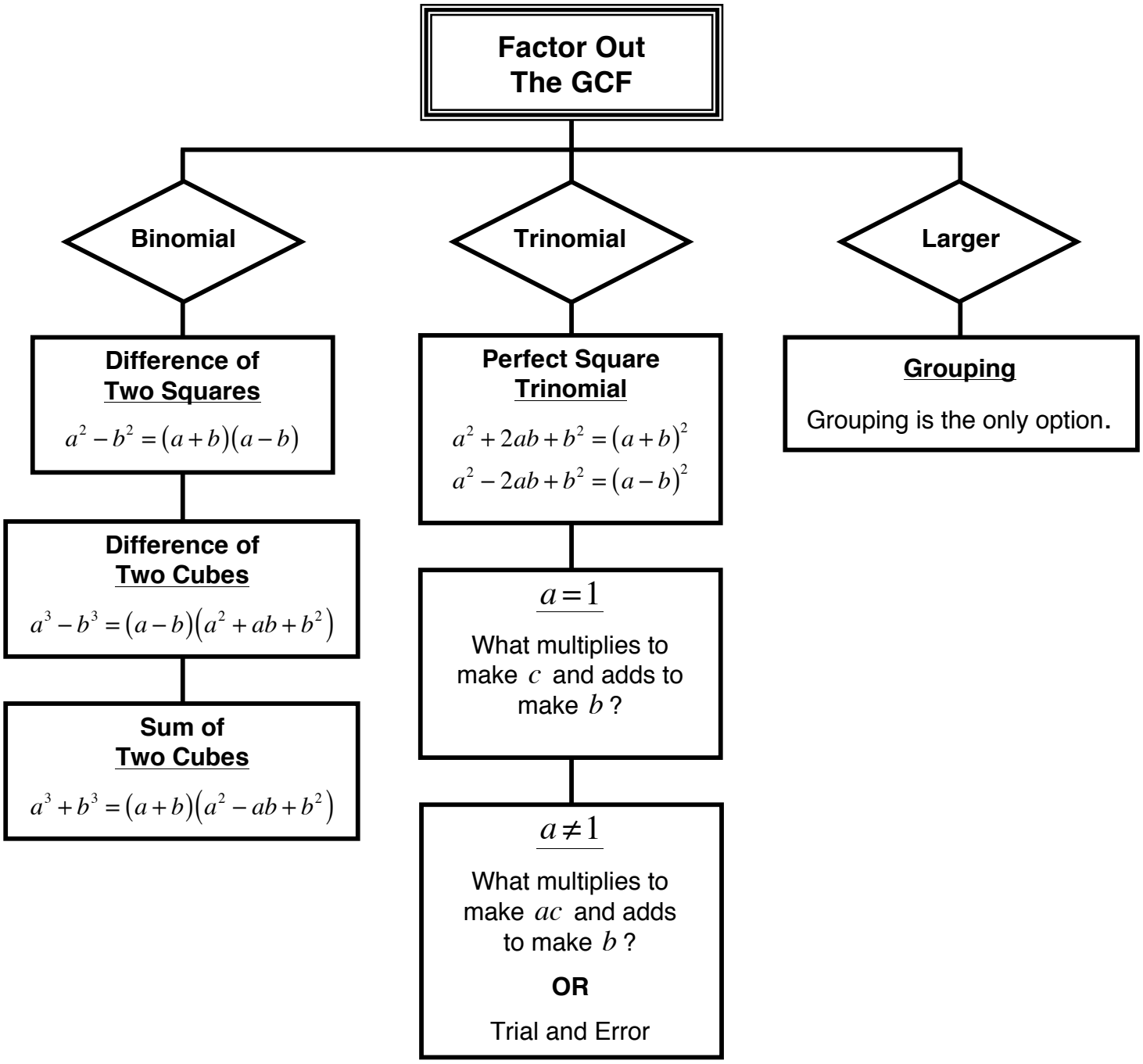
A Factoring Flowchart



REMEMBER

1. Always factor completely. After any step of factoring, look at each new factor to see if you can factor it any further.

2. Check you answers. Multiplying your answers out using distribution.

Examples

1. $10a^2x - 40b^2x = 10x\left(a^2 - 4b^2\right)$ GCF

$= 10x(a+2b)(a-2b)$ Difference of 2 Squares

2. $4at^4 - 64a = 4a\left(t^4 - 16\right)$ GCF

$= 4a\left(t^2+4\right)\left(t^2-4\right)$ Difference of 2 Squares

$= 4a\left(t^2+4\right)(t+2)(t-2)$ Difference of 2 Squares

3. $a^2x^2 - a^2y^2 - b^2x^2 + b^2y^2 = \left(a^2x^2 - a^2y^2\right) + \left(-b^2x^2 + b^2y^2\right)$ Grouping

$= a^2\left(x^2 - y^2\right) - b^2\left(x^2 - y^2\right)$ Factoring Each Group

$= \left(a^2 - b^2\right)\left(x^2 - y^2\right)$ GCF

$= (a+b)(a-b)(x+y)(x-y)$ Difference of 2 Squares

4. $150x^2 - 205x - 30 = 5\left(30x^2 - 41x - 6\right)$ GCF

$= 5\left(30x^2 - 45x + 4x - 6\right)$ ac=-180, b=-41

$= 5\left(\left(30x^2 - 45x\right) + (4x - 6)\right)$ Grouping Inside

$= 5\left(15x(2x-3) + 2(2x-3)\right)$ Factoring Each Group

$= 5(15x+2)(2x-3)$ GCF