Lines and Squares: the Connection

Problem 1. We have discovered that the number of intersections in the *Lines* problem follows a progression.

For two lines on top	, w	ith a	an in	icrea	asing	nun	nber	of	poir	nts on the botto	m:
points on bottom	1	2	3	4	5	6	7	8	9	10	
	0	1	3	6	10	15					
For three lines on to	р, ч	with	an	incr	easin	ıg nu	ımbe	er c	f pc	ints on the bott	tom:
points on bottom	1	2	3	4	5	6	7	8	9	10	
	0	3	9	18	30						
For four lines on top, with an increasing number of points on the bottom:											
points on bottom	1	2	3	4	5	6	7	8	9	10	
	0	6	18	36	;						
Ean free lines on ton		th a					- h - m	_ f		ta on the botto	
For five lines on top	, w	tn a	an m	crea	ising	nun	iber	OI	pon	its on the botto	m:
points on bottom	1	2	3	4	5	6	7	8	9	10	
	0	10	- 30)							

Try to fill in the rest of the table by figuring out the pattern. What would you guess the number of intersections for 6 points on top and 6 points on the bottom? What does the pattern have to do with the problem?

Problem 2. We have discovered that the number of intersections in the *Lines* problem is always the same as the number of rectangles in the *Squares* problem? Hint: In the *Lines* problem, what determines (identifies) a particular intersection and, by the same token, in the *Squares* problem, what determines (identifies) a particular rectangle?