I'm thinking of a number. I add 2 to that number. I square the result. I subtract 1 from that number. That's my magic output

Which number has the magic output of 168?

On Monday, Angela ate 3 grapes. On Tuesday, she felt a little hungrier and ate 2 more grapes than she had eaten the day before. Each day that week, Angela at 2 more grapes than she had eaten the day before.

On which day did Angela finish eating her entire bag of 168 grapes?

A certain mold was in a petri dish. It covered a 3x1 rectangle on the dish. Each day, it grew so that its length and width increased by 1.

On what day will the area of the petri dish covered by the mold be 168 units?

Input	Process	Output
0	3	3
1	3 + (3 + 2)	8
2	3 + (3 + 2) + (3 + 2 + 2)	15
3		
4		
…		
10	3 + 10 * 3 + (1+2+…+10) * 2	
…		
n		

Input	Process	Output
0	1x3	3
1	(1+1)(3+1)	8
2	(1+2)(3+2)	15
3		
4		
…		
10	(1+10)(3+10)	143
…		
n		

Input	Process	Output
0	0 -> 2 -> 4 -> 3	3
1	1 -> 3 -> 9 -> 8	8
2	2 -> 4 -> 16 -> 15	15
3		
4		
…		
10	10 -> 12 -> 144 -> 143	143
…		
n		

Stg 0   Stg 1   Stg 2   Stg 3   Stg 4

Stg 0 Stg 1 Stg 2   Stg 3   Stg 4

Stg 0   Stg 1   Stg 2   Stg 3   Stg 4

Stg 0   Stg 1   Stg 2   Stg 3

+1   +1   +2   +2   +3   +3

Stg 0   Stg 1   Stg 2   Stg 3   Stg 4

Stg 0   Stg 1   Stg 2   Stg 3   Stg 4

Stg 0 Stg 1 Stg 2 Stg 3 Stg 4