

Ch 23 #49

There are two nuances that you need to realize:

1. The info about 120mm isn't needed until pt D.
2. On pts A-C, you're solving for where to put the film, relative to the lens. Since you want a clear image on your film, you need to place the film at the same location as where the image is formed. (So you're really solving for image distance.)

Ch 23 #53

For part A, they tell you it's a real image, so you also know it's inverted, which means you actually need to use a magnification value of $M = -2$. Start by using the magnification eqn to find s_i in terms of s_o . Then substitute both of these values into the lens eqn, and solve for s_o . For part B, repeat part A, but for a virtual (and therefore upright) image.

Ch 23 #56

This one is very similar to #53, with the added twist at the end that they asked you for the total distance from the object to the image.