Thin Lens Equation

Are you tired of doing ray drawings?
We're going to use math to find the image now! Bonus: math is more accurate.

We need to know some symbols:

O = object	d = distance
i = image	f = focal length
h = height	m = magnification

Sign Conventions - Table 1 – page 566

Take a look here. Using +/- signs mean something. You will need to keep an eye on this chart when solving problems. You will be given a copy of this chart when writing a test.

Magnification

If something is twice as large, we say: 2x magnified …or…. 2x mag
If something is half as large, we say: 0.5 x magnified …or… 0.5x mag
If something is the same size, we say: 1x magnified …or… 1x mag

Generally, if the magnification number is less than 1, the image is **smaller** than object
and, if the magnification number is greater than 1, the image is **larger** than object

2 Formulas to know

Thin Lens Formula

$$\frac{1}{di} + \frac{1}{do} = \frac{1}{f}$$

*hint: convert fractions to decimals to make your life easier.
carry 3 decimal places and round to 1 or 2 at the end.

Magnification formula

$$M = \frac{hi}{ho} \quad \text{or..} \quad M = \frac{-di}{do}$$

*note the negative sign on 2nd formula