Where are we?
Images of young star clusters (open clusters)

M7 and the Pleiades
Disk galaxies like the Milky Way

Galaxy: a large self-bound collection of gas and stars that is a distinct physical entity

Edge on  Face on
Cartoon of the edge-on Milky Way galaxy

Thick disk: stars
Thin disk: stars/gas
The Sun
Bulge: stars
Halo: stars
Globular clusters

12 kpc
40,000 light years
Images of globular clusters – clusters of $\sim 10^4$ stars (from SDSS data)
Dwarf Galaxies orbit the Milky Way

Dwarf galaxies have 1/10 or fewer the number of stars as a Milky Way sized galaxy. About 20 known around the Milky Way.
The LOCAL GROUP

Figure 18.17 These are the galaxies of the Local Group, arranged to represent their actual physical relationships to the Milky Way. For more detailed information about each galaxy, please visit: http://universe.colorado.edu/lgc/1817.html
Many galaxies are organized in groups and clusters

Here is a group of galaxies - Hickson 44, about 60 million light years away
Massive galaxy cluster Abell 1689 = about 2 billion light years away.
We are located at the edge of a local supercluster of galaxies
There are hundreds of billions of galaxies in the Universe.

Each bright spot in this computer simulation represents a single galaxy.

This simulation shows that the distribution of galaxies is very clustered, and looks like a cosmic web on very large scales.
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