

Ray Model of Light & Reflection Activities

1. **Draw** ray diagrams to represent what light hitting transparent, translucent and opaque objects.
(*HINT: Draw 3-4 parallel rays coming in towards an object at the same time, then show what happens to them*)

TRANSPARENT	TRANSLUCENT	OPAQUE

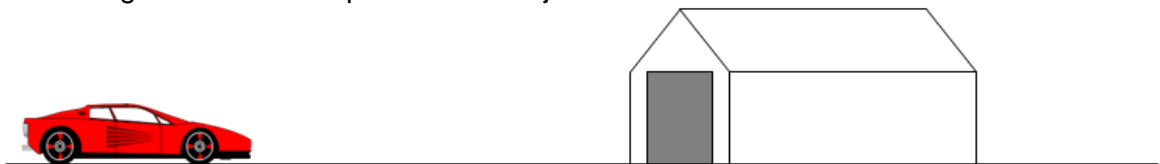
2. Use a Mira (red plastic) and adjust it so that the image of the point P is on top of the point Q. Hold the Mira in this position and trace along the bottom edge of the Mira. This represents the line of reflection (mirror surface)
 - Q is said to be the “image of P” and “P is reflected onto Q.”
 - Measure the distance from Q to the Mira line and P to the Mira line. What do you notice? Locate the image of X in the Mira line you have drawn. Label this location as Y.
 - Measure the distance from Y to the Mira line and X to the Mira line. What do you notice?

Q •

X •

P •

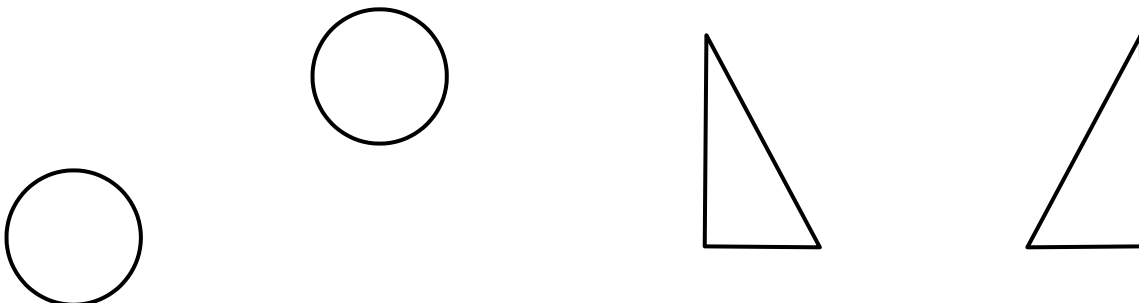
2. Use the Mira to park the car into the garage. Trace the bottom of the Mira (mirror surface). What happens to the image of the car compared to the object?



