

Series of type sizes based on a Fibonacci sequence:

The basic sequence  
(beginning at 1):  
5 pt., 8 pt., 13 pt., 21 pt., 34 pt.,  
and 55 pt.

Aa Aa Aa Aa Aa

The sequence doubled:  
6 pt., 10 pt., 16 pt., 26 pt., 42 pt.,  
and 68 pt.

Aa Aa Aa Aa Aa Aa

The first and second sequences  
interlaced:  
6 pt., 8 pt., 10 pt., 13 pt., 16 pt.,  
21 pt., 26 pt., 34 pt., and 42 pt.

Aa Aa Aa Aa Aa Aa Aa Aa

Compare with a straightforward  
arithmetic sequence (+5):  
5 pt., 10 pt., 15 pt., 20 pt., 25 pt.,  
30 pt., 35 pt., and 40 pt.

Aa Aa Aa Aa Aa Aa Aa

Or, a geometric sequence (x2):  
4 pt., 8 pt., 16 pt., 32 pt., and 64 pt.

Aa Aa Aa Aa

108

**Fibonacci sequence**

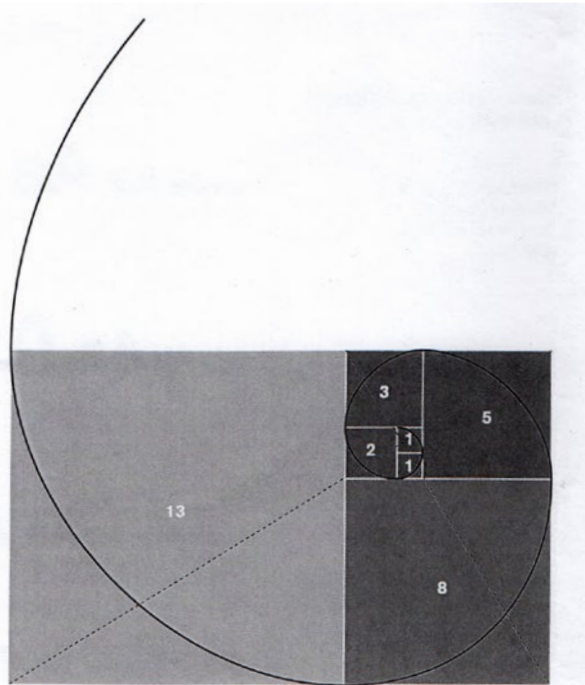
Another useful model when considering proportions is the Fibonacci sequence. Named for Italian mathematician Leonardo Fibonacci (c.1170–1240), a Fibonacci sequence describes a sequence in which each number is the sum of the two preceding numbers:

- 0
- 1
- 1 [1+0]
- 2 [1+1]
- 3 [1+2]
- 5 [2+3]
- 8 [3+5]
- 13 [5+8]
- 21 [8+13]
- 34 [13+21]
- ...

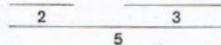
As the numbers in a Fibonacci sequence increase, the proportion between any two numbers very closely approximates the proportion in a golden section (1:1.618). For example, 21:34 approximately equals 1:1.618. Nature is full of examples of the Fibonacci sequence and the golden section, from the intervals of branches on a tree to the shell of a chambered nautilus.

Fibonacci's sequence always began with 1 but the proportion between any two numbers remains constant when the sequence is multiplied:

|     |     |     |
|-----|-----|-----|
| 0   | 0   | 0   |
| 2   | 3   | 4   |
| 2   | 3   | 4   |
| 4   | 6   | 8   |
| 6   | 9   | 12  |
| 10  | 15  | 20  |
| 16  | 24  | 32  |
| 26  | 39  | 52  |
| 42  | 63  | 84  |
| 68  | 102 | 136 |
| ... | ... | ... |



Above, a spiral describing a Fibonacci series (and the growth of a chambered nautilus). The red rectangle on the upper right approximates a golden section. As each square in the sequence is added, the orientation of the golden section changes from vertical to horizontal.



Left, one of the many examples of a Fibonacci sequence is the musical octave as seen on a piano—eight white keys and five black keys (separated into a group of two and a group of three).