A-day: Due Fri., Mar 7 (Assigned Tues., Feb 4)
B-day: Due Mon, Mar 10 (Assigned Thurs., Mar 3)

2008 Light 4

1. Define the following variables:

   A. h
   B. M
   C. q
   D. f
   E. h'
   F. p

2. + or—? (*Work HARD on this, for it holds the key to most of the optics part of this chapter.)*

A. ____ f for concave mirror
B. ____ f for concave lens
C. ____ f for convex lens
D. ____ f for convex mirror
E. ____ p for convex mirror
F. ____ p for convex lens
G. ____ q for divergent devices
H. ____ if the image is inside a mirror
I. ____ p for divergent devices
J. ____ q if the image is on the same side of a lens as the object.
K. ____ h' if the image is on the same side of the mirror as the object.
L. ____ f for divergent devices
M. ____ M for a virtual image.
N. ____ h for a real image
O. ____ f for convergent devices
P. ____ p for convergent devices
Q. ____ q if the image is on the opposite side of the lens from the object.
R. ____ q for a real image
S. ____ M for divergent devices
T. ____ q for a virtual image
U. ____ M for a real image
V. ____ h' if a real image
W. ____ h' for divergent devices
X. ____ q for convergent devices

Let's use some easy questions to better understand magnification.

3. Object is 10 cm tall. Image is virtual and 5 cm tall.
   A. Image is magnified or reduced?
   B. Image is upright or inverted?
   C. Calculate M

4. Object is 15 cm tall. Image is <u>real</u> and -5 cm tall.
   A. Image is magnified or reduced?
   B. Image is upright or inverted?
   C. Calculate M

5. Object is 2 cm tall. Image is <u>real</u> and –6 cm tall.
   A. Image is magnified or reduced?
   B. Image is upright or inverted?
   C. Calculate M

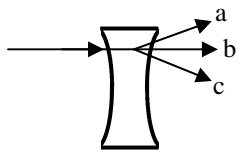
6. Object is 4 cm tall. Image is virtual and 12 cm tall.
   A. Image is magnified or reduced?
   B. Image is upright or inverted?
   C. Calculate M

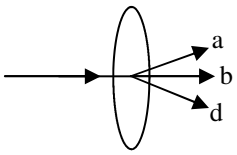
7. Using the above information, answer the following questions about M.
   A. If M is positive, is the image real or virtual?
   B. If the absolute value of M (|M|) is greater than 1, then the image is magnified or reduced?
   C. If the absolute value of M is less than 1 (between 0 and 1), then the image is magnified or reduced?

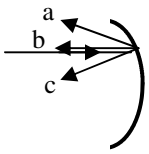
8. M for a lens is –2.3. Is the image
   A. magnified or reduced?
   B. real or virtual?

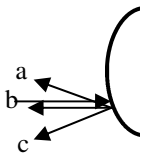
9. M for a mirror is 0.34. Is the image
   A. magnified or reduced?
   B. real or virtual?

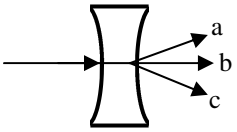
10. For the following mirrors and lenses, use your notes to figure out exactly where the light will go.

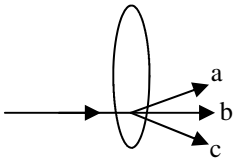


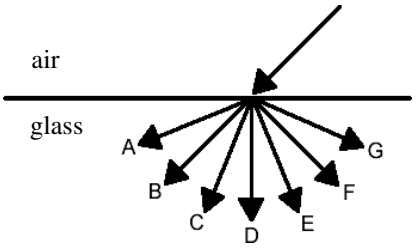




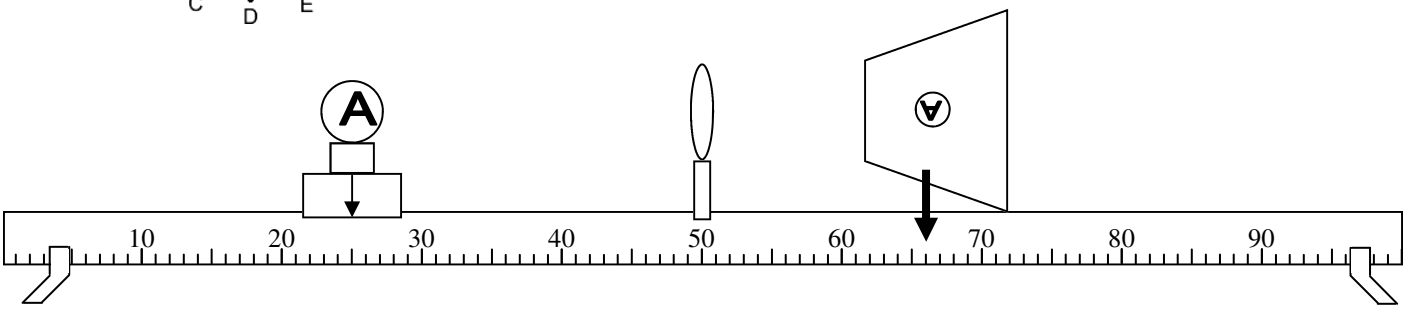








11. Using what you learned on the previous question, decide where the light will go.



12. Use the above diagram to answer the following questions.
    A. Label h, h', p, q.
    B. Draw straight lines from the top and bottom of the object to the lens and show what will happen when they pass thru the lens.
    C. Calculate the focal length. (*You MUST give variables, equation, show work, and answer.)*
    Variables: Equation: Solve:

    D. Calculate the magnification of the lens.
    Variables: Equation: Solve:

13. The object is 9 cm to the left of a convex mirror that has a focal length of 3 cm.
    A. Convergent or divergent?
    B. Real or virtual focal length?
    C. Is f positive or negative?
    D. Calculate the distance to the image.
    Variables: Equation: Solve:

Bellwork:

14. There are two unicellular organisms in a Petri dish. If the nucleus from Organism A is removed and the DNA from Organism B is inserted into A, what characteristics will Organism A have when it reproduces? A or B?

15. At the right are two strands of genetic code. The left nucleic acids are completed. Fill in the right side with the correct nucleic acid pairs.

16. DNA or RNA
    A. _____Found in the nucleus, but only temporarily.
    B. _____Does not have uracil.
    C. _____Only found in the nucleus.
    D. _____Tied together with deoxyribose.