Algebra: flowchart

Planner week 8 · Simplify, expand or factorise? Follow the arrows

An algebra question

Is there an = sign?

Yes → **Solve it** use the Equations flowchart

No

Which word does the question use?

Simplify · Expand · Factorise

SIMPLIFY

Simplify 3x + 2y + 5x − y

1. Circle each term with its sign
2. x: 3 + 5 = 8 · y: 2 − 1 = 1
3. = **8x + y**

✓ 2a × 5b = 10ab

EXPAND

Expand 5(2m − 3)

1. Grid: 5 on the side, 2m and −3 on top
2. 5 × 2m = 10m · 5 × −3 = −15
3. = **10m − 15**

✓ multiply every term inside

FACTORISE

Factorise 6x − 15

1. Biggest number into 6 and 15: 3
2. 3 × 2x = 6x · 3 × −5 = −15
3. = **3(2x − 5)**

✓ expand it back to check

Check your answer: put a number in, e.g. x = 2
3(2x − 5) → 3 × (4 − 5) = −3 and 6x − 15 → 12 − 15 = −3 ✓ **the same**

The big question

Is there an **= sign**? Then: am I collecting terms, multiplying **out** a bracket, or putting a bracket **back in**?

Watch out

- 3x + 2y is not 5xy: different letters stay apart.
- 3(2x − 5) is not 6x − 5: multiply the 5 too.
- Factorise fully: take out the biggest factor, letters too: $9x^2 + 6x = 3x(3x + 2)$.
- m × m × m = m^3