

Build your Own Constellation Viewer

Amount of time for this lesson = 55 minutes (Each Day Here)

1. Standards and Safety and Materials:

- A. Standards – SC4.1.5 Objects in the Sky-Students describe observable objects in the sky and their patterns of movement.
W.4.2 Write informative/explanatory text to examine a topic and convey ideas and information clearly.
- B. Safety Concerns: Students should be careful when using push pins. They could poke themselves.
- C. Materials: 1 sheet of black construction paper (or paper towel tube)
 - 10 3x3 squares of black construction paper
 - 1 push pin
 - 1 book ring
 - 1 cereal box
 - 1 scissors
 - White colored pencil or crayon
 - Scotch tape

<http://www.bing.com/videos/search?q=constellation+video&FORM=VIRE3#view=detail&mid=7C08590E421B31EC255D7C08590E421B31EC255D>

(Material list is for 1 student)

2. Objectives:

- A. SWBAT... Students will be able to **construct** Constellation viewer to understand that stars are in the solar system and are a part of a galaxy.
- B. SWBAT... Students will **create** their own constellation and write a story or a myth to explain it.

3. Connections, Misconceptions, and Crosscutting Concepts

- A. Real world connections: Astronomer, Astronaut, Fisherman, Farmer, Pilot, Armed Forces
- B. Student connections: Constellations, Stars
- C. Misconceptions: Constellations are not real, but they are used to understand which stars are which and to use for navigating and seasons.
- D. Crosscutting Concepts: Patterns, movement, place in space
- E. Academic Language: Constellation, stars, space, telescopes, Hubble, Myth

4. Catch/Engagement: <http://www.astrosociety.org/edu/surfgame.html>

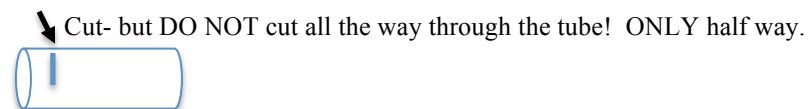
5. Pre-test: See Below

6. Activity/Exploration:

Part 1: Lecture- Show video and discuss why knowing stars names and constellations are important in life.

Part 2: Lab

Step 1- Roll sheet of construction paper into a tube and tape (if you have a paper towel tube you can cover your tube to decorate. At the end of one side of the tube cut half way into the tube. This will hold your constellation cards. See illustration below.



Step 2- At the edge of each 3x3 construction square have student trace the tube with a white crayon or colored pencil See illustration below.



Step 3- Have students cut out lower half of the circle but leave the top of the square. See illustration below to see what cut out should look like.



Repeat with all squares- these now will be referred to as Constellation cards

Step 4- Next place one constellation card on the cereal box and the constellation template over top of the square adjusting the desired constellation over the circle portion of the constellation card. Use a push pin and poke the stars of the constellation. Have students write the name of the constellation in the rectangle portion of the constellation card.

Repeat until all desired constellations are finished. **Have students create their own constellation on one of the constellation cards.**

Step 5- Hole punch all cards and use a book ring to keep them together. Insert one finished constellation card into the cut end of the tube and look through.

When students are finished creating their constellation viewer, have them create a story or a myth about their own constellation. Read a few of the examples below so students have an understanding that some constellations have a story and to give them a model to create their own story. Students must **Write** their story in complete sentences.

7. Review/Essential Questions/*Explanation*: (Should be very closely related to your pre/post tests! Explanation piece...)

A. Low Level – What do we use to see deep into space

B. Middle Level – How would you use constellations in a career?

C. High Level –How would this information be useful if you were stranded in the middle of the ocean without a radio?

8. Assessments (Post-test)/*Evaluation*:

A. Formative: What is a constellation? Why do we need to know about constellations? Anyone know a story about a constellation they want to share? Are constellations a real story or a myth? What instrument do we use to see deep into space?

B. Post-test:

9. Timeline:

A. Catch 4 min

B. Pre-test 3 min

C. Activity – 2 parts 45 min (writing may take longer, depending on student)

D. Review and Post-test 3 min

10. Enrichment/*Elaboration*: Constellation activity book

11. IEP Accommodations/Differentiation/Diversity: To accommodate you can already have 3x3 templates created for the students.

