Max’s Magnificent Mathematical Division Challenge

Learning objective: To demonstrate proficiency in long division using the formal written method, including remainders and multi-step problem solving.

Read each question carefully. Show your full working out for every calculation, as marks are awarded for your method even if the final answer contains a minor error. Max the monkey is cheering you on!

Max is organising the Great Jungle Harvest. He has collected 864 tropical fruits and needs to pack them into crates. Each crate holds 12 fruits. Once the fruits are packed, he is helping Ellie the elephant sort her collection of 945 historical scrolls into 15 equal archives.

Word bank: Dividend · Divisor · Quotient · Remainder · Long division · Place value · Estimation

1. Using the formal long division method, calculate how many crates Max needs to pack all 864 fruits. Show your working out. (3 marks)

2. Ellie has 945 historical scrolls to store in 15 archives. How many scrolls will be in each archive? Show your calculation. (3 marks)

3. A shipment of 528 golden mangoes arrives. Max decides to divide these into boxes of 24. Calculate the quotient. Explain how you used estimation to check your answer is reasonable. (4 marks)

4. If Max has 749 shiny pebbles and shares them equally among 22 friends, how many pebbles will each friend receive, and how many will be left over as a remainder? (4 marks)

5. Max finds a box of 672 star-fruit. He tries to divide them by 28. A friend says the answer is 25. Without calculating the full division, explain why this answer is incorrect using your knowledge of place value and multiplication. (3 marks)

6. Compare and contrast the process of short division and long division. When is it more efficient to use the formal long division method compared to mental strategies? (3 marks)

7. Max has £850 to spend on new storage baskets. Each basket costs £17. Write a word problem that requires the use of long division to solve, then provide the solution. (5 marks)

Draw: Draw a diagram representing how Max might group 144 items into 12 sets of 12, showing your understanding of how division relates to arrays.

Extension challenge: Total: /25. Challenge: What might happen if the divisor was a prime number compared to a composite number when calculating remainders? Justify your answer with an example.