

Fibonacci Sequence Reading Comprehension

Name _____

Named for an Italian mathematician, the Fibonacci Sequence is a set of numbers that follow a very specific mathematic rule: the next number in the sequence is the sum of the two numbers before it. For example, if the first two numbers in the sequence are 1 and 1, the next number would be $1+1$, or 2. Subsequently, the next number would be $1+2$, or 3, and so on. The sequence goes for infinity as numbers are added one at a time: 1, 1, 2, 3, 5, 8, 13, 21, 34...

What makes the sequence so interesting is that its main applications are not found with a pencil and paper; rather, multiple real-life examples of the Fibonacci sequence can be observed in nature. The number of petals on a flower tend to follow the Fibonacci sequence, as do the proportions of the human body. Spiral shapes also fall neatly into this pattern: the number of spirals found in pine cones, pineapples, and the insides of sunflowers usually follow the Fibonacci sequence. Further, many spirals in nature tend to start off very tightly coiled and then gradually move more and more outward as they go on – these spirals are called Fibonacci spirals because they become larger in relation to the Fibonacci sequence.

One of the most interesting applications of the Fibonacci sequence is present in architecture—the golden rectangle. The golden rectangle is said to be the most aesthetically pleasing rectangle because of the ratio of its length to width – about 1.61. A golden rectangle is created by adding squares to an existing rectangle in the order of the Fibonacci sequence. For example, we would start with a 1×1 square and add another 1×1 square to that, as per the first two numbers of the sequence. The next number in the sequence is 2, so we would add a 2×2 square to the existing rectangle. We would then add a 3×3 square, and then a 5×5 square, and so on. No matter how many new squares we added to the rectangle, the ratio of length to width would remain the same, creating a rectangle that mirrors the unique Fibonacci patterns in nature.

1. Which of the following best explains the Fibonacci Sequence?

- The previous number is the sum of the two numbers after it
- The next number is the sum of the two numbers after it
- The next number is the sum of the two numbers before it
- The previous number is the sum of two numbers near it

- 2. What pattern does not fit the Fibonacci sequence?**
- a. 13, 21, 34, 55, 89...
 - b. 21, 34, 55, 89, 146...
 - c. 1, 1, 2, 3, 5, 8, 13....
 - d. All of the above follow the Fibonacci sequence
- 3. Which of the following questions lacks elaboration in the second paragraph?**
- a. What are Fibonacci spirals?
 - b. What are examples in nature of the Fibonacci sequence?
 - c. How do the proportions of the human body follow the Fibonacci sequence?
 - d. What is interesting about the Fibonacci sequence?
- 4. What word or words in the first paragraph could be replaced by the word "then?"**
- a. sequence
 - b. For example
 - c. next
 - d. subsequently
- 5. What is true about the golden rectangle?**
- a. The width of the golden rectangle will change according to the number of squares added to it
 - b. Its ratio of length to width does not change regardless of its size
 - c. The height of the golden rectangle will change according to the number of squares added to it
 - d. The ratio of width to height in a golden rectangle is 1.61
- 6. In what paragraph is biographical information about Fibonacci given?**
- a. Introductory paragraph
 - b. Middle paragraph
 - c. Last paragraph
 - d. None of the paragraphs give biographical information about Fibonacci
- 7. Which of the following do you think is closest to a golden rectangle?**

