



## Curriculum Guide Contents

<i>A Look at the Greek Mythology Cylinder</i> .....	3	<i>Leo, the Lion</i> .....	9
<i>Introduction</i> .....	3	<i>Lepus, the Hare</i> .....	9
<i>Andromeda</i> .....	3	<i>Libra, the Scales</i> .....	9
<i>Aquarius</i> .....	3	<i>Lyra, the Lyre</i> .....	10
<i>Aquila, the Eagle</i> .....	3	<i>Ophuichus, Serpent Holder</i> .....	10
<i>Aries, the Ram</i> .....	3	<i>Orion, the Hunter</i> .....	10
<i>Auriga</i> .....	4	<i>Pegasus, the Winged Horse</i> .....	11
<i>Bootes</i> .....	4	<i>Perseus, the Champion</i> .....	11
<i>Cancer, the Crab</i> .....	4	<i>Phoenix</i> .....	11
<i>Canis Major, the Big Dog</i> .....	4	<i>Pisces, the Fishes</i> .....	11
<i>Canis Minor, the Little Dog</i> .....	4	<i>Pisces Australis, the Southern Fish</i> .....	12
<i>Capricornus, the Sea Goat</i> .....	5	<i>Sagitta, the Arrow</i> .....	12
<i>Cassiopeia, the Queen</i> .....	5	<i>Sagittarius, the Archer</i> .....	12
<i>Centaurus</i> .....	5	<i>Scorpius, the Scorpion</i> .....	12
<i>Cepheus, the King</i> .....	5	<i>Southern Cross</i> .....	13
<i>Cetus, the Sea Monster</i> .....	6	<i>Taurus, the Bull</i> .....	13
<i>Corona Borealis, Northern Crown</i> .....	6	<i>Triangulum, the Triangle</i> .....	13
<i>Corvus, the Crow</i> .....	6	<i>Ursa Major, the Big Bear</i> .....	13
<i>Crater</i> .....	6	<i>Ursa Minor, the Little Bear</i> .....	14
<i>Cygnus, the Swan</i> .....	6	<i>Virgo, the Virgin</i> .....	14
<i>Delphinus, the Dolphin</i> .....	7	<i>Three Activities for the STARLAB Greek</i>	
<i>Draco, the Dragon *</i> .....	7	<i>Mythology Cylinder</i> .....	15
<i>Equuleus, the Colt</i> .....	7	<i>Constellation Creations</i> .....	16
<i>Eridanus, the River</i> .....	8	<i>Create a Myth</i> .....	18
<i>Gemini, the Twins</i> .....	8	<i>I'm Getting Dizzy!</i> .....	20
<i>Hercules, the Kneeler</i> .....	8	<i>The Story of Cassiopeia, the Queen</i> .....	24
<i>Hydra, the Water Snake</i> .....	9	<i>I'm Getting Dizzy Worksheet</i> .....	25

# A Look at the Greek Mythology Cylinder

## Introduction

Classical Greek mythology is as rich and varied as the culture that engendered it. In addition to the abbreviated versions of the stories in this guide, you will want to explore the vast amount of literature available on the Greek constellations and the many myths associated with each of them. For more details on the stories found here, consult Percy M. Proctor's excellent book, *Star Myths and Stories*, from Exposition Press, Inc., Hicksville, NY.

## Andromeda

Daughter of King Cepheus and Queen Cassiopeia. She is seen stretched out at full length and chained by her ankles and wrists to a rocky island where she is being offered as a sacrifice to Cetus, the Sea Monster.

## Aquarius

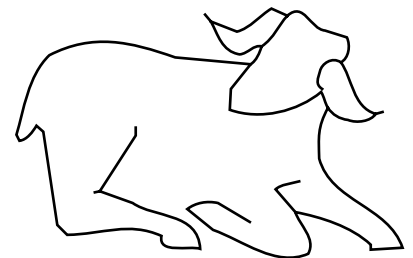
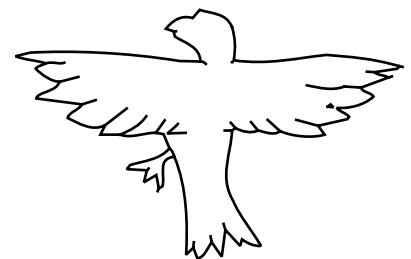
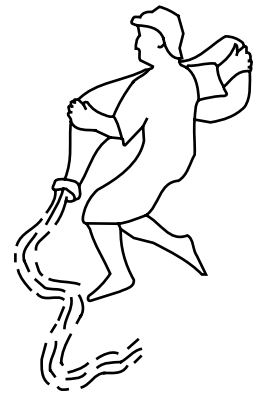
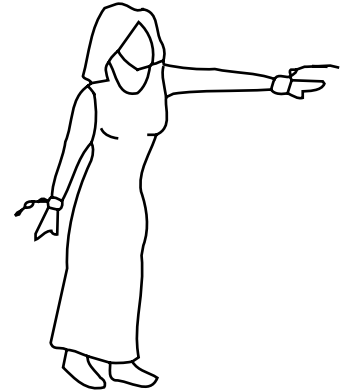
Aquarius was the constellation in which the sun was located during the rainy season of the year. Therefore, it seemed appropriate to represent Aquarius as a giant holding a huge upturned urn or jar from which poured an unending stream of water. All the rivers owed their waters to this downpour and floods occurred when, from time to time, the water cascaded down from the urn faster than it could be emptied into the seas.

