

Max's Cube Number Challenge

Learning objective: To identify, calculate, and explore cube numbers up to 10 cubed.

Max the monkey is obsessed with 3D shapes! He wants to know if you can help him calculate the volume of his wooden building blocks. Use this fact-file to define cube numbers, show your workings for calculations, and spot the patterns in the sequence. Remember, a cube number is a whole number multiplied by itself three times ($n \times n \times n$).

Word bank: cube number · multiplied · product · volume · base · sequence · dimension

1. Defining Cubes: In your own words, explain what a cube number is. Why do we call it a 'cube' number? (2 marks)

2. The First Three: Max has three small blocks. Calculate the value of 1 cubed, 2 cubed, and 3 cubed. Show your multiplication steps. (3 marks)

3. Max's Missing Blocks: If Max has a cube with a side length of 4cm, what is the total volume? Remember to write your answer in cm^3 . (2 marks)

4. Spot the Pattern: Look at the sequence of cube numbers (1, 8, 27, 64...). Can you predict the next two numbers in the sequence? (2 marks)

5. Challenge Calculation: Max wants to build a large display cube with a side length of 10cm. How many small 1cm^3 blocks will he need in total? (2 marks)

Extension challenge: Max has £50 to spend on building blocks. If each 1cm^3 block costs 5p, how many full cubes with a side length of 3cm could he afford to build? Show your maths!