factoring trinomials

Before factoring a trinomial, take a look at it and decide whether it is a perfect square trinomial or not. Trinomials are often in the form a2 + bx + c and can often be factored as the product of two binomials. Also, identify the a, b and c

Remove the GCF (if there is one)

$$x^2 + 5x + 6$$

This trinomial does not have a GCF. Therefore, you are just going to write 2 sets of brackets below the equation. Like this (.). (.)

If there was a GCF, you would pull it out and place it as a coefficient before the brackets.

Factor

$$(\quad) (\quad)$$

becomes

$$(x + 3)(x + 2)$$

Look at the first term and last term. Take the first term and find it's factor pair, place those 2 as the first term in each bracket. Then, write out the factors of the last term and find 2 numbers that will add up to the sum of the middle term, place those as the last terms In the brackets.

Verify

A way to verify is to multiply the outside terms and the inside terms of the 2 brackets and add them together; if they add up to the middle term, your anwser is correct.

Another example:

$$-2x^3 - 6x^2 + 56x$$

Step 1: $-2x(x^2 + 3x - 28)$

remove the GCF, place it outside of the brackets and divide everything in the brackets by the GCF

Step 2:
$$-4 + 7 = +3$$
and
$$(-4)(+7) = -28$$

find the 2 terms of -28 that add up to 3

Step 3: $-2x(x - 4)(x + 7)$

place the terms in the brackets and verify your answer