

Distance to Alpha Centauri in our scale model

If the Sun is a bowling ball and Earth is a small bead 24 meters away, how far away do you think the next nearest star is? Is it across the street? Is it a mile away or a few miles away? Let's do the calculation.

$$\frac{D_{star}}{D_{Sun}} = \frac{d_{ball}}{d_{Sun}} \quad D_{star} = \frac{d_{ball}}{d_{Sun}} D_{Sun}$$

We use the same ratio for the ball and Sun to find the distance to Alpha Centauri in our model.

$$D_{Star} = 4.0 \times 10^{16} m$$

This is the real distance to Alpha Centauri.

$$D_{star} = \frac{2.2 \times 10^{-1} m}{1.4 \times 10^9 m} 4.0 \times 10^{16} m = 6.3 \times 10^6 m$$

We find that the distance to Alpha Centauri in our scale model is over 6 million meters! That is almost four thousand miles, or the distance across the United States.

If you are standing in Corvallis Oregon holding a bead, looking at a bowling ball 24 paces away, the next closest star in that scale is in Miami! That is pretty amazing.