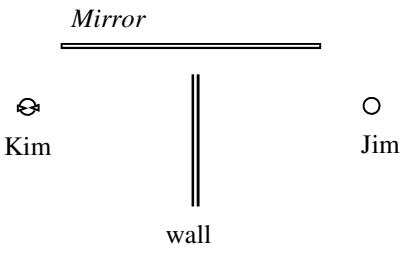
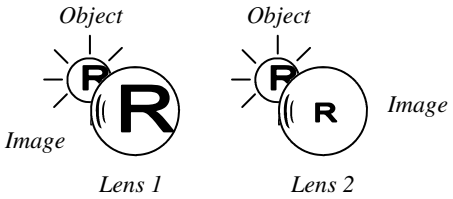
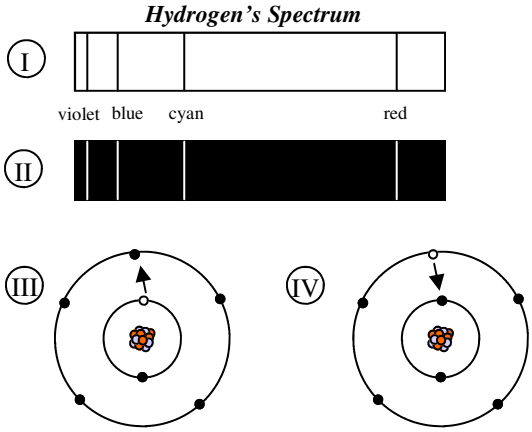
PreAP Light and Optics 11



1. Slim Kim walks into a room and sees Jim in a mirror.
   A. Draw where Jim's image is in the mirror.
   B. Use a solid line to show the actual path of the light from Jim to Kim.
   C. Use a dashed line to show the path the Jim's image SEEMS to follow.

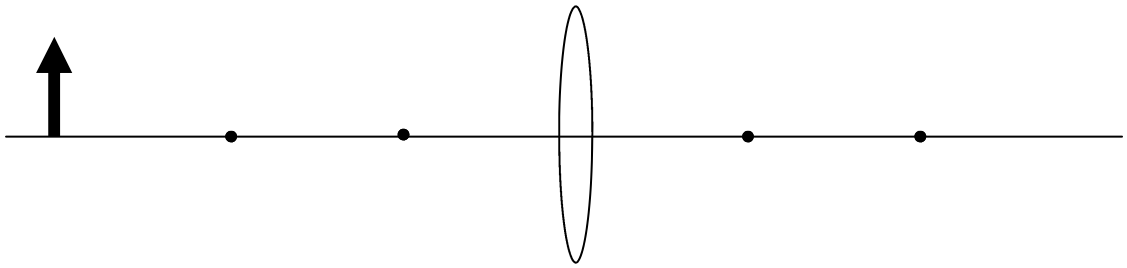


2. A person looks thru two different lenses. The images are shown at the left.
   A. Which lens magnifies?
   B. Which lens reduces?
   C. Which lens is convex?
   D. Which lens is concave?
   E. Which one is convergent?
   F. Which on is divergent?
   G. Which one is like a magnifying lens?
   H. Which lens did we use in our lab?
   I. In the lab your lens could produce what kinds of images?
   J. So, convergent devices can produce real or virtual image?
   K. Convergent devices can magnify or reduce?
   L. But divergent devices can produce real or virtual image?
   M. Divergent devices can magnify or reduce?



3. Emission or absorption?
   A. _____Light going into the atom.
   B. _____Light coming out of the atom.
   C. _____Dark lines in the rainbow of colors (#I below).
   D. _____Different colored lines in a black background (#II).
   E. _____Seen when electrons raise to higher orbitals (#III).
   F. _____Seen when electrons fall back to lower orbits (#IV).
   G. _____Are different for each element.

4. Draw the following ray diagram.



(*I will walk you thru this one more time.)*

5. Green light (550nm) goes from air to diamond. What is its wavelength in the diamond?
   A. * Calculate the frequency of the light in air.
   B. * What will be the frequency of the light in the diamond?
   C. * What is the speed of the light in diamond?
   D. * Now calculate the wavelength of the green light in the diamond.

6. Red light (750nm) is in air. It then moves into ice (n = 1.309).
   A. Calculate the wavelength of the light in ice.

   B. Calculate the critical angle from air to ice.

   C. Calculate the critical angle from ice to air.

Enough homework, already. You have notes and past homeworks and web quizzes and labs and….. Time for YOU to study and redo work.

5A) $v = f\lambda$ and in air $v = c$.
5B) same in both materials.
5C) $n = c/v$ (see refraction notes)
5D) $v = f\lambda$. You have f; you have v in diamond.