# Max’s Mathematical Square Hunt

*Learning objective: To identify, represent, and calculate square numbers up to 12 x 12, and investigate their geometric properties.*

Max the monkey has been busy creating patterns with his building blocks. Use this template to explore the concept of square numbers. You will need to calculate the values, explain the mathematical reasoning, and create your own geometric representations. Remember: a square number is the product of an integer multiplied by itself.

*Word bank: Product · Integer · Array · Dimension · Geometric · Sequence · Calculation · Factor*

**1. The Definition of a Square: In your own words, explain what a square number is. Why do we call them 'square' numbers? Refer to the shape of an array in your answer. (3 marks)**

**2. Calculation Challenge: Choose three square numbers between 1 and 144. Write the multiplication calculation for each and justify why they fit the definition of a square. (3 marks)**

**3. Comparing Patterns: Compare and contrast the sequence of square numbers with the sequence of even numbers. What do you notice about the gaps between consecutive square numbers? (4 marks)**

**4. The Missing Link: If 81 is a square number, explain how you would find the next square number in the sequence without simply multiplying 10 by 10. Justify your method. (3 marks)**

**5. Problem Solving: Max has 50 square tiles. What is the largest square shape he can build? How many tiles will he have left over? Explain your working out. (3 marks)**

**6. Hypothesis: What might happen to the total number of tiles if you increased the side length of a square by 1? Explain the relationship using the term 'product'. (4 marks)**

*Extension challenge: Design a 'Square Number Poster' for your classroom. Your poster must include a visual representation of 3 squared (3x3) and 4 squared (4x4) using an array of dots. Below the visuals, write a creative poem about square numbers for Leo the Lion, ensuring you include at least three key mathematical terms from the word bank.*