

Collect expand and factorise

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Purpose

Collect like terms, expand a single bracket and factorise a common factor. Explain how these equivalent forms are connected.

Vocabulary

Like terms: identical variable part including powers. Expand: multiply out a bracket. Factorise: express as a product. Common factor: divides every term. Equivalent: same value for all allowed inputs.

Why the method works

The distributive law $a(b+c)=ab+ac$ shares multiplication across a sum. Thus $3(x+2)=3x+6$. Reversing this gives factorisation. Collecting $3x+2x$ counts five x units; x and x^2 are different units.

Method and checking

Group only like terms. Multiply every term inside a bracket, including its sign. To factorise, take a common factor from every term. Expand again and substitute a value to check.

Common errors and next attempt

If only the first term is multiplied, draw two product arrows. If unlike powers are collected, compare $x=3$. For negative brackets, write each signed product. Recheck $-2(x-3)=-2x+6$.