

Simple and Compound Interest and Compounding Intervals

FET – Core Maths

What's on the Agenda?

- Simple Interest
- Compound Interest
- Compounding Intervals
- Annuities

Simple Interest

- We can show the difference between simple and compound and explain intuitively how it works.

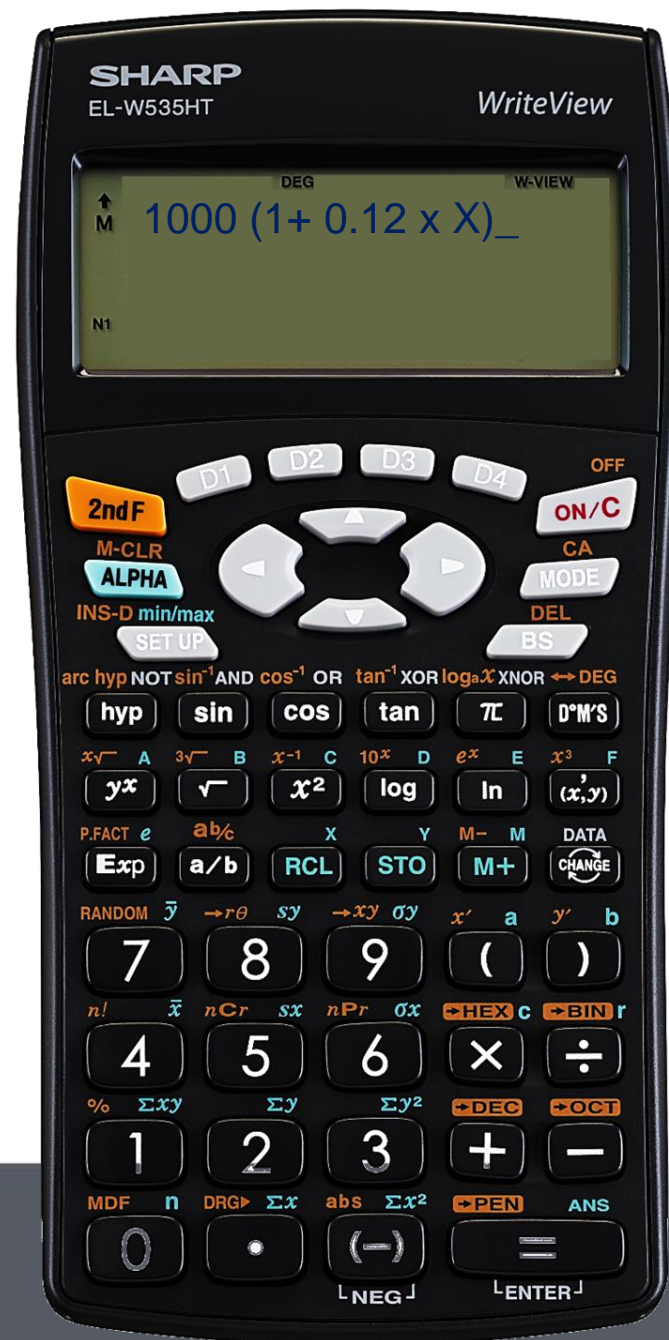
- Press **MODE** 3.

- Type in 1000 **(** 1 **+**

- 0.12 **×**

- **RCL** **RCL** **)**

- **=** 3 times









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Questions we can ask



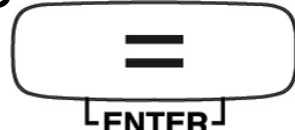
- What is the pattern?
- When does the money double?
- When does it triple.
- What happens if we change the interest rate? Or the principle amount?

Well let's try that

- Press 
- To change the principle amount press the  key 10 times and then press  to delete 1000.
- Now type in 25 000.
- And press  3 times.





