Constellations and asterisms

Define in your own words what you understand by the term *Constellation*:

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- __________________________________________________________________________
- __________________________________________________________________________

Traditionally constellations have been a group of bright objects in the sky (stars and galaxies) that appear to form a pattern (Figure 1). Different cultures have grouped the bright objects in different patterns according to what has been part of their culture.

![Figure 1. Constellation Orion: stars forming a distinguishable pattern. From http://www.chemistrydaily.com/chemistry/Constellations](image)

Traditionally cultures have not limited themselves to define a grouping of bright objects, but have created stories and myths around them. In a time with no book, TV’s, iPods or phones, people were left to their imagination for entertainment. Looking at the dark sky and create or hear stories around the starry sky must have been quite pleasant.

We are left with a collection of stories around patches of the sky by different cultures. We are extremely biased towards the Western culture and therefore very familiar with Ancient Greek constellations. Modern astronomers still use the Western constellations as a mean to divide the sky in blocks that form an irregular grid to help them locate objects in the sky, like we use neighborhoods in a city to identify places. Astronomers will then use a term like “Leonid meteor shower” to describe meteors that are visible in the block formed by the constellation Leo.
Asterisms

A star pattern that is not officially recognized by the international scientific community (International Astronomical Union) as a constellation is called an Asterism. The stars that form asterisms can be part of one or more constellations. For example, the Big Dipper is an asterism within the Ursa Major constellation. Figure 2 A) shows the stars that form the Big Dipper and 2B shows the artistic view of that constellation. Figure 3 shows the patch of sky currently associated with the Ursa Major constellation, where only the Big Dipper is highlighted.

One reason it is hard for us to recognize a constellation, and therefore start using an asterism, is light pollution. It is very hard for most of us to observe the sky as dark as the Ancients Greeks did
because of light pollution. It is easy for us to spot the brightest stars of Ursa Major, the ones that look like a dipper, so we start using the asterism instead of the constellation. Another reason is that we find patterns in the sky that are relevant to us. Some of you could find and asterism in the form of a iPod or a cell phone because they are relevant for you.

In this activity you will use the software Stellarium to observe the constellations as imagined by different cultures. You will then create your own asterism and write a story around that asterism.

**Start Stellarium**

You will observe the sky in Madison with no light pollution. You will observe the constellations that were thought to exist by different cultures and understand how current astronomers use the Western constellations to produce a grid of the sky.

Set location, remove atmosphere and light pollution to see how the sky looked many years ago in Madison.

- Set the location and time: Move the mouse to the left side until an option bar pops out. Select the Location option and select Madison, WI.
- Remove light pollution: on the same left side bar, but under the option Sky and viewing options and the tab Options, select the lowest level for light pollution
- Remove the atmosphere: Move the mouse to the lower part of screen for a different option bar, and select the one that looks like clouds and sun.

Have Stellarium draw the lines connecting constellations, draw the boundaries used by current astronomers and also draw an artists view of those constellations: On the left side bar option, click on the one that looks like a star talking about planets, stars and galaxies

- On the new screen, click on the option Star Galore. Notice the different cultures available. Leave the Western culture
- On the same semi-transparent screen, click the option with stars and dotted lines. You will now control what is displayed on the screen by selecting different boxes.
- Observe the effect that selecting the options Lines, Labels, Boundaries and Art have on the celestial sphere.
- The option Boundaries will show the way astronomers use the constellations as reference points to create a grid.
- Use the Star Galore link to see the constellations that different cultures thought of while stargazing.

It is your turn to group a bunch of celestial objects into a pattern that you like to create your own asterism. Create a story for that asterism the way other cultures have done through out the years. You can even create several asterisms that interact in your story, or have your asterism interact with constellations.

Draw the bunch of stars that you chose, and the artistic representation of your asterism(s). You will turn in the drawing with the story behind it.
Summary:

Define the term constellation:

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Explain in general terms the use of constellations in modern Astronomy

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Describe the difference between Constellations and Asterisms

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