Factorising Harder Quadratics

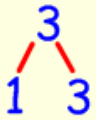
Factorise:

$$2x^2 + 5x - 3$$

This is a harder question because there is a coefficient before x^2

We know to get $2x^2$ we need $2x$ x x

$$(2x \quad)(x \quad)$$



The only way to get 3 is 1 x 3

The number in the second bracket will be multiplied to 2. To get a 5 we need to double the 3.

$$(2x - 1)(x + 3)$$

We can expand to check

Factorise:

$$2x^2 + 5x - 3$$

Another way to do this is to undo the expansion step by step:

1) Multiply the first and last numbers:
2 x -3 = -6

2) We the look for the numbers that multiply to give -6 and add to give 5
+6 and -1

3) Rewrite the question replacing 5x
$2x^2 + 6x - x - 3$

4) Factorise the first two terms and the last two terms:
$2x(x+3) -1(x + 3)$

5) Rewrite: $(2x - 1)(x + 3)$