

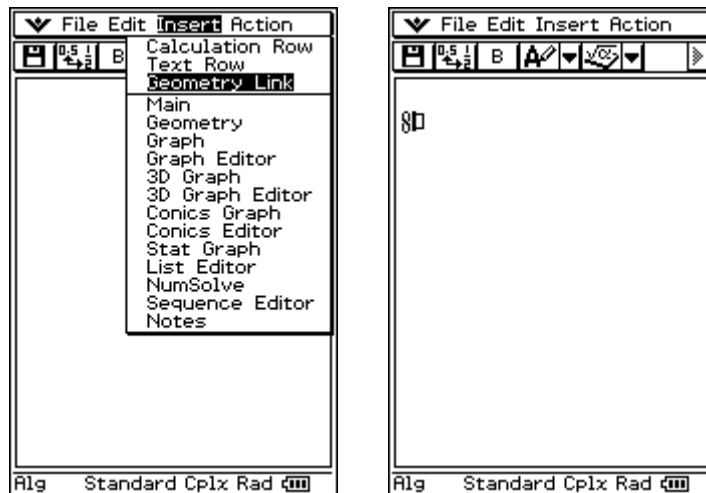
## HotLinked Parabolic Mirrors

The third menu option on eActivity's **Insert** menu is **Geometry Link**. We'll use a parabolic mirror to focus in on this feature.

A geometry link is a direct two way link between an expression in eActivity and an object in geometry. When the geometric object moves, the expression changes. When the expression changes, the geometry object moves.

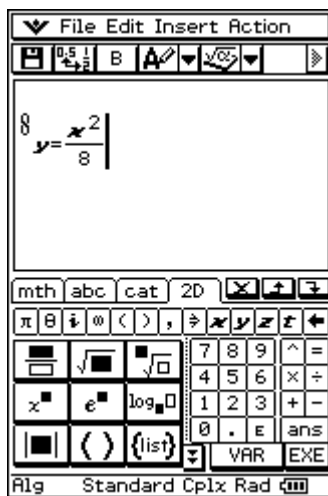
We'll build a model to allow us to study the reflection of a ray of light in a parabolic mirror. In order to do this we'll have to use geometry commands which we won't explain in detail until later on in the book. So if you are following along on your ClassPad, it might be better to stop and read just for this section. You can come back and make the model after you have gone through the geometry chapter (coming up next).

First, we insert a geometry link:

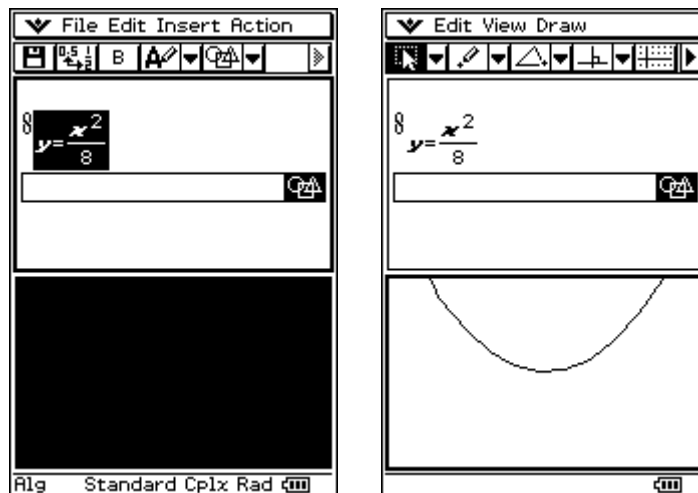


The Geometry Link looks like an ordinary Math Entry Field but has a small link symbol to its left.

