Grade 4 Math Assessment: Understanding Probability

Learning objective: To identify, describe, and calculate the likelihood of events occurring using mathematical terminology and fractions.

Read each question carefully. Use the vocabulary provided to explain your reasoning. Show your workings for all calculations.

Max the monkey is organising his collection of colored tokens for a math game. He has a velvet bag containing 10 tokens: 5 are red, 3 are blue, 1 is green, and 1 is yellow.

Word bank: certain · impossible · likely · unlikely · evens · fraction · outcome · probability

1. Using the words from the word bank, describe the probability of Max picking a red token from the bag. Explain your answer. (2 marks)

2. What is the probability of picking a green token? Write your answer as a fraction. (2 marks)

3. Max adds a purple token to the bag. Is it now 'certain' that he will pick a blue token? Explain your reasoning. (3 marks)

4. If Max picks a token, records its color, and puts it back in the bag (this is called 'replacement'), what is the probability of picking a blue token followed by a yellow token? Show your working. (4 marks)

5. Zara the zebra suggests a new game with a fair six-sided die. If you roll the die, what is the probability of rolling a number greater than 4? Express this as a fraction in its simplest form. (4 marks)

6. Design a spinner that has 8 sections using at least three different colors. Write a paragraph explaining the probability of the spinner landing on each color. You must use the terms 'likely' and 'unlikely' in your explanation to describe the different segments. (5 marks)

7. Max says: 'If I have 100 tokens and 50 are blue, the probability of picking a blue one is 1/2.' Is he correct? Justify your answer using math. (5 marks)

Draw: Draw a spinner divided into 8 equal sections. Use three colors: Red, Blue, and Green. Ensure the Red sections make picking red 'likely' and the Green sections make picking green 'unlikely'.

Extension challenge: Total: /25