Curved Mirrors and The Law of Reflection

Read from **Lesson 3** of the **Reflection chapter** at **The Physics Classroom:**

http://www.physicsclassroom.com/Class/refln/u13l3a.html

MOP Connection: Reflection and Mirrors: sublevel 5

The diagram below depicts a concave mirror with its principal axis and its center of curvature (C). Five incident rays are shown traveling parallel to the principal axis.

1.   Construct normal lines for each of the five incident rays. (Geometry Review: A line which passes through the center of a circle will be perpendicular to the circle at its point of intersection. Thus, the normal line for each of these incident rays passes through C.)

2.   Measure the angle of incidence and use the law of reflection to construct five reflected rays at the appropriate angle of reflection.

3.   Construct two more incident rays parallel to the principal axis that strike points 6 and 7. Draw the normal line and use the law of reflection to draw the corresponding reflected rays.
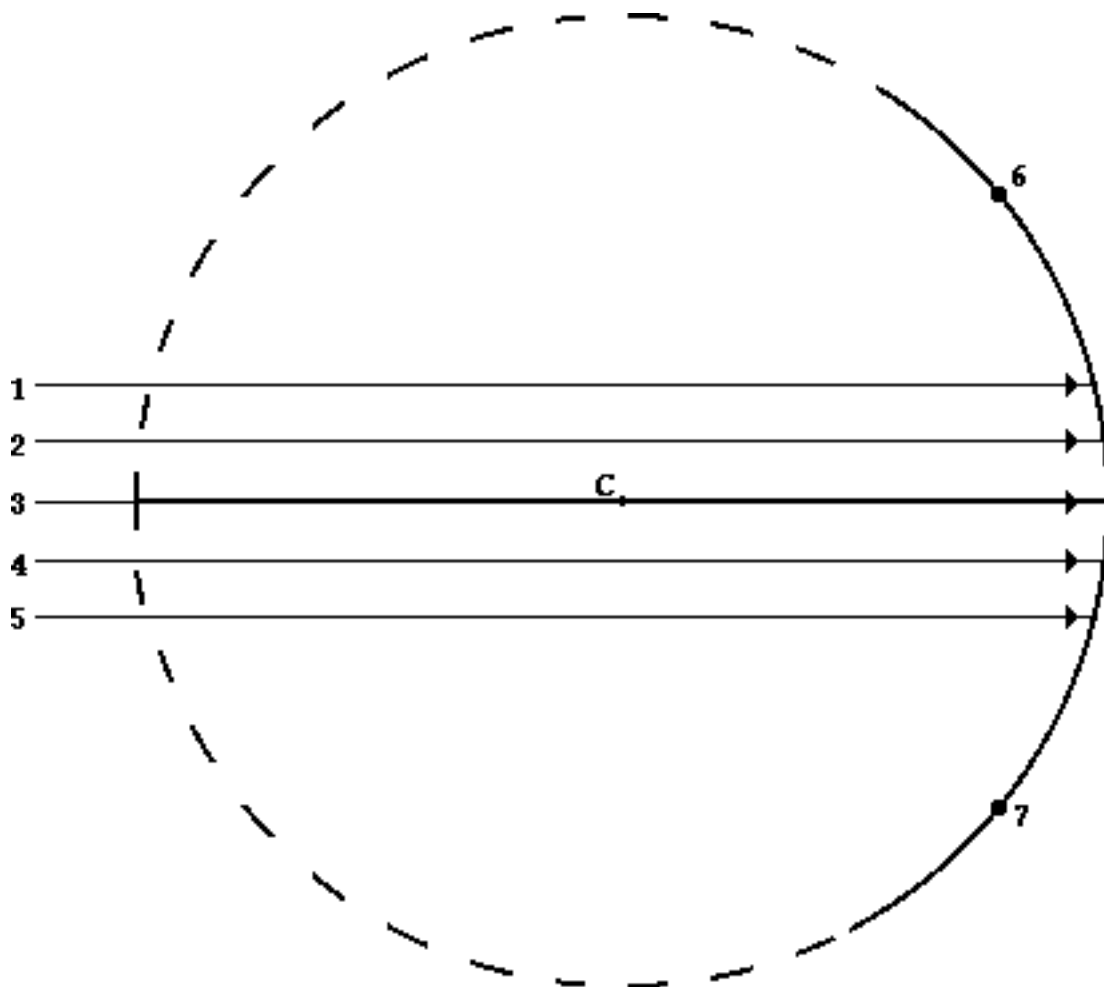

4.   Label the focal point (F) on the diagram above.

5.   Propose your personal definition of the focal point: The focal point is …

6.   Make some generalized statements about rays 1-5 and about rays 6-7. How are they similar and how are they different?