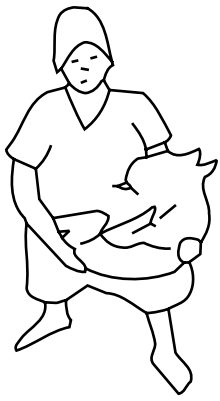
## Aquila, the Eagle

The eagle was Jupiter's favorite bird and was given many difficult tasks to do. The most difficult task was when he had to fly back to Mount Olympus burdened by the weight of a young man, Ganymede, whom he had been sent to find. Ganymede would become the new cupbearer of the Gods.

## Aries, the Ram

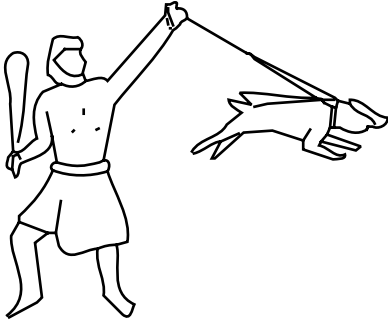
Aries is a small constellation. It requires a vivid imagination to find the three main stars that form the ram. It is, however, one of the most famous of the zodiac constellations. Long ago, before there were calendars to keep track of the progress of the year, watchers of the sky learned to rely on the stars to track the passage of time. From 2100 BC to 100 AD, it was the stars of Aries that announced the spring equinox.





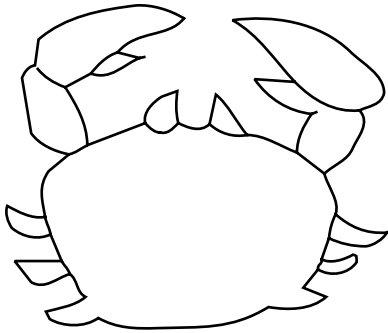
### **Auriga**

In pictures that show what Auriga is supposed to represent, no chariot is ever found, but grasped in his right hand are the reins which a chariot driver would be holding. Auriga is also shown holding a goat over his left shoulder and two little kids in his left hand. This picture tells a mixed-up story about a charioteer and a goat herder. The rising of Capella, the bright star in Auriga, was a welcome sign for shepherds for it foretold the coming of the rainy season upon which they relied for renewed growth of pasture land. On the other hand, the rising of Capella was a most unwelcome sign for sailors for it signaled the beginning of the stormy season. The kids were regarded as mad stars by sailors' wives, who feared for the well-being of their men at sea during the stormy season.



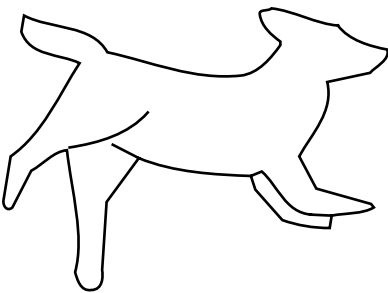
### **Bootes**

Bootes and his two hunting dogs, Canes and Venatici, were put in the heavens to keep watch over the Big Bear and make certain that it stayed forever in its proper place, endlessly circling the North Star.



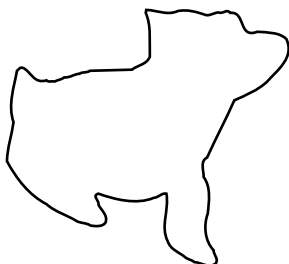
### **Cancer, the Crab**

Legend tells us that Juno sent Cancer to annoy Hercules as he fought his desperate battle with the many-headed Hydra, the water snake. Hercules was the son of one of the many mortal women whom Jupiter married, each time arousing the jealous anger of his goddess wife Juno. Juno took a special dislike to Hercules and tried to make his life miserable. Hercules easily crushed the crab with his foot, but Juno who realized the creature had done its best in trying to serve her, rewarded it by placing it as a constellation in the sky.



### **Canis Major, the Big Dog**

Canis Major is the largest of the hunting dogs that had been Orion's faithful companions on Earth. He was placed at Orion's feet in the sky so that he could continue to have his help as he chased Taurus the Bull across the heavens.

