Max’s Mathematical Market Challenge

Learning objective: To demonstrate mastery of fractions, including equivalence, ordering, and calculations with mixed numbers and improper fractions.

Read each question carefully. Show your working out clearly, as method marks may be awarded. Use the space provided for your calculations. Good luck!

Max the monkey is helping at the local village market. He is organising fruit stalls and pricing items to ensure everyone gets a fair deal. Max uses his knowledge of fractions to manage the inventory.

Word bank: numerator · denominator · equivalent · proper fraction · improper fraction · mixed number · simplify · common denominator

1. Max has a crate of 24 apples. He sells 3/8 of them in the morning. How many apples did he sell? Show your method. (2 marks)

2. Max finds two stalls selling bananas. Stall A sells 4/6 of a crate, and Stall B sells 2/3 of a crate. Explain why these two fractions are equivalent. (2 marks)

3. Calculate 3/5 + 1/10. Give your answer in its simplest form. (2 marks)

4. Max has 4 1/2 kilograms of pears. He sells 1 3/4 kilograms to a customer. How many kilograms of pears does he have left? Show your calculation. (3 marks)

5. Compare the following fractions using <, >, or =. Justify your reasoning for each: 5/7 and 7/9. (3 marks)

6. A box of strawberries costs £4.80. Max offers a 'half-price' discount, then an additional 'one-third off' the discounted price. What is the final price of the strawberries? Show your steps clearly. (4 marks)

7. Max wants to pack 7/3 kilograms of plums into small bags. Each bag holds 1/6 of a kilogram. How many bags can he fill? Justify your answer by converting the improper fraction to a common denominator first. (4 marks)

8. Max is designing a new stall layout. He wants to dedicate 1/2 of the space to apples, 1/4 to pears, and the remainder to plums. If the total stall width is 12 metres, calculate the width for each fruit type. Write a short paragraph explaining the mathematical steps you took to reach your conclusion. (5 marks)

Draw: Draw a visual representation of 3/4 of a rectangular market stall floor divided into equal sections, shading the different areas for apples, pears, and plums as described in the final question.

Extension challenge: Max wonders what might happen if the market grew to three times its current size. If he has 12 3/4 kilograms of oranges now, and the demand triples, how many kilograms will he need to order? Explain the impact of multiplying a mixed number by a whole number. Total: /25