1) What is a real image? What is a virtual image? What is always true of real/virtual images in terms of their orientation?

2) What are the two types of spherical mirrors?

3) What "makes sense" in terms of mirrors? That is, on what side of the mirror do we expect to see the object? The image? Then on which side of the mirror are the object distance, image distance, radius, and focal length positive? Negative? Make a table. On which side of the mirror will the image be real? Virtual?

4) What are the 3 main beams that we draw in ray diagrams? Practice drawing them.

5) How do we find images by drawing ray diagrams? Practice them.

6) What is the mirror equation?

7) What is the lateral magnification equation?

Chapter 26

1) What is the index of refraction?

2) What is Snell’s Law?

3) What is apparent depth?

4) What is total internal reflection? How is it related to the index of refraction? How can we determine the critical angle for total internal reflection?

5) What is polarization by reflection? What is Brewster’s angle?

6) What is dispersion of light?

7) What are the two "basic" types of thin lenses? How many foci do lenses have? Which focus goes with which surface?

8) What "makes sense" in terms of lenses? That is, on what side of the lens do we expect to see the object? The image? Then on which side of the lens are the object distance, image distance, radius, and focal length positive? Negative? Make a table. On which side of the lens will the image be real? Virtual?

9) What are the 3 main beams that we draw in ray diagrams? Practice drawing them.

10) How do we find images by drawing ray diagrams? Practice them.

11) What is the thin lens equation?

12) What is the lateral magnification equation?

13) How do lenses work in combination?
14) What is refractive power? How does the human eye work? What are near point and far point? What is nearsightedness? Farsightedness?

Chapter 27

1) What is constructive interference? Destructive interference? What phase difference makes all the difference between constructive and destructive interference?

2) What is Young’s Interference Experiment? What is its importance? What is the equation for bright fringes? What is the equation for dark fringes? How would you draw a sketch of the intensity of the interference pattern?

3) Does the wavelength of light in a medium depend on the index of refraction of the medium? Does the frequency of light in a medium depend on the index of refraction of the medium?

4) What is path length difference? Try to understand the three coordinate systems in which one can view a sine wave, and how to go between them.

5) Can there be a phase change upon reflection? If yes, what are the conditions and by how much could the phase change? Can there be a phase change upon refraction? If yes, what are the conditions and by how much could the phase change?

6) What are the three ways in which the phase difference between two waves can change?

7) The thin film interference equations in the textbook are specific for certain situations. You need to be able to derive them for different situations. For thin films, you’ll usually have to combine two different phase changes - one due to reflection, and the other due to different path lengths through which the two waves travel. This is the thing that gives students the biggest headache in this chapter.

8) What is the Michelson Interferometer? What importance does it have to us?

9) What is Huygens’ principle?

10) What is diffraction?

11) What is diffraction by a single slit? What is the equation for the dark fringes? Bright fringes? How do these equations differ from the interference equations?

12) What is the intensity in single-slit diffraction? How would you draw a sketch of it?

13) What is diffraction by a circular aperture? What is Rayleigh’s criterion?

14) What is diffraction by a double slit? How would you sketch the intensity taking into account interference and diffraction?

15) What is a diffraction grating? What is the equation for the maxima? Minima?

16) What is X-ray diffraction?