Welcome Back

- Please take a handout.
- We will be doing this lab during the first 40 minutes of class.
- Please read over the lab.
- I will take questions on the procedure in a moment.

Presentations

- There are a few people who have not yet presented.
- They will present at the end of class today.

Todays Lab

- Each lab group needs the following:
  - A handout
  - A mirror
  - A piece of graph paper
  - A cork board and 2 pins

Today's Lab

- Nature of plane (flat) mirrors.
- Line up pins: place one pin (A) 3cm perpendicular from the center of the mirror.
- Place another pin (B) 3cm from the mirror, 3cm from pin A.

Draw Lines

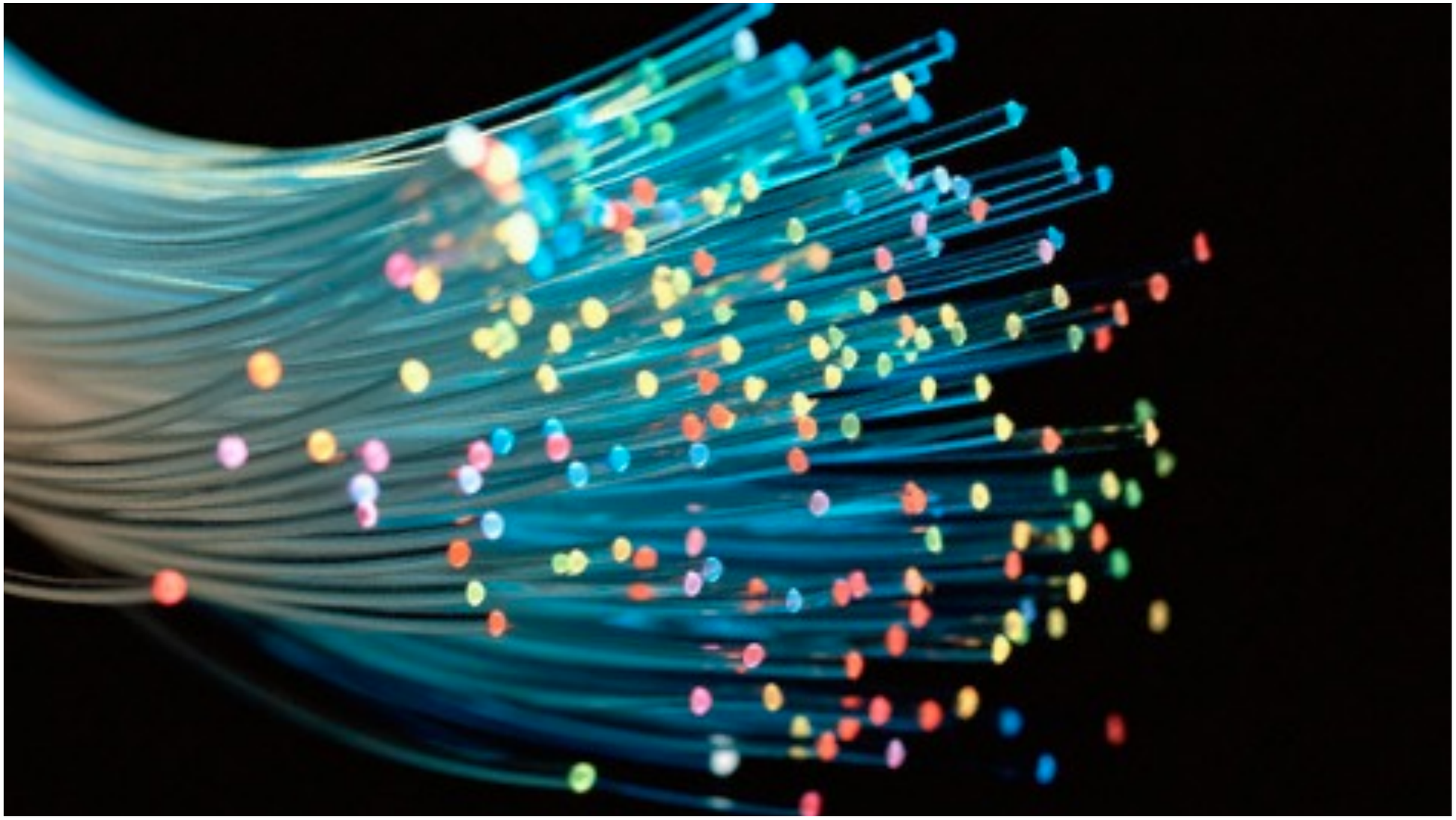
- Line up a ruler and draw a line from pin B to the mirror.
- Place pin B on the other side of pin A.
- Line up a ruler and draw a line from pin B to the mirror.

