



The purpose of this activity is to practise expanding brackets and factorising quadratic expressions.

### Information sheet

Quadratic expressions and equations have many applications in everyday life, though these are not obvious.

The Greeks used one solution of the equation  $x^2 + x - 1 = 0$  to define the Golden Ratio which is now used extensively in films and photography. Solving more complex quadratic equations enabled electronic equipment such as mobile phones to be designed and manufactured.

Here are some quadratic expressions and their factors.

$$x^2 + 10x + 25 = (x + 5)(x + 5) = (x + 5)^2$$

$$x^2 - 25 = (x - 5)(x + 5)$$

$$x^2 - 10x + 25 = (x - 5)(x - 5) = (x - 5)^2$$

$$2x^2 - 5x - 25 = (2x + 5)(x - 5)$$

$$6x^2 - 5x - 25 = (2x - 5)(3x + 5)$$

### Think about...

What methods do you know for expanding brackets?

How do you know whether an expression will factorise into one bracket or two?

When factorising, what is the significance of a term in the expression being positive or negative?

Check that you can factorise and multiply out the expressions above. Your teacher may not wish you to do all of them.

### Try these

Your teacher will give you a set of cards. Your task is to match the expressions in factorised and expanded form.

### Reflect on your work

- What did you find most challenging about this activity?
- Write down your three top tips for overcoming these challenges next time you meet quadratic expressions.
- Share your ideas with a partner, a small group or the class.