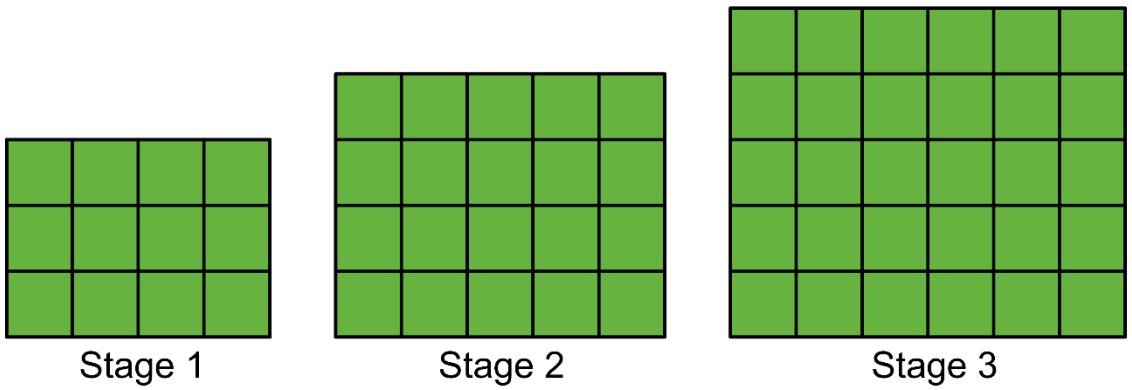
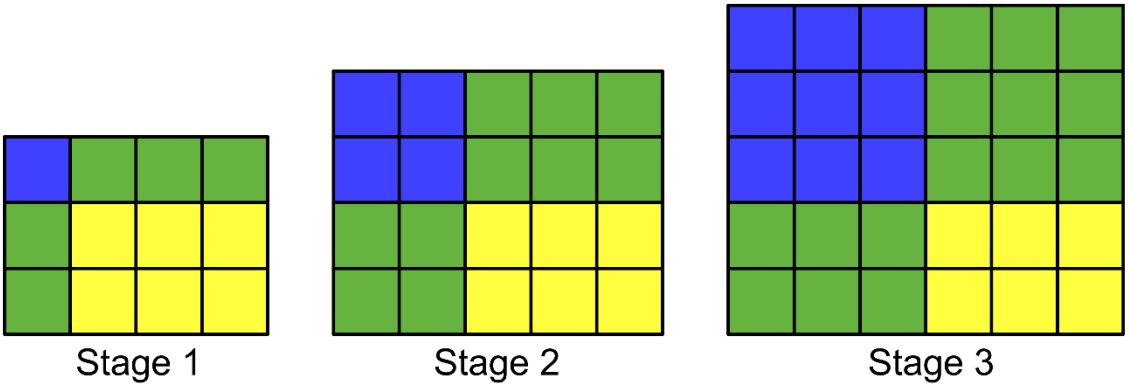