Extend Lines

- Draw line along the mirror and remove the mirror.
- Extend the lines from pin B to the mirror until they meet.
- Draw all of the other lines on the page.

Paragraph

- For each part (A and B) write a brief paragraph about the nature of mirrors.
- Address Do and Di, the angles that you measure and other aspects of mirrors and light.
- Hand in (one copy per group) your data sheet, graph paper and your paragraphs.



Optics - Nature of Light

Tonight

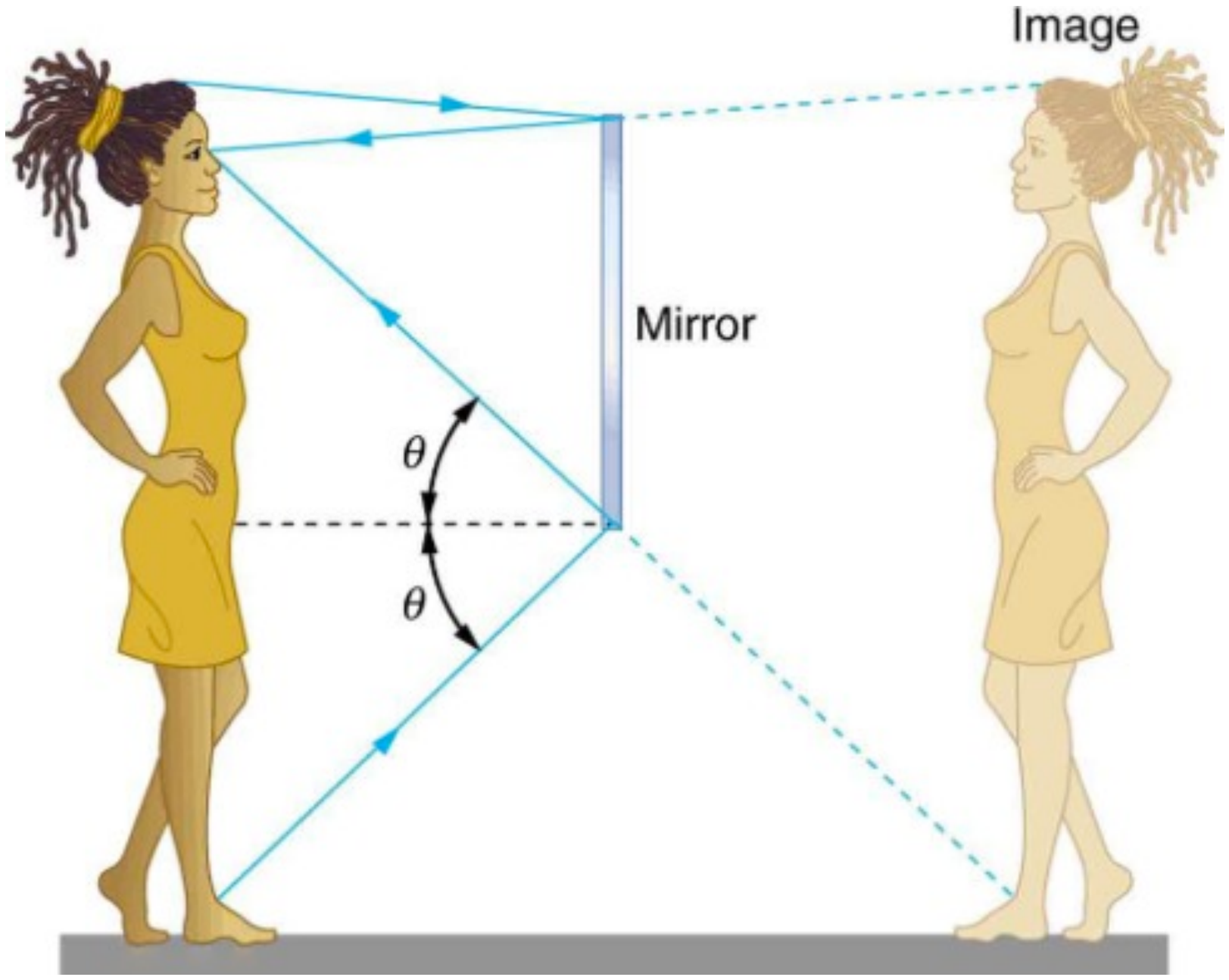
- Plane Mirror Worksheet.
- There are 4 questions.

