

LT: *I can describe the scale of the universe using models and the concept of light years*

Name: _____

TG: _____

EXPLORING SPACE
The Universe: The Vast Reaches of Space
A Light-Year

Distances are so great in space that a special unit of measurement is used. It is called a light-year. This sounds like a measurement of time, but it is a unit used to measure distance. By definition a light-year is the distance that light travels in one year. To calculate the distance of one light-year, you determine the number of seconds in a year and then multiply that number by the speed of light. Light is the fastest thing we know of, as it travels at an incredible 186,000 miles (300,000 kilometers) per second.

Your job is to calculate the value of one light-year.

Calculate the number of seconds in one year.

Calculate the number of miles, or kilometers, in a light-year by multiplying the number of seconds in a year by 186,000 miles, or 300,000 km.

Exceeds: Write the values in scientific notation (for example: $\times 10^9$)

Now that you know how many miles or kilometers are in a light-year, determine the distance of these objects (round light-year to nearest trillion).

1. The closest star to Earth other than the sun is 4.3 light-years away.
2. The Andromeda galaxy is 2.2 million light-years away from Earth.
3. The diameter of the Milky Way galaxy is 100,000 light-years.