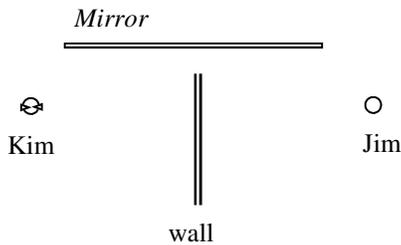
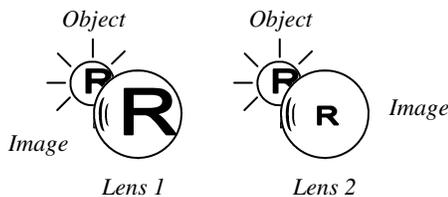


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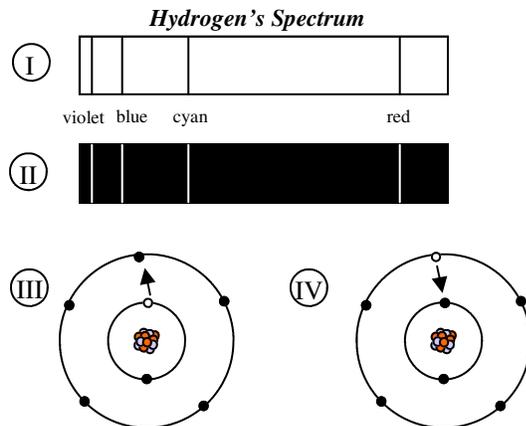


1. Slim Kim walks into a room and sees Jim in a mirror.
  - A. Draw where Jim's image is in the mirror.
  - B. Use a solid line to show the actual path of the light from Jim to Kim.
  - C. Use a dashed line to show the path the Jim's image SEEMS to follow.

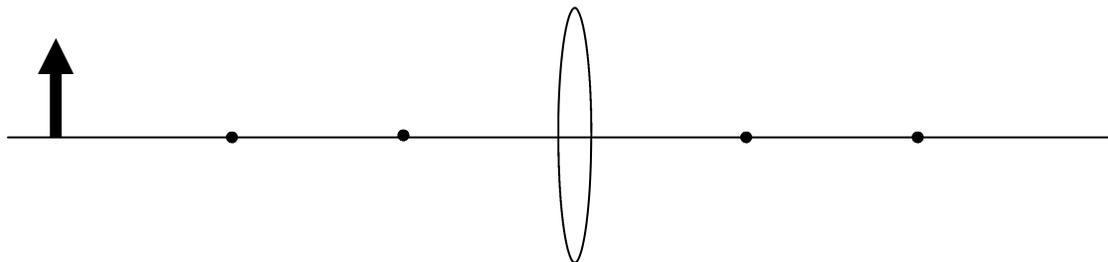


2. A person looks thru two different lenses. The images are shown at the left.
  - A. Which lens magnifies?
  - B. Which lens reduces?
  - C. Which lens is convex?
  - D. Which lens is concave?
  - E. Which one is convergent?
  - F. Which one is divergent?
  - G. Which one is like a magnifying lens?
  - 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 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.

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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.