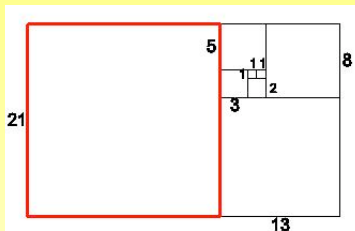


Fibonacci Numbers



The Fibonacci Sequence:

$\{1, 1, 2, 3, 5, 8, 13, 21, 34, 55, \dots\}$

1. Begin with two 1's: $\{1, 1, \dots\}$
2. Create the next term by adding the previous two
3. Return to Step 2

Notation:

F_N = the N th term in the Fibonacci Sequence.

Example: $F_6 = 8$

F_{N+1} = the term after the N th term in the Fibonacci Sequence

$F_N + 1$ = the N th term in the Fibonacci Sequence, plus 1.

Formula for the N th Fibonacci Number:

$$F_N = F_{N-1} + F_{N-2}$$



In Class Work

1. Given that $F_{19} = 4181$ and $F_{20} = 6765$, find

(a) F_{21}

$$F_{21} = F_{20} + F_{19} = 6765 + 4181 = 10946$$

(b) F_{18}

$$F_{20} = F_{19} + F_{18} \Rightarrow F_{18} = F_{20} - F_{19} = 6765 - 4181 = 2584$$

2. Given that $F_{31} = 1346269$ and $F_{33} = 3524578$, find

(a) F_{32}

$$F_{33} = F_{32} + F_{31} \Rightarrow F_{32} = F_{33} - F_{31} = 3524578 - 1346269 = 2178309$$

(b) F_{34}

$$F_{34} = F_{33} + F_{32} = F_{33} + (F_{33} - F_{31}) = 3524578 + 2178309 = 5702887$$