Nature of Light

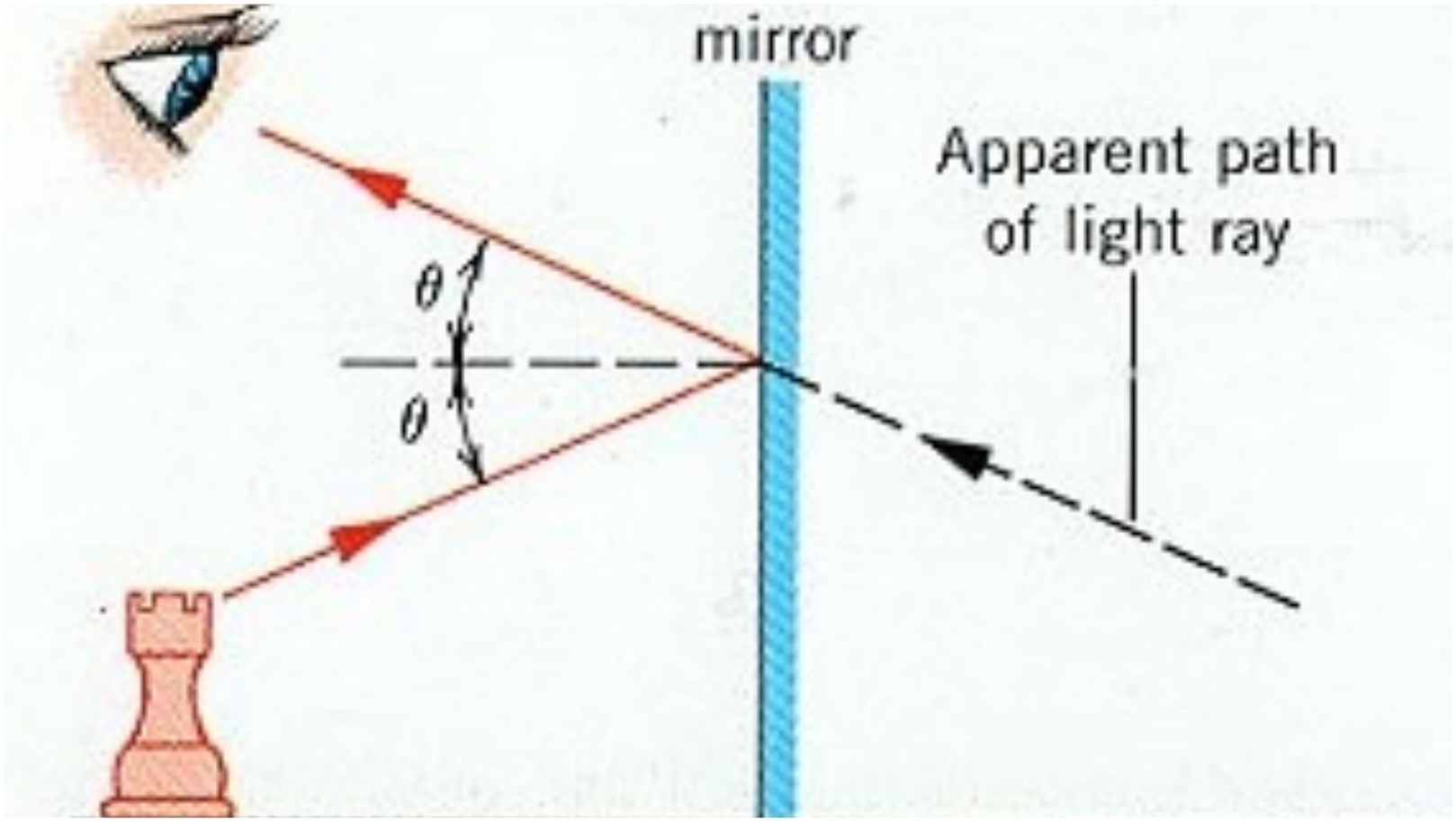
- Wave or particle? Yes.
- We need light to see.
- Can see objects that give off light (luminous objects) and objects that reflect light (illuminated objects).

