$10\,000 is invested in a bank receiving 4% interest at the end of each year.
How long does it take before the investment doubles in value?

After 1 year $A = 10\,000 \times 1.04$

After 2 years $A = (10\,000 \times 1.04) \times 1.04$
$A = 10\,000 \times 1.04^2$

After 3 years $A = 10\,000 \times 1.04^3$

After n years $A = 10\,000 \times 1.04^n$

How long does it take before the investment doubles in value?

$$10\,000 \times 1.04^n = 20\,000$$
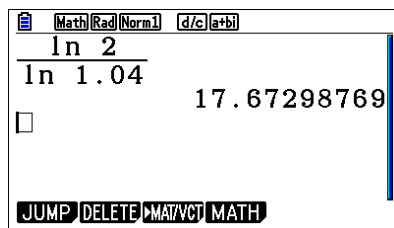
Solve for n

$$1.04^n = \frac{20\,000}{10\,000}$$
$$1.04^n = 2$$

Take logs of both sides

$$\ln(1.04^n) = \ln(2)$$
$$n\ln(1.04) = \ln(2)$$
$$n = \frac{\ln(2)}{\ln(1.04)}$$

$$n = 18$$

We can also use the calculator to solve.
The table function is useful here

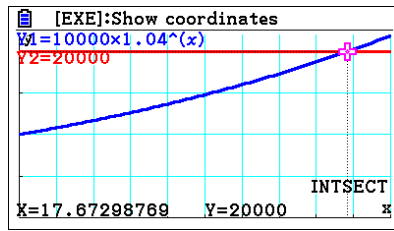$$10\,000 \times 1.04^n = 20\,000$$

$$n = 18$$

You can also solve using the graph mode

$$n = 18$$