

Brownie Space Science Adventurer Badge

Space Science Tools

This sheet provides basic facts about space science tools to help you and your girls embark on the Space Science Adventurer badge.

Words to Know-

Here is some vocabulary to get you started . . .

Space Science Tools: Tools and instruments space scientists use to observe and gather information about our Universe

Universe: Space and everything in it—including the Earth

Solar System: The Sun, our star, and all the objects that travel in orbit around it

Galaxy: A system of dust, gas, and stars. Our star, the Sun, is just one of billions within our Galaxy called the Milky Way.

KEY FACTS-

- The most important space science tools for astronomers are telescopes, because they are built to gather more light than the human eye.
- By gathering light, telescopes allow us to see things far away that are too dim to see without their help. The amount of light gathered is determined by the diameter of the primary lens or mirror. The magnification of the image we see is determined by the eyepiece, camera, or instrument being used.
- Telescopes let you see many things in the Universe. They are used to observe the Sun, planets, moons, comets, asteroids, and other objects in our Solar System.
- For example, a telescope with a main mirror of 200 inches (like Palomar in Southern California) has a light-gathering power roughly 500,000 times greater than the human eye.
- Telescopes were invented just over 400 years ago, most likely by the Dutch who realized that, with the help of a telescope, they could spot ships coming into port earlier. Galileo heard about this, built his own telescope, and then started observing the sky.

FUN FACTS TO SHARE WITH GIRLS-

- Until the invention of the telescope, humans used mainly their eyes to observe the sky.
- After Galileo built his own telescope, he published his discoveries. He found that the Moon is not perfect and smooth—it has craters and mountains; that the Sun has spots; that Jupiter has its own moons; and that the Milky Way has many stars that are not visible without a telescope.
- The first astronomical photograph of the Moon was taken in 1840 at Harvard College Observatory in Cambridge, Massachusetts.
- Space-based telescopes can observe 24 hours per day, seven days per week.
- As of 2016, astronomers have discovered almost 5,000 planets orbiting other stars. They are called exoplanets.

DIGGING DEEPER-

If you'd like to know more about space tools, check out these helpful links—

Super Cool Space Tools website:

<http://spaceplace.nasa.gov/story-space-tools/en/>