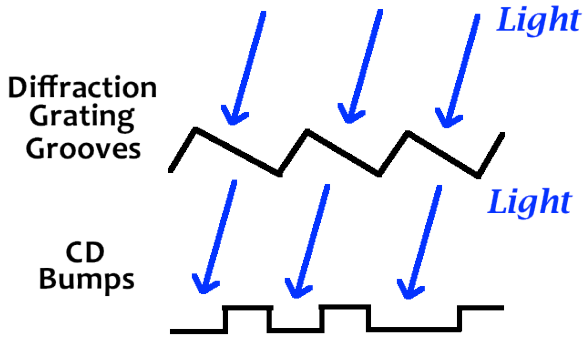
Make Your Own CD Spectrometer!

Materials:
1 Cereal Box, 1 CD, 1 Pair of Scissors
1 Roll of Tape, Aluminum Foil



Overview:
Light sources are often made up of different color components and a diffraction grating can be used to separate out these different colors. Since each element of the periodic table has a unique color pattern, scientists can use gratings to identify what elements are in a light source. For example, astronomers use gratings to determine what elements are found in stars.
You can make your own grating out of just a CD and an empty cereal box.

Why This Works:
A CD uses a pattern of bumps to store data. (See picture above.) These bumps are similar enough to the repeated pattern of grooves in professional diffraction gratings that we can use a CD as a grating!

Instructions: These instructions are based on a video that can be found here:
http://www2.physics.ox.ac.uk/lab-camera-action/make-your-own-cd-spectrometer

Step 1:
Make two diagonal cuts on each side of the box at a 30 angle. Make a horizontal cut on the edge of the box to connect these two diagonal cuts.
This cut will be used to hold the CD.

Step 2:
Make a small hole in the top of the box above the CD. This opening will be used for looking at light reflected off the CD.

Step 3:
Make a horizontal cut into the opposite side of the box. This cut should be slightly higher than the cut from Step 1 so that light entering the slit can bounce off the CD.
The slit lets the light into the box.

Tip: Tape two pieces of aluminum foil above the slit so that they are very close together, but not overlapping. This should improve the quality of the slit.

Congrats! You have made your very own CD Cereal Box Spectrometer!
To use it, point the slit towards a light source and look through the opening at the top.
Try looking at different light bulbs, streetlights at night, or neon lights. (DO NOT LOOK AT THE SUN!)
If you find neon lights, try comparing what you see to a neon spectrum online. Is it really neon? Enjoy!