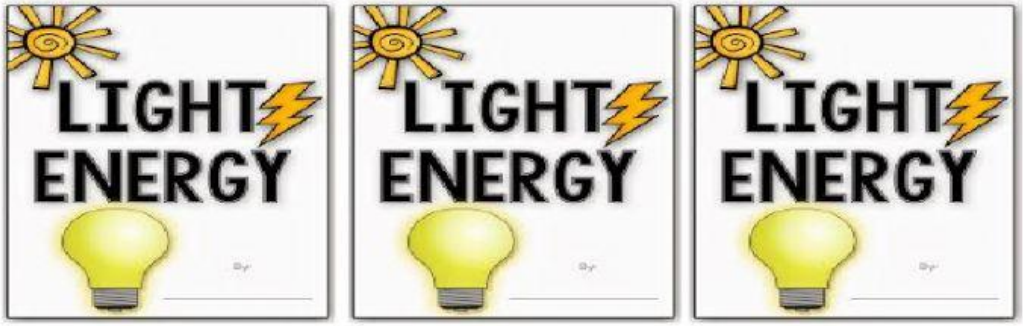
Name _____ Date _____



Light is a form of energy made of photons. A **photon** is the smallest unit of visible light. Photons are like tiny pockets of energy that are produced when an object's atoms heat up and begin to move. The hotter the object becomes, the more photons are produced.

1) The smallest unit of visible light is a _____.

2) Photons are produced when an object's atoms _____ _____.

Light travels in **waves** yet it is unique because it behaves both like a particle and a wave with different kinds of matter. If light hits an object and passes through it, that object is known as a **transparent object**. **Transparent objects** allow light to pass through so that objects behind them can be clearly seen.

3) Light energy travels in _____.

4) If light can pass through an object, that object is known as a _____ object.

There are certain objects through which light cannot pass, and if light hits them it changes its path. These objects are called **opaque objects** such as wood, a cell phone, or a person. Some objects allow light to pass through them partially and they are known as **translucent objects**, such as plastic, paper, and frosted glass.

5) Objects through which light cannot pass are _____.

6) _____ objects allow light to pass through them partially.

When light travels through different mediums, it slows down and sometimes bends. This bending of light is known as **refraction**. When light hits some objects it bounces back. This bouncing back of light is known as **reflection**. When hitting dark objects, light can sometimes be absorbed, that is the photon energy is taken in as internal energy by the dark object. This is known as **absorption**.

7) When light bends as it passes through some mediums it is called _____.

8) When light bounces back after hitting an object it is called _____.

9) _____ can sometimes happen when light hits dark objects.

The **speed of light** is the fastest speed in the universe, even faster than a rocket ship. In a vacuum where there are no obstacles, light travels 0.1 million miles per second. Light takes only approximately 1.2 seconds to reach the moon from the earth, a distance of 238,900 miles! The distance between the sun to the earth is 93,000,000 miles but it takes the light from the sun only eight minutes to reach the earth. This is a speed of 186,000 miles per second!

10) The speed of light is the _____ speed in the universe.

11) Light travels _____ miles per second!

Light energy is also called **radiant energy** and is a form of **electromagnetic radiation**. It is the only form of energy that

travels in **wavelengths** that can be seen by the human eye. Light energy is given off by stars, lasers, lightbulbs, and hot objects. It is used by humans to help us see. It is also used by plants which capture the light energy from the sun and use it to produce food in a process called **photosynthesis**. Some living organisms including humans also give off light, which is known as being **bioluminescent**. Many sea creatures, glow worms, and fireflies are bioluminescent and can produce light. Humans are also bioluminescent but the light they transmit is 1,000 times weaker than the human eye can see.

12) Another name for light energy is _____ energy.

13) Light energy is a form of _____ radiation.

14) Plants use light energy from the sun by capturing it and using it to produce food in a process called _____.

15) Living organisms including humans that give off light are called _____.