

Maths Investigation - Fibonacci Numbers

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 :

1. What's the next number in the Fibonacci sequence ?
2. List the next 20 numbers that are part of the sequence ?
3. How is the pattern formed ?
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, __, __,
8. Fibonacci sequences are commonly found in nature. Find examples of these.

Complete for Monday 10th December