Max’s Probability Puzzles

Learning objective: To calculate and compare probabilities of independent events, expressing them as fractions, decimals, and percentages.

Read each question carefully. Use your knowledge of probability to calculate the likelihood of each event. Max the monkey is ready to help you solve these maths challenges!

Max the monkey has a collection of 20 colourful wooden blocks in a velvet bag. Inside the bag, there are 8 red blocks, 6 blue blocks, 4 yellow blocks, and 2 green blocks.

Word bank: Probability · Likely · Unlikely · Certain · Impossible · Outcome · Fraction · Percentage

1. If Max picks one block at random, what is the probability that he picks a red block? Give your answer as a fraction in its simplest form. (2 marks)

2. What is the probability of picking a green block? Express your answer as a percentage. (2 marks)

3. Max adds 5 more blue blocks to the bag. Without calculating the new total, explain if the probability of picking a blue block has increased, decreased, or stayed the same. (2 marks)

4. What is the probability of picking a block that is either red or yellow? Give your answer as a decimal. (2 marks)

5. Max says, 'It is impossible to pick a purple block.' Explain why he is correct based on the contents of the bag. (2 marks)

Draw: Draw a spinner divided into 8 equal sections. Colour 4 sections blue, 2 sections red, 1 section yellow, and 1 section green. Write the probability of landing on blue as a fraction underneath.

Extension challenge: Imagine Max has a second bag containing 10 coins. 5 are £1 coins, 3 are 50p coins, and 2 are 20p coins. If Max picks one coin, what is the probability that the value is less than £1? Write your answer as a fraction and a percentage.