Ideas about patterns from PITB Day 2

- If you divide n by 4 and look at the remainder

  if remainder = 1

  = 2 ?

  = 3 then n can't be written as x^2+y^2

  = 4

- If you divide n by 12 & get a remainder of 1, it seems to work
- Factoring the numbers that work...

$y1 = x^2 + 1$
$x^2 + 4$
$x^2 + 9$
$x^2 + 16$

2nd Table

$1^2 + 1^2$
$1^2 + 2^2$ → 3 more → $2^2 + 2^2$
$2^2 + 3^2$ → 5 more → $3^2 + 3^2$
⋮

$y1 = \sqrt{\# - x^2}$ Make a table and look for integers

Bowen's Question:

How many different distances can you make on a n×n board?

Size of board	# diff lengths on sq board		# diff lengths on 1so board
1×1	1	0 counts as a distance for us	1 ?
2×2	3		3 ?
3×3	6	1, 2, 2√2, √5, √2, 0	6 ?
4×4	10		10 ?
5×5	15	but 6×6 is 20, not 21	15 ?