EM-30 Planet Scale Model

Introduction: The planets of our solar system are important. Obviously we need Earth to live on. Jupiter's massive gravity well helps pull in comets and other space debris, acting as a shield. The outer planets help shed angular momentum generated by the sun's rotation, which keeps our star stable.

Ancient astronomers were long puzzled by the planets. They moved against the star field, which meant they were something other than stars. Eventually this motion was mapped with great precision, although without telescopes, the ancients still did not know what they were. Many assumed they were gods, demons, or some other supernatural entity.

Today we know that the planets are leftover chunks of matter from the formation of the solar system. There are eight of them, not counting the dwarf planets, asteroids, and various lesser bodies. They range from tiny mercury, which is a small sphere of an iron-nickel alloy, to giant Jupiter, which is composed mainly of hydrogen and helium, both in gaseous and liquid states. The bands and famous spot of Jupiter are a result of the hideously complicated interplay of all these fluids.

All the outer planets have rings, but none are as spectacular as those of Saturn. Composed of ice and dust, this system numbers hundreds of individual rings measuring only about 10 meters thick. They are so thin that viewed edge on, it is impossible to see them without the most sensitive of instruments.

Neptune and Uranus are very similar worlds. Cold, distant, and with a similar composition, little else is known about them. Neptune is the most distant of the planets. It is so distant it cannot be seen with the eye. In fact, it was the first planet to who's existence was deduced mathematically. This success was a crowing achievement for the mathematical laws governing orbital dynamics.

Closer to the sun lies Mercury. The densest of all the planets, it is composed mostly of an iron nickel alloy. One theory about this odd composition is that Mercury used to have a mantle and a crust, like earth, but eons of exposure to the solar winds stripped it away, leaving only the core behind.

Venus is the hottest world, with temperatures regularly exceeding 800 degrees! This incredible temperature is not due solely to the greenhouse effect. The Venusian atmosphere weighs 93 times that of Earth, effectively acting like Earth's oceans to a depth of 1km. With an atmosphere as dense and heavy as an ocean, it can hold far more heat than Earth's atmosphere. Eons of exposure to bright sunlight have heated this atmosphere up, much like heating a kettle on your stove. Even if the sun were extinguished, the Venusian atmosphere holds so much heat that it would take many years to lose it all.

Mars is the most habitable world after Earth. Small, rocky, and devoid of extreme weather, it is possible to land humans there safely. It once had an abundance of water, but its small size prevented it from maintaining a thick atmosphere, which meant that eventually most of the water was lost to space. Some still lurks in the polar ice caps and frozen underground. Mars was once very geologically active,

boasting the largest mountain in the solar system! It is now believed that Mars has fully cooled, which means geologic processes have stopped. Curiously, Mars has about the same land area as Earth, despite being far smaller. This is because Mars is all land, whereas 70% of Earth is covered by water.

Information on the planets is very in depth. This guide is intended to serve as a taste to get students curious about the subject. By no means is this information all inclusive. For more complete information, please consult reference guides.

Operation: To use your planet model, you need to assemble it. To do this, take the four bolts and four nuts that were included with the unit. You will see four mounting holes on the Saturn disc, and two semicircular pieces representing its ring system. Use the included bolts to mount the rings to that Saturn disc.

Your planet model is cut to relative scale. That is, the ratio between tow planets, say Earth and Jupiter, is the same in the model as it is in real life. This allows you to show students the incredible variation in size amongst the various planets. Try turning the planet discs upside down so that the labels are hidden, and asking your students to put the planets in order.

Mounting holes are bored in the top of each disc. You can hang the planets like a mobile, or mount them above the blackboard as a permanent display.

The discs also make convenient stencils. Place them on a sheet of cardboard and let students trace around them. They can then cut their own cardboard planets. These can be decorated to look like the real things. That way, each student can have their own scale model.

Warranty and Parts:
We replace all defective or missing parts free of charge. Additional replacement parts may be ordered toll-free. We accept MasterCard, Visa, checks and School P.O.s. All products warranted to be free from defect for 90 days. Does not apply to accident, misuse or normal wear and tear. Intended for children 13 years of age and up. This item is not a toy. It may contain small parts that can be choking hazards. Adult supervision is required.