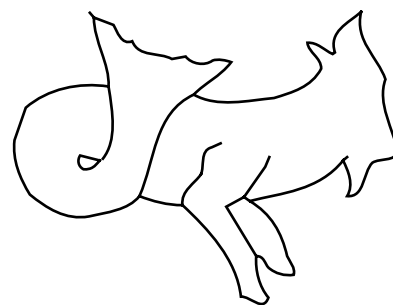


### **Canis Minor, the Little Dog**

Canis Minor is the second and smaller of the two hunting dogs placed in the sky to keep Orion company. This little dog is less fierce — more like a house pet.

### **Capricornus, the Sea Goat**

Capricornus appears in the sky at the time of the winter solstice when the sun stopped dropping and began to climb higher and higher in the sky day by day. The figure of a goat, the animal most famous for his climbing ability, was chosen to represent the constellation in which the sun was found at this time. The goat of the heavens is half goat and half fish, thus a creature not only able to climb, but also at home in the rains and floods of the winter season.

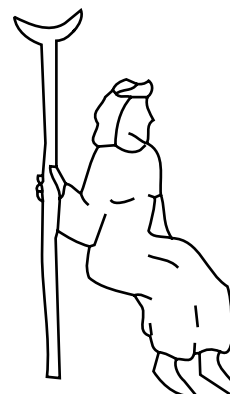


### **Cassiopeia, the Queen**

Cassiopeia was a beautiful woman who was fond of boasting about her beauty. The maidens who attended King Neptune in his underwater kingdom learned that she boasted of being more beautiful than any of them. They demanded Neptune punish her.

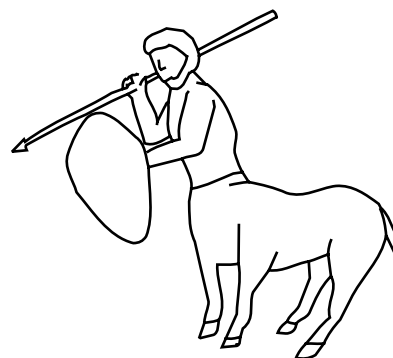
Neptune sent a monster sea serpent, Cetus, to terrify all who lived along the coast of the country ruled by King Cepheus and Queen Cassiopeia. The Serpent snatched women and children whom he found on the shore. Troubled by this problem in his kingdom, King Cepheus went to an oracle to find out how he could rid his kingdom of this horrible monster. The oracle's answer was that only if he sacrificed his daughter, Andromeda, to the serpent would the maidens feel they had been avenged for the way Cassiopeia had insulted them and ask Neptune to recall the serpent.

Cassiopeia was placed in the heavens to be punished rather than honored. She swings every half night around the North Star. She is upside down in the chair in which she is seated, hanging on for dear life in a position most humiliating for a queen of old who was so proud of her beauty.



### **Centaurus**

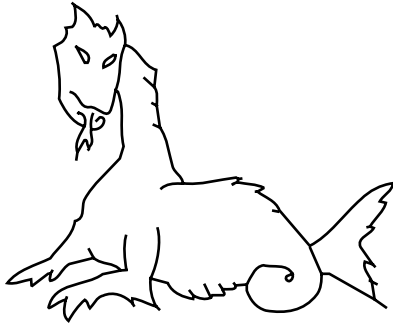
A fabulous creature with the head, trunk, and arms of a human being, joined to the body and legs of a horse.



### **Cepheus, the King**

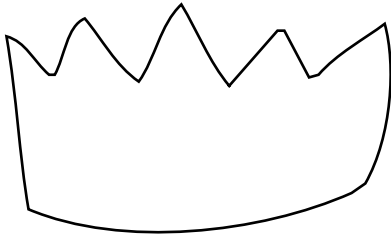
Cepheus is a rather faint and inconspicuous constellation. This is fitting as King Cepheus always played second fiddle to his wife, Queen Cassiopeia, who ruled the roost.





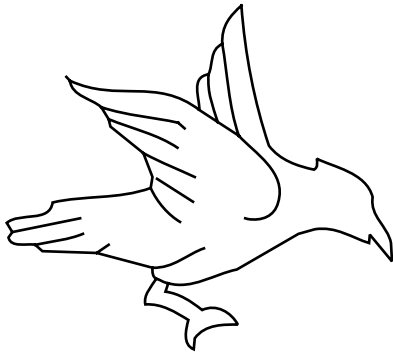
### **Cetus, the Sea Monster**

Cetus is the sea monster that Neptune sent to devour Andromeda and thus punish Queen Cassiopeia. Cetus had the forked tail of a dolphin, paws of an animal, head of a greyhound with short tusks and long, scaly neck. Cetus was said to be 40 feet in length, with ribs six feet long.



