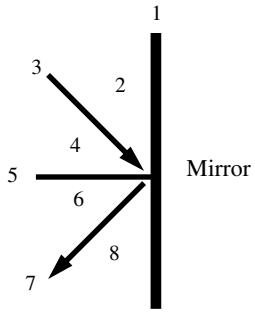
A-day: Due Tues., Mar 4 (Assigned Fri., Feb 29)
B-day: Due Thurs, Mar 6 (Assigned Mon., Mar 3)

2008 Light 3

1. A. How many seconds are there in a minute?
   B. How many seconds are there in an hour?

   C. So, how far can light travel in an hour?

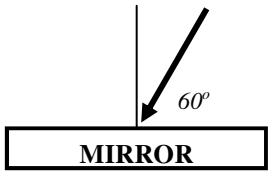
2. (*From the notes:)* Why can a lens or mirror make our eyes see an object as enlarged or reduced?



3. The diagram at the left shows a light ray hitting a flat mirror.
   A. Is it concave or convex?
   B. ____ Which is the incident ray?
   C. ____ Which is the angle of reflection?
   D. ____ Which is the normal?
   E. ____ Which is the angle of incidence?
   F. ____ Which is the angle of reflection?

4. For mirrors all angles must be taken from the n_____.

5. For the mirror at the right,
   A. What is the angle of incidence?
   B. What is the angle of reflection (and draw it)?



6. What is the difference between a virtual and real focal point?

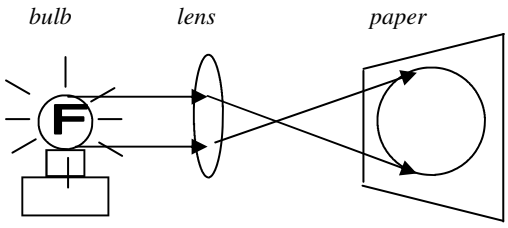
7. How do we define a real image in optics?

8. By looking at an image, how can you tell if it is real or virtual?

9. Give two ways to prove that your image in a bathroom mirror is virtual.

10. You are standing in front of a full length flat mirror. There are 4 floor tiles between you and the mirror.
    A. How many floor tiles will you see in the mirror in front of your reflection?
    B. If each floor tile is 1 foot wide, how much distance does there seem to be between you and your image?

11. True or false: the focal point is where your image will be in focus.
    Why or why not?

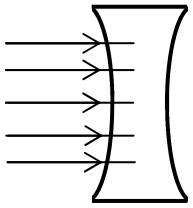


12. The lens at the right allows the letter to be projected onto the paper.
    A. Is the image real or virtual?
    B. Label the focal point, the image, and the object.
    C. On the paper draw the image (*be accurate—study the notes*).

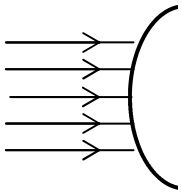
13. Does light reflect from or go thru a mirror?
14. Does light reflect from or go thru a lens?

15. 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?

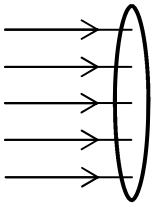
16. Use the ***lens*** at the right to answer the following.
    A. Is it concave or convex?
    B. Draw what will happen to the parallel light rays.
    C. Is it convergent or divergent?
    D. Does it have a real or virtual focal point?
    E. Which side is real?



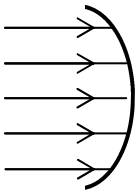
17. Use the ***lens*** at the right to answer the following.
    A. Is it concave or convex?
    B. Draw what will happen to the parallel light rays.
    C. Is it convergent or divergent?
    D. Does it have a real or virtual focal point?
    E. Which side is real?



18. 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?
    E. Which side is real?



19. 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?
    E. Which side is real?



20. Concave mirror (CCM), convex mirror (CVM), concave lens (CCL), or convex lens (CVL)?
    A. _____ Is divergent and reflects.
    B. _____ The middle is thicker than the ends and refracts.
    C. _____ Has a virtual focal point and the left side is real.
    D. _____ Is convergent and the right side is real.
    E. _____ Has a real focal point and reflects.
    F. _____ Is divergent and the right side is real.

21. List five of the characteristics of life.