Line of Sight

- In order to see something, you have to be looking at it. (How deep)
- You must line up your eyes in the direction of the object.
- In order to see an object in a mirror, you need to line your eyes with the image that the objects makes in the mirror.



Line of Sight

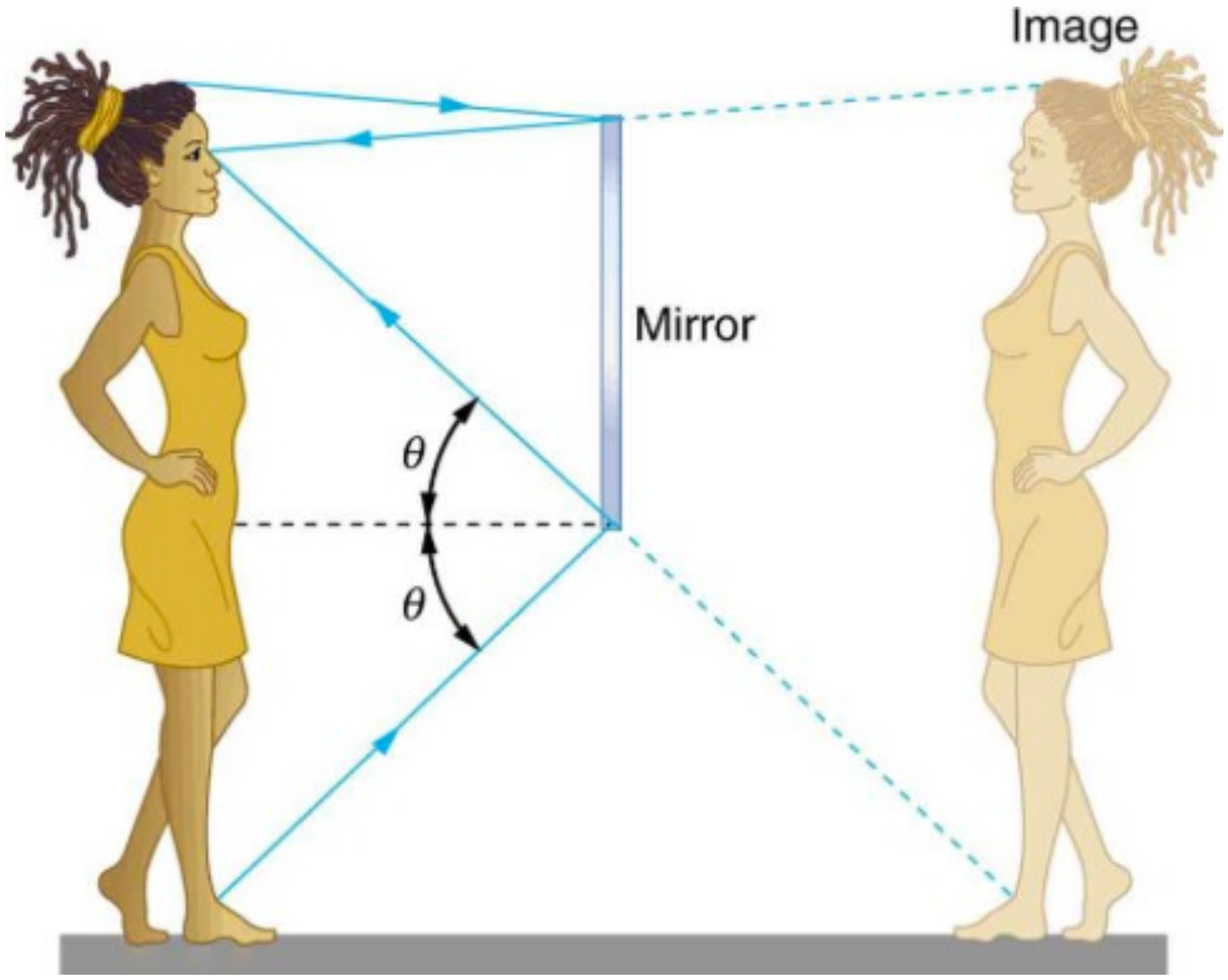

mirror
Apparent path
of light ray
θ
θ

Di = Do

- Di - Distance from the mirror to the image.
- Do - Distance mirror to the object.
- Di should always be equal to Do for a plane (flat) mirror.

