

6.4: The Cosmic Distance Ladder

? The Distance Ladder



In this chapter, we have explored various techniques astronomers use to calculate distances in space. Different techniques work well for different distances, but the techniques for objects farther away typically rest on calibrations from studies of similar objects that are closer. For example, getting the luminosity of a distant star by knowing its spectral class (main sequence fitting) depends on finding the luminosity of many closer stars of the same class by means of some other technique (e.g., parallax or moving-cluster method). As we go farther out into the Universe, distance measurements typically become both more difficult and uncertain. To be confident of our results, it is important that we use multiple independent techniques.

Several of the most important distance techniques have been covered in this chapter. If they give a consistent distance for an object or set of objects (for which each method employed is suitable), then we can be fairly confident that we have a good estimate for the distances we obtain.

📌 Match the Technique to the Distance

Drag and drop the tiles to match the distance-finding techniques with the appropriate astronomical object(s) and distance range.

In the activity, “MW” refers to the Milky Way and “SNe” refers to supernovae.

When you are done, hit the Check Answers button to check your answers. Revise as necessary.

Play Activity

The final correct figure is called the cosmic distance ladder. The ladder shows the individual steps used to construct the astronomical distance scale. As you read down the ladder, each step depends on the steps above, and goes out to farther distances.

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