

## Year 7 Maths Investigation - Fibonacci Numbers Project

Leonardo Fibonacci was a mathematician who is most famous for describing the following number pattern:

1, 1, 2, 3, 5, 8, 13, 21, .....

### Your task :

#### PRODUCING

1. What's the next number in the Fibonacci sequence ?
2. List the next 20 numbers that are part of the sequence ?

#### INVESTIGATING

3. How is the pattern formed ?

#### SOME CALCULATIONS

4. Write out the first 15 Fibonacci numbers.
  - a) Look at every third number. What sort of number is it ?
  - b) Look at every fourth number. What is it divisible by ?
  - c) Look at every fifth number. What is it divisible by ?
5. Follow these steps :
  - a) Take any three Fibonacci numbers in a row.
  - b) Multiply the first and the third number together.
  - c) Multiply the middle number by itself.
  - d) Find the difference between the answer you got for part b and the answer you got for part c.
  - e) What pattern did you notice ?
6.
  - a) Add up the first five Fibonacci numbers. Compare your answer with the seventh number.
  - b) Add up the first ten Fibonacci numbers. Compare your answer with the twelfth number. Is there a pattern when you compare this with your result to part a ?
  - c) Add up the first fifteen Fibonacci numbers. By looking at your results for parts a and b, work out what the seventeenth number is going to be.
7. It's possible to make different Fibonacci sequences by using different starting numbers. Copy and complete these sequences.

|                                |                                |
|--------------------------------|--------------------------------|
| a) 2, 2, 4, 6, 10, __, __, __, | f) 1, 2, 3, 5, 8, __, __, __,  |
| b) 0, 4, 4, 8, __, __, __,     | g) 10, 1, 11, 12, __, __, __,  |
| c) 0, 0, __, __, __,           | h) 10, 10, 20, 30, __, __, __, |
| d) 6, __, 8, __, 18, __,       | i) 9, __, 9, __, __, __,       |
| e) __, 5, __, 11, __, __,      | j) __, 4, __, 20, __, __,      |