Incidence and Reflection

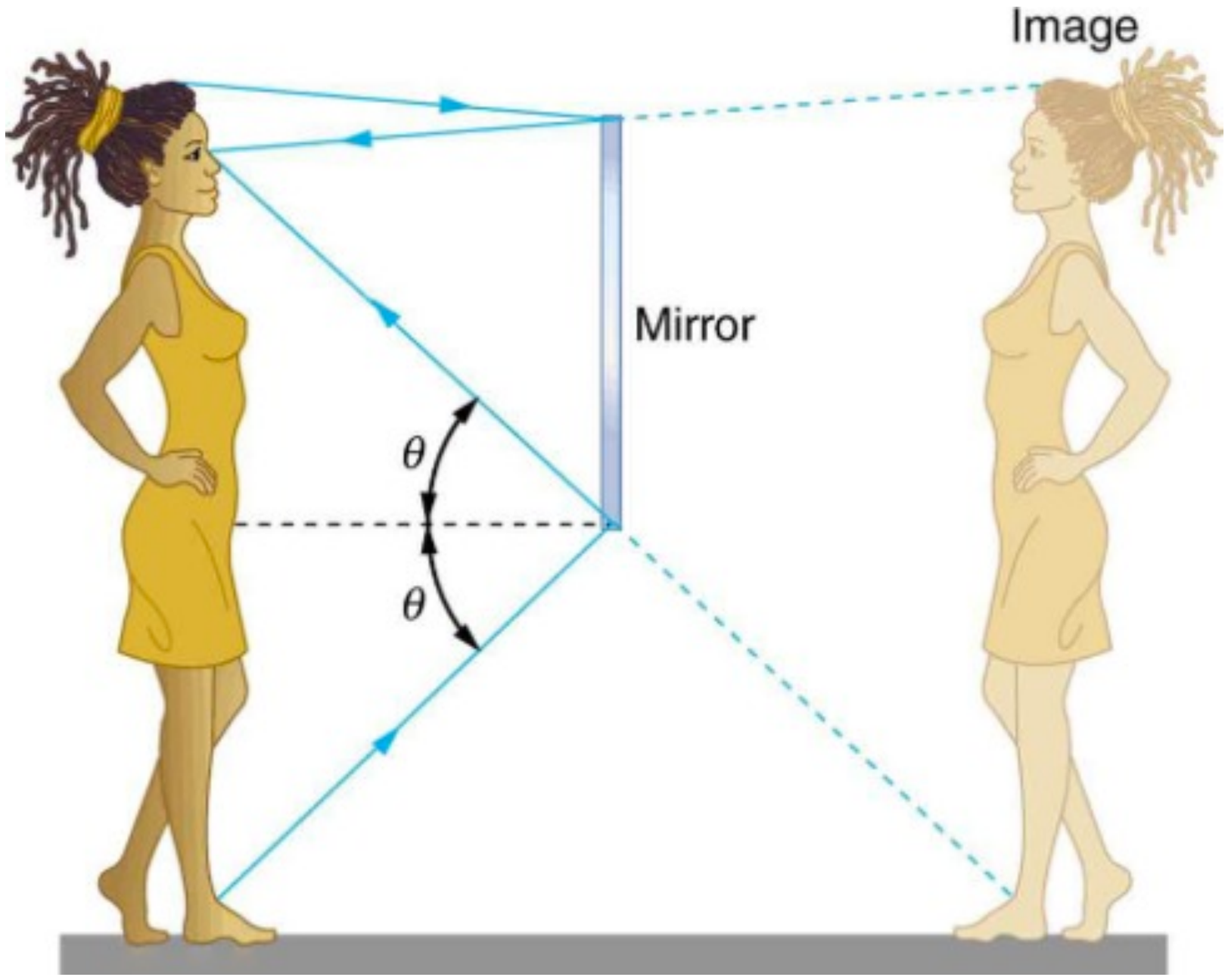
- Incidence is the ray that represents light coming off of an object towards a mirror.
- The light is reflected off of the mirror. THe direction of the reflected light toward the eye is the reflection ray.



