

NOTES: GEORGIA HIGH SCHOOL SCIENCE TEST
THE SOLAR SYSTEM

1. What is a Solar system?

A solar system consists of:

- * one central star, the Sun and**
- * nine planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto**
- * more than 60 moons**
- * millions of rocky asteroids**
- * billions of icy comets**

Pluto orbits beyond the orbit of Neptune (usually). It is much smaller than any of the official planets and now classified as a "dwarf planet". Pluto is smaller than seven of the solar system's moons (the Moon, Io, Europa, Ganymede, Callisto, Titan and Triton).

On August 24, 2006, Pluto's status was officially changed from planet to dwarf planet. For decades children have been taught that there are nine planets in the Solar System. However, with this change, there are now only eight planets. Its diameter is 2274 kilometers (1413 miles)

2. How many planets are there in our solar system?

Our solar system has 9 planets and one star: the Sun. They are : Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto. An easy way to remember them is: My Very Educated Mother Just Served Us Nine Pizza-pies. (M for Mercury, V for Venus etc)

3. How did this solar system begin/form? Theory of its formation.

The planets, asteroids and comets in the Solar System are loose particles left over from the formation of the Sun. Originally the gas and dust which would become the Sun was the core of a cloud much larger than the Solar System, probably several lightyears (far far away) across; where 1 light-year is equal to approximately 10,000,000,000,000 miles.

The core was slowly rotating at first, but as it collapsed it spun faster, like a spinning ice-skater pulling in their arms. The rotation prevented the core's equator from collapsing as fast as the poles, so the core became a spinning disc.

Gas and dust in the disc spiraled gradually in to the center, where it accumulated to form the Sun. But because dust is denser than gas, some of the dust settled to the mid-plane of the disc. These dust particles stuck together to make clumps, then clumps stuck together to make rocks, then rocks collided to make planets. In the case of the 'gas giant' planets, Jupiter, Saturn, Uranus and Neptune, the rocky cores were massive enough to also attract some of the gas. The outer layers of these planets are made up of hydrogen and other gases.

So the Sun is the collapsed core of an interstellar gas cloud, and the planets, asteroids and comets are small lumps of dust which stayed in orbit instead of spiraling into the Sun. The planets all formed within a very short period, probably a few million years, about five billion years ago. Within that short time, no-one knows for sure which of them formed first. Maybe the inner planets formed first and were dragged by the spiraling gas so they are now closest to the Sun; or maybe the outer planets formed first, and the inner ones are small because they didn't have a long time to grow

4.How old is our solar system?

The solar system is said to be over 5 billion years old.

5.And how big is our solar system?

There are no physical boundaries in space. The solar system consists of nine planets orbiting around one star: the Sun. Pluto, the farthest planet from the Sun orbits approximately as far as 40 astronomical units. An astronomical unit is a unit of length used by astronomers. One astronomical unit equals the distance from Earth to the Sun: 93 million miles. Really too big for us to imagine!

6.What are the differences between our planets?

Planets are different in sizes and colors. The four planets closer to the Sun are called 'rocky' planets. They are small in size and similar to Earth in composition. They have no rings and only two of them (Earth and Mars) have moons.

The four outer planets, also called 'gas giants', are much larger than the 'rocky' planets. They all have rings and have many moons. The 'gas giants' are made up mostly of hydrogen, helium, frozen water, ammonia, methane, and carbon monoxide.

Pluto, the most remote planet, might be little more than a giant comet. Its composition is similar to that of comets, and its orbit is quite different from that of the other comets and planets. Pluto has three moons: the largest is Charon which is almost the size of Pluto and sometimes they are called twin planets.

7.What is the asteroid belt?

The asteroid belt is a zone between the orbits of Mars and Jupiter. It is said that the asteroids in the asteroid belt never formed a planet because the gravity of nearby Jupiter kept pulling them apart. Today, millions of asteroids probably inhabit the asteroid belt, with many more scattered throughout the solar system.

8.Where do comets come from?

Comets are solar system leftovers; they are often described as 'dirty snowballs', lumps of frozen gas and dust. Astronomers suspect that many of these objects live in a giant cloud called the 'Oort' Cloud, that extends as much as a light year from the Sun

9.Can we ever see planets with our naked eye?

Yes! Some planets can be seen with the naked eye (Without telescope or binoculars). That is how they were discovered by the ancient civilizations: Mercury, Venus, Mars, Jupiter and Saturn.

Uranus, Neptune, and Pluto were all discovered using a telescope.

10. Which are rocky or terrestrial planets?

Mercury, Venus, Earth and Mars are called 'rocky' or 'terrestrial' planets. They are similar to Earth in composition. Being close to the Sun, lightweight elements like hydrogen and helium were sandblasted away by the intense radiation. Mostly rock and metal was left in this zone and clumped together to form the inner rocky planets.

11. What are gaseous planet?

Jupiter, Saturn, Uranus and Neptune are called the gaseous planets. Jupiter and Saturn contain the largest percentages of hydrogen and helium, while Uranus and Neptune contain largest shares of ices -- frozen water, ammonia, methane, and carbon monoxide.

12. And which planets have rings?

The four gas giants, Jupiter, Saturn, Uranus and Neptune, have rings.