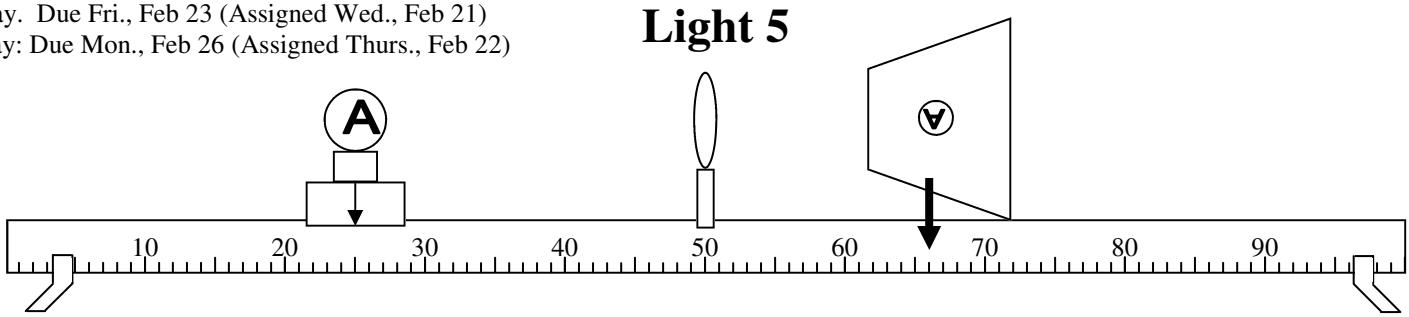
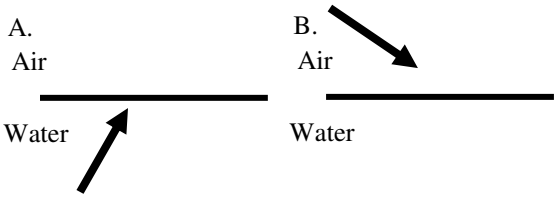
A-day. Due Fri., Feb 23 (Assigned Wed., Feb 21)
B-day: Due Mon., Feb 26 (Assigned Thurs., Feb 22)

Light 5



1. Find the focal length of the above lens.

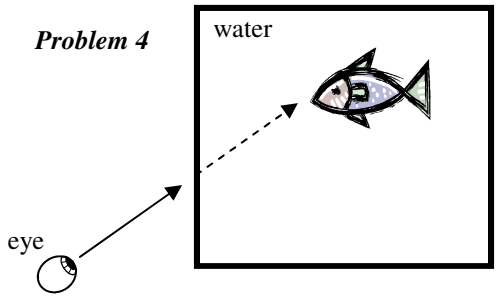


2. Does light move faster or slower in water than in air?

3. Using graphics A. and B. at the right, draw what will happen to the light rays when they pass out of and into water. (*Think about what we did in the hall to show this.*)

4. On the graphic at the right, draw where the fish might be. (*Doesn't have to be perfect.*)

Problem 4



5. Find the speed of light in a diamond.

6. If light hits a diamond at 60° from air, find the refracted angle in the diamond.

7. Find the critical angle of light crossing from ice to air.

8. Positive or negative? (*Need help: see "Variables and Conventions" notes.)*

____ f for concave mirror
____ f for concave lens
____ f for convex lens
____ f for convex mirror
____ p for convex mirror
____ p for convex lens
____ q for divergent devices
____ if the image is inside a mirror
____ p for divergent devices

____ q if the image is on the same side of a lens as the object.
____ h' if the image is on the same side of the mirror as the object.
____ f for divergent devices
____ M for a virtual image.
____ h for a real image
____ f for convergent devices
____ q for convergent devices

____ q if the image is on the opposite side of the lens from the object.
____ q for a real image
____ M for divergent devices
____ q for a virtual image
____ M for a real image
____ h' if a real image
____ h' for divergent devices
____ q for convergent devices

9. A 5 cm object is 8 cm in front of a lens. The image appears inverted and 10 cm on the opposite side of the lens from the object.
   A) What kind of lens is it?
   B) Is the image real or virtual?
   C) So, is q positive or negative?
   D) Find the focal length.

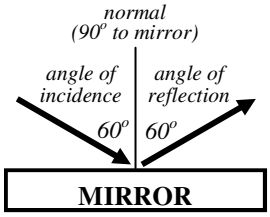
   E) Find the magnification of the lens.

   F) Find the height of the image.

Light 5

10. In class I used a bundle of fiber optics to shoot light from the projector backwards at the class. How did it work?

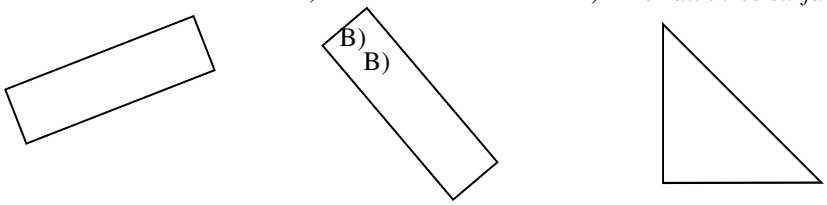
We need to start learning what a "normal" is. Remember "normal force"? (An upward force pushing up from a surface perpendicular to a surface.) The "normal" is an imaginary perpendicular line drawn up from the surface of an object.



angle of incidence = angle of reflection

11. Draw the normal line for the following surfaces.

A) B) C) *For all three surfaces*



Using the Lens Applet from the website link, answer the following questions.

12. There are two small red hash marks on either side of the lens. What are they (be specific)?

13. To change from a convergent device to a divergent device, what button do you push?

For the following, be aware that your answer can be "not possible".

14. With the applet, make a convex lens.
    A) Where is the object when the image is real and magnified?
    B) Where is the object when the image is virtual and magnified?
    C) Where is the object when the image is real and reduced?
    D) Where is the object when the image is virtual and reduced?

15. With the applet, make a concave lens.
    A) Where is the object when the image is real and magnified?
    B) Where is the object when the image is virtual and magnified?
    C) Where is the object when the image is real and reduced?
    D) Where is the object when the image is virtual and reduced?

16. With the applet, make a convex mirror.
    A) Where is the object when the image is real and magnified?
    B) Where is the object when the image is virtual and magnified?
    C) Where is the object when the image is real and reduced?
    D) Where is the object when the image is virtual and reduced?

17. With the applet, make a concave mirror.
    A) Where is the object when the image is real and magnified?
    B) Where is the object when the image is virtual and magnified?
    C) Where is the object when the image is real and reduced?
    D) Where is the object when the image is virtual and reduced?