Incidence and Reflection

θi and θr

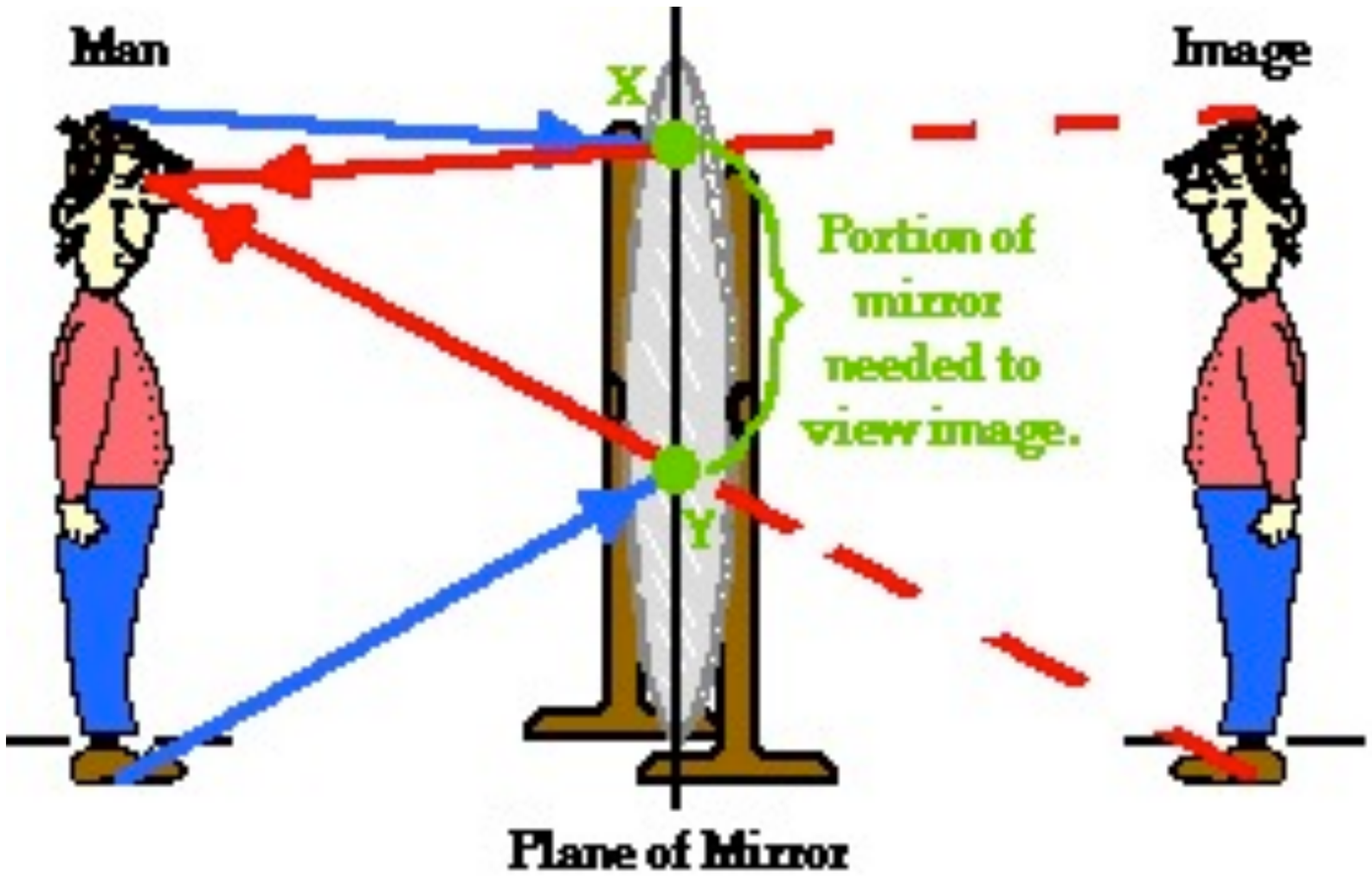
- Angle of incidence and reflection.
- Measured from a line perpendicular to the surface of the mirror.
- θi is measured from the perpendicular line to the ray of incidence.
- θr is measured from the perpendicular line to the ray of reflection.



