Glossary

concave lens A lens that is thinner in the middle and thicker at the edges; bends light outward. Concave lenses make objects appear smaller.

concave mirror A mirror that curves inward like a bowl. Concave mirrors make objects appear upside-down. Light rays hitting the mirror reflect off and cross over each other, creating an upside-down image.

convex lens A lens that is thicker in the middle and thinner at the edges; bends light inward. Convex lenses make objects appear larger.

convex mirror A mirror that curves outward like the back of a spoon. Convex mirrors make objects appear farther away than they really are. The mirror collects light rays from a larger area than a flat mirror and so it shows a larger area than a flat mirror does.

diffraction The separating of light into different colors when it passes through a narrow slit. When light passes through a narrow slit, its path bends and the colors separate. The narrower the slit, the more it spreads light into its spectrum of colors.

energy The ability to do work. Light is a form of energy. Energy can be converted from one form to another. For example, light energy can be converted to electrical energy in a solar calculator. Or, electrical energy can be converted to light energy in a flashlight.

fiber optics The branch of science that looks at how light travels through optical fibers. Fiber optics is used to light up the inside of the body for surgery, to send telephone messages, and to look inside hard-to-reach places.

focal point The point where the image formed by a lens or mirror is turned upside-down. The focal point of a convex lens is usually found a few centimeters from the lens. Objects in front of the focal point appear right-side up and larger than they really are. Objects just beyond the focal point appear larger and upside-down. Objects way beyond the focal point appear smaller and upside-down.

light A form of energy that travels in waves and can move through empty space. Light travels in straight lines. It can reflect off of surfaces. We can see light when it enters our eyes. The light that we see is called visible light. Some kinds of light, like ultraviolet light and radio waves, cannot be seen without special equipment.

opaque A material that does not let light pass through it. A piece of wood is opaque. Opaque materials do not transmit light. You cannot see through an opaque object. Light that hits an opaque object does not travel through it. Instead, the light bounces off or is absorbed.

optical fiber A strand of transparent material that carries light. Optical fibers can be made from glass or plastic. Light carried by an optical fiber is reflected by the walls of the fiber. If the fiber bends, the light can be reflected along the bend. Even though the fiber can form a curved shape, the light carried by the fiber travels in straight lines inside the fiber.

orbit The path that an object in space takes around a larger object. Earth moves around the Sun. The path that Earth takes around the Sun is called Earth's orbit.

prism A glass bar that separates light into the colors of the rainbow. A prism refracts (bends) light, breaking it into its separate colors. A prism lets you see the individual colors in white light.

Glossary (continued)

reflect To bounce back from a surface. We can see things because light reflects off of them and travels to our eyes. Some objects reflect light better than others.

refraction The bending of light when it moves from one material to another. Light travels at different speeds through different materials. When light moves from one material to another, its speed changes. At the boundary between the two materials, the path of light will bend. The light rays still travel in straight lines, but the path changes direction slightly.

rotation The spinning of a planet or moon on its axis. Earth spins around. The imaginary line that it spins on is called Earth's axis. The spinning movement is called Earth's rotation. As Earth rotates, different parts face the Sun. Over 24 hours, sunlight will have a chance to shine on every part of Earth. During the day, Earth's rotation makes the Sun appear to move across the sky.

spectrum All of the colors of light. White light is made up of a mixture of all colors of light. The order of colors in the spectrum of white light is red, orange, yellow, green, blue, indigo, and violet.

sundial An instrument that uses shadows cast by the Sun to measure time. Before the invention of clocks, people used sundials to tell time. A sundial has a pointer that sticks up out of a flat disk. Sundials are placed in sunny areas. When the Sun moves in the sky, the shadow cast by the pointer also moves. The location of the shadow can be used to tell how much time has passed.

translucent A material that lets some light pass through it. A frosted window is translucent. Translucent materials transmit some light. You can see some light shining through a translucent object. Some of the light that hits a translucent object bounces off or is scattered. Some of the light is absorbed. Some of the light is able to travel though it.

transparent A material that lets most light pass through it. A piece of glass is transparent. Transparent materials transmit almost all light. You can see clearly through a transparent object. Very little of the light that hits a transparent object is scattered or absorbed. Almost all of the light is able to travel though it.