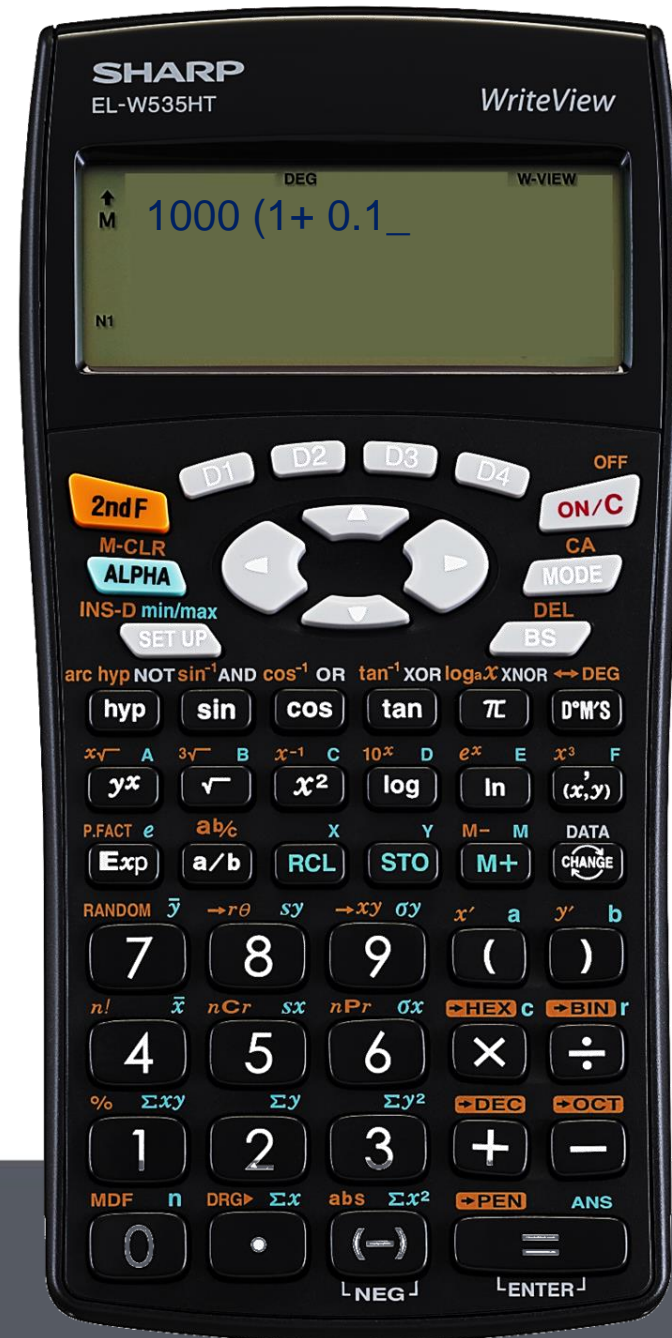
And if the interest rate changes?

- Press 
- Press  3 times and then to delete the 2 and change it to 5 (to make 15%).
- Change 25 000 back to 1000.
- Press  3 times
- What happens now?



