Max’s Prime Number Challenge

Learning objective: To identify, describe, and apply knowledge of prime numbers up to 100, including recognising composite numbers and prime factors.

Read each question carefully. Max the monkey has left these puzzles for you to solve. Show your working out clearly to gain full marks. You have 30 minutes to complete this assessment.

Max the monkey is organising his jungle collection of shiny stones. He only likes to arrange them in groups that cannot be split into equal smaller rows, except for rows of one or the total number itself. He calls these his 'Special Prime Stones'.

Word bank: Prime number · Composite number · Factor · Multiple · Divisible · Product

1. Max says that 1 is a prime number. Explain why Max is incorrect using the definition of a prime number. (2 marks)

2. List all the prime numbers between 10 and 30. (3 marks)

3. Circle the numbers in this list that are composite numbers: 7, 9, 13, 21, 27, 29. (3 marks)

4. Max has 45 stones. He wants to know if 45 is a prime number. Prove your answer by identifying all the factors of 45. (4 marks)

5. Find the prime factors of 36. Show your method, such as a factor tree. (4 marks)

6. Max buys a bag of fruit for £4. He says the price is a prime number. Is he right? Explain your reasoning and list two other prime numbers that are costs in pounds (£) less than £10. (4 marks)

7. Imagine you are explaining to a younger pupil why 2 is a very unique prime number. Write a short paragraph explaining what makes 2 different from every other prime number. (5 marks)

Draw: Draw a 'Prime Factor Tree' for the number 24, showing how it branches out until you reach only prime numbers at the ends of the branches.

Extension challenge: Total: /25