Fibonacci   **5-27-08**

1. Determine the first 20 terms in the Fibonacci sequence.

2. Find the ratios determined by $\dfrac{a_n}{a_{n-1}}$ of terms $2 \le n \le 20$.

$\dfrac{a_2}{a_1} =$ $\dfrac{a_3}{a_2} =$ $\dfrac{a}{a} =$ $\dfrac{a}{a} =$

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3. Build your own Fibonacci like sequence by starting with any two values and determine the first 20 terms.

4. For your sequence find the ratios determined by $\dfrac{a_n}{a_{n-1}}$ of terms $2 \le n \le 20$.

$\dfrac{a_2}{a_1} =$ $\dfrac{a_6}{a_5} =$ $\dfrac{a_{10}}{a_9} =$ $\dfrac{a_{13}}{a_{12}} =$

$\dfrac{a_{16}}{a_{15}} =$ $\dfrac{a_{18}}{a_{17}} =$ $\dfrac{a_{19}}{a_{18}} =$ $\dfrac{a_{20}}{a_{19}} =$

5. Given a length divided into two parts as shown, determine the value of b when a=1.

6. Determine your height and the distance from the floor to your belly button. Then find the ratio of your height to your lower and the ratio of your lower half to your upper half.

7. Also measure the length of your arm. Then determine the length of your upper arm(to the elbow) and lower arm. From this also find the ratios for long to short.

8. Verify the first 10 terms of the explicit form of the Fibonacci sequence.

$$a_n = \frac{1}{\sqrt{5}}\left(\frac{1+\sqrt{5}}{2}\right)^n - \frac{1}{\sqrt{5}}\left(\frac{1-\sqrt{5}}{2}\right)^n$$