AQA Level 2 Further mathematics Number & algebra

Section 2: Algebraic manipulation

Crucial points

1. **Make sure that you are not making basic errors**
   Errors in algebra are very common. Sometimes these are just careless mistakes, but sometimes you may make errors because you have not understood a technique correctly. If you have problems with any technique in this section of work, read the worked examples very carefully and make sure that you understand each step. If you are not sure, make sure that you consult a teacher.

2. **Know what is meant by taking out a factor**
   When factorising, make sure that you understand that "taking out a factor" means dividing each term by that factor, NOT subtracting.

3. **Make sure that you are confident with algebraic fractions**
   If you are having trouble with algebraic fractions, you may find it helps to practise some numerical fractions first, so that you can be sure that you remember the techniques involved.

4. **Be careful with cancelling fractions**
   Remember that when you cancel fractions, you are dividing the numerator and denominator by the same thing. You have to divide each term by the same thing, and it may help to factorise numerator and denominator if possible so that you can see any factors.
   A fraction like $\frac{2p}{p+q}$ cannot be simplified, as p is not a factor of the whole denominator.

5. **Make sure that you can rearrange a formula with confidence**
   If you are stuck on rearranging a formula, try writing in numbers instead of all the letters except for the new subject, so that you have an equation with one unknown. Then think what you would do to solve the equation, and do the same thing to the formula that you are rearranging.

6. **Make sure the new subject only appears once**
   When changing the subject of a formula, make sure the new subject does not appear on both sides of the equals sign in the rearranged formula.
   e.g. Make x the subject of $b = \frac{ax-2}{x}$

✘ ***WRONG***

$$b = \frac{ax-2}{x}$$
$$\Rightarrow bx = ax - 2$$
$$\Rightarrow x = \frac{ax-2}{b}$$ ✘

x is still present on the RHS of the equation

AQA FM Number and algebra 2 Crucial points

✓ ***RIGHT***

$$b = \frac{ax-2}{x}$$
$$\Rightarrow bx = ax - 2$$
$$\Rightarrow bx + 2 = ax$$
$$\Rightarrow 2 = ax - bx$$
$$\Rightarrow 2 = x(a-b)$$
$$\Rightarrow \frac{2}{a-b} = x$$
$$\Rightarrow x = \frac{2}{a-b}$$ ✓

Get the terms involving x on the same side of the equation

Isolate x by factorising

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