

# Stars and Constellations

## Description

With the naked eye, you can see countless stars in the night sky from Earth. How can you find your way around? Are the stars always the same? Build a constellation viewer with us and learn about the constellations. We'll also show you why you can't see stars during the day. You can find the constellation template and the description of the experiment on the following website as a pdf download-link:

[http://www.gub-bw.de/img/uploads/literatur/Sterne%20und%20Sternbilder\\_Beschreibung\\_Video.pdf](http://www.gub-bw.de/img/uploads/literatur/Sterne%20und%20Sternbilder_Beschreibung_Video.pdf)

## Materials

- |                     |               |                                 |
|---------------------|---------------|---------------------------------|
| 1 Flashlight        | 6 Glue        | 11 Pinch pin or pinboard needle |
| 2 Toilet paper roll | 7 White paper | 12 A felt pad                   |
| 3 Black paint       | 8 Black clay  |                                 |
| 4 Paintbrush        | 9 Pencil      |                                 |
| 5 Cutter            | 10 Scissors   |                                 |

## Preparation

If you look up at the sky at night, it is littered with countless stars. How could you find your way around? Since prehistoric times, people have mentally connected individual stars to form images. Today, there are officially 88 of these constellations to help you find your way in the sky. You can build a constellation viewer so that you can easily recognize individual images in the sky.

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## Procedure

- 1** Paint the toilet paper roll black, preferably also from the inside. When it is dry, score the roll over half of the cross-section with the cutter at a distance of about 1 cm from the edge.
- 2** Place the roll on the white paper and move the pen around once. You can now draw a constellation in this circle. You can choose a constellation from books or the Internet or invent one yourself. Then glue your picture onto the black paper and cut out the circle. Alternatively, you can find a small selection of constellations to cut out and glue on at the end of the description.
- 3** Now print out the individual star points. Slide the circle into the slot of the roll and go into a dark room. Shine the flashlight into the roll and point the beam of light at an empty wall. The constellation appears. The next time you look at the night sky, try to find your constellation in the night sky.
- 4** Now test what happens if you shine your constellation on a wall and then turn on the ceiling light in the room. The constellation disappears - although it is still there. The large room light outshines your flashlight and makes it disappear optically.

## Background

During the day, the light of the sun is much brighter than the light of the stars and covers the starlight. Only when it gets dark, we can see the light of the stars. So the stars also shine in the sky during the day, only we cannot recognize them.

Also at night, the light of our cities „hides“ the fainter shining stars: With the naked eye, about 2,000 to 6,000 stars can be seen in the sky, but in the vicinity of cities less than 1,000. One even speaks of „light pollution“. That is why most astronomical observatories are located far away from the big cities.

In total, it is estimated that there are about 100 billion galaxies and 100 billion stars per galaxy.

Since prehistoric times, sky gazers have been mentally connecting stars into images. The ancient Greeks transferred their mythology to constellations. These stories can still be read today. It was not until the beginning of the 20th century that the night sky was defined by an international assembly and divided into the 88 constellations that are valid today.