1. What is a constellation?

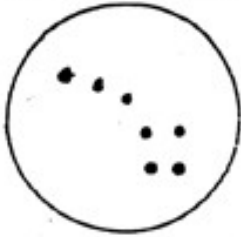
2. The Greek word galaxy means?
 - A. A lot
 - B. Bright
 - C. Milky

3. What makes up a galaxy?

4. What jobs could require the need to know the constellations for navigation purpose?

Constellation template

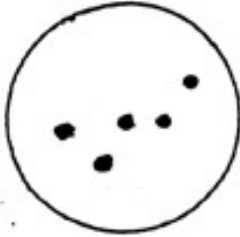
Little Dipper



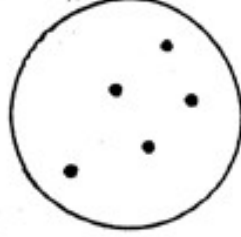
Big Dipper



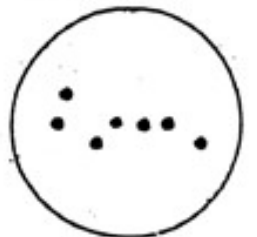
Cassiopeia



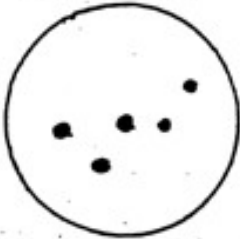
Cepheus



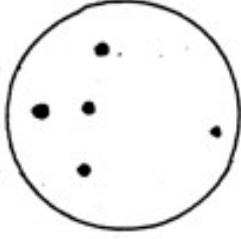
Big Dipper



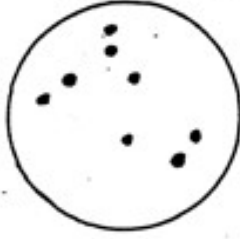
Cassiopeia



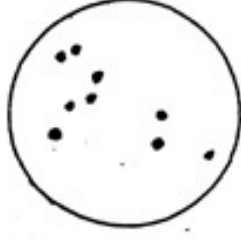
Cygnus



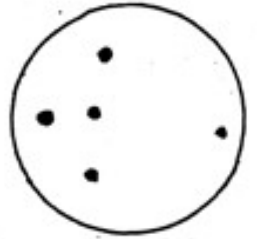
Gemini



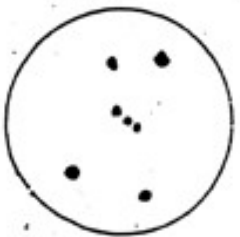
Leo



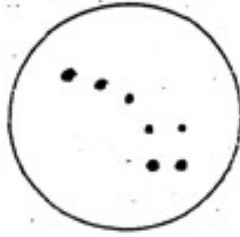
Cygnus



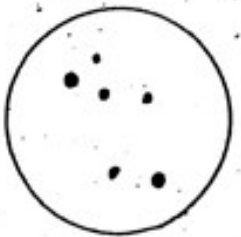
Orion



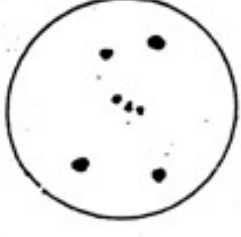
Little Dipper



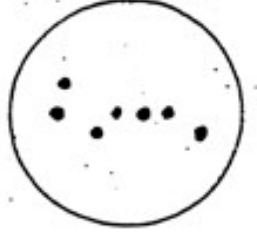
Lyra



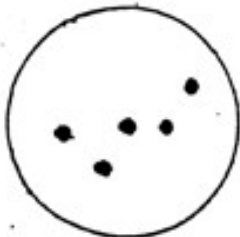
Orion



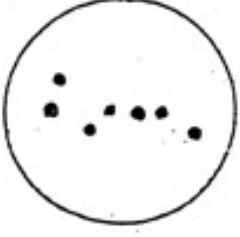
Big Dipper



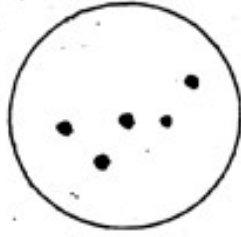
Cassiopeia



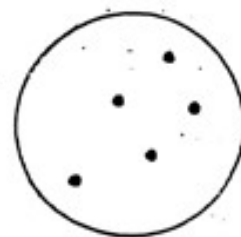
Big Dipper



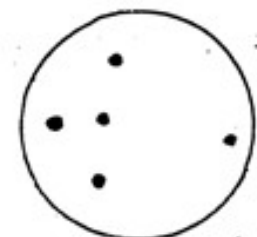
Cassiopeia



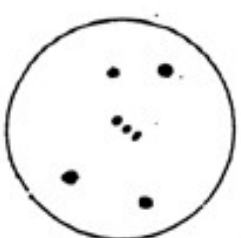
Cepheus



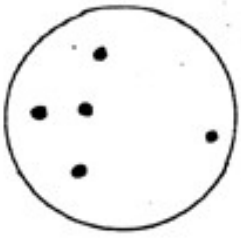
Cygnus



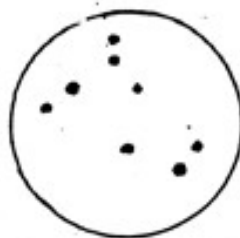
Orion



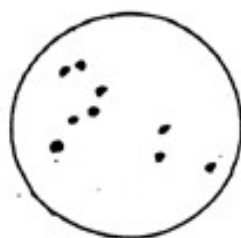
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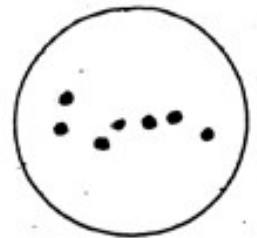
Gemini



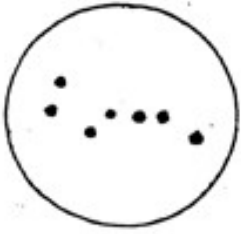
Leo



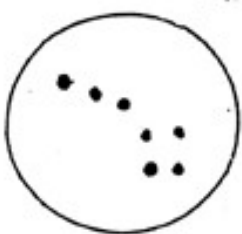
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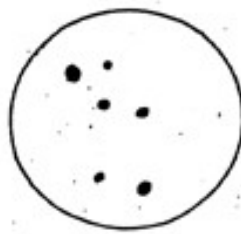
Big Dipper



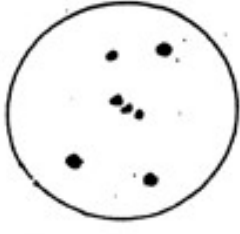
