



# STARS

## Parsecs and Light Years





## Parsecs and Light Years

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### Overview

This lesson will discuss the commonality and conversion between Parsec and Light Years.

Remember that when using Parallax, you derive the distance to an object in Parsecs, this will introduce how Light Years fit into the distance terminology.

This lesson assumes that you have reviewed the video lesson: Angular Measurements on the Sky and Parsecs.

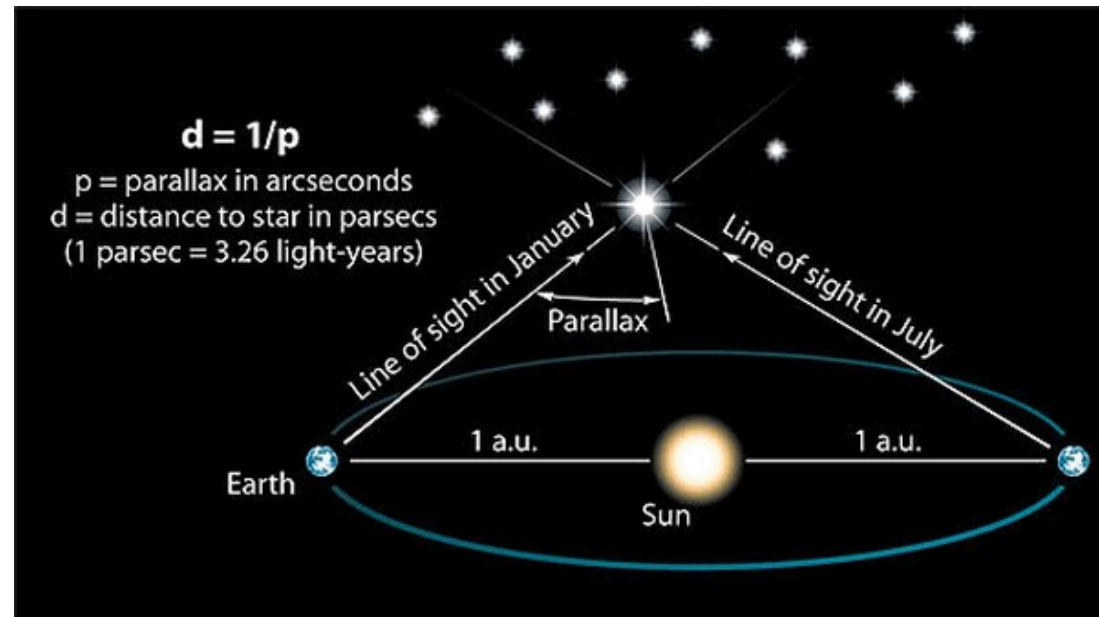


### What is a Parsec

It is the distance at which one Astronomical Unit (AU – The average distance from the Sun to the Earth) subtends an angle of 1 arcsecond.

Parallax measurements provide distances in Parsecs.

Parsec (pc) is the shortened: Parallax Arcsecond.





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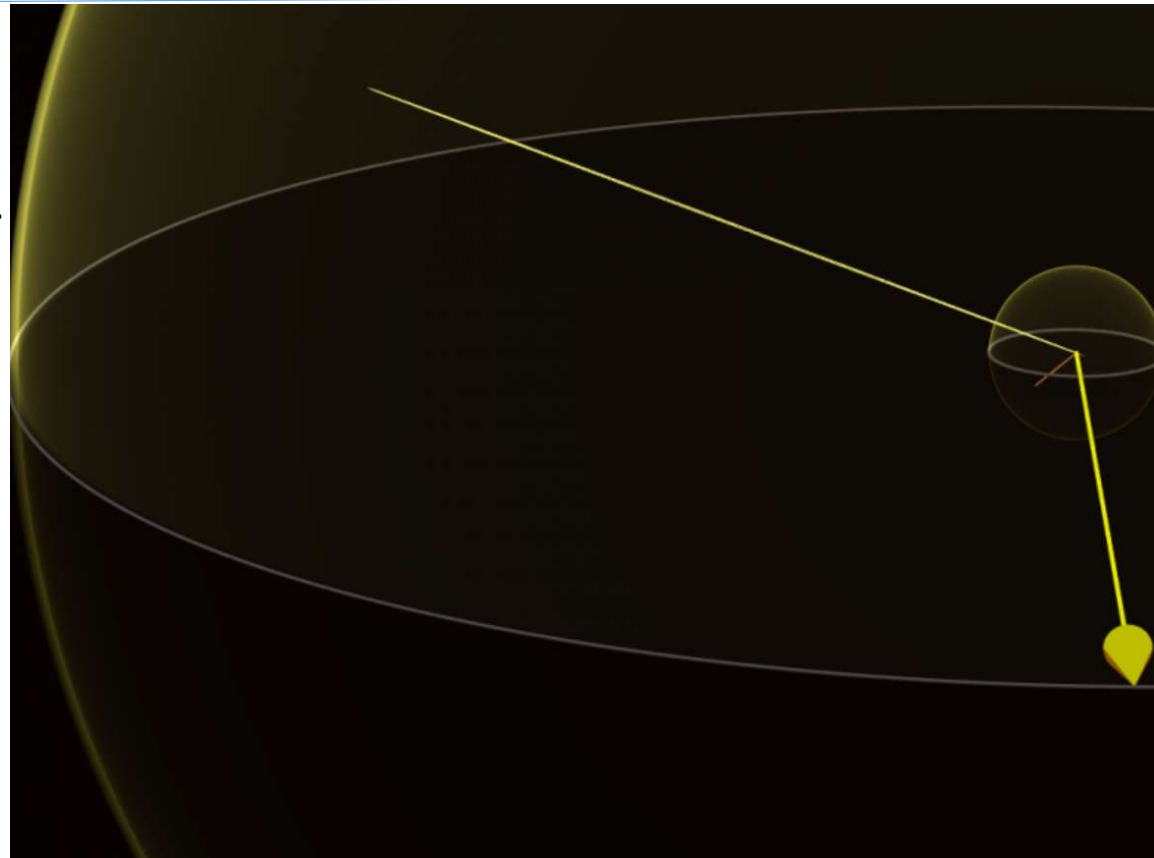
### What is a Light Year

