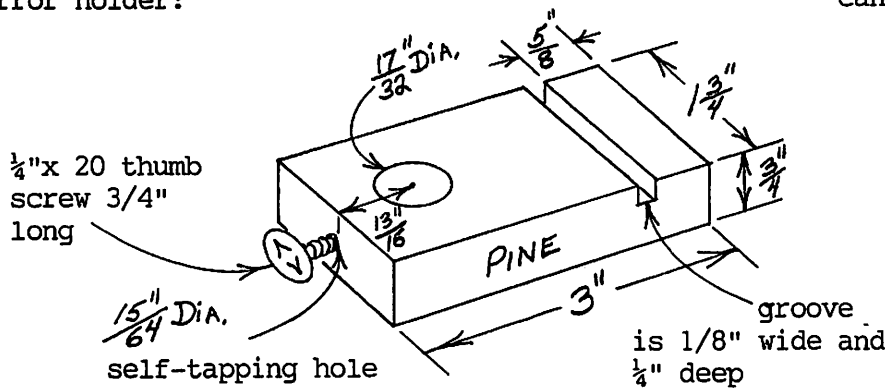


The "To-Infinity" mirror system.

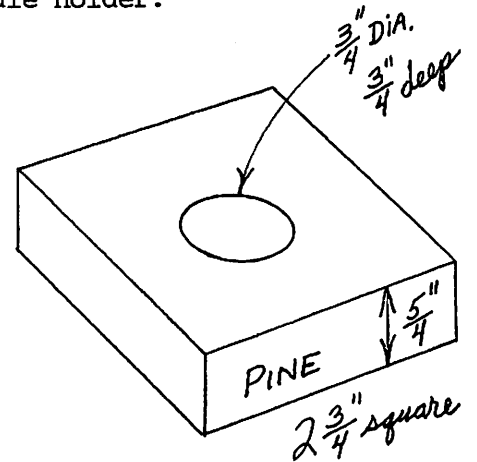
By using a pair of flat mirrors and a candle flame, you can easily produce a very dramatic and instructive demonstration on the topic of light. The flame's light reflects (bounces?) back and forth between the two mirrors. The two plane mirrors could be common 12" square mirror tiles or similar scraps from your local glazier. One tile will need to be cut down to 9" by someone with glass-cutting experience. Devise a method of supporting the mirrors and candle; my method is shown. It requires two ring stands with wooden holders for the mirrors and a wooden holder for the candle.

Suggested dimensions:

mirror holder:

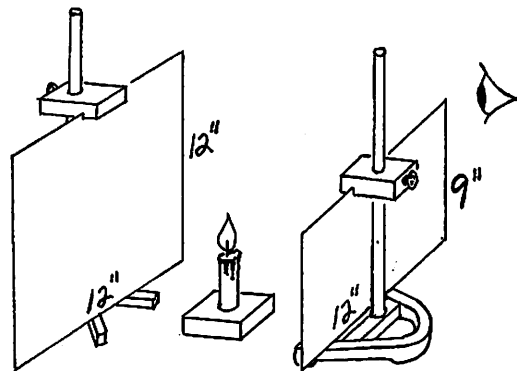


candle holder:



