

# Scale Model of Galaxies Near the Milky Way

[DRAFT: version 1.1, 6/18/09 Madison Metropolitan School District Planetarium]

**Scale: 1 kly = 1 mm (1,000 light years = 1 millimeter)**

This rough scale model depicts the largest galaxies in our Local Group of galaxies.

| Galaxy  | Galactic Longitude | Galactic Latitude | Distance (kly) | Diameter (kly) |
|---|--------------------|-------------------|----------------|----------------|
| <b>Milky Way</b>  |                    |                   |                | 90             |
| Large Magellanic Cloud  | 280                | -33               | 165            | 25             |
| Small Magellanic Cloud  | 303                | -44               | 195            | 15             |
| Sagittarius Dwarf   | 6                  | -14               | 78             | 20             |
| <b>Andromeda Galaxy</b>   | 121                | -21               | 2560           | 140            |
| M110  | 121                | -21               | 2690           | 15             |
| M32   | 121                | -22               | 2625           | 8              |
| <b>Triangulum</b>   | 134                | -31               | 2735           | 55             |
| Shown here are galactic coordinates. Diameters and distances are approximate.<br>Source: <a href="http://www.atlasoftheuniverse.com">www.atlasoftheuniverse.com</a> |                    |                   |                |                |

## **Background:**

While stars are millions of stellar diameters away from each other, galaxies are only "tens" of galactic diameters away from each other. That's why galaxies collide, but stars don't.

## **Vocabulary:**

- **kly** = 1000 light years; light year = distance light can travel in one year, which is approximately 10 trillion km (6 trillion miles)
- **Galactic Longitude:** direction, in degrees, in our galactic plane, centered on our solar system, with the zero point aligned with the center of the Milky Way.
- **Galactic Latitude:** number of degrees above or below the galactic plane, measured from our solar system

## **Materials:**

scissors, metric tape measure, galaxy graphics

## **Directions:**

1. Cut out the galaxy images.
2. Arrange them by distance and direction (galactic latitude and longitude) as measured from the center of the Milky Way. Use the scale: 1 kly = 1 mm

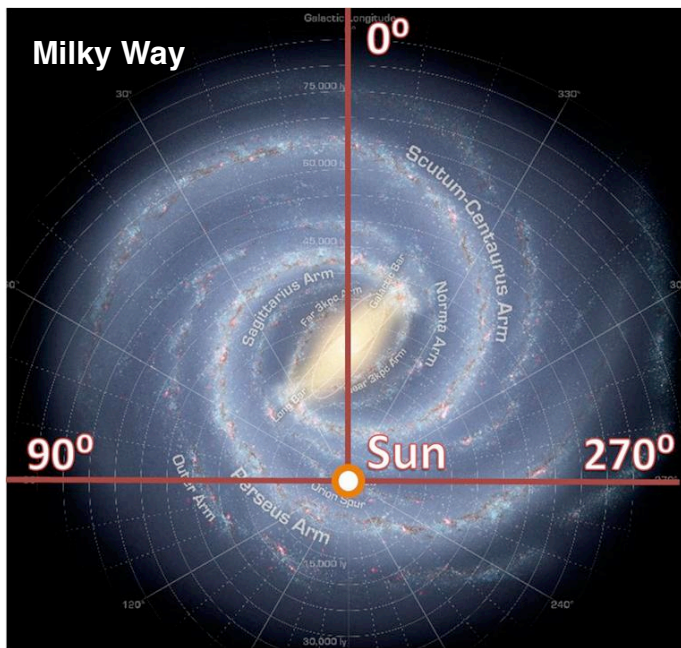


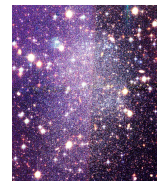
Image Credit:  
Annotated Milky Way: NASA/JPL-Caltech/R. Hurt  
Galactic Longitude Overlay: Brews



**LMC**  
Large Magellanic  
Cloud  
Image Credit:  
Fred Espenak



**SMC**  
Small Magellanic Cloud  
Image Credit:  
Fred Espenak



**Sagittarius Dwarf**  
Image Credit:  
Credit: NASA, ESA, and  
The Hubble Heritage Team  
STScI/AURA)



Image credit:  
NASA/Swift Science Team  
Stefan Immler



Image Credit & Copyright: Robert Gendler



**M110**  
Image Credit:  
Jerry Lodriguss



**M32**  
Image Credit:  
S. Van Dyk and  
R. Hurt (IPAC)