

Max's Probability Puzzles

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

Read the passage about Max's fun fair games and answer the questions below. Remember to simplify your fractions where possible.

Max the monkey is helping his friends set up a charity fun fair. He has organized a game called 'The Lucky Marble Draw'. In a velvet bag, Max has placed 20 marbles: 10 are blue, 5 are red, 3 are yellow, and 2 are green. Max wants to make sure the fair is fair for everyone, so he is calculating the probability of picking specific colors. He knows that to find the probability, he must divide the number of ways a specific outcome can happen by the total number of possible outcomes.

Word bank: Probability · Likely · Unlikely · Certain · Impossible · Outcome · Chance

1. If you pick one marble at random, what is the probability of picking a blue marble? Give your answer as a fraction in its simplest form. (2 marks)

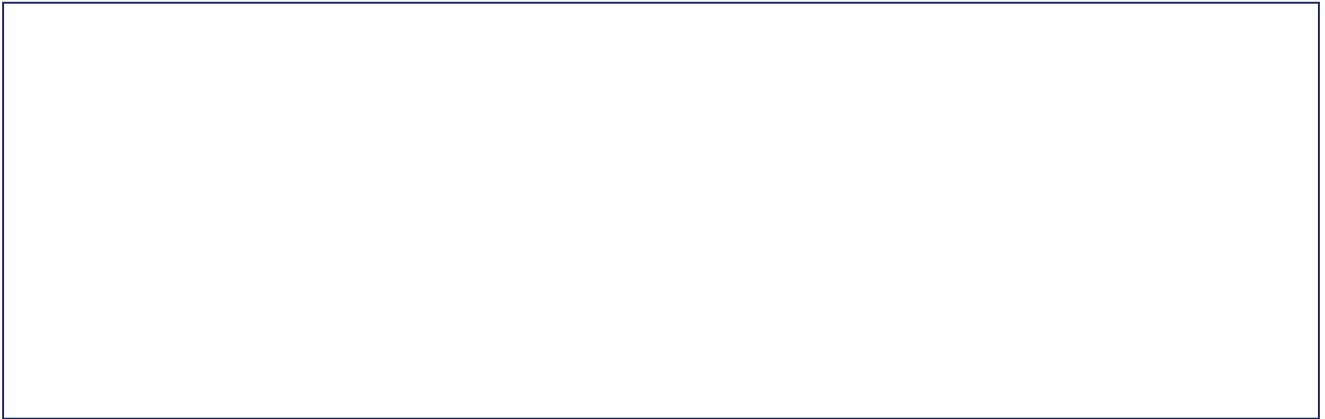
2. What is the probability of picking a green marble? Express your answer as a percentage. (2 marks)

3. Max adds a purple marble to the bag. Is it now more or less likely to pick a red marble compared to before? Explain your reasoning. (2 marks)

4. What is the probability of picking a marble that is either red or yellow? Show your working out. (2 marks)

5. If Max replaces all the green marbles with more blue marbles, what is the probability of picking a green marble now? Use the correct probability word to describe this event. (2 marks)

Draw: Draw a bag filled with 20 marbles following Max's original distribution (10 blue, 5 red, 3 yellow, 2 green) and label the contents.



Extension challenge: Max decides to charge 50p per turn to play the marble game. If 40 children play the game once each, how much money will Max raise for the charity? Write your answer in pounds.