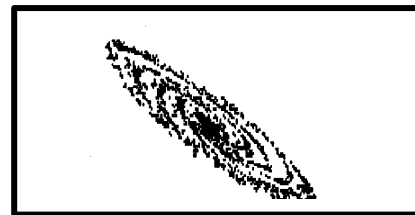


Activity: Galaxy Cards

Galaxies are very large groups of stars in the universe. There are billions of galaxies, which may each contain 100 billions of stars. These galaxies are divided into three basic types.

I. Spiral Galaxies:

Spiral galaxies consist of one or more spiral arms that rotate around a distinct, relatively dense nucleus. Stars in the central hub are probably older than the stars in the arms. The spiral arms are great quantities of cosmic dust and gas. Possibly these concentrations of cosmic matter have not yet formed into true stars. Spiral galaxies are divided into two smaller groups based on the shape of their arms.



A. Normal Spirals (S):

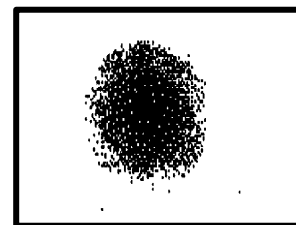
- These galaxies range from those with relatively large central disks and shortly coiled arms to galaxies with relatively small disks and large, loosely coiled arms.
- Two main arms usually emerge from the opposite side of the central disk, but some galaxies have been known to rotate.
- Stars remote to the central disk revolve slower than stars near the central disk.
- Absorption of light by dust can be seen if the galaxy is viewed edgewise.

B. Barred spirals (SB):

- These galaxies are not as abundant, and have spiral arms that project from the ends of the bar, which seem to have come off the central disk.
- They appear to turn as a unit in space.

II. Elliptical galaxies (E):

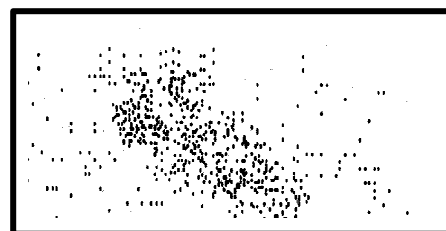
Elliptical galaxies range in shape from spherical to flattened discs. No arms are present. They appear symmetrical, and orientation in space is impossible. The farther out from the center of the galaxy, the smaller the number the stars. The fact that elliptical galaxies are not dish-shaped like the spiral galaxies means that they probably rotate much more slowly if at all. The largest elliptical galaxies have far more mass than any of the spirals.



These galaxies contain very little dust and gas. The stars in elliptical galaxies are generally older than those in other types of galaxies. This should not be surprising, because stars are born in huge clouds of gas and dust (nebula), which are rare in elliptical galaxies.

III. Irregular galaxies (I):

Irregular galaxies show no defined structure or symmetry. Our two nearest galactic neighbors, the Large and Small Magellan clouds, are irregular galaxies. These galaxies are very much less common than spiral or elliptical ones.



Name: _____ period _____

Purpose: to classify galaxies by their characteristics.

Materials:

set of galaxy cards paper and pen

Procedure:

1. Place the galaxy cards on the desk picture side up.
2. Classify the galaxies by separating the like galaxies into groups.
3. Place a check in the correct column for each galaxy.

Observations:

Card	Normal Spiral	Barred Spiral	Elliptical	Irregular
A				
B				
C				
D				
E				
F				
G				
H				
I				
J				
K				
L				

Conclusions: record answers on separate sheet of notebook paper and staple

1. What do spiral galaxies consist of?
2. What composes the arms of the spiral galaxies?
3. Where are the older stars located in a spiral galaxy?
4. Compare the time required for the stars to rotate between the hub and the spiral arms.
5. Describe the arms of the barred spiral galaxies.
6. How does the star count vary from the center to the edge of elliptical galaxies?
7. Why are the stars older in elliptical galaxies than others?
8. Why is it thought that the elliptical galaxies rotate very slowly if at all?
9. What type of galaxies are our nearest neighbors?
10. What type of galaxy is the least common?