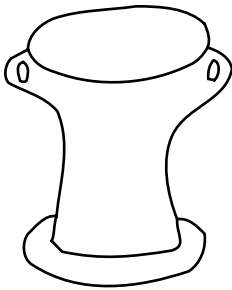
### **Corona Borealis, Northern Crown**

As a wedding gift to his bride, Bacchus presented Ariadne with a golden crown set with seven glittering diamonds. Not long after their marriage, Ariadne died and Bacchus, in his grief, resolved to throw away the crown which she had worn so happily because it reminded him of his lost love. Up into the sky he tossed it, and higher and higher it rose until his friends among the gods caught it and hung it high in the sky where its seven diamonds formed the Northern Crown.



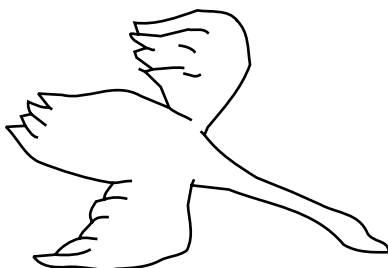
### **Corvus, the Crow**

Legend tells us that the crow once had silver white feathers and a beautiful singing voice. One morning the god Apollo sent the crow to fetch a cup of water. Having spied some half-ripened figs, the crow lingered at the spring waiting for them to ripen. He had quite a feast, but soon realized he was due for a scolding from Apollo for his tardiness. The crow lied to Apollo about his whereabouts but Apollo could easily tell the crow was lying. He angrily punished him by changing the color of his feathers to black and condemning him to be known in the future for his croak instead of his song.



### **Crater**

This represents the cup that Corvus, the Crow was sent to fill at a spring and bring back to Apollo.

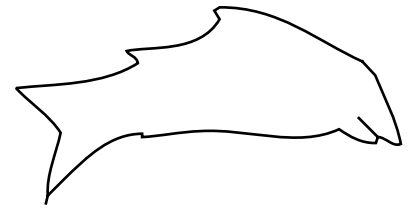


### **Cygnus, the Swan**

Cygnus was the best friend of Phaeton, son of Apollo. After wildly driving Apollo's chariot across the skies, Phaeton was struck by lightning bolts and fell into the river Eridanus. In those days, it was believed that the soul of a dead person must roam the world forever as a ghost unless his body was properly buried. Cygnus dove into the river over and over again in search of Phaeton's body. Jupiter was so moved by the love and devotion that Cygnus showed for Phaeton that he turned Cygnus into a swan so he could dive more easily. Finally after Cygnus gave up in despair of ever finding the body of Phaeton, Jupiter placed him in the heavens as a swan.

### **Delphinus, the Dolphin**

Apollo placed this constellation in the sky to honor a dolphin that saved the life of Arion, a famous musician. Arion was returning home by boat to Corinth with a great sum of money after a successful concert tour in Italy. The ship's crew, knowing of this money, seized Arion and was about to throw him overboard when he begged to play one last song on his harp. So beautiful was his last song that Apollo, the god of music, summoned a dolphin to rescue Arion. The dolphin carried Arion safely to Corinth where he summoned the police to set a trap for the incoming sailors. Arion had a small statue of the dolphin made and placed a shrine in a temple. Later, Apollo took it and placed it among the stars so it would be an eternal memorial to a brave and friendly fish.



### **Draco, the Dragon \***

Draco is the dragon sent by Juno to guard the golden apples which she had given Jupiter as her wedding present to him. The dragon was a monster with poisonous, fiery breath and an enchanted hide that no arrow could pierce. Ever watchful, he coiled around the tree on which the golden apples hung and would allow no one to come close except Atlas, the giant who held the world on his shoulders.

To get the apples away from the dragon was one of the labors Hercules had to accomplish. He went to Atlas for help and Atlas agreed to get the apples if Hercules would take over the task of holding up the world in the meantime. Atlas enjoyed his freedom so much, he ran away with the apples and left Hercules supporting the Earth. Hercules was clever, however, and he asked Atlas to relieve him long enough to place a pad on his shoulder. Atlas fell for the trick and Hercules ran off with the golden apples.

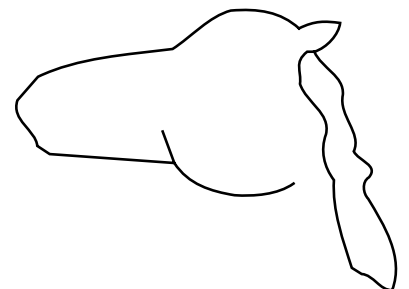
To punish the dragon for its failure, Juno placed it as one of the circumpolar constellations where, in the northern heaven, it would never set and would always remain on guard.

