KS3 Maths: revision notes

Algebraic expressions

Your notes

Contents

1. The language of algebra
2. Simplifying and substituting
3. Brackets
4. Key terms
5. Quick questions
6. What to do next

The language of algebra

- Letters stand for numbers. A **term** is a single part, such as 3x. An **expression** is a group of **terms**, such as 3x + 2.
- An **equation** has an equals sign and can be solved: 3x + 2 = 11. A **formula** links quantities: A = l × w.
- 3x means 3 × x; x^2 means x × x; xy means x × y.

Simplifying and substituting

- Collect **like terms**: 3a + 5b – a + 2b = 2a + 7b. Only **terms** with the same letters (and powers) can be added.
- Multiply: 2x × 4y = 8xy, and a × a × a = a^3.
- Index laws work with letters too: $x^3 \times x^4 = x^7$, and $y^6 \div y^2 = y^4$.
- **Substitute** by replacing the letters with numbers: if x = 3 and y = –2, then 2x + 5y = 6 – 10 = –4.

Brackets

- **Expand** by multiplying every **term** inside the bracket: 3(x + 4) = 3x + 12, and x(x – 5) = x^2 – 5x.
- **Expand** double brackets by multiplying every pair of **terms**: (x + 2)(x + 3) = x^2 + 3x + 2x + 6 = x^2 + 5x + 6.
- **Factorise** by taking out the highest common factor: 6x + 9 = 3(2x + 3), and x^2 + 4x = x(x + 4).

Key terms

Term	A single number, letter, or number and letters multiplied together, such as 5x.
Expression	A group of terms with no equals sign, such as 2x + 3.

Equation	A statement with an equals sign that can be solved, such as 2x + 3 = 9.
Formula	A rule linking quantities, such as A = l × w.
Like terms	Terms with exactly the same letters and powers.
Coefficient	The number in front of a letter, such as the 3 in 3x.
Substitute	Replace letters with numbers.
Expand	Multiply out brackets.
Factorise	Put an expression into brackets by taking out a common factor.

Your notes

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What is 3a + 5b – a + 2b simplified?
2. What is 2x × 4y simplified?
3. What is a × a × a simplified?
4. If x = 3, what is 4x – 5?
5. If a = –2, what is a^2?
6. What is 3(x + 4) expanded?
7. What is x(x – 5) expanded?
8. What is (x + 2)(x + 3) expanded?

Answers

1. 2a + 7b
2. 8xy
3. a^3
4. 7
5. 4
6. 3x + 12
7. $x^2 – 5x$
8. $x^2 + 5x + 6$

What to do next

Practise 14 questions on this topic

Try 4 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.