It is the distance that light travels in one year.

Most often used in the public eye and when discussing distances on an galactic scale.

A light year (ly) equals:

- 9.5 trillion kilometers
- 5.9 trillion miles
- 63,241 AU





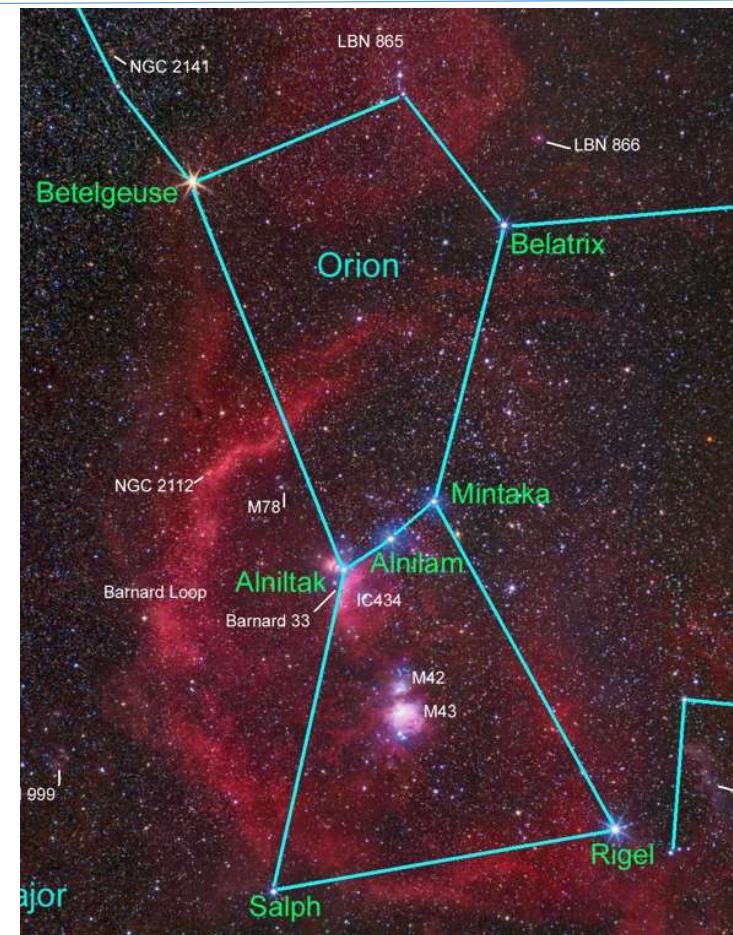
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### In Application

To find distance in parsecs, divide the parallax by 1. Also, 1 parsec= 3.26LY

- $D \text{ (in pc)} = 1/p$
- $D \times 3.26 = \text{ly}$

Name	Parallax	Parsecs	Light Yrs	Magnitude
Betelgeuse	0.00763	131.06	427.00	0.43
Bellatrix	0.01342	74.52	242.90	1.62
Saiph	0.00452	221.24	721.23	2.06
Rigel	0.00422	236.97	772.51	0.15
Mintaka	0.00356	280.89	915.73	2.25
Alnilam	0.00243	411.52	1341.56	1.68
Alnitak	0.00399	250.62	817.04	1.71



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### Summary

Parsecs and Light Years are common ways to express distance to objects.

In pure Astronomy speak, Parsecs is the standard term.

In public and text book speak, Light Years is more common as it is easier to relate to.

Both are effective.

In your scientific writing, stick to Parsecs as the standard.



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# Questions?