Optics Review

1. Draw a ray diagram showing where the image would form in a concave mirror of radius of curvature 10 cm if the object were placed 3 cm in front of the mirror. Describe the image (height, location, real/virtual, upright/inverted).

2. A concave lens with a focal length of 5 cm has a 1.2 cm tall Lego head 8 cm in front of it.
   a. Find the location of the image
   b. Find the magnification
   c. Describe the image

3. A lens made a virtual image 5 times larger than the object. The object and the image are separated by 32 cm. Find the focal length of the lens.

4. A 10 cm tall object is 10 m to the left of a convex lens with a focal length of 20 cm. There is a concave lens with a focal length of 20 cm located 25 cm to the right of the first lens.
   a. How far apart are the image and the object?
   b. Size of image?
   c. Upright or inverted?

5. A convex mirror has a focal length of 6 cm. How far apart are the image and the object when the object is 8 cm in front of the mirror?

6. The critical angle for a plastic-water boundary is 59.1°. If n for water is 1.33, find the speed of light in plastic.

7. Trace the ray, showing all angles. Make sure it leaves the object.