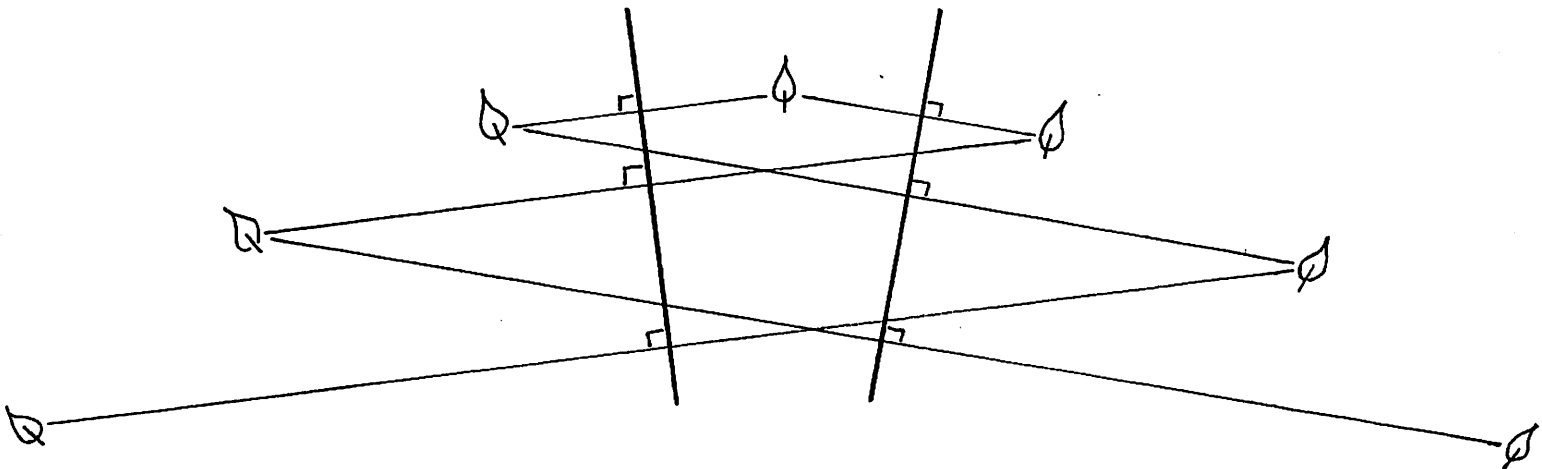
Set-up:

Make the mirrors nonparallel.



Look over the top edge of the 9" high mirror to see the multiple images.

Explanation: The images on the "curve" become objects for opposite mirrors.



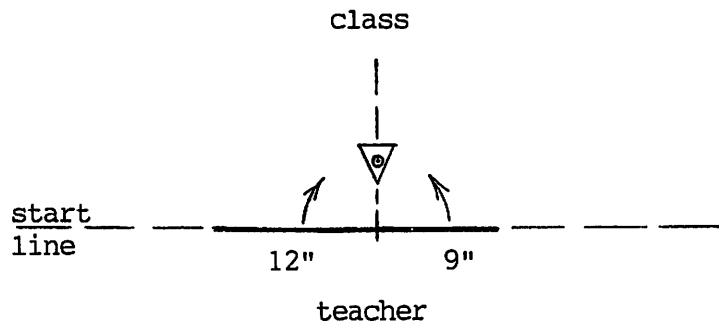
(cont.)

Now that you have the pair of mirrors and a flame, you can easily go on and demonstrate the kaleidoscope and explain how it works. A kaleidoscope is simply two mirrors "hinged" on one edge in a "V" with the flame between them. The number of images seen depends on the angle between the mirrors; as the angle decreases, the number of images increases.

Begin the demonstration by standing behind the mirrors sitting on a table, with the 9" mirror "standing up". Line up the mirrors in a straight line (180°) with their edges touching; the candle flame is out in front on a line perpendicular to the edges. (A wedge-shaped wooden candle holder is better for this demo.) The class should see one image. Now slowly rotate the mirrors toward each other, decreasing the angle between them; new (more) images will appear to the class. Keep rotating the mirrors until 6 - 8 images appear; most kaleidoscopes fall into this range. If you continue rotating the mirrors, thus, more and more images, you are approaching the situation seen in the first demonstration where the angle is very small or the mirrors are nearly parallel. Does the class now understand better, and appreciate more, the interaction between light and mirrors than before the demonstrations?

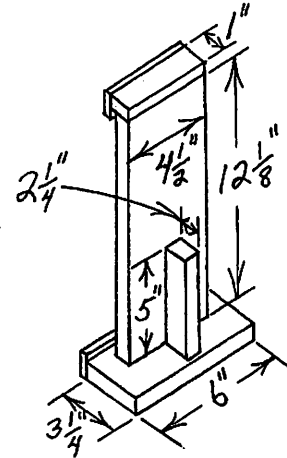
You can reuse the ring stands as mirror supports but with the 9" mirror "standing up"; the mirrors should be plumb. I built and use an alternative set of wooden supports for the kaleidoscope; see the diagrams below.

Top view of the procedure:



Suggested dimensions: made mostly of 3/4" pine or plywood

mirror holder:
(need two)



candle holder:

