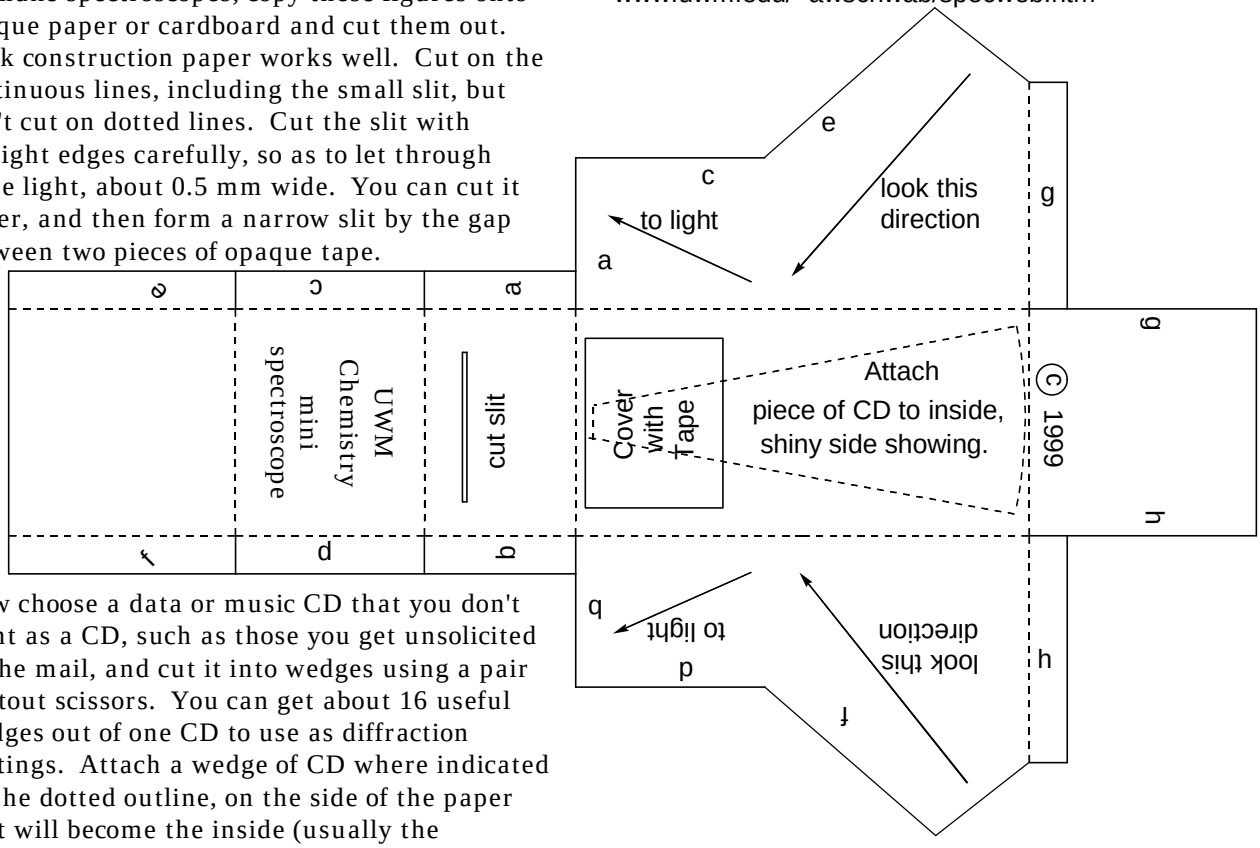
UWM Chemistry

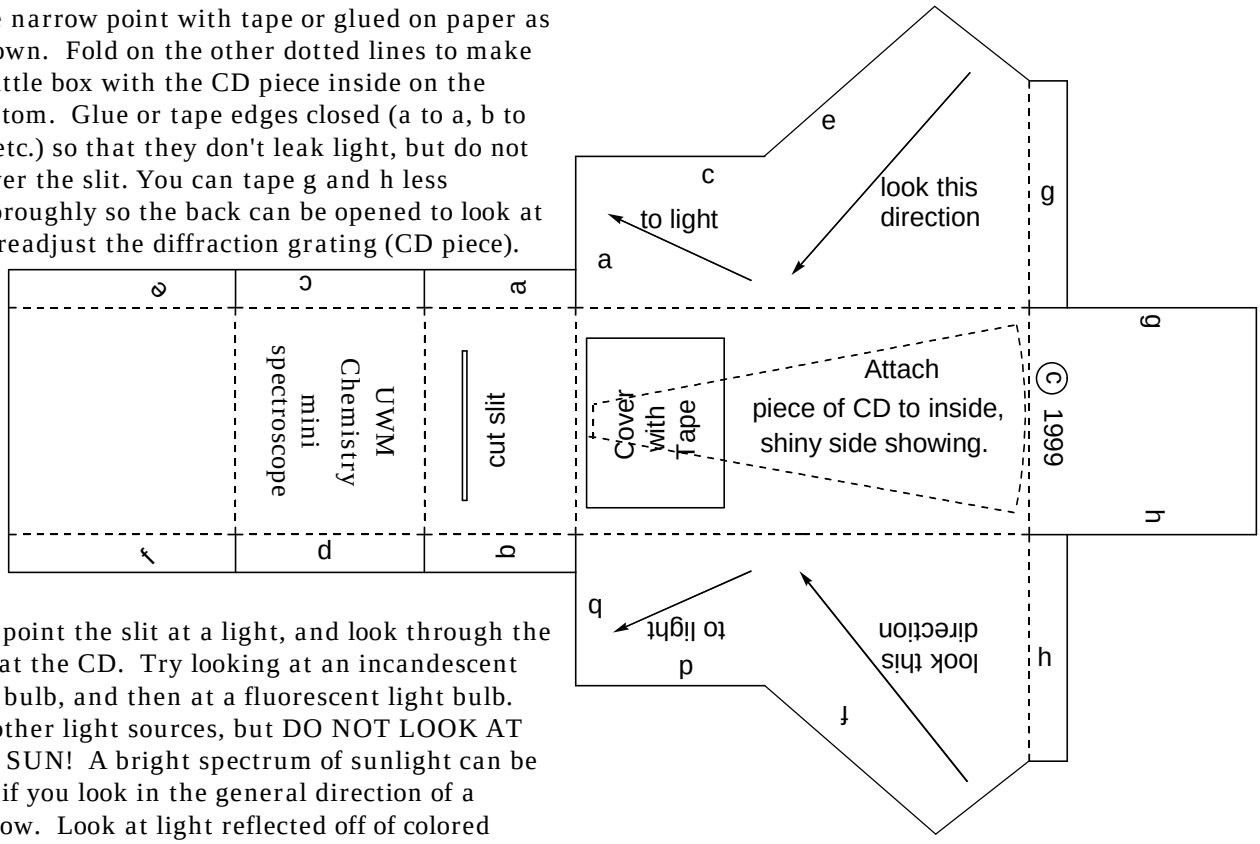
"Science of Stuff" Spectroscopes

www.uwm.edu/~awschwab/specweb.htm

To make spectroscopes, copy these figures onto opaque paper or cardboard and cut them out. Dark construction paper works well. Cut on the continuous lines, including the small slit, but don't cut on dotted lines. Cut the slit with straight edges carefully, so as to let through some light, about 0.5 mm wide. You can cut it wider, and then form a narrow slit by the gap between two pieces of opaque tape.



Now choose a data or music CD that you don't want as a CD, such as those you get unsolicited in the mail, and cut it into wedges using a pair of stout scissors. You can get about 16 useful wedges out of one CD to use as diffraction gratings. Attach a wedge of CD where indicated by the dotted outline, on the side of the paper that will become the inside (usually the unprinted side). Make sure the iridescent shiny side is exposed, but cover the mirror-like part at the narrow point with tape or glued on paper as shown. Fold on the other dotted lines to make a little box with the CD piece inside on the bottom. Glue or tape edges closed (a to a, b to b, etc.) so that they don't leak light, but do not cover the slit. You can tape g and h less thoroughly so the back can be opened to look at or readjust the diffraction grating (CD piece).



Now point the slit at a light, and look through the hole at the CD. Try looking at an incandescent light bulb, and then at a fluorescent light bulb. Try other light sources, but DO NOT LOOK AT THE SUN! A bright spectrum of sunlight can be seen if you look in the general direction of a window. Look at light reflected off of colored paper. What happens if you widen the slit?