

# GCSE Maths – Algebra

## Collecting Like Terms

### Worksheet

NOTES



SOLUTIONS



This worksheet will show you how to work out different types of collecting like terms questions. Each section contains a **worked example**, a **question with hints** and then **questions for you to work through** on your own.

This work by [PMT Education](https://www.pmt.education) is licensed under [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)



## Section A

### Worked Example

**Simplify the expression**  $7x + 8y - 9x + 3x^2 + 2y - 10$

**Step 1:** Identify the 'like terms' to make it clear which terms we can combine.

$$7x + 8y - 9x + 3x^2 + 2y - 10$$

*Here, we have four types of terms: the 'x' term, the 'y' term, the 'x<sup>2</sup>' term and the constant term.*

**Step 2:** Rearrange the expression so the like terms can be placed together.

$$+7x - 9x + 8y + 2y + 3x^2 - 10$$

**Remember** to include the invisible + sign that is front of the first term, i.e., the '7x' in this example.

**Step 3:** Combine the like terms by summing them together.

$$\begin{aligned} +7x - 9x + 8y + 2y + 3x^2 - 10 \\ \Rightarrow -2x + 10y + 3x^2 - 10 \end{aligned}$$

So, the final answer is  $-2x + 10y + 3x^2 - 10$

### Guided Example

**Simplify the expression**  $6a + 5ba + 17b + 10 + 7a^3 - 10a + 3ab - a^3$

**Step 1:** Identify the 'like terms' to make it clear which terms we can combine.

**Step 2:** Rearrange the expression so the like terms can be placed together.

**Step 3:** Combine the like terms by summing them together.



### Now it's your turn!

If you get stuck, look back at the worked and guided examples.

1. Simplify the following algebraic expressions:

a)  $5p + 7q + 10 + 15p - 7q + 8t - 3$

b)  $16 + 8d + 9e - 82 + 7de + 5 - d$

c)  $92 + 7ab + 16 + 8abc + 9ab - bc$

d)  $34ab + 17 + 52ab + 18ab^2 + 62 + 19a^2b$

e)  $62xy + 17xyz + 64 + xy - 18xyz + 9y + 21 + 92yz$

f)  $x^2 - xy^2 + xy - y^2 + 1 - x^2 + yx$

g)  $23 - a + b - ab + b^2 - a^2b^2 - 2a - (3ab)^2$

