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Analysis H  
Chapter 1 Quiz 1  
**CALCULATORS OK**

1. Simplify each expression. Write your answer as an exponent or as a binomial coefficient (not the actual number).

a.  $\binom{67}{0} + \binom{67}{1} + \binom{67}{2} + \binom{67}{3} + \cdots + \binom{67}{67} =$

b.  $\binom{824}{0} + \binom{824}{2} + \binom{824}{4} + \binom{824}{6} + \cdots + \binom{824}{824} =$

c.  $\binom{4}{4} + \binom{5}{4} + \binom{6}{4} + \binom{7}{4} + \cdots + \binom{379}{4} =$

2. Write an explanatory proof about EITHER (a) or (c) from #1, for **why** the pattern works in general. Your proof must include words along with mathematical symbols. You may choose to include drawings as well.

Proof for part (circle one): a      c

**\*\*For this page, you must show work in order to receive credit!**

**Don't just give an answer – show me how you arrived at the answer, along with any computations (even though you can use your calculator).**

3. For the pattern of numbers below, where the top row is row 1 and the bottom row shown is row 5...

		2		
	4		6	
	8	10	12	
14	16	18	20	
22	24	26	28	30

a) What is the middle term of row 53?

b) What is the first term of row 912?

4. For the Fibonacci numbers  $F_1, F_2, F_3, \dots$

a) Express  $F_9$  in terms of  $F_4$  and  $F_5$ .

b) Find  $t$ , given that  $F_t = 5F_{317} + 3F_{316}$