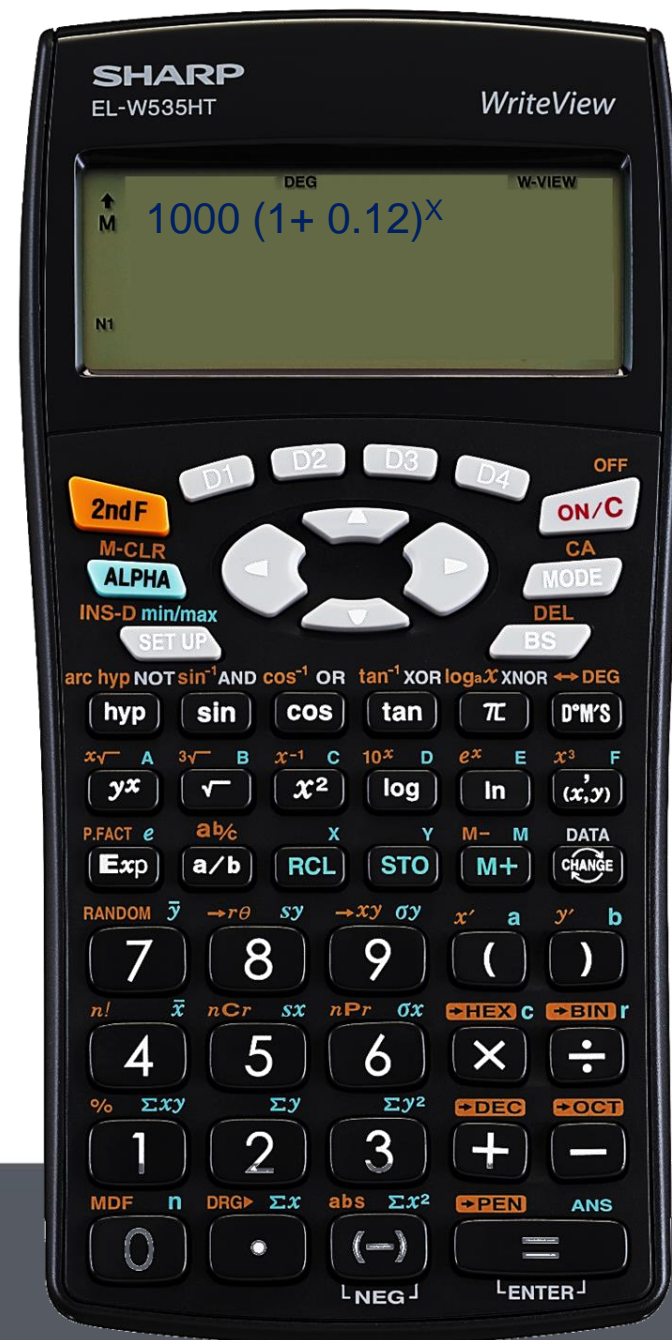
Compound Interest

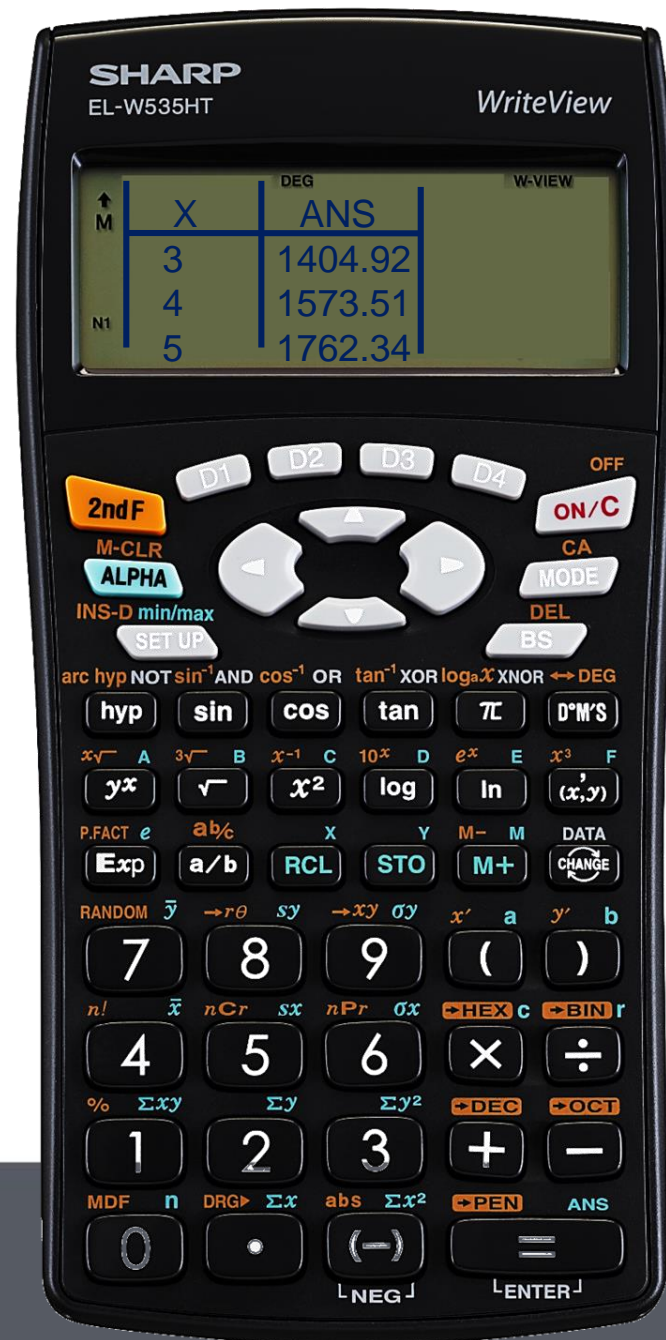
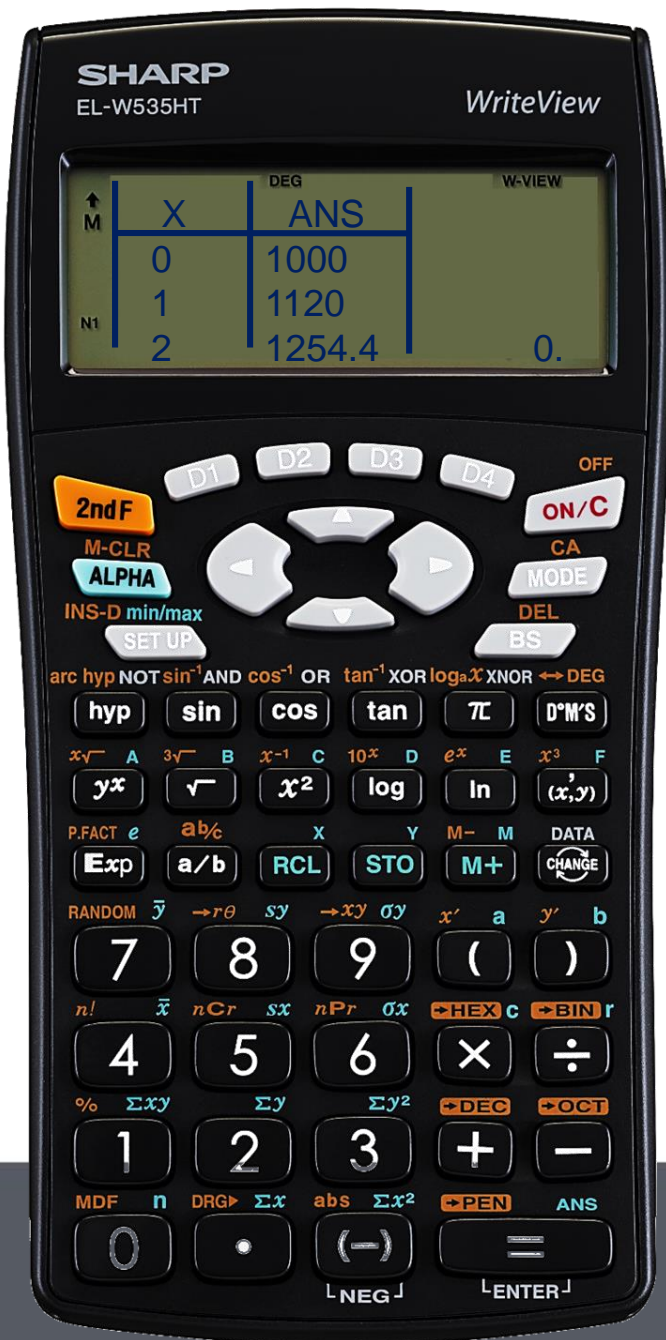
- Press 
- We want to change the simple interest formula into a compound interest formula.
- Press  and delete everything up to the 0.1.



