

Max's Magnificent Maths Lab: Mastering Place Value

Learning objective: To read, write, order, and compare numbers up to at least 1,000,000 and determine the value of each digit.

Max the monkey is preparing for a grand jungle counting expedition! Use this fact-file to organise your knowledge of large numbers. Complete each section by applying your understanding of place value to solve Max's puzzles. Ensure your number formatting uses commas correctly for readability.

Word bank: partitioning · place value · ten-thousands · hundred-thousands · ascending · descending · digit · value · millions · equivalent

1. The Millionaire's Mountain: Write a seven-digit number and partition it into its constituent parts (e.g., $1,234,567 = 1,000,000 + 200,000 + 30,000 + 4,000 + 500 + 60 + 7$). Explain why the position of the digit '2' changes its value. (3 marks)

2. Comparing Climbers: Create two different six-digit numbers. Use the greater than (>) or less than (<) symbols to compare them. Justify your answer by describing which digit holds the highest value and how you determined which number is larger. (3 marks)

3. Rounding Records: Take a five-digit number and round it to the nearest 10, 100, and 1,000. Explain the rule you use to decide whether to round up or down. (3 marks)

4. Max's Mystery Number: If a number has a 5 in the hundred-thousands place, a 0 in the ten-thousands place, and a 2 in the ones place, what is the smallest possible six-digit number it could be? Explain your reasoning. (2 marks)

5. Currency Calculations: If Max collects £456,789 in shiny pebbles and spends £100,000 on maps, what is his new total? Write the new total in words and digits. What might happen to the place value if he divided his remaining total by ten? (3 marks)

6. Reflective Reasoning: Compare and contrast the value of the digit '7' in the numbers 70,000 and 700,000. How many times larger is the 7 in the second number compared to the first? (2 marks)

Extension challenge: Challenge: Max has found a sequence of numbers: 125,000; 250,000; 375,000. Predict the next two numbers in the sequence and justify your pattern. Then, create your own complex sequence starting at 50,000 and decreasing by 12,500 each time. What is the lowest positive number you can reach?