

Max's Algebra Adventure

Learning objective: To express missing number problems algebraically and find the value of unknown variables.

Read each problem carefully. Use Max the monkey's methods to write an algebraic expression or equation and solve for the missing variable.

Word bank: variable · equation · expression · constant · coefficient · substitute

1. Max has a bag of marbles. He adds 5 more to the bag, making a total of 12. Write an equation using 'm' for the number of marbles he started with and solve it. (2 marks)

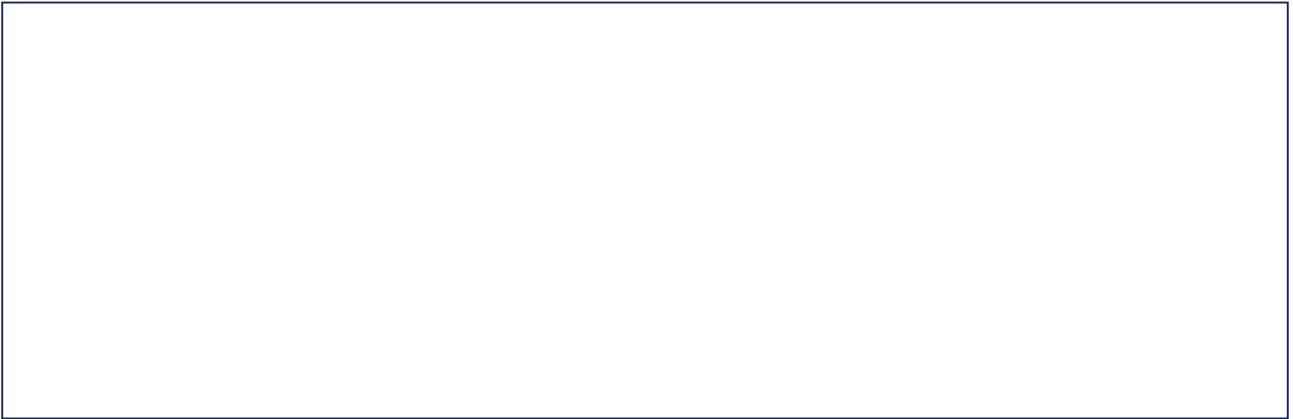
2. Ellie the elephant collects shiny stones. She has 4 piles, each containing 's' stones, plus 3 extra stones in her trunk. Write an expression for the total number of stones Ellie has. (1 mark)

3. If 'a = 7' and 'b = 4', calculate the value of the expression: $3a + 2b - 5$. (2 marks)

4. Kit the fox finds a box of pens. The cost of one pen is 'p'. If 6 pens cost £4.50, write an equation to represent this and find the value of one pen. (2 marks)

5. Zara is painting patterns. She uses the rule ' $2n + 1$ ' to find the number of triangles needed for a pattern of size 'n'. How many triangles does she need for a pattern of size 12? (2 marks)

Draw: Draw a picture of Max the monkey balancing a seesaw with a box labelled 'x' on one side and three blocks labelled '1' on the other side, representing the equation $x = 3$.



Extension challenge: Create your own 'function machine' puzzle where you input a number 'n', multiply it by 4, and subtract 2. Write the algebraic expression for the output and test it with three different input numbers.