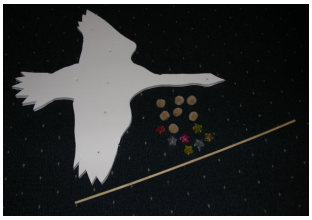
Foam Core 3-D Constellation Model
For
Star Magnitude & Light Year from Earth Distances

Here are some "quick & dirty" instructions for putting together the models. I will write up a "formal" lesson within the two next weeks with the exact measurements, star bead sizes, pom-pom sizes for the different magnitudes - i.e. a complete materials list, where to get the materials, constellation cutout patterns, and the standards this activity meets.

I have attached to the end, the exact measurements, and distances for each star in the four constellations. For Elementary students, I would suggest that the foam core models be cut out to keep the activity from turning into a "finger dissection" class. Make a master pattern of the constellations out of heavy cardboard or plywood. Place these on the foam core, trace around cut out with an Exacta knife. By making a 1/8th inch hole in the constellation master of the exact location for the stars in a given constellation, you can then simply push a nail though the holes after cutting out the pattern and you will have consistency for each model.

For the star magnitudes, use different size pom-poms. I used the following diameters: 5mm size for 5th mag, 7mm for 4th mag, ¼ inch for 3rd mag, ½ inch for 2nd mag, ¾ in for 1st mag, and 1inch for the 0 mag. You will find the magnitude of each constellations stars on the attached chart. The magnitudes in the ( ) are rounded off magnitudes and the numbers just to the right of these are the exact magnitudes. People will find that magnitudes will vary a little depending on which source of information is used. See attached sheet for star position numbers. Attach the stars with hot glue for fast results or use white glue and let the models set over night to dry in place. The color of the pom-pom does not make any difference, just the size.



I have used Cygnus to explain this paragraph but the principles are the same for all of the models. Use 1/8th inch round wooden dowels cut to a representative length for each star's light year distance from Earth. The ratio of mm/light year distance for dowel lengths for each constellation will vary from constellation to constellation but must remain constant for a given constellation. The reason for this is that the light year distance varies greatly between the constellations. Hot glue ¼ inch diameter pom-poms on one end of each of the cut pieces of wooden dowels. 7mm star shaped beads are hot glued over the star locations in the constellations. <u>When gluing, make sure that the hole coming through one of the star points is at the top</u>. The longest dowel piece represents the star that is the closest to Earth and the shortest represents the star that is the furthest from Earth. The pom-poms for this part of the model should be all the same color but it doesn't really make any difference what color this is.

When looked at from the top, the pattern is the same as the pattern seen with the magnitude pom-poms but when tilted, one can see that the stars are at different distances and the constellation pattern falls apart.

The raised black dots that you see on the pictures of all four constellation models and the dowels are used so that a totally non-sighted individual will be able to place the correct light year length dowel at the correct star location.