# Ray Diagrams for Plane Mirrors
## Lesson Notes

## Learning Outcomes
- What is a ray diagram and how do you draw them for plane (flat) mirrors?

## What is a Ray Diagram?
- A **ray diagram** is a conceptual tool that shows how light gets from the object to the mirror to the eye as a person sights at the image of an object.
- Ray diagrams are based on the premise that to view an object in a mirror, one must sight along a line at the image of the object. When one does, light travels along that line to your eye.
- Ray diagrams can be drawn for all types of mirrors. This video focuses on plane mirrors.
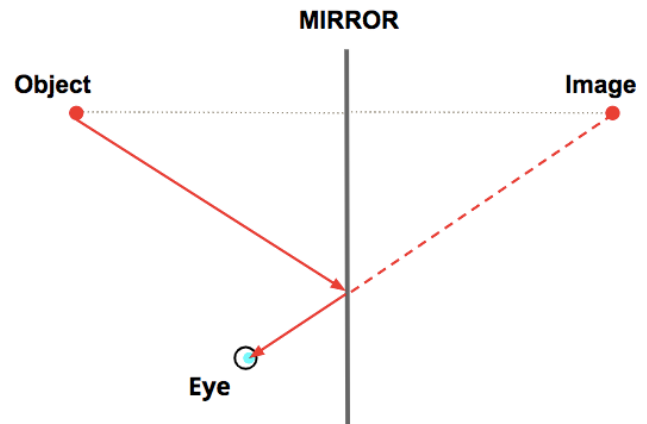
## Proceure for Drawing Ray Diagram
### Step 1 Locate the Image:
Draw in the image at the proper location.

### Step 2 Draw the Reflected Ray:
Align a straight-edge along the *line of sight*. Draw the reflected ray from the mirror to the eye. Extend the reflected ray with a dashed line back to the image location.

### Step 3 Draw the Incident Ray:
Use a straight-edge to draw the incident ray from the object to the mirror.

**NOTE:** If the object is an arrow object instead of a point, then perform the procedure twice - once for the top extreme and once for the bottom extreme of the arrow.

## Practice: Complete these ray diagrams:

Point Object                          Arrow Object
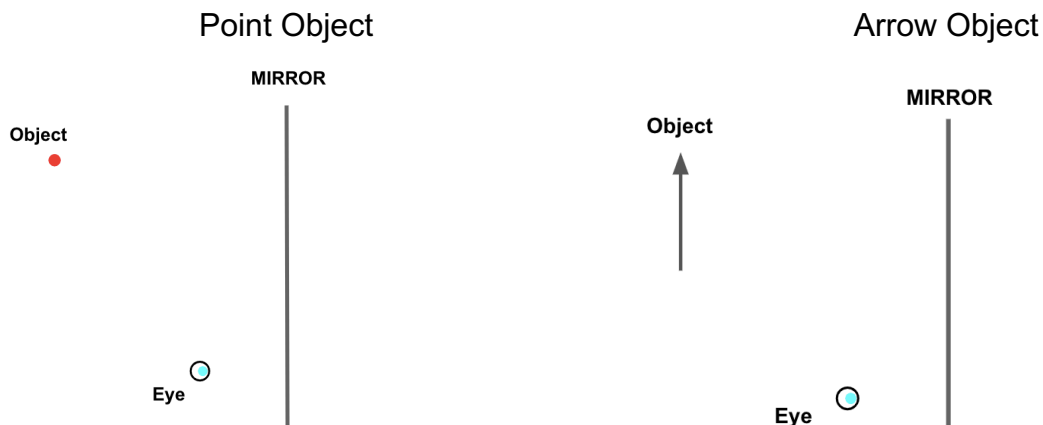
## Application #1: Where Must an Eye Sight to See the Complete Image of an Object?
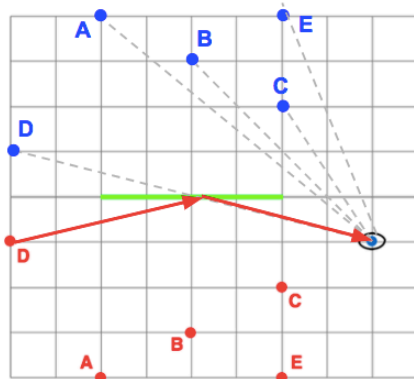
At what locations on the mirror must the eye sight in order to view the image of the object in the mirror?
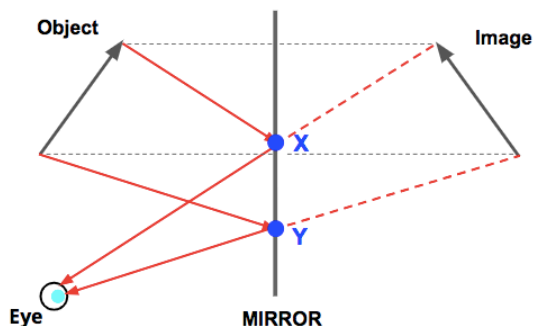
**Answer:**

The eye must sight as high as point X and as low as point Y.

## Application #2: Who Can See Who?

Al (**A**), Bo (**B**), Cy (**C**), Dez (**D**), and Ellis (**E**) are positioned in front of a plane mirror. Which students can be seen from the indicated eye position?
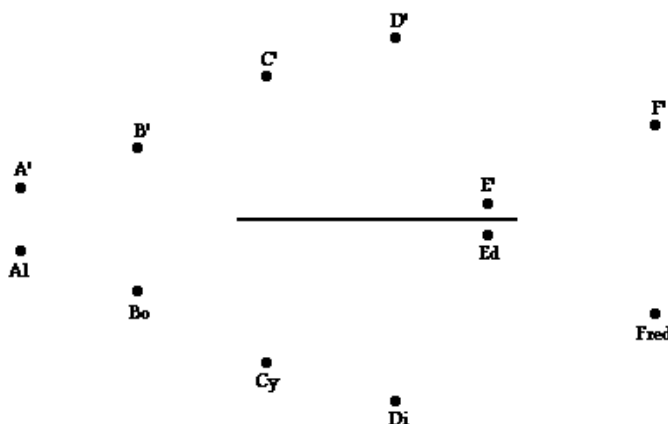
**Step 1**: Locate the images.
**Step 2**: Draw lines of sight at each image. If line intersects the mirror, then the image can be seen.

**Answer:**

Only Dez can be seen.

## Practice: Who Can See Who?

Six students are arranged in front of a mirror. Their positions are shown below. The image of each student is also drawn on the diagram. Make the appropriate line of sight constructions to determine that students each individual student can see.

Answers in Check Your Understanding section (bottom of page) at ...
https://www.physicsclassroom.com/class/refln/Lesson-2/Ray-Diagrams-for-Plane-Mirrors