Setup

- No set up in the classroom is required, however, it MUST be a sunny day and you need to go somewhere outside that is **directly in the sun**.
- before going outside hold the concave mirror towards the classroom lights and try to focus it on one spot – it won't work very well (or at all) - see "Explanation" below for why this is the case.
    - When doing this get the students to say what they see *(there is some reflection, but it's not very intense or easy to see).*

Procedure

- Go outside to a sunny area with the concave mirror and a few pieces of newspaper – try to go somewhere on the pavement where having paper on fire won't be a big deal – also bring a full water bottle outside with you just incase you need to put the fire out.
- stand in direct sunlight with the concave mirror and point the mirror directly back to the sun
- if students want they can put their hand in front of the mirror and work it towards to focal point **WARNING: it will be very hot near the focal point – tell all students this!**
- have a student hold up a piece of newspaper and move the newspaper back and forth until the rays being focused on the newspaper are at their finest point – this is the focal point.

Explanation: the finest point is considered the focal point because all of the rays from the sun are essentially parallel when they reach the earth –Diagram 1 shows this. Since the sun is so far away any rays that leave the sun that are not on a direct trajectory to the earth will miss the earth because over the distance from the sun to the earth any small variation in rays will be magnified over the distance the rays travel. Thus, all rays can be approximated to be parallel.

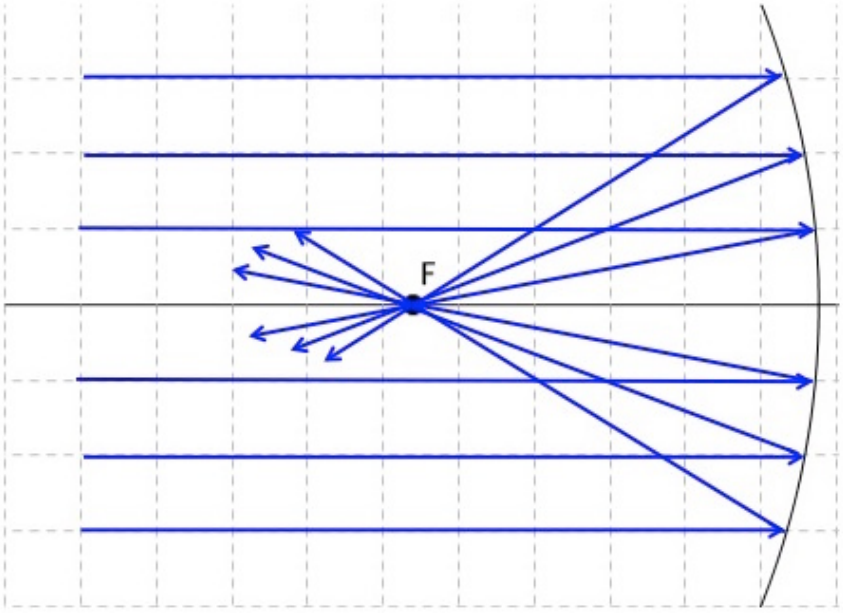

Diagram 1: Parallel rays on a concave mirror converge at the focal point