

Max's Mathematical Mystery: The Factor and Multiple Explorer

Learning objective: To identify, find, and explain factors and multiples of given numbers, and distinguish between the two concepts.

Help Max the monkey solve his number puzzles! Use this template to explore the relationships between numbers. Choose a 'Starting Number' between 1 and 50 and follow the sections to uncover its mathematical secrets. Ensure you check your times tables to verify your answers.

Word bank: Factor · Multiple · Product · Divisible · Prime number · Composite · Times table · Relationship

1. The Starting Number: Choose a number between 1 and 50 and write it here. List all the factor pairs that multiply together to make this number. (2 marks)

2. The Multiple Hunt: List the first five multiples of your starting number. How does the value change as you find higher multiples? (2 marks)

3. Compare and Contrast: Explain the difference between a factor and a multiple. Why is a factor usually smaller than the number, while a multiple is usually larger? (3 marks)

4. Justify your answer: Max says that 12 is a factor of 24, but 24 is not a factor of 12. Do you agree? Explain your mathematical reasoning. (3 marks)

5. What might happen if your starting number was a prime number? How would its list of factors differ from a composite number like 12 or 20? (3 marks)

6. Creative Challenge: Invent a 'Number Riddle' for a friend using factors and multiples (e.g., 'I am a multiple of 5 and a factor of 20. What number am I?'). (2 marks)

Extension challenge: Challenge: Investigate the number 36. Find all its factors and arrange them in a factor bug diagram. Then, find three different numbers that have 36 as a common multiple. Write a short paragraph explaining why some numbers have many factors while others have very few.