
For each of the following problems circle T if the given statement is always true and F if the statement is sometimes false. There is no partial credit on this part of the quiz.

1. T F A set with n elements has 2^n proper subsets.
This is false. There are 2^n total subsets, but only $2^n - 1$ of them are proper.
2. T F If you toss seven fair coins, there are 120 ways to obtain at least 2 heads.
This is true. There are 2^7 total ways to toss these coins, and we subtract 1 (for the way to have no heads) and 7 (for the ways to have one head), getting $128 - 1 - 7 = 120$.
Complete the following problems. Show all work and explain your reasoning.
3. Write out the first 7 rows of Pascal's triangle.

				1														
				1		1												
				1		2		1										
				1		3		3		1								
				1		4		6		4		1						
				1		5		10		10		5		1				
				1		6		15		20		15		6		1		
				1		7		21		35		35		21		7		1

4. How many different ways could three distinct days of the week be chosen so that at least one of them begins with the letter S? (Assume that the order of selection is not important).
There are 7C_3 ways to do this. We will subtract off the number of ways to not choose any days starting with the letter S: there are 5C_3 ways to do this. Therefore, there are

$${}^7C_3 - {}^5C_3 = 25$$

ways to do this.