\*5000 years ago, the fourth magnitude star, Thuban, close to the end of Draco's tail, was the Pole Star around which the entire northern heavens seemed to revolve, just as they now appear to revolve around the North Star. This change in the Pole Star has occurred because the Earth is wobbling in the same way that a slowing-down top wobbles. Hence, the Earth's axis does not continue to point toward the same spot in the northern sky, but slowly traces out a circle among the stars there. Only after thousands of years has it become apparent that a new North Star has taken the place of the one toward which the Earth's axis had been pointing.



### **Equuleus, the Colt**

Equuleus was a horse that figured in a contest waged by Neptune, god of the seas, and Pallas Athene, goddess of wisdom, to decide who would become patron of an ancient Greek city. Under the terms of the contest, Neptune and Athene were each to make a gift to the city, and a jury of twelve gods was to decide who had the more useful gift. Neptune struck a rock with his trident and a horse appeared. Athene caused an olive tree to sprout out of the rocky top of the hill. The jury of gods had the power to look far into the future and realize what the cultivation of that tree would mean to the future prosperity of Greece and declared Athene the winner. The city was named Athens to honor Athene.







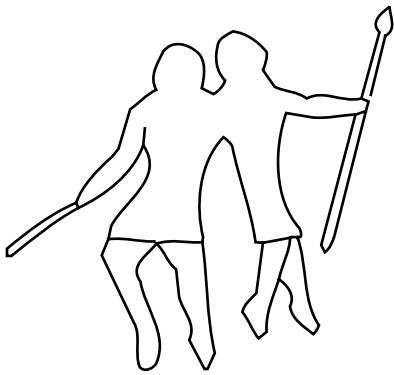
### **Eridanus, the River**

Eridanus, or the river of the heavens, can be traced from where it starts close to Rigel at the foot of Orion, to where it winds down and disappears below the southern horizon. It stretches more than 60° in its long course and is outlined by a host of faint stars.

All over the world, this curving line of stars was considered a river, often named after the country's main river: the Nile in Egypt, the Euphrates in Babylonia, the Po in Italy.

The Po river figures in the most familiar old story. It was the river in which the body of Phaeton plunged after he was struck down by Jupiter's thunderbolt, ending his foolish drive across the sky in Apollo's chariot.

Apollo was so saddened by the fate of his son that he placed the river in the sky as a constellation to be an eternal memorial to his courageous but headstrong son.



### **Gemini, the Twins**

Castor and Pollux were twin brothers so devoted to each other that they were inseparable. Pollux was immortal like his father Jupiter, but Castor was mortal like his mother Leda. When Castor died in battle, Pollux begged Jupiter to take away his immortality so he too could die. Jupiter was so impressed by this demonstration of love that he arranged for Pollux to spend half of each day with Castor in Hades, and Castor could spend the other half with Pollux on Mount Olympus among the Gods. Eventually Jupiter honored the twins by changing them into stars and placing them in the heavens to be a memorial to brotherly love at its finest.



### **Hercules, the Kneeler**

Hercules was the son of Jupiter and one of his mortal wives. His birth made Jupiter's goddess wife, Juno, so jealous that she decided to make Hercules' life miserable. While he was still a baby, she sent two huge snakes to kill him, but Hercules strangled both of them.

When he had grown to manhood, Juno caused Hercules to become insane for a brief period during which he murdered his family. To atone for that dreadful deed, he was bound out as a slave and had to earn his freedom by successfully completing 12 heroic tasks, the labors of Hercules. The twelve tasks were:

- killing the Nemean lion
- battling Hydra the water snake
- capturing the wild boar of Arcadia
- capturing a deer with horns of gold and hoofs of brass
- shooting a flock of man-eating birds with beaks of brass and feathers like arrows
- cleaning out 3000 cattle stables with years of accumulated filth
- capturing the Cretan bull that snorted fire
- killing the man-eating horses of King Poinedes
- seizing the jeweled belt of the Queen of the Amazons
- capturing a herd of oxen guarded by a giant with 3 heads, 6 hands, 3 bodies
- bringing back Cerberus, the fierce 3-headed dog that guarded Pluto's kingdom
- getting the golden apples of Hesperides



### Hydra, the Water Snake

Hydra is one of the longest constellations, stretching out for 100° across a full quarter of the sky. Halfway down its long, snaky coils are the two small constellations of Corvus, the Crow and Crater, the Cup. Hydra is the water snake which the Crow tried to blame for delaying him so long in bringing back the cup of water (Crater) to Apollo.

### Leo, the Lion

The majestic head and mane of Leo, the Lion are formed by the curving line of stars known as the Sickle. Leo's main star, Regulus, is the faintest of the so-called first magnitude stars. It was always a star of great importance to ancient astronomers, however, who considered it to be the ruler over all other stars. Its duty was to keep them all in order and in their proper places in the sky.