Compound Interest

- Now type in 2)
- y^x
- RCL RCL
- = three times.
ENTER









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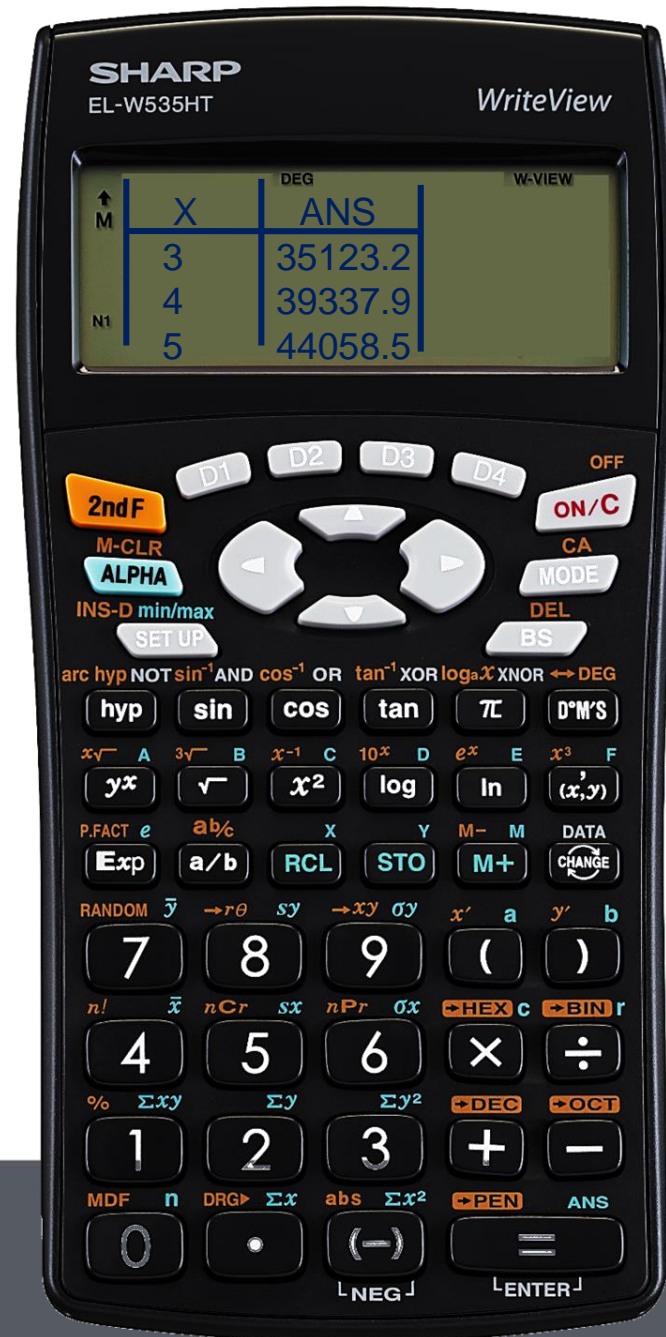
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Questions we can ask

- What is the pattern?
- When does the money double?
- When does it triple.
- What happens if we change the interest rate? Or the principle amount?
Compounding intervals?