Little Dipper



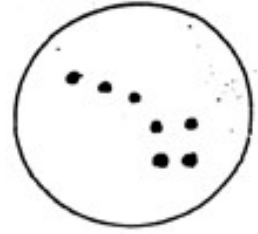
Lyra



Orion



Little Dipper



Constellation

Legends

by

Norm McCarter

Naturalist and Astronomy Intern

SCICON

Andromeda - The Chained Lady

Cassiopeia, Andromeda's mother, boasted that she was the most beautiful woman in the world, even more beautiful than the gods. Poseidon, the brother of Zeus and the god of the seas, took great offense at this statement, for he had created the most beautiful beings ever in the form of his sea nymphs. In his anger, he created a great sea monster, Cetus (pictured as a whale) to ravage the seas and sea coast.

Since Cassiopeia would not recant her claim of beauty, it was decreed that she must sacrifice her only daughter, the beautiful Andromeda, to this sea monster. So Andromeda was chained to a large rock projecting out into the sea and was left there to await the arrival of the great sea monster Cetus. As Cetus approached Andromeda, Perseus arrived (some say on the winged sandals given to him by Hermes). He had just killed the gorgon Medusa and was carrying her severed head in a special bag. When Perseus saw the beautiful maiden in distress, like a true champion he went to her aid. Facing the terrible sea monster, he drew the head of Medusa from the bag and held it so that the sea monster would see it. Immediately, the sea monster turned to stone. Perseus then freed the beautiful Andromeda and, claiming her as his bride, took her home with him as his queen to rule.

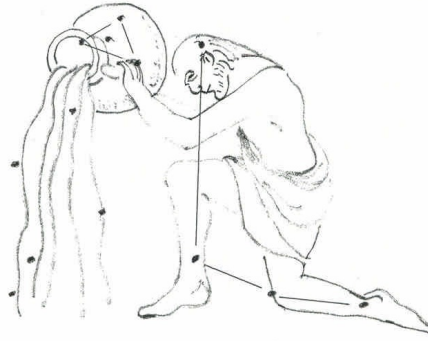


Aquarius - The Water Bearer

The name most often associated with the constellation Aquarius is that of *Ganymede*, son of *Tros*, King of *Troy*.

Ganymede was an extremely handsome young man, the most handsome the gods and goddesses had ever seen.