Light, Reflection and Mirrors

The diagram below depicts a **convex mirror** with its principal axis and its center of curvature (C). Five incident rays moving parallel to the principal axis are shown.

7. As on the front side, construct normal lines for each of the five incident rays. (Geometry Review: A line which passes through the center of a circle will be perpendicular to the circle at its point of intersection. Thus, the normal line for each of these incident rays passes through C.)
8. Measure the angle of incidence and use the law of reflection to construct five reflected rays at the appropriate angle of reflection.
9. For each reflected ray, construct extensions of the rays backwards behind the mirror until they intersect the principal axis.
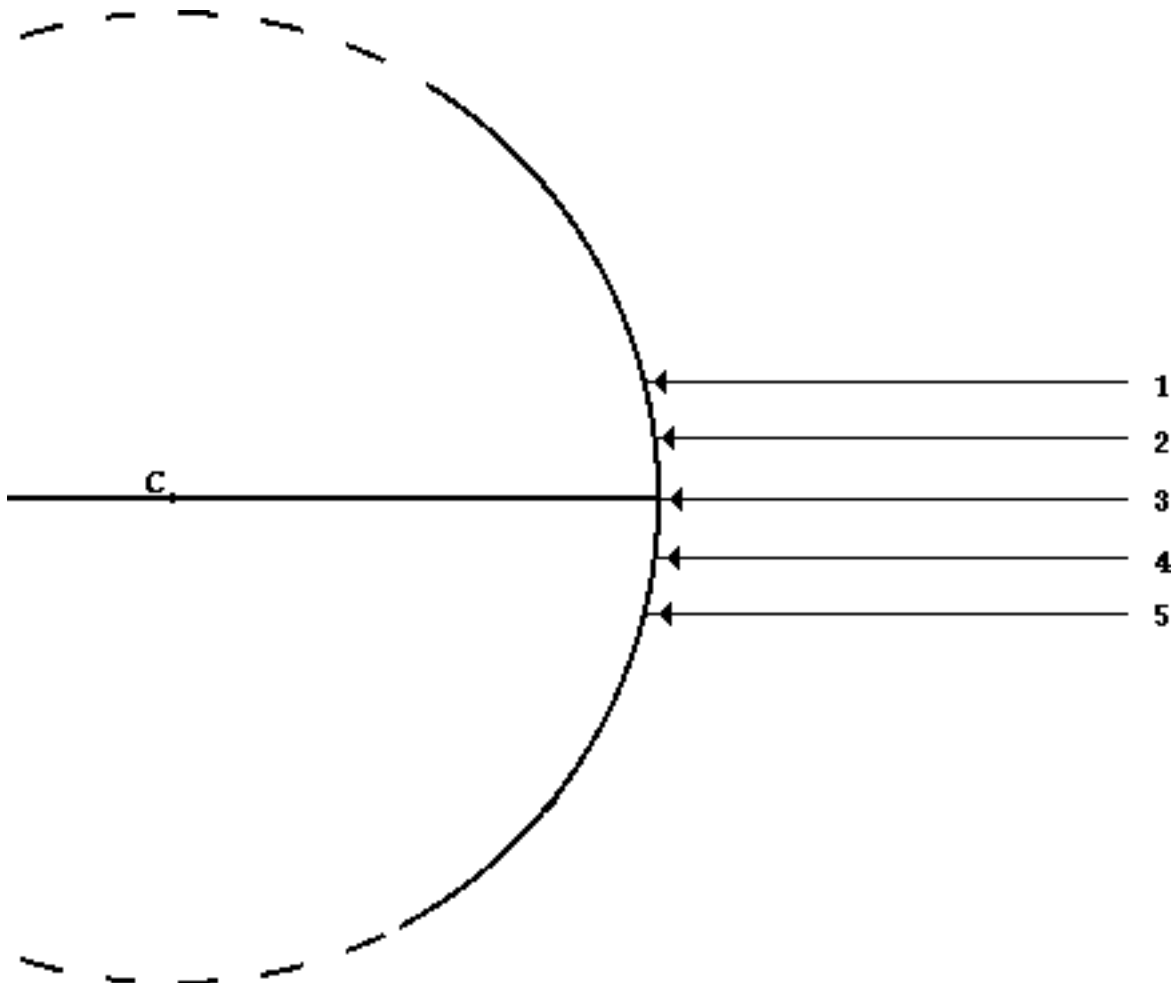
10. Make some generalized statements about rays 1-5 to describe how they reflect.

Conclusion:
Propose a rule of reflection for both concave and convex mirrors that would describe how incident rays parallel to the principal axis would behave upon reflection.