

Equivalent Expressions and Polynomials

expand, factor, simplify, and prove two forms are the same thing

Equivalent means equal for every x

- the question is nearly always which expression is equivalent to, and equivalent means the two forms agree for every legal value of x, not just for one
- that gives you a shortcut the algebra does not: pick a number, put it into the original and into each option, and keep whichever option matches. Avoid 0 and 1, which make too many wrong options look right
- the algebra itself is only four moves: distribute, collect like terms, factor, and cancel a common factor from top and bottom
- these are grind questions rather than thinking questions, so they should come in under the 95 second average the 44-question, 70-minute Math section allows. Expanding a bracket is not where your time should go
- no negative marking, so an expression you cannot simplify still gets an answer. Test $x=2$ in the original, test the options, and pick the one that agrees

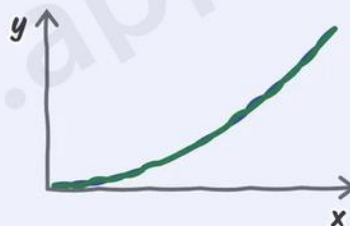
the substitute-a-number method is slower to describe than to do. Two substitutions usually leave exactly one option standing

The patterns worth knowing cold

square of a sum	$(a+b)^2 = a^2 + 2ab + b^2$
square of a difference	$(a-b)^2 = a^2 - 2ab + b^2$
difference of two squares	$a^2 - b^2 = (a-b)(a+b)$
product of two simple brackets	$(x+p)(x+q) = x^2 + (p+q)x + pq$

the middle term is where marks are lost. $(a+b)^2$ is NOT $a^2 + b^2$, and forgetting the $2ab$ is the single most common expansion slip on this test

The calculator check for equivalence *



the original expression and a candidate answer graphed on the same axes: the two curves follow the same path, which is what equivalent looks like

a graphing calculator is built into the Math section for every question. Typing both forms in and seeing one curve settles an equivalence question you cannot see your way through