GLE: 6.1.C.a: Explain that stars are separated from one another by large, vast and different distances, which causes stars to appear smaller than the Sun.

Source: http://starchild.gsfc.nasa.gov/docs/StarChild/questions/question19.html

The light-year is often used to measure distances to stars.

A light-year is a unit of distance. It is the distance that light can travel in one year.

Light moves at a velocity of about 300,000 <u>kilometers</u> (km) each second. So in one year, it can travel about 10 trillion km.

Why would you want such a big unit of distance?

Astronomers use other units light years and parsecs to measure distances between stars.

The parsec is equal to 3.3 light-years. Using the light-year, we can say that:

- The Crab <u>supernova</u> remnant is about 4,000 light-years away.
- The Milky Way Galaxy is about 150,000 light-years across.
- The Andromeda Galaxy is 2.3 million light-years away.

GLE: 6.1.C.a:

You should be able to: Recognize and **Explain** that stars are separated from one another by vast and different distances, which causes stars to appear smaller than the Sun.

DOK: 1

GLE 6.1.C.b: You should be able to compare the distance light travels from the Sun to Earth to the distance light travels from other stars to Earth using light years.

A **light year** = 10 trillion kilometers. They are used to measure distances to stars and other objects in space. A light year is the

distance light can travel in ONE year. Light moves at a light speed of 300,000km per second and 10 trillion kilometers in ONE year.

A Parsec = 3.3 light years-

Scientist use such large distances for object in space because, even though kilometers or miles are large on Earth, they are too small in space. Instead, of 2.3 million light years to Andromeda, it would be 21,000,000,000,000,000,000km or 21 quintillion miles.

The Sun The Crab Supernova remnant: The Milky Way Galaxy:	93 million miles from Earth or 12,000 Earths away 4000 light years away from our Earth. 150,000 light years across.		
		The Andromeda Galaxy:	23 million light years away from our Earth.

Test:

Explain how stars are separated from one another and what does this cause. **GLE: 6.1.C.a**

Scoring Guide:

Stars are separated by large, vast and different distances which are light years and parsecs. (1 point)

This causes stars to appear smaller than the Sun. (1 point)