We can enter our parabola's equation:

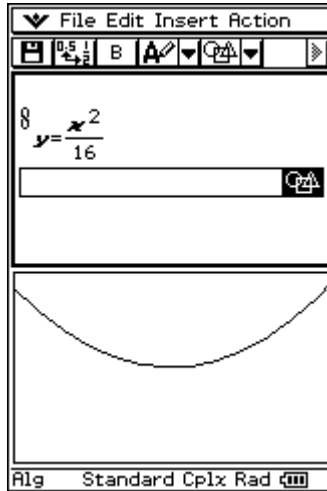


We now create a geometry strip and drag in the equation:

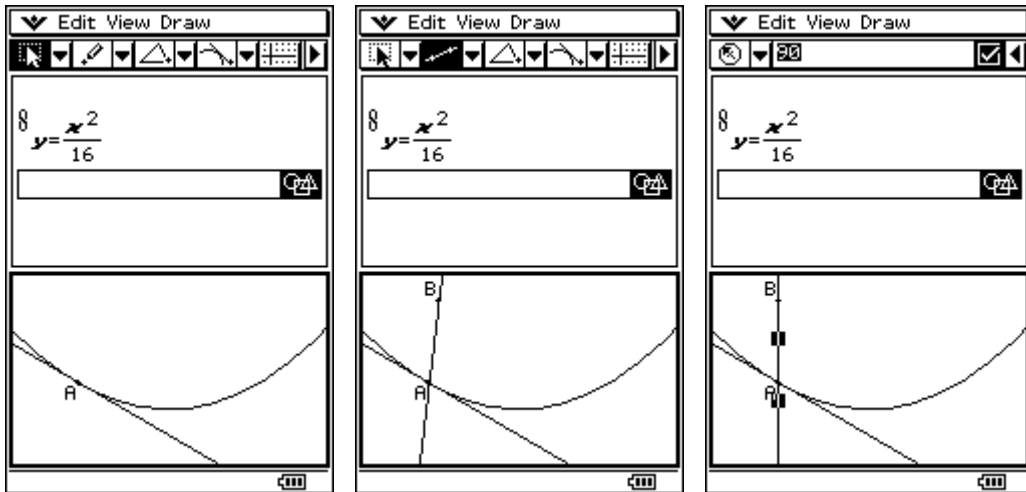


## GETTING THE MOST OUT OF CLASSPAD

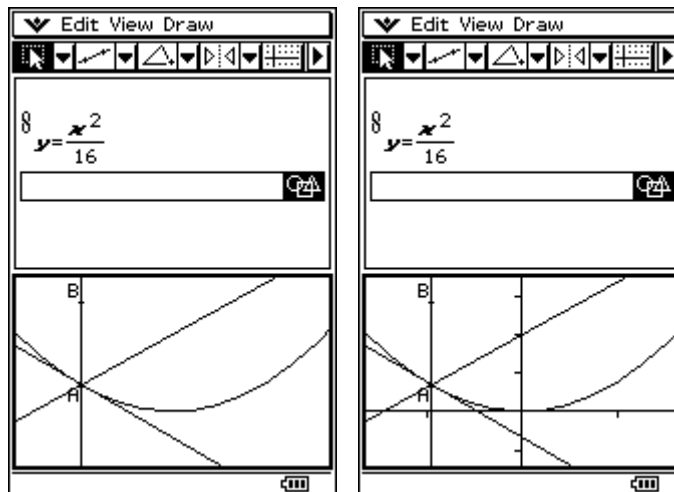
Now, if we change the equation in the Geometry Link, the geometry model is updated automatically:



To study reflection in the parabola, we need to first construct its tangent. Then we create an infinite line through the tangent point, and set its direction so that it is vertical.