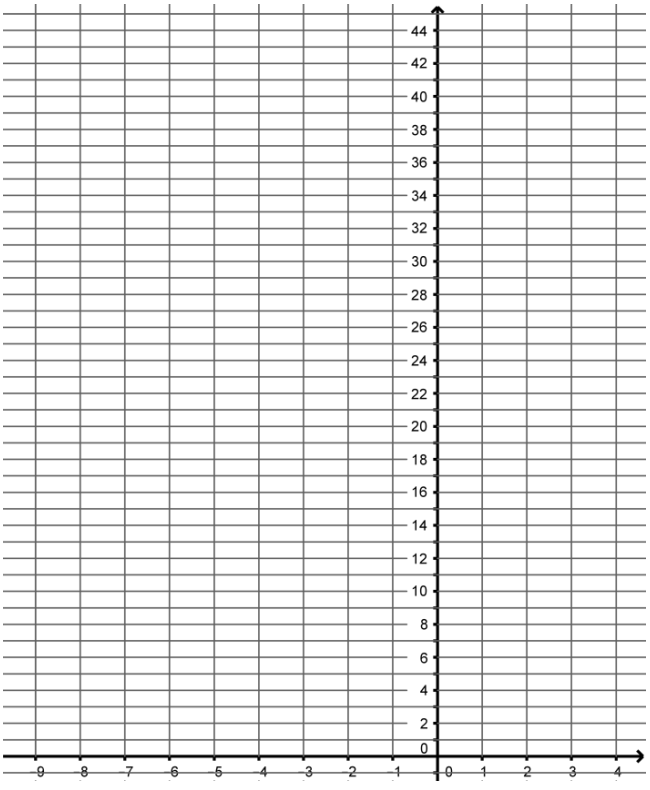


1. Describe the relationship between the stage number and the number of squares in the patterns above.

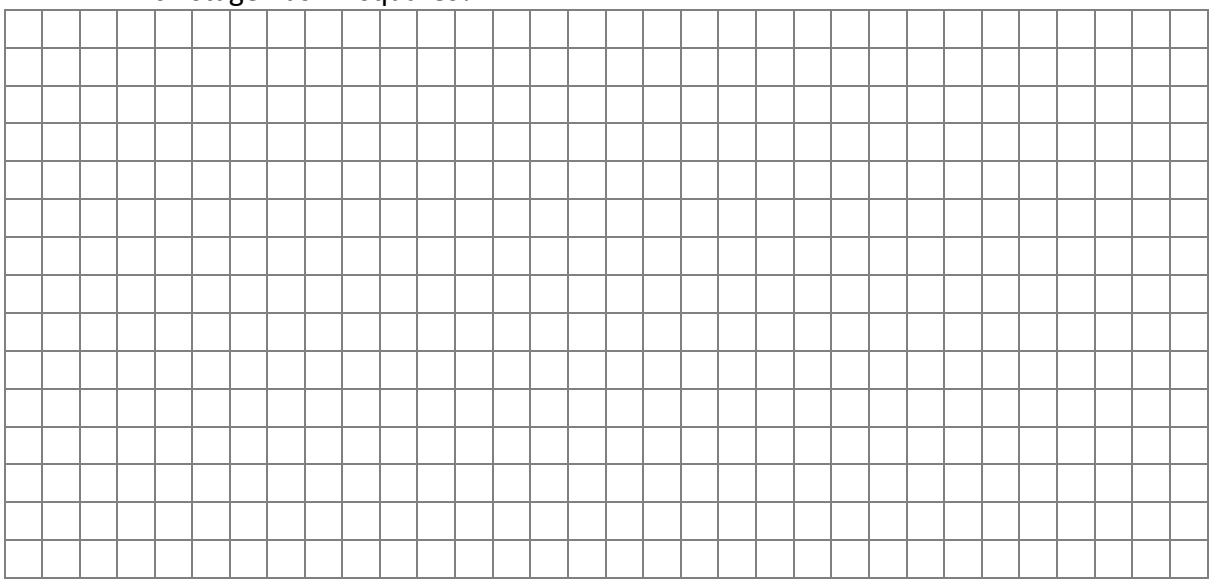
2. Fill in the second and third columns for stage numbers 1, 2, 3 and 4 in the table below. (You will fill in other parts of the table at later time.)

Stage Number x	$(x+2)(x+3)$	**Number of Squares**	**Rate of Change of the Outputs**	**Change of the Change of the Outputs**
1				
2				
3				
4				

