

Use a calculator for this activity.

You may have seen this sequence before:

$$u_1 = 1, u_2 = 1, u_3 = 2, u_4 = 3, u_5 = 5, u_6 = 8, u_7 = 13$$

- Find the next three terms.
- Express the rule for the formation of the sequence:
  - (i) in words
  - (ii) in algebra

Now form the sequence  $v_n$  where  $v_n = \frac{u_{n+1}}{u_n}$

$$\text{So } v_1 = \frac{u_2}{u_1} = \frac{1}{1} = 1 \quad v_2 = \frac{u_3}{u_2} = \frac{2}{1} = 2 \quad v_3 = \frac{u_4}{u_3} = \frac{3}{2} = 1.5$$

- Determine the rest of the first twelve terms of the sequence  $v_n$ .
- Describe its behaviour.
- Investigate what happens to  $v_n$  if we change  $u_1$  and  $u_2$ .