

Assignment:

- Without going to the web to see the numerous sites with the calculation, try to derive an expression for the focal length of a spherical lens (index of refraction n), assuming the lens is surrounded by air and the paraxial approximation (feel free to use the OCW materials and listed sources). Then calculate the magnification of a lens/webcam system (you might need to use the web to learn how the webcams work...)
- Take a picture of something with known dimensions (such as a wire or hair measured with a caliper, etc) with your microscope, and estimate the magnification of your microscope.
- Make a plot of temperature vs time in your incubator around different setpoints, subjecting it to different “perturbations” (e.g. add ice). Try a few different control schemes. Write a few paragraphs about what you did.
- Send us an image/movie of something interesting you have observed in your pondscum. Write a few paragraphs about what you observed.

EXTRA CREDIT:

- Get an image/movie of a tardigrade (waterbear)!