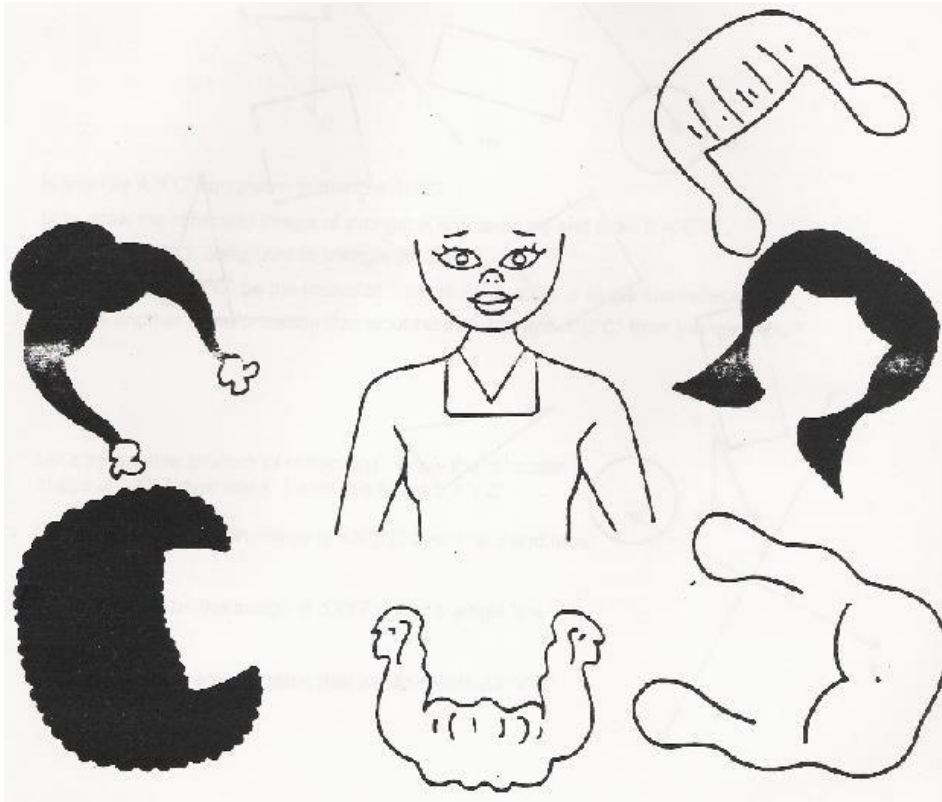
3. Place the Mira between the two circles below and adjust it so that the reflection of one circle is on top of the other circle.

Draw the Mira line. Draw a proper **ray diagram** (2 rays from a location on the object reflecting & intersecting on the image. *REPEAT for another point*) to prove why the image is in this location.

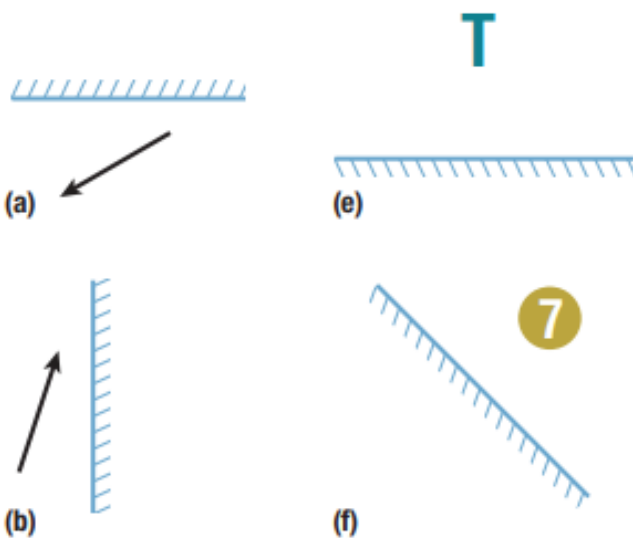
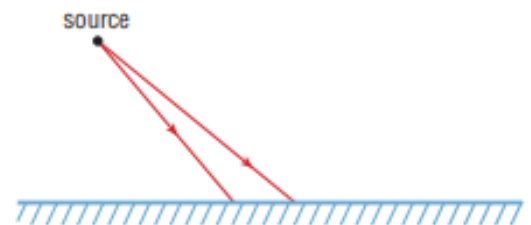
Try again with the two triangles.



- Pick **ONE** wig and find the Mira line, reflective surface needed, to place the wig on the girl's head.
Trace the bottom of the Mira location (reflective surface).
Then draw a proper **ray diagram** to show how the image appears on her head.



- Use a ruler & protractor to draw normals & reflected lines for the 2 incident rays. Then project the reflected rays to locate the apparent source (virtual image) behind the mirror. Verify using an object-image line and lines of equal length that are perpendicular to the mirror.
- For 2 of the objects (a,b,e,f) locate the images using ray diagrams. For the other 2 objects locate the images using object-image lines.



- Use light rays on the image below to show that you can see your feet in a mirror that is only half your height



Figure 14