

3-D Constellation

Twinkle twinkle little star... I wonder how far away you are! From Earth, stars in constellations look like they grouped together in the same area of space. In reality, they are at different distances from us, and only look grouped together because of our perspective. Make your own 3-D constellation and see how close (and far away!) the different stars in the constellation Orion are to Earth!



Supplies:

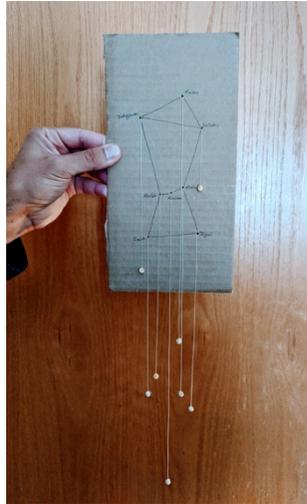
- Piece of cardboard or cardstock
- Thin string or thread
- 8 small beads (pony beads work well!) or buttons
- Tape
- Orion constellation images (attached)
- Needle or pushpin
- Pen or pencil
- Ruler

Instructions:

1. Draw out the constellation Orion on your piece of cardboard, or print the constellation provided and glue it on. Tip: if drawing the constellation, don't forget to add the names of the stars!
2. Poke a hole through the cardboard where each star is located.
3. Cut 8 pieces of string. Each piece should be about 18 inches long.

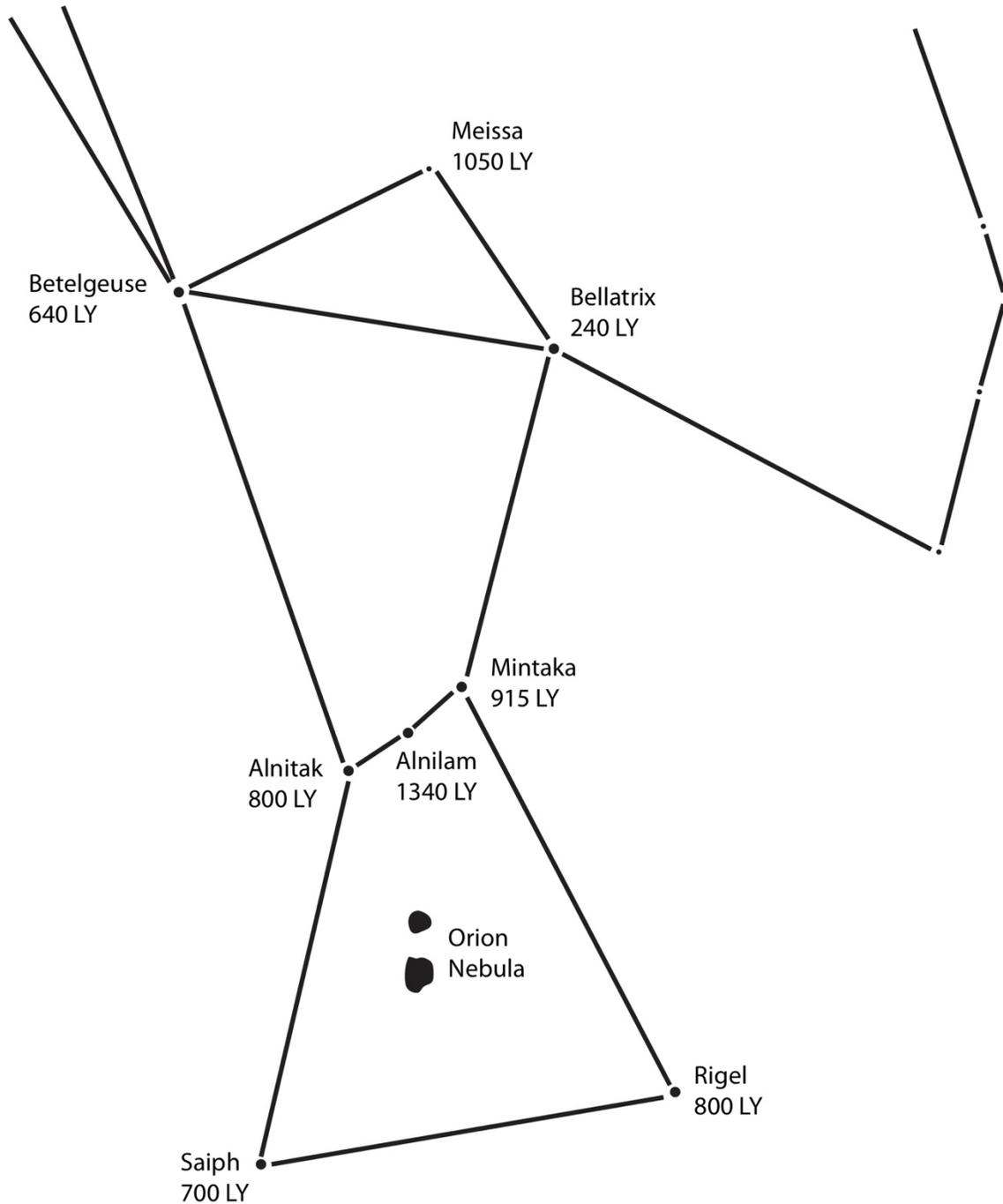


4. Tie a bead onto the end of each piece of string. These will be your stars!
5. Thread the end without a bead through each of the holes on your cardboard.
6. Using your ruler and the chart below, pull your string through until the bead is the correct distance from the cardboard. This distance will be different for each star. Place a piece of tape over the back of the string to keep it in place at the right length!
7. Hold your constellation board above your head and allow the beads to hang towards you as you look up. From this perspective, the beads align to form the constellation Orion, just like on Earth!
8. Now hold the board in front of you, allowing the beads to hang towards the floor. From this different perspective, see how the stars are not on the same plane but all in different locations in 3D space!



Scaled Distances of Stars in Orion:

STAR NAME	DISTANCE IN LIGHT YEARS	SCALED DISTANCE IN INCHES
BETELGEUSE	640	6.4
MEISSA	1050	10.5
BELLATRIX	240	2.4
ALNITAK	800	8
ALNILAM	1340	13.4
MINTAKA	915	9.2
SAIPH	700	7
RIGEL	800	8



Constellation drawings and image from Astronomical Society of the Pacific.



Constellation drawings and image from Astronomical Society of the Pacific.