an output cell; a formula that links to a hard coded input cell. It doesn't need to be on the same page necessarily and you can have really complicated calculations in between. As long as there is a direct link between the hard coded cell and the formula output cell. This is a fairly simple example here. Go into Data, What-If analysis and go to Goal Seek. What we want to do is to set that monthly repayment cell in B4 to a value of \$10,000, by changing the interest rate. We want to say hypothetically what would it be? Select okay and you can see there that it will automatically calculate what that would be. That would have taken ages to do that manually and it calculates it right down to lots of decimal places. A very powerful tool.

Financial Modelling in Excel

Let's have a look at another example using break even analysis. Over on the next page we have got an example. There are fixed costs, raw materials, variable costs. We are selling bird cages. Each bird cage sells for \$125 and it costs us \$40 to produce each cage. We want to know how many units do we need to sell in order to cover our fixed costs. We've done a P&L here with the fixed costs, variable costs and selling price and then our revenue is calculated, fixed costs, variable costs and profit. The way that it is at the moment, you can see that we are making a loss. What if that was to change to 5,000 units? You can see that we would make a really good profit. What if it were to change to 4,000 units? Still quite a good profit. Maybe it's more like 3,000, let's try that. So you can see we could be here all day or I could do it in a few seconds using a Goal Seek. Go to Data, What-If analysis and go to Goal Seek. Set your profit to a value of zero, by changing the number of cages that are being produced. Say okay and you can see there that it's giving you a decimal place number so you could take those decimal places off, of course and it will give you very close to a zero, break even amount.

That was just a couple of examples, of how using a Goal Seek can help you with your What-If analysis.