The world in a spoon

Look at your reflection in a shiny metal spoon, or a curved mirror. If it's curved towards you, like looking into the bowl of the spoon, we call it concave and if it's curved outward, like looking at the back of the spoon, we call it convex. Use a concave mirror for this, such as your reflection off the inside of a spoon.

a. When you look at your reflection, is it magnified or reduced? Can you account for that, using our ray model of light? Draw a diagram.

b. Move the spoon or curved mirror away. What happens to your reflection? Can you account for that, using our ray model of light? Draw a diagram.

Closer than they appear

When a *T. rex* pursues a jeep in the movie *Jurassic Park*, we see a reflected image of the (very large) *T. rex* via a side-view mirror, on which is printed the (then darkly humorous) warning: "Objects in mirror are closer than they appear."

A. Is the mirror flat, convex, or concave? Why do you think so?

Let's analyze the warning "Objects in mirror are closer than they appear." to see whether this is really true.

B. If the radius of the mirror is 2 meters and the T-Rex is 10 meters from the mirror and stands 5 meters tall, how big is the image and how far is it from the mirror?
C. Draw a careful ray diagram indicating the distance *p* of the object from the mirror, *q* the distance of the image from the mirror and the image size *h'* and *h* for the object size.
D. Did you find that the image is bigger or smaller than the original object? Is it farther from the mirror than the object or closer? Does your result support or contradict the statement on the mirror? If it contradicts the statement, explain why they say it.