Max’s Cube Number Challenge

Learning objective: To recognise and use cube numbers and the notation for cubed (³), and to calculate cubes of whole numbers.

Max the monkey is organising his collection of wooden blocks. He loves building perfect cubes! Use your knowledge of multiplication to help him solve these maths puzzles.

Word bank: cube · multiplied · product · notation · volume · calculate

1. Max has a cube made of smaller blocks. It is 3 blocks wide, 3 blocks high, and 3 blocks deep. Write the calculation as a cube number (using notation) and find the total number of blocks. (2 marks)

2. Calculate the value of the following: a) 2^3 = _____ b) 5^3 = _____ c) 10^3 = _____ (3 marks)

3. Max buys a special set of building blocks that cost £4 for every 1 cubic unit of volume. If he builds a cube that is 4 units by 4 units by 4 units, how much did the blocks for that cube cost in total? (3 marks)

4. True or False? Explain your reasoning: 'A cube number is always larger than its square number counterpart (e.g., 4^3 is larger than 4^2).' (2 marks)

5. Find the missing number: If a cube has a volume of 216 cubic units, what is the length of one side of the cube? (2 marks)

Draw: Draw a 3D sketch of a 2x2x2 cube. Label the height, width, and depth to show why we call it '2 cubed'.

Extension challenge: Max wants to build a giant cube using exactly 1,000 blocks. If he builds it, how many blocks long, wide, and high will his giant cube be? Show your working out.