Leo was the constellation in front of which the sun was found in midsummer. To the ancient peoples, the explanation of why the sun became so overpowering in summer must have been that the stars of Leo were adding greatly to the heat of the sun. It was natural, therefore, to compare these stars to the most powerful animal known, the Lion, King of Beasts.

### Lepus, the Hare

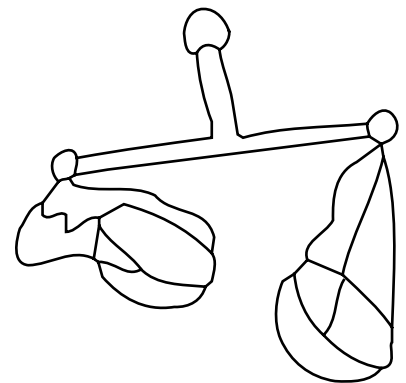
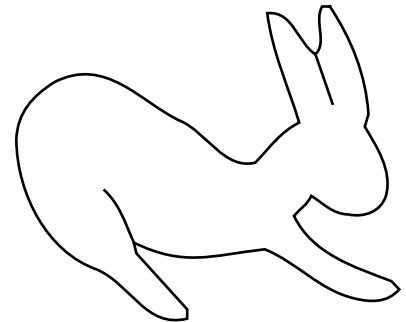
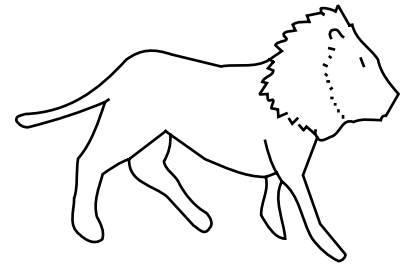
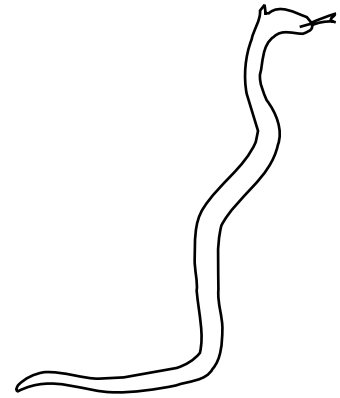
Lepus is located at the foot of Orion, the Hunter. Orion, who was so busy chasing Taurus the Bull, allowed the hare to remain unnoticed as long as he stayed absolutely quiet.

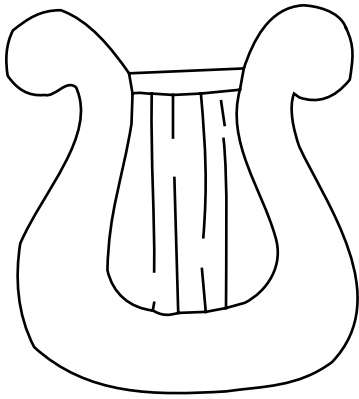
Another thought is that the hare stayed below Orion in hopes that he would remain unnoticed by Sirius, the Big Dog who was swiftly pursuing him.

### Libra, the Scales

Of the 12 zodiac constellations, Libra is the only one that does not represent something alive. An early astronomer assigned the task of reforming the calendar, decided to honor Julius Caesar by combining the claw stars of the Scorpion to form the figure of Caesar holding a pair of old-fashioned balance scales. The constellation was meant to be an eternal memorial in the heavens to the infinite wisdom and justice of Caesar. After Caesar's death, however, his figure was dropped out of the constellation picture and only the scales were retained.

2000 years ago at the time of the calendar reform, the stars used to form Libra were among the stars in front of which the sun was found at the time of the autumnal equinox, when days and nights are equal or balanced.





### **Lyra, the Lyre**

The lyre was one of the first stringed instruments used in Greece. Mercury made the first lyre and presented it to Apollo, who in turn gave it to his son Orpheus. Orpheus learned to play such sweet music on it that birds came to listen, wild beasts were tamed and sea monsters charmed by the music's spell.

Orpheus married Eurydice, but shortly after their wedding she was bitten and killed by a poisonous snake. Orpheus was so grieved he went to see Pluto, ruler of the underworld, to try to use his music to soften Pluto's heart and thereby, rescue Eurydice.

He was able to overcome all the dangers on route to Hades, and when he reached Pluto, his music brought the underworld king under its spell. Pluto gave Orpheus permission to take Eurydice back to Earth but only if Orpheus went first and never turned back to see if she was following. He agreed to these conditions, but when they were almost at the end of their walk, Orpheus could no longer hear Eurydice's footsteps. Fearing something had happened to her, he turned back to look. A great stone dropped down to block the path and hid Eurydice forever from his sight. For years Orpheus roamed the woods, playing only sad tunes. Many a maiden fell in love with him but he remained true to Eurydice's memory.

