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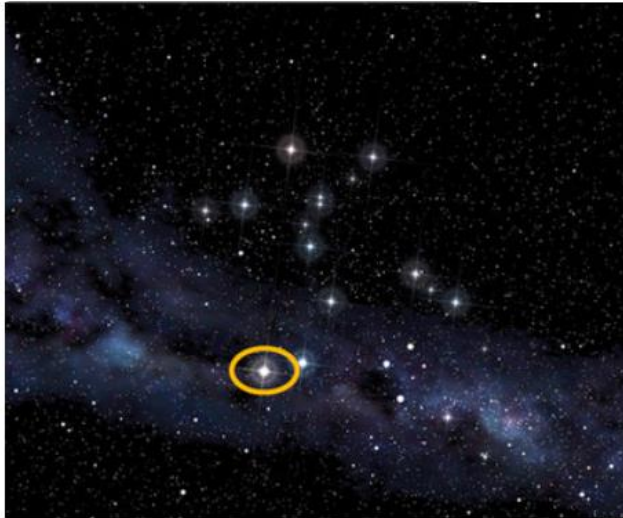
### **Distance Affects a Star's Apparent Brightness**

There are billions upon billions of stars in space. On a clear night, you can easily spot some stars in the sky. They are bright against the dark night sky. But most stars are harder to see. These stars are much dimmer.

The **apparent brightness** of a star is a measure of how bright it looks from Earth. One factor that affects a star's brightness is how far away it is from Earth. This is why the sun is so much brighter than other stars. Compared to other stars, it is very close to Earth.

Although all other stars are very far away from the sun, some stars are closer than others. One of the closest stars is called Alpha Centauri A. It is about 4.3 light-years away from both Earth and the sun. This means the light you see left the star 4.3 years ago! So, Alpha Centauri A is much farther from Earth than the sun. Most stars are much farther away than Alpha Centauri. They are up to tens of thousands of light-years away, or even farther.

Stars that are a great distance from Earth look dimmer than stars that are closer. This is because the farther light travels, the more it spreads out. Less of their light reaches Earth, so their apparent brightness is lower. The sun is so close that its apparent brightness is enough to light up the sky. More of its light falls on Earth than does the light of other stars. Alpha Centauri A gives off about as much light as the sun. But, at 4.3 light-years away, it only looks like a tiny bright dot in the night sky. Most stars are so far away that by the time their light reaches Earth, it is so spread out, they cannot be seen without a telescope.



The sun and Alpha Centauri are stars that give off about the same amount of light. But the sun appears brighter than Alpha Centauri because it is closer to Earth. This is because distance is a factor that affects a star's apparent brightness.

<b>Star</b>	<b>Distance from Earth (in light-years)</b>
<b>Proxima Centauri</b>	4.2 ly
<b>Alpha Centauri A</b>	4.3 ly
<b>Sirius</b>	8.6 ly
<b>Betelgeuse</b>	642 ly
<b>Rigel</b>	773 ly

As this chart shows, stars are different distances away from Earth.