

Name: \_\_\_\_\_

## Fibonacci Sequence and Divisibility

The Fibonacci sequence is a sequence where each number is the sum of the two numbers before it. (This is called a recursive sequence.)

1, 1,  $\overset{1+1}{2}$ ,  $\overset{1+2}{3}$ ,  $\overset{2+3}{5}$ ,  $\overset{3+5}{8}$ ,  $\overset{5+8}{13}$ , \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

1. Find the next six numbers in the sequence. Feel free to continue adding to the sequence.
2. The sum of any ten consecutive Fibonacci numbers is always divisible by 11. Give one example of this. (If you are working in a group, have every person start at a different place in the sequence.)
3. Circle all the even numbers. What pattern did you find?
4. Underline every fourth number. What pattern did you find?
5. Use what you found out in questions 3 and 4 to help fill out this pattern.

Every \_\_\_\_\_ Fibonacci number is divisible by 2.

Every 4<sup>th</sup> Fibonacci number is divisible by \_\_\_\_\_.

Every \_\_\_\_\_ Fibonacci number is divisible by \_\_\_\_\_.

Every 6<sup>th</sup> Fibonacci number is divisible by 8.

Every 7<sup>th</sup> Fibonacci number is divisible by 13.

Every 8<sup>th</sup> Fibonacci number is divisible by 21.

Every 9<sup>th</sup> Fibonacci number is divisible by \_\_\_\_\_.

6. Give two examples of “Every 6<sup>th</sup> Fibonacci number is divisible by 8.”
7. There is only one perfect square, except 1, in the Fibonacci sequence. What is it?  
What term in the sequence is it?  
What is interesting about those two numbers?
8. There is only one perfect cube, except 1, in the Fibonacci sequence. What is it?