Finally a group of maidens angered by his lack of attentiveness killed Orpheus and tossed his lyre into the river. Jupiter sent a vulture to bring back the lyre and he placed it in the heavens as a constellation. The vulture is represented by the bright blue star Vega, which means "falling bird."



### **Ophuichus, Serpent Holder**

Ophuichus was said to represent the famous Greek physician, Aesculapius, who discovered how to bring the dead back to life. He used a mysterious herb which he discovered when he killed a snake one day. A second snake appeared and it thrust bits of a mysterious herb into the mouth of its dead mate, bringing it back to life. Aesculapius studied the herb and found it growing in his garden.

So successful was Aesculapius's use of the herb that Pluto, ruler of the underworld, complained to Jupiter that he had no dead souls. His business was ruined. Jupiter, fearing that Aesculapius found the way to give immortality to every man, sent a deadly lightning bolt that killed the doctor. But in tribute to his great skills as a physician, Jupiter placed Aesculapius among the stars along with the snake.



### **Orion, the Hunter**

Greek legend tells us that Diana, goddess of both the moon and hunting, fell in love with Orion, the bravest hunter of ancient times. She began to neglect her duty of driving the moon chariot across the sky at night which lit the sky so that she could go down to Earth to hunt with Orion.

When her brother Apollo heard of this neglect, he decided to do away with Orion. He shone his golden rays so blindingly on Orion one day while he was swimming, that he appeared only as a faint dot in the waves. He then challenged Diana to hit the tiny target with her bow and arrow. Diana, not knowing what the target was, shot so accurately that her arrow hit Orion and killed him. When she found his body on the shore that evening she realized what had happened. After trying in vain to bring Orion back to life, she put his body in her moon chariot and drove high across the sky where it was darkest. She put the body of her beloved Orion in the sky. Suddenly, the sky became bright with stars that outlined his body, jeweled belt and glittering sword. At his foot to keep him company, she placed his two favorite hunting dogs and marked each with a brilliant star. Procyon in the Little Dog (Canis Minor) and Sirius in the Big Dog (Canis Major).

### **Pegasus, the Winged Horse**

The most famous of the myths about Pegasus describes it as the winged horse which carried Perseus through the sky as he returned the head of the Medusa. Neptune, who had loved Medusa when she was young and pretty, created Pegasus from white beach sand, rainbow-colored foam of breaking waves, and drops of blood from the severed head of Medusa. So perhaps the reason why Pegasus is shown with half a body may be to represent the newly created horse just rising out of the sea with half its body still hidden beneath the waves.

Pegasus was also the favorite steed of Jupiter, who sent all his thunderbolts via Pegasus. Jupiter presented Pegasus to the Muses on Mt. Helicon. One day, as he pranced about there, a casual kick of one hoof caused the famous spring of Hippocrene to gush forth on the mountain top. Its waters had the magic power of inspiring whoever drank them to gain the gift of writing poetry.

### **Perseus, the Champion**

Perseus was known for two courageous acts. His first was bringing back the head of the Medusa, who had snakes for her hair and was so ugly that anyone who looked at her turned to stone. Armed with a highly polished shield from Minerva, winged sandals from Mercury, and a magic pouch and helmet from the nymphs of the north, Perseus set off to slay the Medusa.

His helmet allowed him to become invisible, the polished shield acted as a mirror so he could back in and watch the Medusa's reflection. He struck a killing blow, scooped up the head and tucked it in the pouch, careful not to look at it.

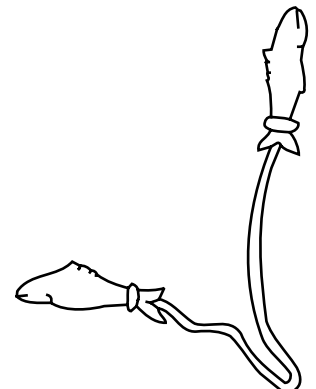
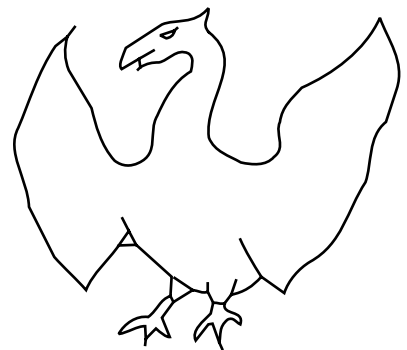
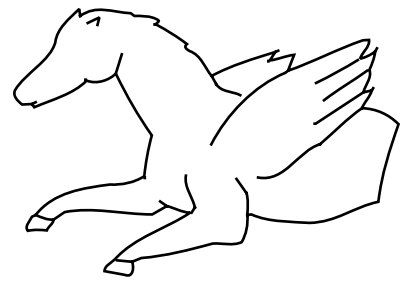
As he flew off, he met the winged horse Pegasus which Neptune had created. Perseus mounted the horse and was swiftly born across the sky. As he flew he noticed a crowd of people gathered on the beach below him. As he guided Pegasus down he saw a maiden, Andromeda, chained to a rock and a terrible sea monster about to engulf her. Perseus dropped down like a shooting star, shouted for Andromeda to cover her face and raised the flap of his pouch just enough so the monster could see the Medusa's head. The sea monster was instantly turned into stone. Perseus freed Andromeda and the people on the beach cheered.

