

About Constellations

1. What's a constellation?

A constellation is a group of stars that appears to form a pattern or picture like Orion the Great Hunter, Leo the Lion, or Taurus the Bull. Constellations are easily recognizable patterns that help people orient themselves using the night sky. There are 88 “official” constellations.

2. Are the stars in a constellation near each other? Explain why it may look like stars are the same distance from us. Also explain how stars vary in size.

Not necessarily. Each constellation is a collection of stars that are distributed in space in three dimensions – the stars are all different distances from Earth. The stars in a constellation appear to be in the same plane because we are viewing them from very, very, far away. Stars vary greatly in size, distance from Earth, and temperature. Dimmer stars may be smaller, farther away, or cooler than brighter stars. By the same token, the brightest stars are not necessarily the closest. Of the stars in Cygnus, the swan, the faintest star is the closest and the brightest star is the farthest!

3. How are constellations named? Name the various cultures that named constellations and what the clusters of stars might be named after. Also tell the significance of naming constellations.

Most of the constellation names we know came from the ancient Middle Eastern, Greek, and Roman cultures. They identified clusters of stars as gods, goddesses, animals, and objects of their stories. It is important to understand that these were not the only cultures populating the night sky with characters important to their lives. Cultures all over the world and throughout time — Native American, Asian, and African — have made pictures with those same stars. In some cases the constellations may have had ceremonial or religious significance. In other cases, the star groupings helped to mark the passage of time between planting and harvesting. There are 48 “ancient” constellations and they are the brightest groupings of stars – those observed easily by the unaided eye. There actually are 50 “ancient” constellations; astronomers divided one of the constellations (Argo) into 3 parts.

“Modern” constellations — like the Peacock, Telescope, and Giraffe — were identified by later astronomers of the 1500s, 1600s, and 1700s who used telescopes

and who were able to observe the night sky in the southern hemisphere. These scientists “connected” the dimmer stars between the ancient constellations. There are 38 modern constellations.

In 1930 the International Astronomical Union officially listed 88 modern and ancient constellations (one of the ancient constellations was divided into 3 parts) and drew a boundary around each. The boundary edges meet, dividing the imaginary sphere — the celestial sphere — surrounding Earth into 88 pieces. Astronomers consider any star within a constellation boundary to be part of that constellation, even if it is not part of the actual picture.

4. Are *all* stars part of a constellation? Explain where these stars might be located and where all stars that we can see from Earth are located.

No, there are billions of stars, and only a fraction of them make up the shapes of our constellations — these are the stars that are easily seen with the unaided eye. Ancient observers connected these stars into the star pictures.

All stars, however, fall within the boundaries of one of the 88 constellation regions. As astronomers studied the night sky with modern telescopes, they were able to discern stars in the dark spaces around the constellations — stars that were not part of the original star pictures. You can see some of these stars by observing the sky on a dark night. If you look at the sky with binoculars, you will see even more stars. If you have a telescope, you will see even more! *All* the stars you see belong to one special group of stars — the stars in our own galaxy, the Milky Way.

5. Why Do We See Different Constellations During the Year?

If observed through the year, the constellations shift gradually to the west. This is caused by Earth’s orbit around our Sun. In the summer, viewers are looking in a different direction in space at night than they are during the winter.

Writing a Summary for Constellations article **and what ot do next:**

1. Notice that each section of the article starts with a question. First underline or highlight parts of the section that answers the question, as well as parts that you will need to include in your explanation.
2. Write a sum
3. mary for each of the 4 sections on a separate piece of paper using complete sentences. Some of the sections are longer than others, so some of your responses might need to be longer than others.
4. Once you have completed summarizing each section open your science book to pages 428-46, take 2 column notes of all key terms (on notebook paper). Here are the terms: satellite, star, planet, meteor, comet, constellation, geocentric, heliocentric, eclipse

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