

Algebraic Notation

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Write '4 less than y' using algebra

Step 1 · Start with y

y

Step 2 · '4 less than' means take 4 away

$y - 4$

Answer: $y - 4$

Check: Test with $y = 10$: 4 less than 10 is 6, and $10 - 4 = 6$ ✓

2. Now try one with the steps

Write $3 \times a \times b$ and $p \times p \times 5$ in algebraic notation

Step 1 · Leave out the $\times$ signs, number first

Step 2 · $p \times p$ is p squared; put the number first

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Write using algebra: 7 more than n. [1]

2. Write $5 \times m$ in algebraic notation. [1]

3. Write $y \times y \times y$ using a power. [1]

4. Write using algebra: n divided by 3. [1]

5. Write using algebra: twice x , subtract 9. [1]

6. Simplify $4 \times a \times b \times 2$. [1]

7. Is $P = 4s$ an expression, an equation, a formula or an identity? [1]

8. Write using algebra: add 5 to n , then multiply the result by 3. [1]

9. Cinema tickets cost £ t each. Write an expression for the total cost, in pounds, of 6 tickets and a £4 box of popcorn. [2]

10. Write using algebra: the square of n , then subtract 1. [1]

11. Explain the difference between $2a$ and a^2 . [2]

12. Ali is k years old. His sister is 3 years older than him, and their dad is twice sister. Write an expression for their dad's age. [2]

13. n is a whole number. Write a simplified expression for the sum of n and the next whole number after it. [2]

14. Which of these is an identity: $3(x + 2) = 3x + 6$ or $3x + 2 = 11$? [1]

15. A rectangle's length is 3 cm more than its width, w cm. Write an expression for its area. [2]

4. Before you hand it in

Writing n^3 or $n \times 3$ instead of $3n$

In algebra the number comes first and the $\times$ sign is left out: $3n$. (n^3 could be confused with n^3 .)

Thinking a^2 and $2a$ are the same

$a^2 = a \times a$ and $2a = a + a$. When $a = 5$: $a^2 = 25$ but $2a = 10$.

Writing 'add 3 to n , then double' as $2n + 3$

The whole result is doubled, so use brackets: $2(n + 3)$, which expands to $2n + 6$.

Writing 'subtract n from 5' as $5 - n$

You start with 5 and take n away: $5 - n$. Check with $n = 1$: subtracting 1 from 5 gives 4, and $5 - 1 = 4$.