Problems discussed in the video series:

Videos (1) – (3)
A point source of electromagnetic radiation has an average power output of 800W.
(a) Calculate the average power received by a surface of area A that is a distance D meters from the source. Make sure to explain your calculation.
(b) Calculate the maximum values of the electric and magnetic fields at a point 3.5m from the source. Explain.

Video (4)
In a Jules Verne novel, a piece of ice is shaped to form a magnifying lens to focus sunlight to start a fire. Is this possible? Explain.

Videos (10) – (11)
Unpolarized microwaves (radio waves) are moving left to right along the z-axis with an intensity I. They hit a barrier made of a large number of closely spaced horizontal wires; call the direction of these wires the x axis.
(a) What is the direction of the E field of the microwaves after passing through these wires?
(b) What are the peak magnitudes of the E and B fields in the microwaves after passing through the wires?

Videos (12) – (14)
You have a camera that cannot focus on an object that's closer than 60cm from the front of the lens. You focus on a flower at 60cm distance, and move in until the front of the lens is 30cm from the flower.
(a) The image is blurry; draw a diagram and explain why.
(b) You now put one lens right in front of the camera lens to fix the blurriness. What type of lens (concave or convex) should you use?
(c) After fixing the blurriness is the image on the camera's film larger, the same size as, or smaller than it was when the camera was 60cm from the flower? In other words, have you changed the size of the image? Explain.