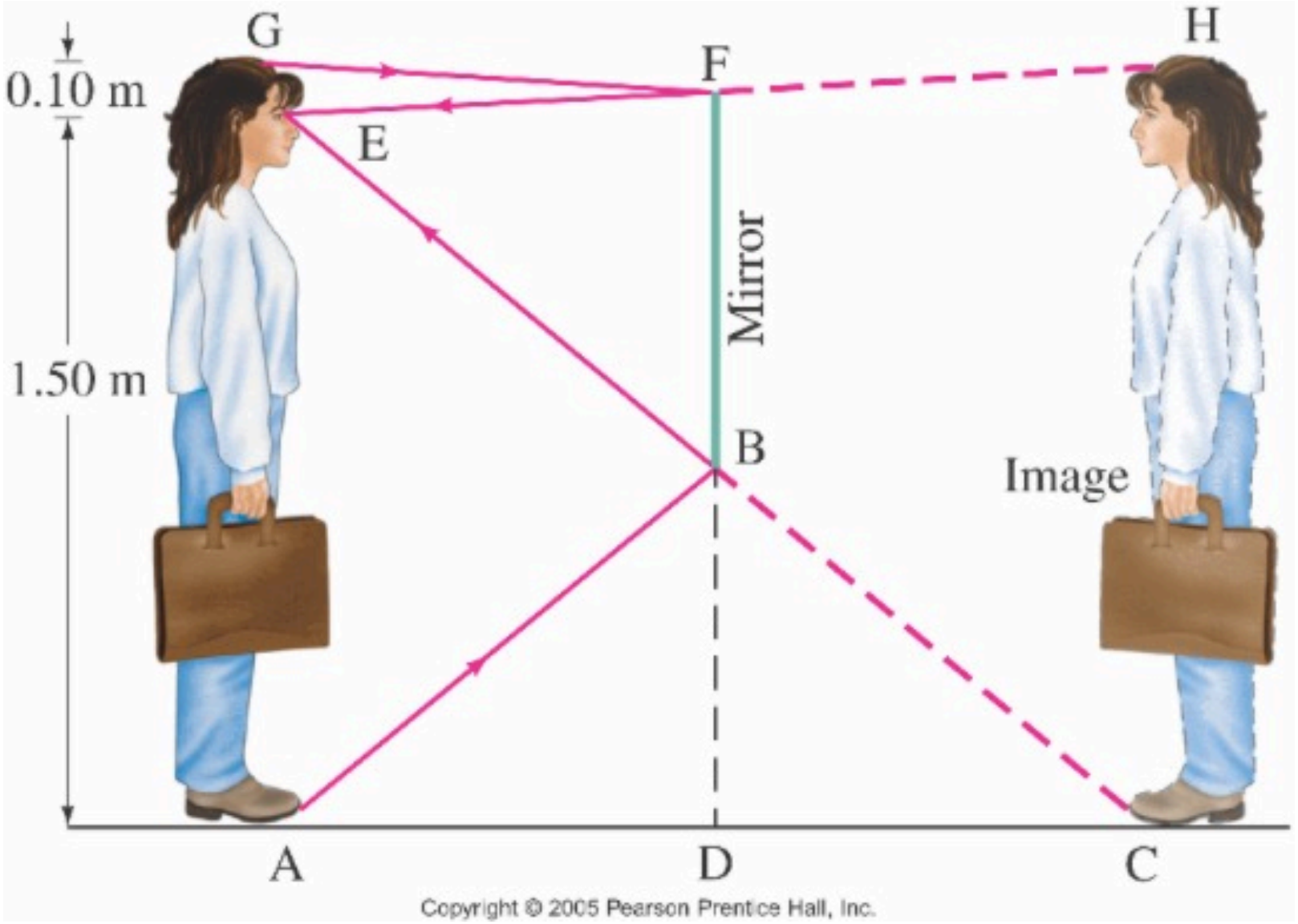
θi and θr

Required Mirror Size

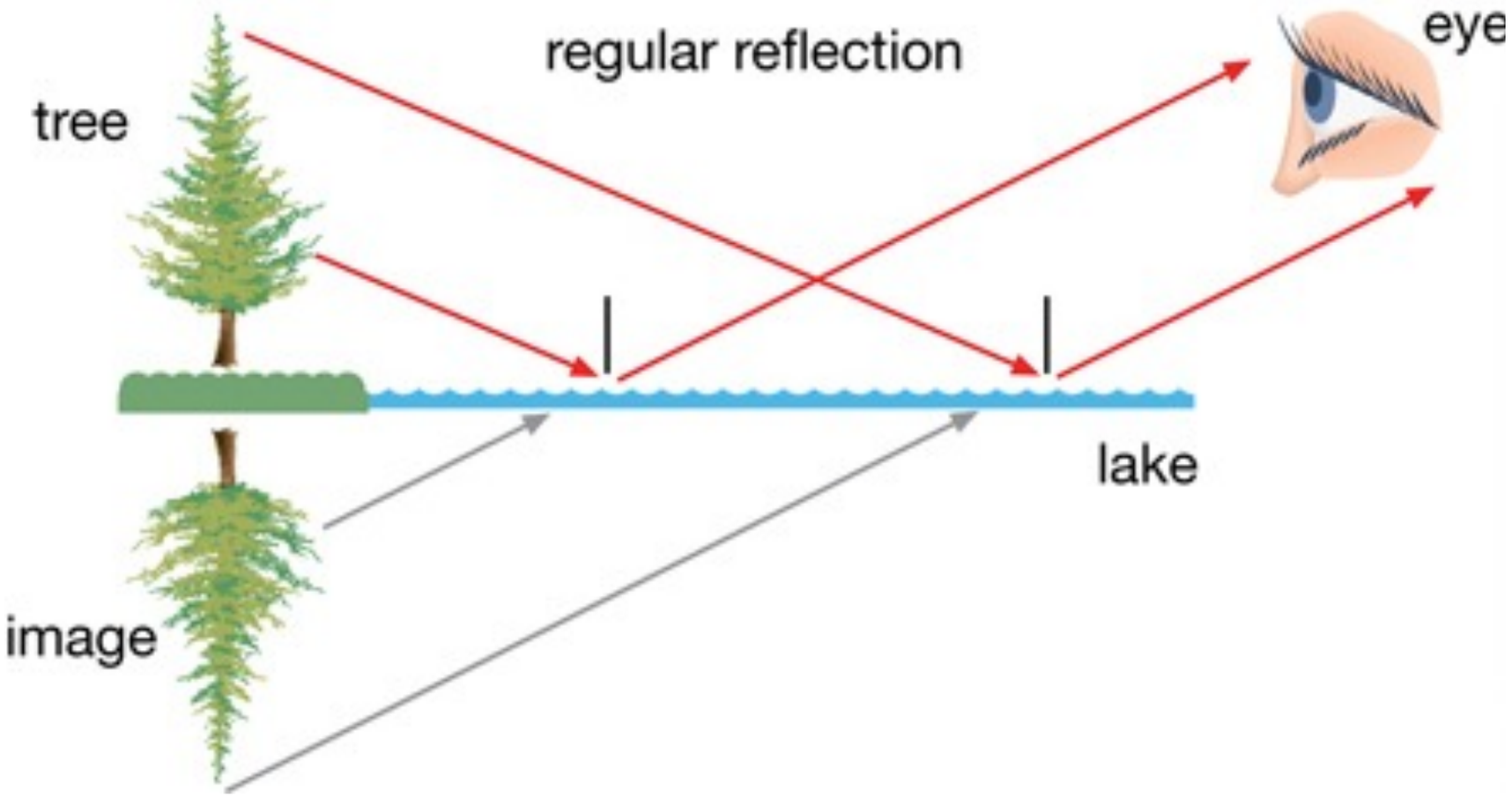
- The distance from the viewer to the mirror is half the distance of the viewer to the image.
- The size of the mirror only has to be half the size (height) of the object in order to view the image.



Man in the Mirror



Label: rays of incidence and reflection, angles of incidence and reflection. Determine the length of the mirror.



Inverted Image

Diffuse and Specular Reflection

- Specular Reflection - Smooth surface. All of the rays of light are reflected in the same direction.
- Diffuse Reflection - Rough surface. Rays of light are reflected in many directions.

Mirage

Presentations