FINANCIAL SKILLS

Video Transcription: Using a Financial Calculator – Part 2

Hi, my name is Michael and this video is called 'How to use a financial calculator'. In this video, we will be looking at how to use a financial calculator to solve "time value of money" problems.

We will be using an HP10bII, financial calculator. If you do not have this financial calculator, you will need to find out what your financial calculator calls the buttons that we refer to in this video.

In any time value of money situation, we always need five pieces of information. You will be given four of those pieces of information and then you need to work out what is the fifth piece of information. So what are these five pieces? The first piece is called 'Present value'. This is the amount we originally invested or, in case of a loan, the amount we originally borrowed. On our financial calculator, this is indicated by the PV-button. The second item is called 'Future value'. This is the final amount we have or owe on the last day. On our financial calculator, this is indicated by the FV-button. The third item is called 'Payment'. These are cash flows that occur after the original cash flow, the present value and the before final settlement, the future value. A fixed monthly repayment on your student loan would be a payment. On the financial calculator, the button PMT indicates payment.

The fourth is called 'Periods'. This is the frequency of payments. On our financial calculator, this is indicated by the N-button. Finally, there is the interest rate. This is indicated on our financial calculator by the I/YR-button. For our purposes, it is important to understand that this YR does not mean 'years' but rather periods. We must always match the payment period to the interest rate. So, if we have an annual payment, we would need to use an annual interest rate, but if we have monthly payments, we need to use a monthly interest rate. For example, if you are given an annual interest rate on a loan of 12% but you pay monthly payments, you will need to adjust this. We do this by taking the 12% and dividing it by the number of months and then we get 1% per month.

Your financial calculator can only calculate one of the five components at once. So, you need to identify which of the five components you need to calculate. Also, what is very important is you need to identify whether the number in the financial calculator is a positive number or a negative number.

Let's do an example; you borrowed R100 at 1% interest per month for 12 months. How much do you need to pay each month, over the year, to owe R20 at the end?

Firstly, does the timing of our interest rate, payment and period, match? Well, yes. We are making monthly payments with a monthly interest rate and our periods are all in months. So now we can carry on with our problem.

Let us calculate our answer. The present value is how much you received on day 1 as you received cash, this is positive – on your calculator input 1 – 0 – 0 – PV. Note that we always press the number first and the name button second. The future value is R20 as this is the value on the last day. As you will pay this amount, it is negative. So input the following into your calculator: 2 – 0 – the plus/minus sign and then FV. The interest rate is 1% per period. Press 1 – I/YR. Note, that is the interest rate per period, in almost all instances, this will be a positive number. The number of periods is 12 months. Press 1 – 2 – N on your calculator.

Tel: +27 21 447 7565 | **Fax:** +27 21 447 8344
Website: www.getsmarter.co.za | **Email:** info@getsmarter.co.za
Page 2 of 3

IN PARTNERSHIP WITH getsmarter

This will always be a positive number. Were we given how much we pay per month? No, we need to calculate this. Press the PMT-button.

Did you get negative R7.31? Notice how it is a negative number; this is because we are paying the money back.

Using the calculator is simple. The most important things for students to understand are the five components: Present value, future value and how interest, payments and periods affect the value of money over time. Finally, we always need to find that one component that we need to calculate. So how do we answer a "time value of money" question in a test or exam? When you are answering a question you need to write down all five of the components on your piece of paper. Next to each of the components you must write down the value that you think it is and put a question mark next to the one you need to calculate. To complete the question, write answer R7.31 next to the number that you are trying to calculate.

Now, try some more examples using some of the numbers above. What monthly interest rate is being charged if you pay back R10 per month? Did you get 4,96%? You could have also been asked to calculate how much must be paid so that nothing is owed at the end of the year. Which of the five components will change? So, when will we need to actually use our financial calculator? Well, if we obtain control of an asset now but we will only pay for it in two years' time, then we need to consider the time value of money to determine the amount at which to initially recognise this asset. The fair value of the asset now will have to take into account a fair interest rate to determine its value. Which of the five components would we be trying to determine? Also, you might have to work out the interest or discount rate that discounts all future cash flows back to the original cash flow as that is the interest rate used to calculate finance expenses or revenue in financial reporting.

Finally, you may have to work out the size of an installment to recover the money that you have lent someone, and who will pay back the amount over time at an agreed interest rate.

This concludes part two of our video, where we looked at how to use a financial calculator and time value of money.

Thank you for watching.