

Max's Probability Potion Shop

Learning objective: To calculate the probability of independent events and represent them as fractions, decimals, and percentages.

Max the monkey is running a magical potion shop. He has different jars of ingredients. Read the contents of each jar below, then answer the questions to help Max predict his potion outcomes. You must express your answers as fractions in their simplest form, and where possible, as decimals and percentages.

Word bank: certain · impossible · likely · unlikely · even chance · sample space · favourable outcome

1. Jar A contains 5 dragon scales and 5 phoenix feathers. If Max picks one item at random, what is the probability of picking a dragon scale? Explain your reasoning. (2 marks)

2. Jar B contains 2 blue crystals, 6 green leaves, and 12 red berries. What is the probability of picking a red berry? Simplify your fraction. (2 marks)

3. Max adds a rare golden seed to Jar B (which had 20 items). What is the probability of picking the golden seed now? Justify why the probability is very low. (3 marks)

4. If Jar C contains only 10 silver stars, what is the probability of picking a silver star? Use the correct mathematical terminology to describe this event. (2 marks)

5. Compare and contrast the probability of picking a green leaf from Jar B versus picking a blue crystal. How do the ratios differ? (3 marks)

6. What might happen to the probability of picking a red berry if Max accidentally adds 20 more red berries to Jar B? Explain your answer. (3 marks)

Draw: Draw a 'Probability Jar' for Max. Include a mixture of at least three different coloured beads (e.g., 4 gold, 6 purple, 10 silver). Label your jar with the probability of picking each colour as a fraction.



Extension challenge: Design your own 'Potion Probability' challenge. Create a scenario with at least 30 items total. Write a word problem for a partner that requires them to calculate the probability of two different events occurring, and ask them to justify their answer using comparative language like 'more likely than' or 'less likely than'.