

Max's Magnificent Multiples and Fabulous Factors

Learning objective: To identify, find, and explain factors and multiples of numbers up to 100.

Read the information below carefully. Use your knowledge of times tables to help Max the monkey solve these number puzzles. Show your working out clearly.

Max the monkey is organising his collection of fruit. He loves math and says that numbers have secret families! A 'multiple' is what you get when you multiply a number by a whole number (like 2, 4, 6, 8 are multiples of 2). A 'factor' is a number that divides exactly into another number without leaving a remainder. For example, 3 is a factor of 12 because $12 \div 3 = 4$. Max has 24 bananas. He wants to know all the ways he can group them equally. He finds that 1, 2, 3, 4, 6, 8, 12, and 24 are all factors of 24. If Max buys bags of apples that cost £3 each, the total cost will always be a multiple of 3 (£3, £6, £9, £12...).

Word bank: factor · multiple · product · divisible · prime · common · calculate

1. Max has 36 mangoes. List all the factor pairs of 36. How do you know you have found them all? (3 marks)

2. Identify the first five multiples of 8. If Max buys 7 bags of nuts at £8 each, explain why the total cost must be a multiple of 8. (3 marks)

3. Compare and contrast the numbers 12 and 13. Which one has more factors? Justify your answer using the definition of a factor. (3 marks)

4. Max says: 'If a number is a multiple of 10, it must also be a multiple of 5.' Is he correct? Explain why using an example. (3 marks)

5. Find a number less than 50 that is a multiple of both 4 and 6. Explain your method for finding this common multiple. (3 marks)

Draw: Draw a 'Factor Tree' for the number 20, showing the branches of factor pairs (e.g., 2 x 10). Color the even factors in blue and the odd factors in yellow.



Extension challenge: What might happen if you tried to find the factors of a very large prime number, such as 97? Write a short paragraph justifying why prime numbers are different from composite numbers like 24 or 36.