

# COUNTDOWN Challenge

## Night 6: Fibonacci Number Patterns

Leonardo Pisano Fibonacci was a mathematician who lived from 1170 to 1250. For a while, he worked extensively with a special sequence of numbers that became known as the Fibonacci sequence. Continue the pattern below to find more Fibonacci numbers.

1   1   2   3   5   8   \_   \_   \_   \_   \_

1+1   1+2   2+3   3+5   5+8

Now let's see some other patterns that we can get using the Fibonacci

**This many Fibonacci #'s ...means this sequence ...which equals what?**

*Hint: Another way to find the sum, add the last number of two consecutive lines and subtract 1*

2	1 + 1	2
3	1 + 1 + 2	4
4	1 + 1 + 2 + 3	7
5	1 + 1 + 2 + 3 + 5	12
6		
7		
8		
9		
10		

**Square and add the Fibonacci numbers...**

**...to get this sum**

$1^2 + 1^2$	= 2	= $1 \times 2$
$1^2 + 1^2 + 2^2$	= 6	= $2 \times 3$
$1^2 + 1^2 + 2^2 + 3^2$	= 15	= $\_ \times \_$
$1^2 + 1^2 + 2^2 + 3^2 + 5^2$	= $\_$	= $\_ \times \_$
$1^2 + 1^2 + 2^2 + 3^2 + 5^2 + 8^2$	= $\_$	= $\_ \times \_$
$1^2 + 1^2 + 2^2 + 3^2 + 5^2 + 8^2 + 13^2$	= $\_$	= $\_ \times \_$
$1^2 + 1^2 + 2^2 + 3^2 + 5^2 + 8^2 + 13^2 + 21^2$	= $\_$	= $\_ \times \_$
$1^2 + 1^2 + 2^2 + 3^2 + 5^2 + 8^2 + 13^2 + 21^2 + 34^2$	= $\_$	= $\_ \times \_$
$1^2 + 1^2 + 2^2 + 3^2 + 5^2 + 8^2 + 13^2 + 21^2 + 34^2 + 55^2$	= $\_$	= $\_ \times \_$