A-day: Due Fri., Feb 27
B-day: Due Mon., Mar 2

2009 Light 2

1. What is the speed of x-rays? Radio wave?
2. If the moon is approximately 384,000,000 m from the earth, how long did it take the radio signals from the Apollo moon lander to reach the earth?

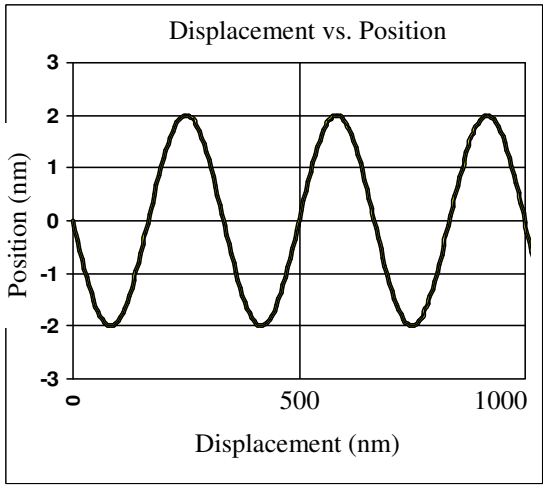
3. What is the wavelength of FM radiowaves of 101 MHz?

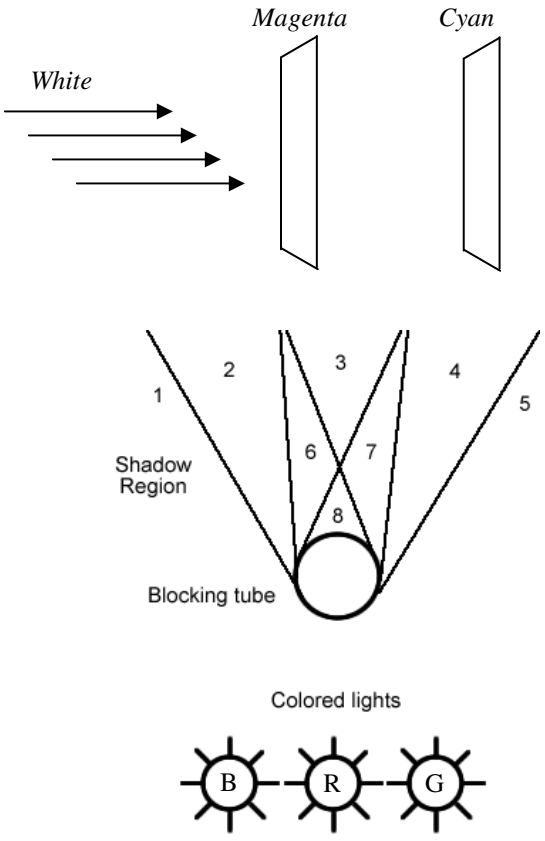
4. What is the frequency of yellow-green light that has a 560 nm wavelength?

5. What part of the electromagnetic spectrum has the least amount of energy?

6. Use the graph at the right to answer the following.
   A. How many wavelengths are shown on the graph? ____λ
   B. How long is the graph (notice units).
   C. Set your answers in A and B equal to each other and solve for the wavelength.

   D. What is the frequency of this light ray?





7. Given three lights: red, green, and blue.
   A. _____ What color is the background?
   B. _____ How do you make blue?
   C. _____ How do you make magenta?
   D. _____ How do you make yellow?
   E. _____ If you make red, what colors are off?
   F._____ To make magenta, what color is off?
   G. _____ What color is off when you see cyan?

8. White light goes thru a magenta filter, then a cyan filter. Draw each step on the diagram.
   A. What colors is white light comprised (made) of?
   B. What light or lights gets thru the magenta filter?
   C. So, what does magenta block?
   C. What light or lights gets thru the cyan filter?
   D What does cyan block?

9. The graphic at the left depicts what we did with the three colored lights. To help you with the following questions you might want to label the diagram as you go. (*Study Help available*)
   A. _____ In which region is green blocked?
   B. _____ In which region is blue blocked?
   C. _____ In which region is red blocked?
   D. _____ Which region is magenta?
   E. _____ Which region is cyan?
   F. _____ Which region is yellow?
   G. _____ Which region is white?
   H. _____ Which region is black?
   I. _____ Which region is blue?

2009 Light 2

10. If you are using the CMYK model for making color:
    A. _____ Is CMYK paints or lights?
    B. _____ What color is the background?
    C. _____ How would you make Red?
    D. _____ How would you make Cyan?
    E. _____ What are the two ways to make black?
    F. _____ What is the most economical way to make black?
    G. _____ How would you make Blue?

11. If you look at a blue object thru green glasses,
    A. What color does it look like?
    B. Why?

From the "Optics Basics" Notes:

12. What is the focal point?

13. Does the image come into focus at the focal point?

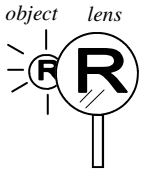
14. Label the two shapes below.

_____ _____

Read about real images.

15. You are looking thru a lens at an object.
    A. Is the image real or virtual?

    B. Why?



TAKS

16. Donny uses a force of 10 newtons to move a 15-kg box a distance of 3 meters. How much work did Donny do?

17. According to the periodic table, which of the following pairs of elements is most chemically similar?
    A. Fluorine and neon B. Chlorine and argon C. Chlorine and chlorine D. Sulfur and chlorine

18. Physical or chemical change?
    A. _____Ice melts to form liquid water
    B. _____Salt dissolved in water
    C. _____Wood burns producing ash and smoke
    D. _____A glass breaks

19. A 3 kg mass is on a frictionless table.
    A. If it is moving 4 m/s, how much energy does it have in the first picture?
    B. What kind of energy does it have in the middle picture?

    C. How much energy does it have in the last picture?