B-day: Due Fri., April 23
A-day: Due Mon., April 26

2009-10 Light 5

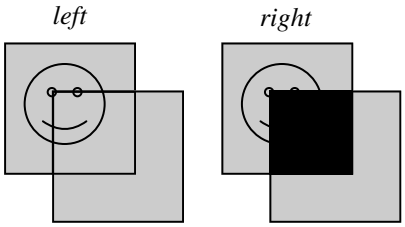
Using your "Miscellaneous Light Topics" Notes:

1. What is total internal reflection?

2. Incandescent or Fluorescent lights?

   A. ____ Gives off more heat. B. ____ Is cooler to the touch. C. _____Uses less energy.

3. Two polarizers are placed over a happy face at the right. In which situation is one of the polarizers turned 90°?



4. When white light passes thru a prism, what happens?

5. What happens when a laser passes thru a prism?

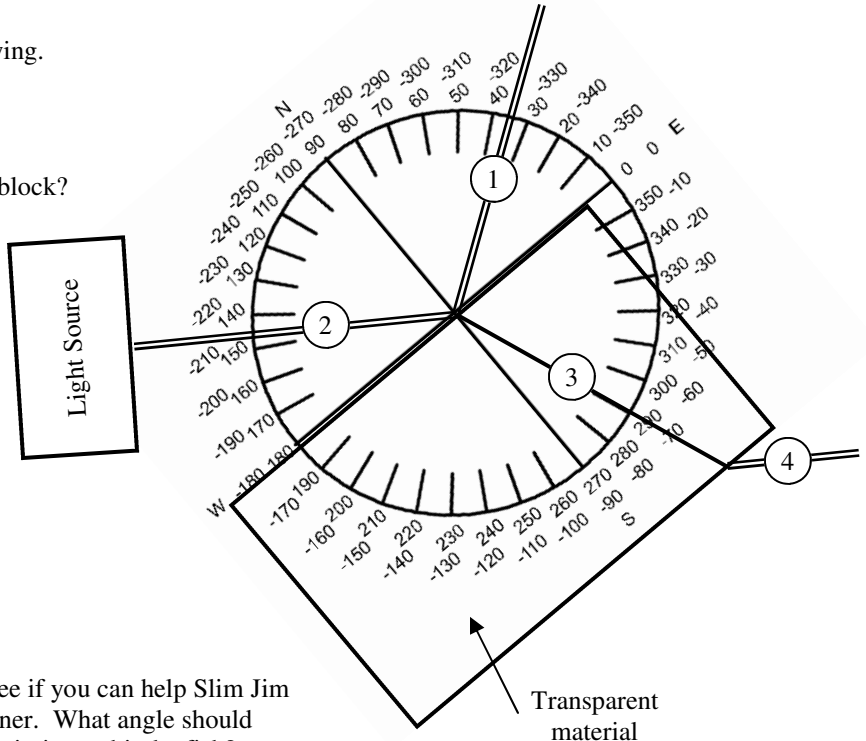
6. When we went outside we burned paper (and wood) with a concave mirror.
   A. Why did it have to be a concave mirror?

   B. Which kind of lens could we have used?
   C. What would have changed if we used a larger mirror?

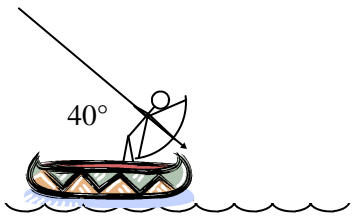
7. How far does light travel in 3 minutes?

8. *From the "Refraction" notes*:
9. What is the index of refraction for diamond?
10. Calculate the speed of light in a diamond.

11. Use the diagram at the right to answer the following.
    A. Which light ray is the incident ray?
    B. What is the angle of incidence?
    C. Which ray is the reflected ray?
    D. Which ray is the ray that refracts inside the block?
    E. For Snell's Law, what is θ_1?
    F. What is θ_2?
    G. If the light started in air, what is n_1?
    H. Calculate the index of refraction for this material.



    I. Using the table of indexes of refractions, what material is this?



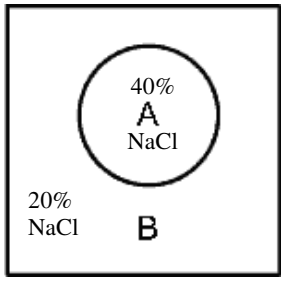
12. Let's see if you can help Slim Jim get dinner. What angle should Jim be aiming to hit the fish?

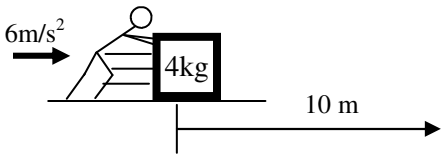
Using your TAKS notes (all 5 objectives)….

13. (Day 14) Salt is dissolved in water. Is this a physical or chemical change? Why?
14. (Day 15) Things that are less dense float or sink? This can lead to what kind of heat transfer?
15. When a liquid is heated it tends to flow better this means it has less _____.
16. (Day 16) Give an element that has the same reactivity as oxygen.
17. What is the chemical symbol for sodium? Potassium?
18. Consider Magnesiusm. A) How many valence electrons? B) How many protons?
    C) Metal or nonmetal? D) Does it tend to gain or lose electrons?
19. (Day 17) Give the formula for the balanced ionic compound created when Beryllium combines with Fluorine.

20. (Day 19) Which dissolves faster:
    A. Powdered sugar or granulated sugar? B. In hot water or in cold water?
    C. Stirred or not stirred? D. Large particles or small particles?
21. (Day 20) Which side of water is positive? This makes water a _____ molecule.
22. (Day 21) A compound is mixed into water and it creates a lot of OH^- ions. Is it an acid or a base?
23. A compound has a pH of 2.5. Acid or base?
24. A solution has a pH of 11. To get its pH to 9, what do you add?
25. What is the pH of pure water?

26. (Day 6) Which organelle is responsible for keeping unwanted materials out of the cell?
27. Which organelle makes proteins? Makes energy?
28. (Day 7A) Are two organisms more closely related if they have the same class or the same genus?
29. Which of the four organisms are the most closely related? (*And can you name any of them*?)
    A. Ursus Maritimus B. Melursus Ursinus
    C. Ailuropoda melanoleuca D. Ursus arctos
30. (Day 7B) If the diagram shows a round membrane that is permeable to water, which way will the water flow?





31. Slim Jim pushes on a box for 10 meters.
    A. How much work does he do on the box (*there is enough information*)?

    B. If there is no friction, how much kinetic energy does it gain?