Change the principle amount

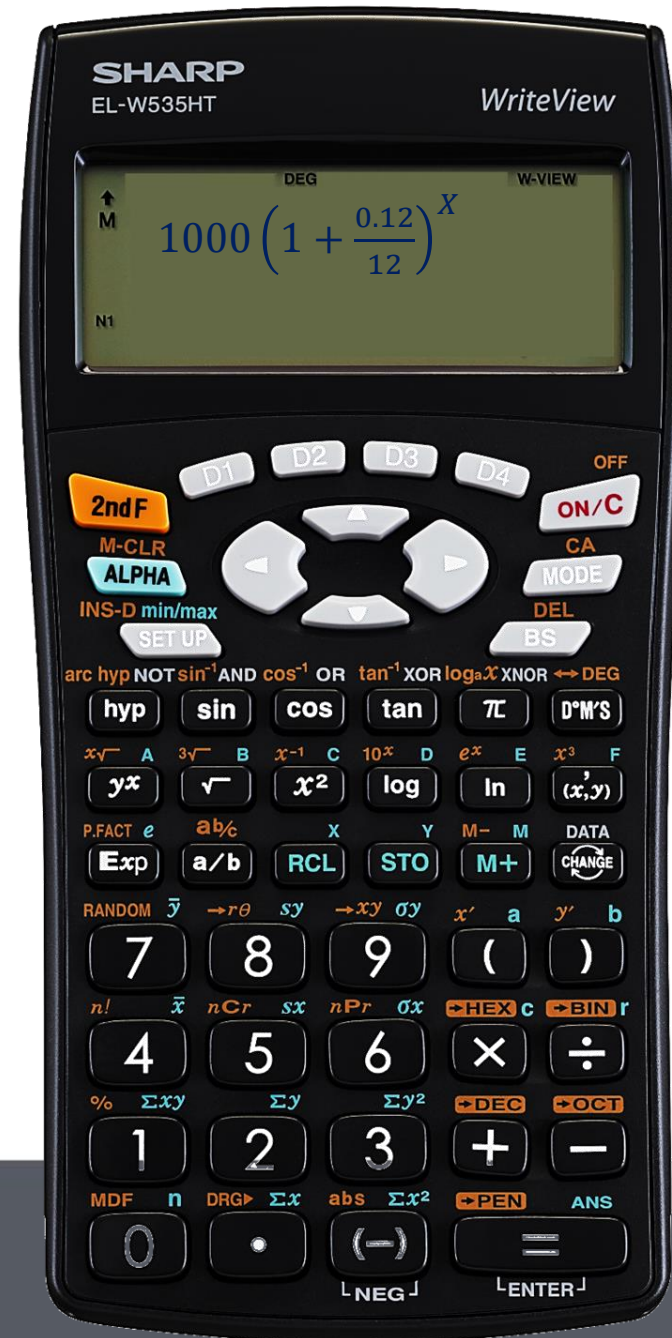
- Press 
- Press the  key until you are behind 1000.
- Press  to delete it and type in 25000 instead.
- Press  3 times.



Compounding Intervals

- What happens if the interest is compounded monthly?

- Press **ON/C** twice
- Type in 1000 **(**
- 1 **+** 0.12
- **a/b** 12 **▶**
- **)** **y^x** **RCL** **RCL**
- **=** **=** **=**



Compounding Intervals

- This gives us the monthly increase in interest for every month.
- What is the value at 12 months?
- After 2 years?



Compounding Intervals

- We can change the steps so that we are only looking at the years.
- Press **ON/C** once and then press **=**
ENTER
- Leave your start at 0 so press **=**
ENTER again.
- Make your step 12 this time and press **=**
ENTER



Annuities

- We can do the same thing for annuities with a little manipulation 😊
- Future value formula:
 - $F = \frac{x[(1+i)^n - 1]}{i}$
- Present value formula:
 - $P = \frac{x[1 - (1+i)^{-n}]}{i}$

How long?

- How long will it take to pay off R100 000 at 10% interest compounded quarterly, if the payments are R3000 per month?

- We need to edit the formula slightly for this:

$$\bullet 100000 - \frac{3000 \left(1 - \left(1 + \frac{0.1}{4} \right)^{-4n} \right)}{\frac{0,10}{4}} = 0$$



How long?

- To type this into the calculator we need to say

- 1 0 0 0 0 0 $\frac{-}{a/b}$
- 3000 (
- 1 $\frac{-}{(}$ 1 $\frac{+}{)}$
- 0.1 $\frac{a/b}{4}$ $\frac{\rightarrow}{)}$
- $\frac{yx}{(-)}$ 4 $\frac{RCL}{RCL}$ $\frac{\rightarrow}{)}$
- $\frac{\rightarrow}{0.1}$ $\frac{a/b}{4}$



Don't forget the competition 😊

- Drill mode (Press **MODE** 2 0)
- Choose 25 questions (press )
- Choose + - x ÷ (press )
- Fastest time this week wins a microwave 😊



Thank you 😊

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And here's me: Tal.Moore@Seartec.co.za

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