Graphs of Quadratic Functions (GeoGebra)

There are several different ways of writing a quadratic function.
One form is ax^2+bx+c.

In this mini-project you will look at different ways of writing a quadratic and discover what information that you can find from the way a quadratic is written.

The forms you will look at are:

ax^2+bx+c	general form
$(x+a)(x+b)$	factorised form 1
$(x+a)^2+b$	completed square form 1
$(ax+b)(cx+d)$	factorised form 2
$a[(x+b)^2+c]$	completed square form 2

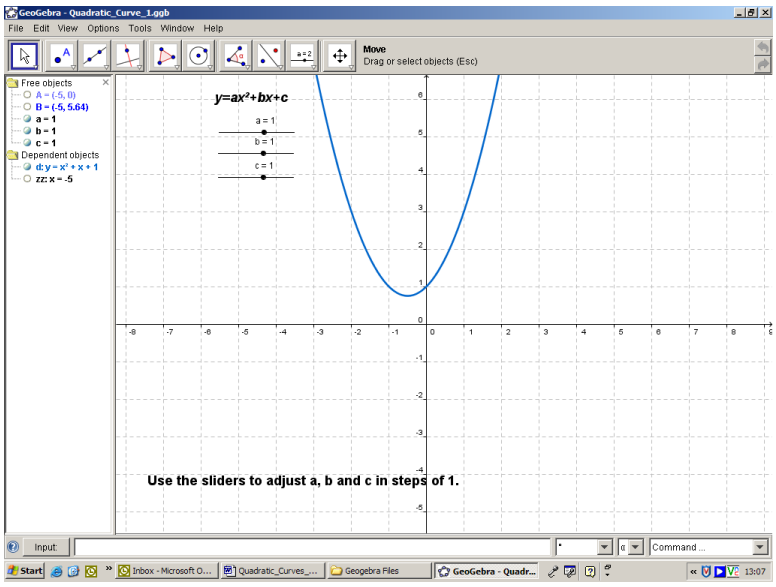
You are going to look at the graphs of $y=q(x)$ where $q(x)$ is a quadratic function.

> The main information you should be able to find from each graph is
> - The intercepts with the axes
> - The maximum or minimum point on the graph
> - The general shape of the graph

Using Geogebra to explore quadratic functions

Open the file Quadratic_Curve_1.ggb

It should give you a screen that looks like this:



To adjust the graph you use the sliders for a, b and c.

Change the value of a. What happens to the graph?

What happens when a is negative?

Now set a to 1 and look at what happens when you adjust b.

Now set b to 1 and look at what happens when you adjust c.

Can you predict the effect that different values of a, b and c will have on the graph?

Can you generalise?

Now do the same using these files:
Quadratic_Curve_2.ggb
Quadratic_Curve_3.ggb
Quadratic_Curve_4.ggb
Quadratic_Curve_5.ggb

Write a short report. Cut and paste examples of graphs on to this to show what you have found.