Expressions: fact sheet

Algebra · Planner week 8 · Find your skill, learn the method

1 Collect like terms

You will see: **Simplify $3x + 2y + 5x - y$**

1. **Circle** each term with the sign in front of it.
2. Add up the x terms, then the y terms.
3. A letter on its own means 1 of it: $y = 1y$.

$$3x + 2y + 5x - y$$

x: $3 + 5 = 8$ y: $2 - 1 = 1$

$$= \mathbf{8x + y}$$

Only terms with the same letters can be added or taken away

2 Multiply terms

You will see: **Simplify $2a \times 5b$ or $m \times m \times m$**

1. Multiply the **numbers**.
2. Write the **letters** after, in alphabetical order.
3. The same letter again and again? Use a **power**.

$$2a \times 5b = \mathbf{10ab}$$

$$3 \times w \times 5 \times t = \mathbf{15tw}$$

$$m \times m \times m = \mathbf{m^3}$$

Numbers first, then letters. No × sign in your answer

3 Divide terms

You will see: **Simplify $12p \div 4$**

1. Divide the **number**.
2. Keep the **letter** the same.
3. Brackets? Simplify inside them first.

$$12p \div 4 = \mathbf{3p}$$

$$(9y + 12y) \div 3$$

inside first: $9y + 12y = 21y$

$$= 21y \div 3 = \mathbf{7y}$$

Divide the number, keep the letter

4 Write an expression

You will see: **"Write an expression for the total ..."**

1. Try it with a **number** first (what if $x = 2$?).
2. "each" / "per" → **×** "total" → **+**
3. "more" / "older" → **+** "less" / "younger" → **−** "twice" → **× 2**

6 apples in each pack, x packs

$$\mathbf{6x}$$

5 points for each win, 2 for each draw: x wins, y draws

$$\mathbf{5x + 2y}$$

An expression has letters but no = sign

Which skill do I need?

Only **+** and **−** signs, e.g. $7a + a - 5a$	1
× signs, e.g. $3 \times a \times 4$ or $t \times t$	2
A **÷** sign, e.g. $12p \div 4$	3
Words: "each", "total", "in terms of x"	4

Watch out

- $3x + 2y$ is **not** $5xy$. Different letters stay apart.
- $m + m = 2m$ but $m \times m = m^2$.
- Keep the sign **in front** of each term: in $4e + 6f - 7e$, the $7e$ is **take away**.
- "Simplify **fully**": keep going until no like terms are left.
- An expression is not an equation: don't write "$x =$".

Key words

- **Term**: e.g. $5x$, $2ab$ or 7
- **Like terms**: same letters, e.g. $3x$, $5x$
- **Expression**: terms, no = sign

Exam tips

- Command word: **simplify**, **expand**, **factorise**?
- Number first: $3x$, not $x3$.
- Check: put in a number for x.