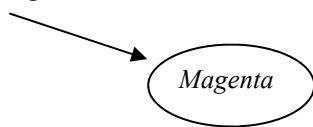


2011-12 Light and Optics 2

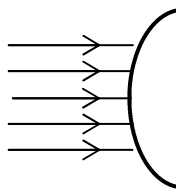
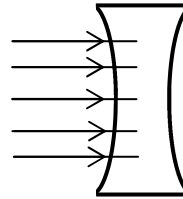
Yellow light



1. Yellow light is incident on a patch of magenta paint.
 - A. * Break up the yellow light into its constituent colors (next to the incoming arrow write the letters of the two colors that make up yellow).
 - B. * If you had white light, what colors would be reflected off of magenta?
 - C. * What color is absorbed by magenta?
 - D. * What color the magenta patch looks like?

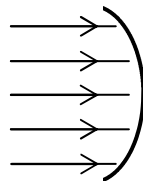
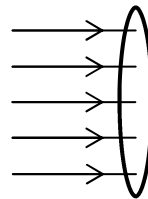
From the lab OR double check your "Optics Basics" notes.

2. Use the lens at the right to answer the following.
 - A. Is it concave or convex?
 - B. Draw what will happen to the parallel light rays.
 - C. Is it convergent or divergent?
 - D. Does it have a real or virtual focal point?



3. Use the mirror at the left to answer the following.
 - A. Is it concave or convex?
 - B. Draw what will happen to the parallel light rays.
 - C. Is it convergent or divergent?
 - D. Does it have a real or virtual focal point?

4. Use the lens at the right to answer the following.
 - A. Is it concave or convex?
 - B. Draw what will happen to the parallel light rays.
 - C. Is it convergent or divergent?
 - D. Does it have a real or virtual focal point?



5. Use the mirror at the left to answer the following.
 - A. Is it concave or convex?
 - B. Draw what will happen to the parallel light rays.
 - C. Is it convergent or divergent?
 - D. Does it have a real or virtual focal point?

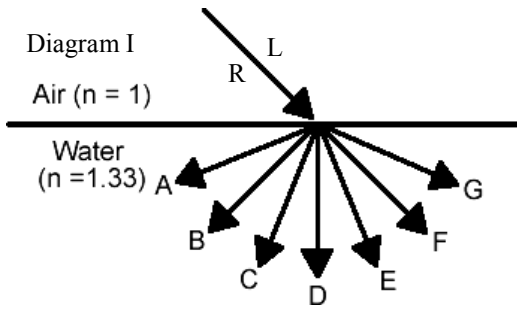
6. A. Does light reflect from or go thru a mirror? B. Does light reflect from or go thru a lens?
7. The light rays shine from a light on the left side of a mirror or lens.
 - A. The light rays will end up on which side of a mirror: left or right?
 - B. The light rays will end up on which side of a lens: left or right?
 - C. * So, which side of a mirror is real?
 - D. * Which side of a lens is real?
8. Concave mirror (CCM), convex mirror (CVM), concave lens (CCL), or convex lens (CVL)?

A. ____ * Is divergent and reflects.	D. ____ Is convergent and the right side is real.
B. ____ * The middle is thicker than the ends and refracts.	E. ____ Has a real focal point and reflects.
C. ____ Has a virtual focal point and the left side is real.	F. ____ Is divergent and the right side is real.

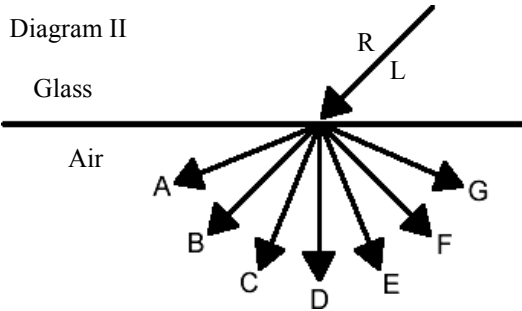
Here's why we care about the real and virtual sides and focal points: we are going to use equations that have focal length (f) and the distance to the object (q). f is + if the focal point is real. f is - if the focal point is virtual. Also, if the image is virtual, then q is - and will be found on the virtual side of the device. If you don't put in the + or - when appropriate, you will calculate incorrectly. As for the object (p) (what we are looking at), it will ALWAYS be real and positive.

9. + or -?

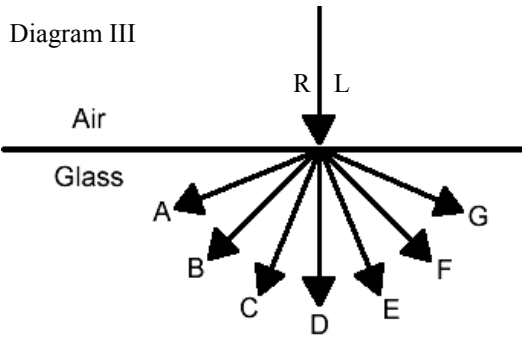
A. ____ f for a convergent device.	E. ____ q if the image is on the right side of a mirror.
B. ____ * q for an image on the left side of a mirror.	F. ____ q if on the right side of a lens.
C. ____ f for a concave mirror.	G. ____ p for a convergent mirror.
D. ____ f for a concave lens.	H. ____ f for a convex mirror.



10. * In the first diagram, light travels from air to water.
- In which substance does light travel faster?
 - Looking from light rays point of view, which side of the light ray hits the water first: left or right? (Notice I have the L and R labeled for you.)
 - Label the “straight path” as “SP”.
 - Label the normal with “N”.
 - What path with the light ray follow in the water?



11. In the second diagram, light travels from glass to air.
- In which substance does light travel faster?
 - Looking from light rays point of view, which side of the light ray hits the water first: left or right?
 - Label the “straight path” as “SP”.
 - Label the normal with “N”.
 - What path with the light ray follow in the air?



12. What path will the light ray take in the glass?

1A) R and G light is coming in; 1B) Magenta light is made up of R and B, so Magenta paint reflects R and B light.
 1C) G is absorbed. 1D) The green gets absorbed and the leaving only R. The patch looks red.
 7C) left side; 7D) right side 8) A. CVM. B. Thicker in middle is convex, CVL;
 9B) +, since left side of mirror is real. 10) A. Air; B. Right side; C. path F is the SP; D. path D is the normal;
 E. Path E (toward the normal)