The milky way

The Milky Way is quite large so you would expect it to weigh lot and you?? ™re right, it does. The Milky Way??™s mass is 200 to 600 billion times that of the sun. This number came about by counting all the stars and assuming they all weigh about the same as our sun. The mass also depends on what you define as the edge of the Milky Way to be. This is nit the only way to determine the mass of it. It is possible to measure the mass by measuring how fast stars are rotating around the disk. The heavier the Milky Way is the more affect gravity will have on the orbit of the stars. Using this way to measure it, the results show the mass would be 1 to 2 trillion times that of our sun.

A more recent estimate by measuring the velocity of 2, 400 stars shows that the Milky Way and its halo??™s mass is 1 trillion solar masses. We can??™t see all of the mass because most of it is made up of dark matter. This dark matter makes up 80 to 90 percent of the Milky Way??™s mass, which means we can only see a small 10 to 20 percent of our own galaxy. ? The Milky Way Galaxy is a spiral galaxy. It looks a lot like a pinwheel and it is always spinning. Gas and dust rotates at approximately 270 kilometres per second (168 miles per second).

At this rate our Solar System will take 225 million years to do one orbit. The last time our Solar System completed its orbit dinosaurs were just starting to appear on the earth. Some galaxies are blob shaped and some are irregular shapes but our galaxy is spiral shaped. Because of the spiral our galaxy falls into a class called barred spirals. The Milky Way has four main spiral arms.

These are the Norma and Cygnus arm, Sagittarius, Scutum-Crux and Perseus. Our sun is in a minor arm or spur. This spur is called the Orion Spur. The galactic disk itself measures a huge 100, 000 light years across and the bar at the centre of the spiral is estimated at be approximately 27, 000 light years long. The Milky Way is a spiral because of its rotation. The stars don??™t stay within the spiral arms but if they did the arms of the spiral would wind in tighter and tighter over time. The spiral is what??™s called a density wave or a standing wave.

The wave is at a certain location were the matter piles up and lingers for a while and then moves on and gets replaced by other matter. As dust and gas gets compressed, it heats up and results in the formation of a new star. The birth of these new stars makes the edge of the spiral brighter.

At the centre of the Milky Way, like many other galaxies, there is a supermassive black hole. Our black hole is named Sagittarius A. Although Sagittarius A tries to eat everything that comes near but it is also a great place for new stars to form. A black hole has such a huge pull that it attracts a lot of matter. This matter bunches up around the black hole and heats up.

Because of the friction, gas and dust heats up too, emitting infrared light. Earth is situated 26, 000 light years from the centre of the Milky Way. Sagittarius A measures a large 14 million miles across meaning it could quite easily fit inside Mercury??™s orbit, the supermassive black hole isn??™t the only thing at the heart of our galaxy. There are also massive star clusters, such as Arches, Quintuplet and the CG star cluster. ? The oldest stars in our

galaxy are 13. 4 billion years old, give or take 800 million years. This is close to the age of the Universe itself.

Although scientists have come to the conclusion, the Milky Way is approximately 13. 6 billion years old. The age of the Milky Way is determined by the amount of beryllium present found in some of the oldest stars known of in the Milky Way. After the Big Bang, hydrogen, helium and lithium were all present. Beryllium is produced by the collisions of cosmic ray with heavier elements. Because of the way beryllium is formed, it can act as a cosmic clock. The longer duration between the first stars that created heavier elements and the stars that made up the globular clusters, the more beryllium there would be.

Scientists could measure the beryllium content of the oldest stars the approximate age of the Milky Way can be determined. There are many, many stars in our galaxy. 2500 of them are visible to the naked eye and only 5, 800 to 8, 000 are visible at all. But the Milky Way is thought to have billions more stars that we can??™t see.

Astronomers have estimated there are 200 billion to 400 billion stars within our galaxy. There??™s a lot of distance between Earth and the far side of our galaxy. When we??™re looking at the stars we tend to see the brighter stars wash out the dimmer ones. Plus we can only see the stars that are a maximum of 1, 000 light years away. Other stars are covered by clouds of dust and gas, which prevents us from seeing the stars they??™re hiding, so we can only see the stars in our vicinity. The diameter of our Milky Way is

between 100, 000 and 120, 000 light years across. This number would be much higher if you included the dark matter.

It all depends where you chose to measure the galaxy from. The measurement was of the visible part of the galaxy. But our galaxy also has a halo of dark matter. This dark matter makes up approximately 10 times the visible matter of the Milky Way. No one has accurately determined the size of the halo yet. To measure the diameter of the Milky Way we have to measure the distance to Cepherd variable stars.

These stars luminosity changes in a predictable way because they puff up and shrink back down. Knowing the luminosity of these stars allows us to measure the distance. The Milky Way, of course, has neighbouring galaxies. Andromeda is one but is not the closest. The closest galaxy to the Milky Way is actually inside it.

The Canis Major Dwarf Galaxy is about 42, 000 light years away from the galactic centre of the Milky Way and is only 25, 000 light years from Earth. That means we??™re closer to the Canis Major Dwarf Galaxy than we are to the middle of our own galaxy. The Canis Major Dwarf Galaxy was discovered in 2003 when astronomers analysed some pictures of the Milky Way. Canis Major has a lot of red stars that shine very brightly on the infrared images.

These stars are called M-Dwarf stars. The Milky Way became such a big galaxy by eating up smaller galaxies. The Milky Way will continue to do this but also by doing this it has made the closest galaxy to the Milky Way part of it.

The Canis Major Dwarf Galaxy is rather small and only has a billion stars. The Andromeda Galaxy is the closest spiral galaxy to us and although it is gravitationally bound to the Milky Way it is far from the closest galaxy measuring 2 million light years away. All the galaxies within a 4 million light years radius are considered our Local Group. In this group there are more than 30 galaxies. References: http://www. universetoday. com/64235/the_milky_way