GCSE Maths – Algebra

Simplifying Expressions

Worksheet

NOTES

SOLUTIONS

This worksheet will show you how to solve problems involving simplifying expressions. Each section contains a worked example, a question with hints and then questions for you to work through on your own.

Section A

Worked Example

Simplify the expression $82cd^2e + 5 - 17ce + 8e \times c - 2$.

Step 1: Identify the different terms that are present in the equation.

For these types of questions, it can be useful to make a mental note of the terms involved. These could be simplified further by re-arrangement and collecting like terms!

Step 2: Simplify the expression using BIDMAS.

$$82cd^2e + 5 - 17ce + 8e \times c - 2$$

$$= 82cd^2e + 5 - 17ce + (8e \times c) - 2$$

$$= 82cd^2e + 5 - 17ce + 8ce - 2$$

Note, it is standard to write algebraic terms in alphabetical order. For example, we write $8ce$ rather than $8ec$.

Step 3: Collect any like terms. Numerical constants can be collected, and variable terms represented by the same letter or combination of letters can be collected.

$$82cd^2e + 5 - 17ce + 8ce - 2 = 82cd^2e - 17ce + 8ce + 5 - 2 = 82cd^2e - 9ce + 3$$

Answer: $\mathbf{82cd^2e - 9ce + 3}$

Guided Example

Simplify the expression $52a^2b^3c^4 \times 18b + 5c - 11a^2b^4c^4 + 62 + 9d$.

Step 1: Identify the different terms that are present in the equation.

Step 2: Simplify the expression using BIDMAS.

Step 3: Collect any like terms. Numerical constants can be collected, and variable terms represented by the same letter or combination of letters can be collected.

Now it's your turn!
If you get stuck, look back at the worked and guided examples.

1. Simplify the following expressions:

a) $34pq + 6 - 4p \times q + q^2$

b) $79 + 97kl \times m + 5m^5 + 101klm$

c) $62 + 22w - 82z - 113 + \left(\frac{16w^3}{4w^2}\right) + 51$

d) $50g^4 + 82efg + \left(\frac{39g^3 \times g^2}{13g}\right) - 16eg \times f - 85 + 17 + 6$

e) $52s^4 + \left(\frac{16s^4t^3}{4t^3}\right) + 256s^3 + \left(\frac{84s^5z^6}{6z^6}\right) + 97s^5 - 91 + 12345s^2 \times s \times s + 1$