Extreme Math

Home Study Assignment #1

Check out the course webpage at http://www.larrydavidson.com/saturday/ExtremeMath.

Whenever you have questions, send email to your teacher: ljd@larrydavidson.com.

The ***Fibonacci Numbers*** are the numbers listed in the second row here...and the pattern continues forever, so there are infinitely many Fibonacci Numbers.

***position*:**	1	2	3	4	5	6	7	8	9	...
***number*:**	***1***	***1***	***2***	***3***	***5***	***8***				

The official definition says that the numbers start with a pair of ones. Then you find each new number by adding the last two numbers you wrote down. So, for example, the sixth number is 8 because you add 3 and 5.

1. Complete the chart by filling in the seventh through ninth Fibonacci numbers.

2. Make your own copy of the chart, starting with the first number and continuing until the 20^{th} number.

3. Study the pattern of even and odd Fibonacci numbers by writing **E** or **O** below each Fibonacci number (so you have **O O E O**...). Then do the following:

    a. Describe the pattern in words.

b. Without finding the 100^{th} Fibonacci number, decide whether it will be even or odd, and explain how you got your answer.

c. Do the same for the 101^{st} and 102^{nd} Fibonacci numbers.

4. Figure out which Fibonacci numbers are multiples of 3. Then do the following:

   a. Describe the pattern in words.

   b. Without finding the 100^{th} number, decide whether it will be a multiple of 3, and explain how you got your answer.

   c. Do the same for the 101^{st} and 102^{nd} numbers.

5. Look back at your answers to questions 3 and 4. Make a prediction for the likely pattern of which Fibonacci numbers will be multiples of 4.