Making Quadratics

Starter

Expand and simplify these expressions:

$(2x + 1)(3x – 4) =$ $(3x + 1)(2x – 4) =$

$(2x – 1)(3x + 4) =$ $(3x – 1)(2x + 4) =$

$(2x + 1)(3x + 4) =$ $(3x + 1)(2x + 4) =$

$(2x – 1)(3x – 4) =$ $(3x – 1)(2x – 4) =$

What patterns do you notice in the questions and the answers?

Can you explain why they happen?

Main task

Look at this quadratic expression, in which the constant term is missing:

$$6x^2 + 7x + \square$$

Can you make the expression factorisable by putting **an integer** in the box?

How many possible solutions are there? Why?

What if the integer in the box has to be between –10 and 10?

What happens if you change the 6 and the 7 in $6x^2 + 7x + \square$ to other numbers?

Extension

Now try the same thing with this expression:

$$6x^2 + \square x + 7$$

Can you make this expression factorisable by putting an integer in the box?

How many possible solutions are there this time? Why?

What other questions can you ask?