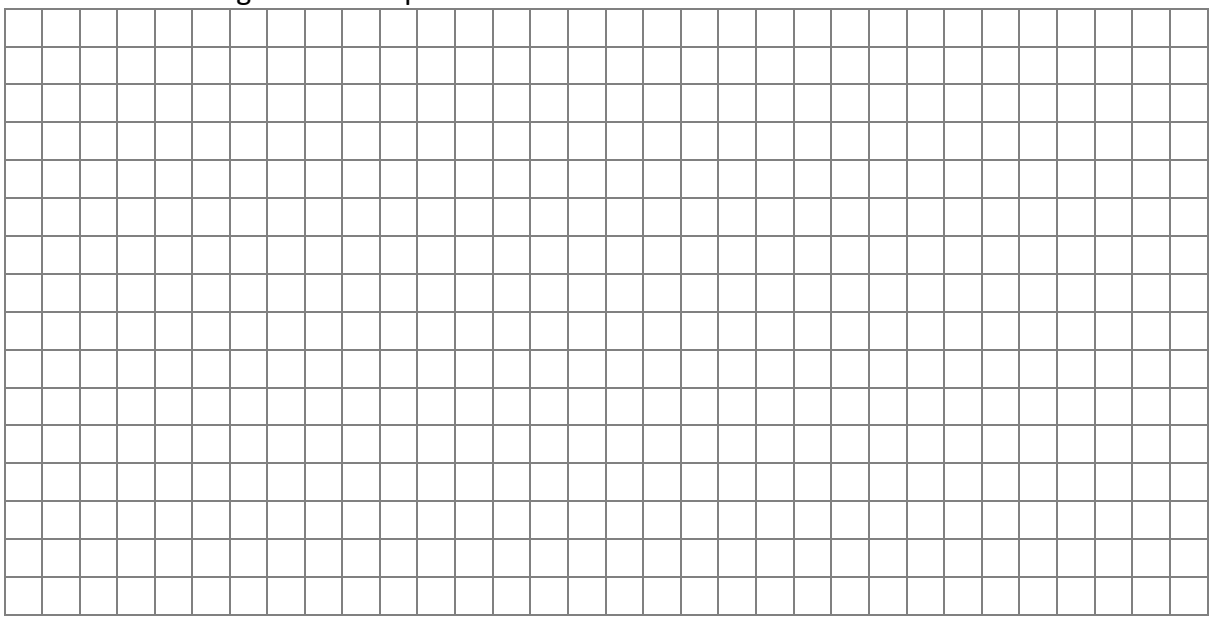
3. Plot the points which have inputs $x = 1$, $x = 2$, $x = 3$, and $x = 4$ on the co-ordinate grid below.



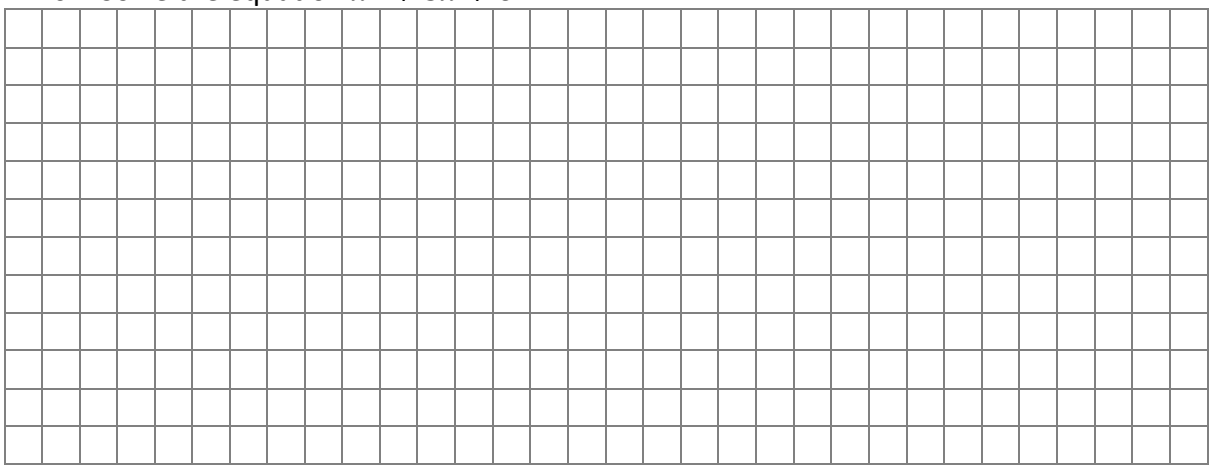
4. Which stage has 42 squares?



5. Which stage has 156 squares?



6. Solve the equation $x^2 + 5x + 6 = 42$.



7. Fill in the second and third columns in the table below, where $f(x) = (x + 2)(x + 3)$.

x	$(x + 2)(x + 3)$	$f(x)$	Rate of Change of the Outputs	Change of the Change of the Outputs
–9				
–8				
–7				
–6				
–5				
–4				
–3				
–2				
–1				
0				
1				
2				
3				
4				

8. Draw the graph of $f(x)$ on the co-ordinate grid below for $-9 \leq x \leq 4$.