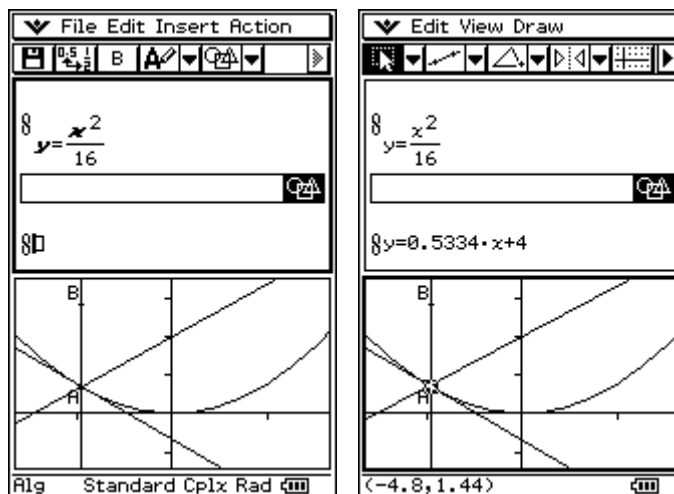


Now, we reflect the line AB in the tangent (switching on the axes gives a clearer view):



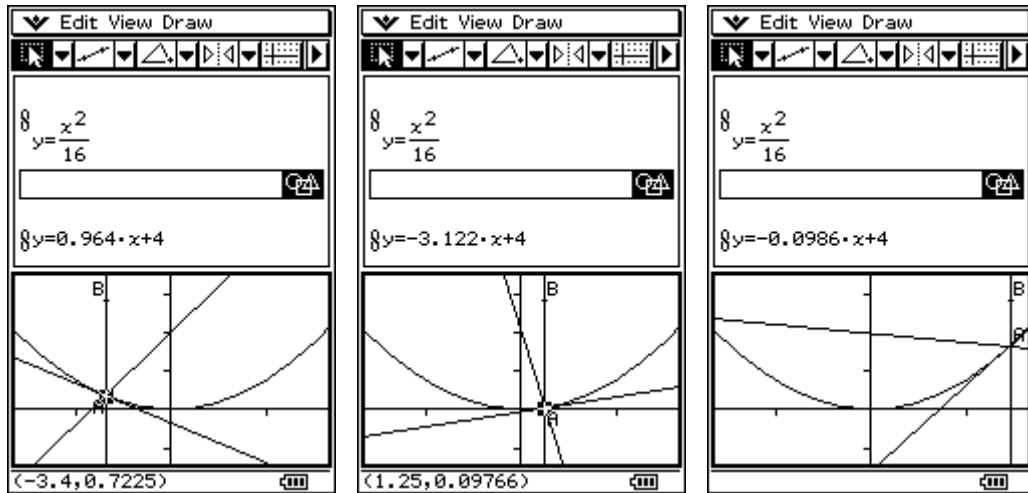
Now let's link the reflected line's equation back to eActivity:

First, we create another Geometry Link, then we drag the line into the link:



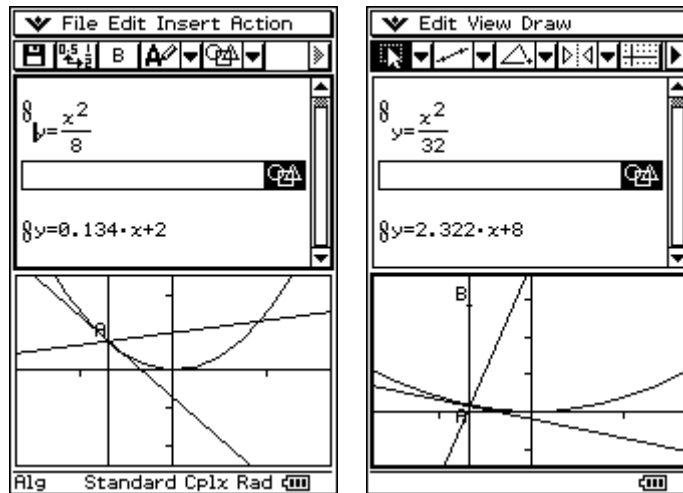
GETTING THE MOST OUT OF CLASSPAD

We can now drag point A round the parabola and watch its equation update in the eActivity window:



What do you notice about the equations. What property do the reflected lines all have?

We can experiment with changing the coefficient of the original parabola. The geometry and the line equation automatically update:



Can you identify a pattern in the line equations?