Max’s Mathematical Cube Challenge

Learning objective: To identify, calculate, and solve problems involving cube numbers up to 12^3.

Max the monkey is organising his collection of wooden blocks. Help him solve these puzzles by using your knowledge of cube numbers. Remember, a cube number is a number multiplied by itself three times (e.g., $2^3 = 2 \times 2 \times 2 = 8$).

Max has blocks that he arranges into perfect cubes. He wants to know the total number of blocks in his structures to keep his library tidy. Use your math skills to help Max build his collection.

Word bank: cube number · product · calculate · factor · dimension · index

1. Max has a cube structure with a side length of 4. Calculate the total number of blocks in his cube (4^3). Show your working. (2 marks)

2. Identify which of these numbers are cube numbers: 8, 16, 27, 64, 100. (2 marks)

3. If Max buys a set of wooden blocks that costs £5 per block, how much would it cost him to build a cube with a side length of 3? (3 marks)

4. Max says, 'I have a cube made of 125 blocks.' What is the length of one side of this cube? (2 marks)

5. Calculate the sum of 2^3 and 5^3. (2 marks)

Draw: Draw a 3x3x3 cube made of smaller individual blocks. Label the height, width, and depth to show why it is called a cube number.

Extension challenge: Max has 500 blocks. What is the largest cube he can build, and how many blocks will he have left over?