Max’s Algebraic Adventures

Learning objective: To express missing number problems algebraically and use simple formulae to solve problems.

Read the information about Max's fruit stall puzzle and use your knowledge of missing values to complete the questions below.

Max the monkey is running a fruit stall at the forest market. He uses algebra to keep track of his stock. Max says, 'If I have 5 apples and I add some more, which I will call 'a', I have 12 apples in total.' We can write this as an equation: 5 + a = 12. To find the value of 'a', we subtract 5 from 12, which means 'a' must be 7. Max also sells banana bunches for £2 each. If you buy 'b' bunches, the total cost in pounds is 2 × b. If you buy 4 bunches, the formula tells us the total is £8.

Word bank: Algebra · Variable · Equation · Expression · Unknown · Balance · Formula · Value

1. Max has 15 pears. He sells some, and now has 9 left. Write an equation using 'p' to represent the number of pears sold and solve it. (2 marks)

2. Max sells a bag of nuts for £3. If 'n' is the number of bags, write an expression for the total cost. How much would 6 bags cost? (2 marks)

3. If 8 + x = 20, what is the value of x? (1 mark)

4. Max has a box of berries. He doubles the number of berries and ends up with 30. If 'b' is the starting number of berries, write an equation and solve for 'b'. (2 marks)

5. Explain in your own words why we use letters like 'a' or 'b' in maths equations. (2 marks)

Draw: Draw a set of balance scales. On one side, draw a box labelled 'x' and 3 apples. On the other side, draw 10 apples. This represents the equation x + 3 = 10.

Extension challenge: Create your own 'Max's Market' word problem where a missing value is represented by a letter. Swap with a partner to see if they can find the value of your mystery letter!