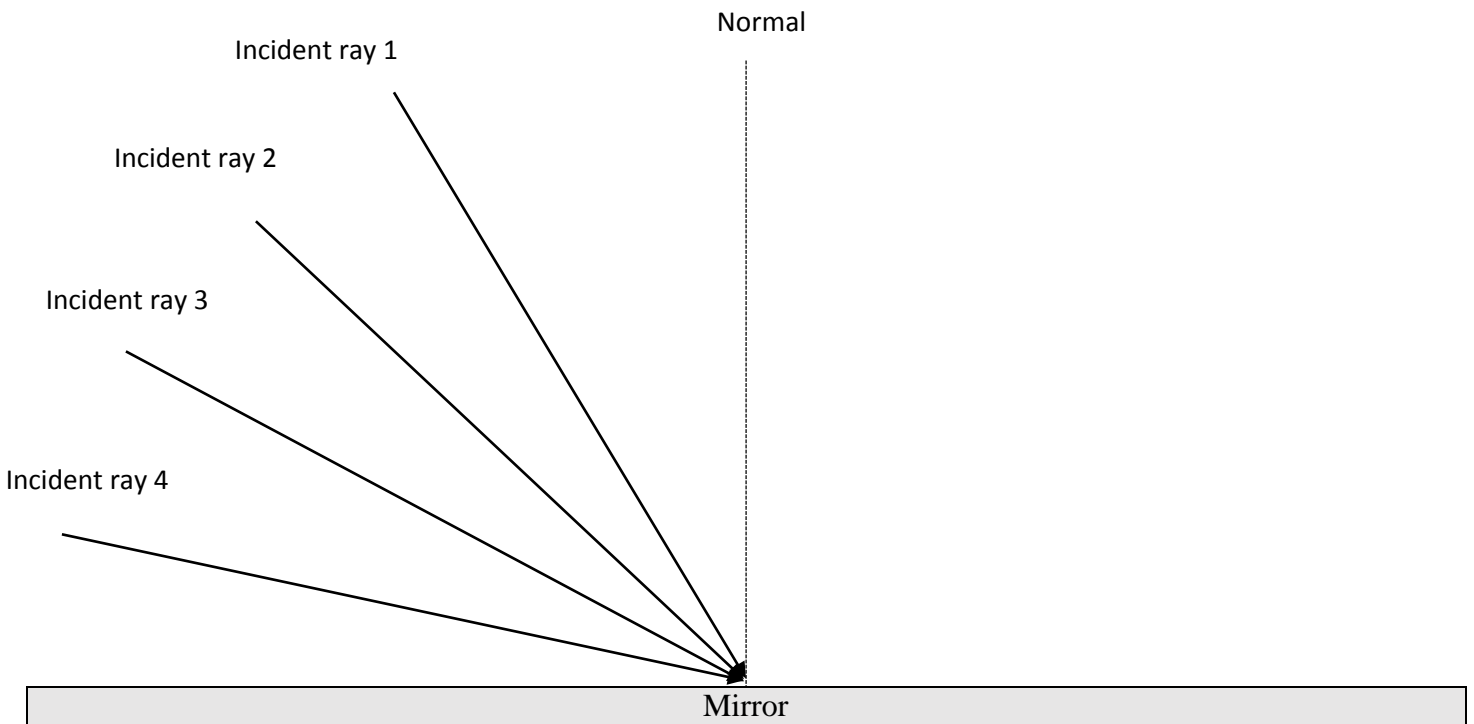


Introduction: When you look in a mirror, light reflects off your face in all directions. Some of this light reflects off the mirror into your eyes. This light must follow a consistent pattern because you always see the same image of your face in a mirror. In this activity, you will be guided through the process of making a ray diagram. When your diagram is complete, you will analyze the relationship between incident and reflected rays.

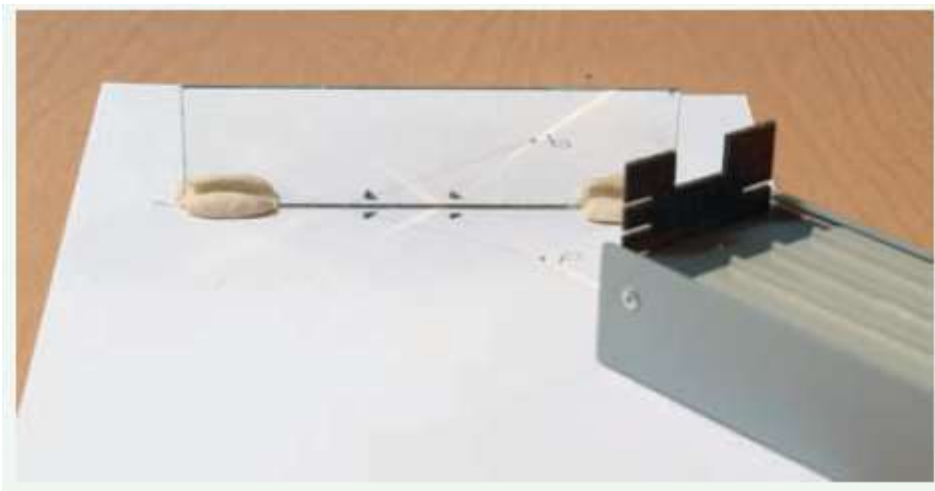
Prediction: What do you think will be the relationship between the **angle of incidence** and the **angle of reflection**? Do you think they will be the *same*? Do you think they will be *different*? If you think they will be different, *how* do you think they will be different? **Write your prediction here:**

Materials

- ray box
- small plane mirror
- protractor
- pencil



1. Use the protractor to measure the angle between Incident ray 1 and the Normal. Record this as the angle of incidence in the Data Table.
 - a. Repeat this step for the remaining Incident rays.
2. Place the mirror so that the reflecting surface is exactly along the line of the mirror in your diagram
3. Use the ray box to shine a thin beam of light along Incident ray 1. Mark the reflected ray with a series of dots along the path of the reflected light.



4. Remove the mirror and the ray box. Locate the reflected ray by drawing a line through the dots and ending at the mirror. On this line draw an arrowhead pointing away from the mirror to indicate that this is a reflected ray.
5. Measure and record the angle of reflection (the angle between the normal and the reflected ray).
6. Repeat steps 2 to 5 for the remaining incident rays.

Data Table

| | Angle of Incidence | Angle of Reflection |
|------------------------|--------------------|---------------------|
| Incidence ray 1 | | |
| Incidence ray 2 | | |
| Incidence ray 3 | | |
| Incidence ray 4 | | |

Analysis and Conclusions:

1. Did your results support your prediction? How do you know?

2. Were there any sources of error in your investigation? What were they?

3. What is the relationship between the angle of incidence and the angle of reflection?
