

Max's Market Algebra Challenge

Learning objective: To express missing number problems algebraically and find pairs of values that satisfy an equation with two unknowns.

Max the monkey is helping at the local fruit market. He has noticed that the total cost of items can be expressed as an algebraic formula. Use the price list below to solve the puzzles. Let 'a' represent the cost of an apple and 'p' represent the cost of a pear. Help Max complete the equations by calculating the missing values.

Word bank: variable · expression · equation · unknown · coefficient · formula

1. Max sells apples for £0.30 each and pears for £0.40 each. The formula for the total cost is $0.3a + 0.4p = \text{Total}$. If a customer buys 5 apples and 3 pears, what is the total cost? (2 marks)

2. Using the same formula ($0.3a + 0.4p = \text{Total}$), a customer spends exactly £2.50. If they bought 3 apples, how many pears did they buy? Show your working out. (2 marks)

3. Max creates a new bundle: 2 apples and 4 pears for £2.20. Write this as an algebraic equation where 'a' is the apple price and 'p' is the pear price. (2 marks)

4. True or False: If $2a = £1.00$, then 'a' must equal £0.50. Explain your reasoning using the word 'coefficient'. (2 marks)

5. Max has £5.00. He wants to buy 10 items in total, consisting of apples (£0.30) and pears (£0.40). How many of each can he buy to spend exactly £5.00? (2 marks)

Draw: Draw a market stall with Max the monkey holding a sign that shows the equation ' $a + p = 1.00$ ' to represent the price of a fruit bowl.



Extension challenge: Design your own 'Fruit Bundle' challenge. Create an equation for a bundle of three different types of fruit and set a total price. Ask a partner to find two different combinations of quantities that could make that total.