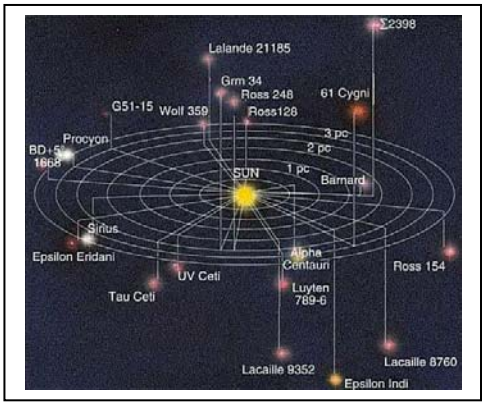
The Solar Neighborhood within 17 light years.



There are 45 stars within 17 light years of the sun. It is very hard to appreciate just how big space is. By considering our neighborhood in the Milky Way, we can start to get a sense of scale.

Local star map courtesy NASA/JPL

The table below gives the names, distances and angles to 11 of the most well-known neighbors to the sun. Although stars are spread out in 3-dimensional space, we will compress these distances to their 2-dimensional equivalents. On a 2-dimensional grid, place a dot at the Origin to represent the Sun. With a metric ruler and a protractor, plot the stars on a piece of paper and label each star. Use a scale of 1 centimeter = 1 light year.

Name	Angle	Distance
Alpha Centauri	220	4.3 light years
Barnard's Star	270	5.9
Wolf 359	170	7.6
Sirius	100	8.6
Epsilon Eridani	50	10.7
61 Cygni	315	11.2
Procyon	115	11.4
Tau Ceti	25	11.9
Kruger 60	335	12.8
40 Eridani	60	15.9
Altair	300	16.6

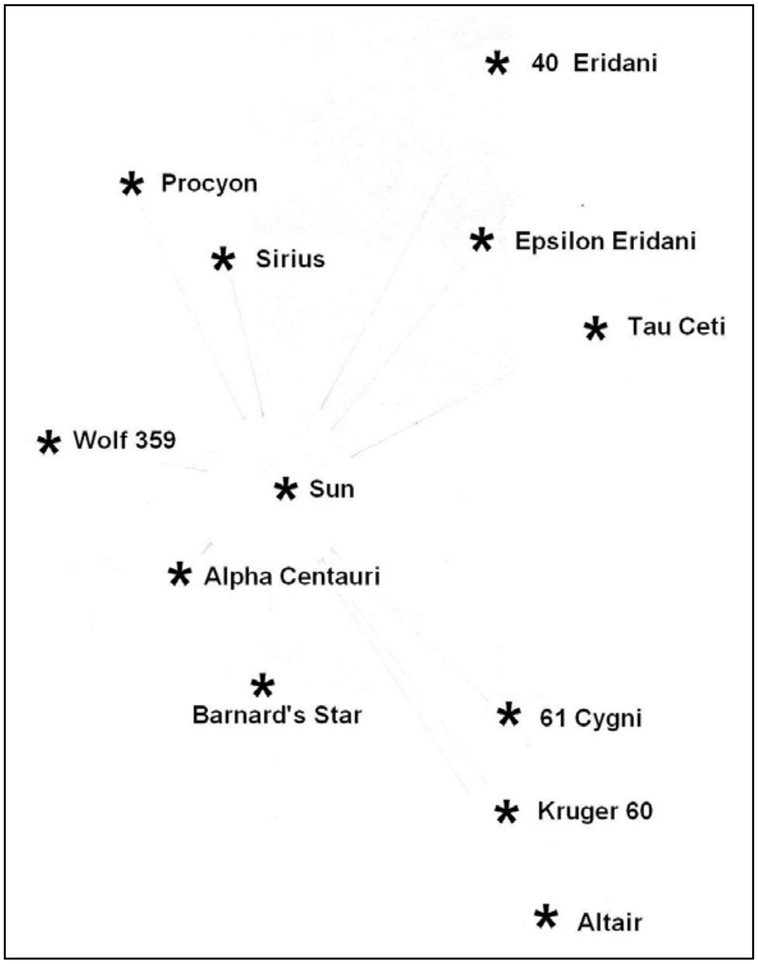
Problem 1 - What is the distance between Sirius and Altair?

Problem 2 - What is the distance between Kruger 60 and Altair?

Problem 3 - Can you find a pair of stars that are closer to each other than either of them are to the Sun?

Problem 4 - If you were starting from Earth, what is the shortest journey you could make that would visit all of the stars in your map?

Answer Key



Problem 1 - At the scale of 1 cm = 1 light year, they are separated by about 24 centimeters or **24 light years.**

Problem 2 - They are separated by 7 centimeters or **7 light years.**

Problem 3 - For example: Procyon and Sirius are 4 cm apart or **4 light years.** 61 Cygni and Kruger 60 are 3 cm apart or **3 light years.**

Problem 4 - One path consists of Sun-Barnards Star-Altair-Kruger 60- 61 Cygni-Tau Ceti-Epsilon Eridani- 40 Eridani-Sirius-Procyon-Wolf 359-Alpha Centauri -Sun. The total distance is about **80 light years.**