Kai Wang **3/15/05**
8th Grade Science
Microscope – Convex Mirrors

AGENDA: Students will be able to understand how convex mirrors are used in a microscope. They will be able to identify the focus and focal length of a curved mirror and observe virtual images in a convex mirror.

STANDARD 1: Recognize, interpret, and describe what are waves and how they relate to light.

STANDARD 2: Explain what happens to light and why refraction occurs as it is passed through a medium, a concave mirror, a convex mirror.

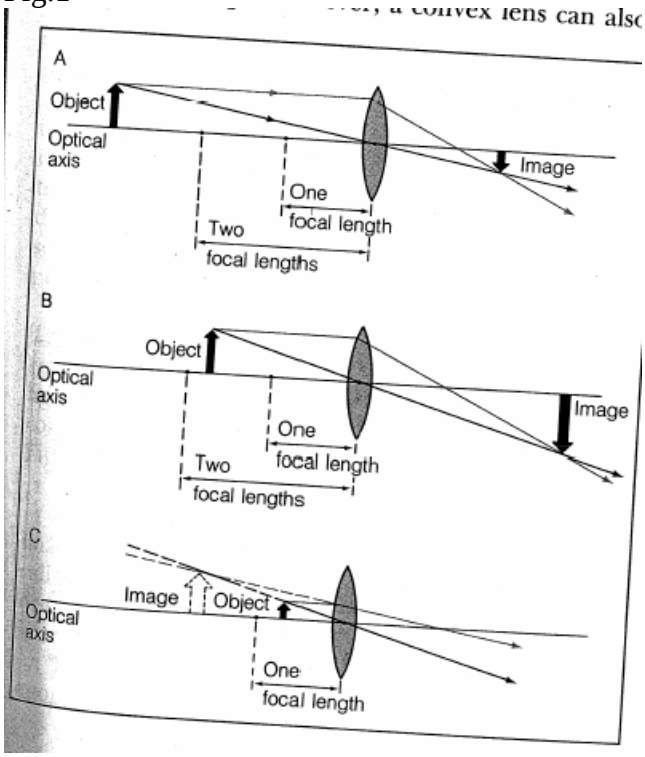
STANDARD 3: Present and explain data findings. Record all observations and be able to explain how it relates to the study of light and refraction

Time Frame: 1 class period (45 min)

Materials: Convex Lenses (2 per team), rulers, textbook or reading material of some kind

1) Activator: Discussion session of waves, the nature of light, concave and convex mirrors. Slinke or a piece of string attached to a doorknob should be used to allow students to see the properties of waves (amplitude, frequency, etc)

Fig.1



(No more than 10 minutes)

2) Instruction/Interaction:

a) Form teams. Each team is to have two convex lenses and a ruler.

b) Have one student hold one convex lens about 30 cm from the textbook. Have another student move the other convex lens up and down and to have the other students on the team observe what is happening to the image on their textbook. Record all observations.

c) Record the distance from where the image gets blurry and where the image is clear (magnified).

d) Repeat the experiment with the first convex lens held 20cm away from the textbook, then 10 cm from the textbook

(ideally approx 20 min)

3) Discussion/Results: Students should observe that the convex lens magnifies the objects under them when they find where the focal points are and how it relates to magnification on a microscope. Students should also see that as they move the lens closer to their textbooks, the image will get bigger until it actually goes in "front of them" as shown in fig 1.

(approx 10min)

4) Wrap Up / Assessment: Complete Worksheet
(approx 5min)

Worksheet Questions:

1) The point in front of a mirror where reflected rays meet is the

a. focal length
b. focal point
c. aperture
d. vertex

2) The distance between the center of the mirror and the focal point is called the

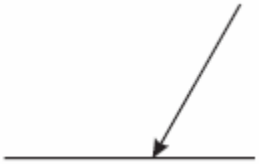
a. focal length

b. focal point
c. aperture
d. vertex

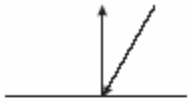
3) As compared to the object, the image formed by a convex mirror is

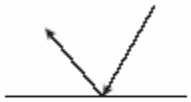
a. upright and larger
b. inverted and smaller
c. inverted and larger
d. upright and smaller

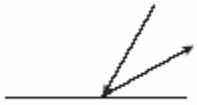
4) Use the figure to answer the question:

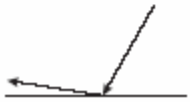


A ray of light shines on a mirror at the angle shown above. Which diagram shows what will happen to the light after it strikes the mirror?

A. 

B. 

C. 

D. 

Open Response: (about 3-4 lines)

5) a) Look at the back of a clean spoon. Describe the image, it's size, and position. What happens to the image as you move the spoon closer and further away from you?

b) Look at inside of a clean spoon. Describe the image, it's size, and position. What happens to the image as you move the spoon closer and further away from you?

6) Place an empty, clear drinking glass over a piece of newspaper or scrap paper with writing on it. When you look through the side of the glass near the bottom, you should be able to see the printing on the paper.

a) Add water to the glass and explain what happens.

b) Why do you think the result you observed occurred?

c) What happens if you move your head to a higher location?