



Introduction to Systems

Have you heard of the solar system? You probably know that it is the Sun, Earth, Moon, Mars, Venus, and all the other planets and their moons. But why is it called the solar *system*? Solar refers to the Sun, but what is a **system**?

A system is a collection of **interacting** parts. The parts work together to create a structure or produce an action. In the solar system, the parts include the Sun and the planets and their moons. The interactions are the motions of the objects and the force of gravity that holds them together. Gravity and the collection of objects work together as a system.

A pair of scissors is a system. It has two levers with sharp edges. Your hand applies force to the ends of the two levers. The cutting edges apply force to the material between the blades. This system cuts through the material.

The solar system is huge and complex. A pair of scissors is small and simple. Both systems are collections of interacting parts.



A bridge is a system.



A tower is part of a cell phone system.

A bridge is also a system of interacting parts. The parts include steel girders, steel cables, bolts, and concrete supports. The bridge system is a structure that is solid and stable. Bridges don't move much, but they support the weight of the traffic traveling across them.

If you look closely, you can find systems everywhere. Some systems are industrial, like a waste-water treatment plant. Some systems are social, like a hospital or school. Some systems are technological, like the cellular telephone system and the Internet. Some systems are natural, like the migration of monarch butterflies and the cycle of the tides. Some systems are cultural, like baseball. What systems can you think of?

Thinking about Systems

Here is a list of eight systems. Can you think of three or four parts of each system?

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| 1. Refrigerator | 5. Flashlight |
| 2. Skateboard | 6. Hot dog |
| 3. Sunglasses | 7. Sleeping bag |
| 4. Helium balloon | 8. Belt |