

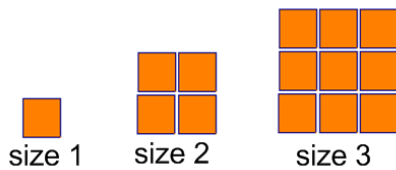
For each of these patterns, problems: sketch what the next pattern should look like, find an algebraic expression for the pattern, explain geometrically and deductively (in words) why your algebraic expression represents the visual pattern, and answer the follow up problem for each pattern

1. Find the **perimeter** for this pattern block train pattern:



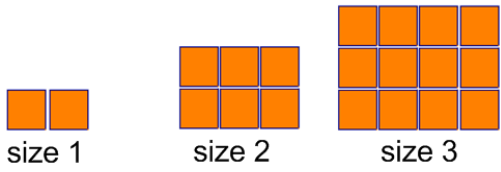
? If a train uses 18 rhombi, how many triangles does it use? Explain how you know.

2. Find the **perimeter** for this square pattern:



? Is there a square with perimeter exactly 50? If so, what size is it? If not, what is the first square pattern whose perimeter is **at least 50**? (Show how you know)

3. Find **how many blocks** it takes to build each rectangular window-pattern



**?** If you have (only) 150 blocks, what is the biggest rectangular window-pattern you could make?  
(Show how you know)