Completing the square is used to solve quadratic equations that cannot be factorised and allows the turning point to be found.

For example, express X squared plus eight X subtract seven in the form of brackets X plus a squared, plus b.

First find the value of a.

To do this, halve the coefficient of X. Half of eight is four, so our expression starts with brackets x plus four all squared.

If x plus four squared is expanded it becomes x squared plus eight x plus 16.

X squared plus eight x matches the first two terms of the original expression, but needs adjusting for the extra 16.

So, 16 is subtracted to get the same value as the original expression.

So, our expression becomes: brackets x plus four all squared subtract 16, subtract seven, which simplifies to x plus four squared subtract 23.

Simplify like terms to complete the square to get negative 23.

Completing the square allows the turning point of the quadratic function to be stated.

If the equation is in the form x plus a squared plus b, then the turning point is negative a, b.

If the equation is in the form x subtract a squared plus b, then the turning point is a, b.

For this example, the turning point is negative four, negative 23.