Max’s Magnificent Cube Number Challenge

Learning objective: To identify, calculate, and apply knowledge of cube numbers up to 10^3.

Max the monkey is busy building towers with his favorite wooden blocks. Help him solve these math puzzles by calculating the volume of his cube towers. Write your answers clearly.

Answer Key: 1. A (8), 2. True, 3. 27, 4. C (64), 5. False ($1^3 = 1$), 6. 125, 7. C (1000), 8. True, 9. 216, 10. 0. Note: A cube number is the result of multiplying an integer by itself twice (e.g., 3 x 3 x 3 = 27).

Word bank: cube number · product · factor · volume · dimension · base · squared · cubed

1. Max builds a small cube tower that is 2 units wide, 2 units deep, and 2 units high. What is the total number of blocks? A) 4, B) 6, C) 8*, D) 12 (1 mark)

2. True or False: 3^3 is the same as 3 x 3 x 3. (1 mark)

3. What is the value of 3 cubed (3^3)? (1 mark)

4. Which of these is a cube number? A) 10, B) 20, C) 64*, D) 80 (1 mark)

5. True or False: 1 cubed (1^3) equals 3. (1 mark)

6. If Max builds a tower that is 5 units tall, 5 wide and 5 deep, how many blocks does he use? (1 mark)

7. What is 10^3? A) 30, B) 100, C) 1000*, D) 10000 (1 mark)

8. True or False: 4^3 is 64. (1 mark)

9. What is the product of 6 x 6 x 6? (1 mark)

10. If a cube has a side length of 0, what is its cube number? (1 mark)

Draw: Draw a large cube made up of 27 smaller cubes (a 3x3x3 grid) and label the height, width, and depth.

Extension challenge: Max has £50 to spend on new building blocks. Each block costs 5p. If he wants to build a giant cube that is 6 units tall, 6 units wide, and 6 units deep, does he have enough money? Show your working out.