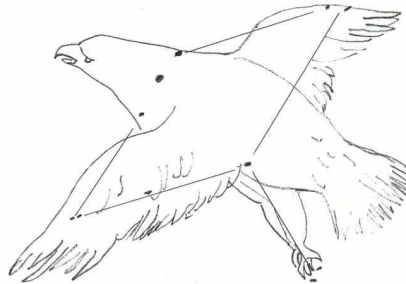
While attending to his father's flocks on *Mount Ida*, *Ganymede* caught the attention of *Zeus*. *Zeus* sent his messenger eagle, *Aquila*, down to earth with instructions to bring *Ganymede* back up to *Mount Olympus*. On *Mount Olympus*, *Ganymede* served the gods by bringing them water whenever they needed it. He also served as cup bearer to *Zeus*. He was honored for his service by *Zeus*, who placed a constellation called *Aquarius*, which means water carrier, among the stars.



Aquila - The Eagle

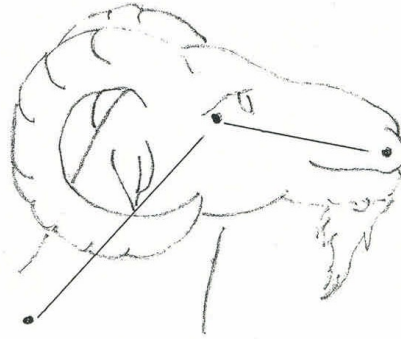
In *Greek mythology*, the eagle was associated with *Zeus* (*Jupiter*), either as a servant who carried *Zeus'* messages down to humans on *Earth* or as a disguise taken by *Zeus* in order to avoid his wife *Hera* when he was up to some mischief.

One story of *Aquila's* service to *Zeus* was that of *Ganymede*, who was a very gentle, kind shepherd and the most handsome mortal the gods and goddesses had ever seen. One day, the great eagle *Aquila* swooped down from the sky and, landing near the startled *Ganymede*, told him that *Zeus* had sent him to carry *Ganymede* to *Mount Olympus*. And so, climbing up on the eagle's broad back, *Ganymede* was taken up to *Mount Olympus* where he served the gods by bringing them water.



Aries - The Ram

Athamas, the legendary king of Thessaly, had two children, Phrixus and Helle. He had remarried and Ino, the children's stepmother, began to treat them very badly. They were treated so cruelly that Hermes took pity on them and sent a magical ram to take them away and escape their stepmother's wrath.



Mounted on the ram's back, the children flew over land and sea to the east. Unfortunately, Helle failed to get a good hold on the fleece of the ram and as they flew over the strait that separates Europe and Asia, she fell off and was drowned in the sea far below. That sea is called Hellespont to this day in honor of her memory.

Phrixus landed safely at Colches, which is on the edge of the Black Sea.

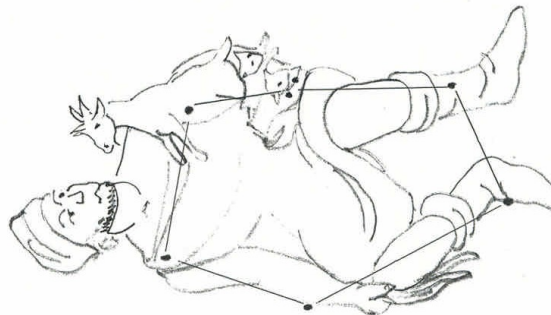
In gratitude for his safe deliverance, Phrixus sacrificed the ram and gave its Golden Fleece to the king of that country.

In honor of the ram's great sacrifice in saving the children, Zeus placed the ram's constellation, Aries, in the night sky.

Auriga - The Charioteer

The constellation

Auriga is mentioned in two ancient stories. The first, relating to a charioteer, is that of Auriga, the crippled son of Vulcan and Minerva, who invented a four-horse chariot in order to get himself around. This became



such an important invention that Zeus placed the first chariot into the skies with the other constellations.

The second story, which is the older of the two, referred to Auriga as a gentle shepherd who, after finding one of his pregnant goats missing, went out into the hills and searched until he found her stranded on a rocky ledge with her two new kids. Placing her across his shoulders and carrying the two kids in his left arm, he returned to the rest of the herd. Some stories relate how the two kids commemorate the two daughters of the king of Crete who fed and cared for the infant Zeus.

Bootes - The Bear Driver

According to the Greeks, Bootes was pictured as a mighty man. In his right hand he holds a spear, and with his left, two hunting dogs. Since he appears to be pursuing the Great Bear (Ursa Major) around the North Pole, Bootes was called "The Bear Driver."

The 'key' star, Arcturus, can be easily found by following the curved line formed by the handle of the Big Dipper outward to the first bright star.

Without doubt, Arcturus was one of the first stars to be named. It was one of the few stars mentioned in the Bible, where it is referred to in the book of Job, thus giving it the name "Job's star."