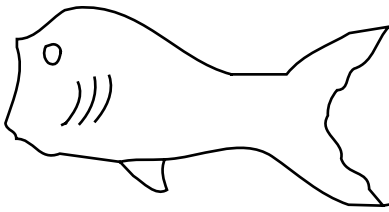
### **Phoenix**

This mythical bird of glorious plumage was fabled to be the only one of its kind and thought to live five hundred years at a time in the Arabian desert. It would burn itself on a funeral pyre and then emerge with renewed youth to begin another life cycle.

### **Pisces, the Fishes**

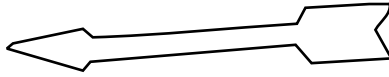
Venus and her son, Cupid, changed themselves into fishes to escape Typhon, a fire-breathing dragon. Typhon could survive only in flames and fire but not in water. Venus and Cupid tied themselves together with a long cord so that they would not be separated.





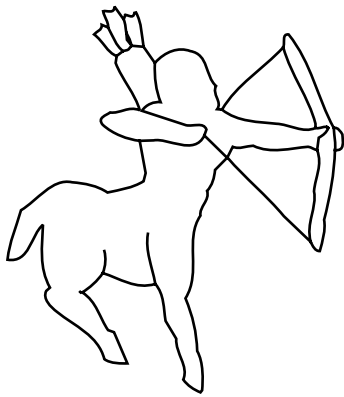
### **Pisces Australis, the Southern Fish**

This constellation contains one first magnitude star called Fomalhaut, which means "mouth of the fish." This bright star marks the mouth of the Southern Fish which is opened wide to catch the torrent of water pouring down from the upturned urn of Aquarius, the Water Carrier, located above Pisces Australis.



### **Sagitta, the Arrow**

Legend tells us that Jupiter punished Prometheus, who twice stole the gift of fire from Mount Olympus, by chaining him to a rock high in the Caucasus Mountains. Every day he sent a vulture to eat at the liver of the chained victim. Each night the liver grew again so the dreadful torture never ceased. Finally, Prometheus was rescued from his agony by Hercules, who killed the vulture with his bow and arrow and freed Prometheus from his chains. According to myth, Sagitta is that arrow shot from Hercules bow.

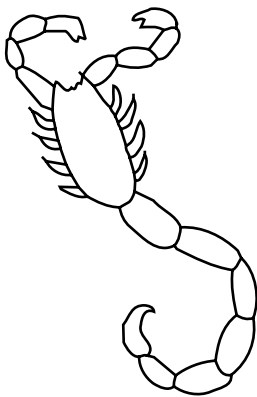


### **Sagittarius, the Archer**

Long ago a strange race of creatures, the Centaurs, half man and half horse, lived on Mount Pelion in Greece. They had the power and speed of a horse with the brains of a man. They were savage creatures, known for their evil ways.

One Centaur, Chiron, became known for his goodness and wisdom. He became a famous teacher to whom kings sent their sons to be educated. Chiron was immortal, but due to a painful wound, he begged Jupiter to allow him to die rather than to live in agony. Jupiter granted his request.

Before Chiron died, he designed all the constellations to aid the navigators. He designed Sagittarius to honor himself since he was known as a great archer.



### **Scorpius, the Scorpion**

Juno, wife of Jupiter, grew tired of hearing Orion boast that no animal could ever harm him. She decided that she would show him how vain he was by having him killed in a most humiliating way . . . from the sting of a tiny, insignificant animal, the scorpion.

The scorpion lay in ambush close to a trail that Orion liked to use on his daily hunting trips, stung him in the heel and caused his death. When Diana, the goddess of the moon, learned of her lover's death, she begged Jupiter to place him as a constellation in the heavens. Juno demanded that Jupiter must also honor the Scorpion in the same way, so he placed them far apart in the sky — Orion in the winter sky and the Scorpion in the summer sky.

### **Southern Cross**

The latitude of Athens is about 39° North, and as one moves south, the whole Cross becomes visible at about 25° North. Therefore, the Greeks would never have seen the whole Cross, at least from their homeland. However, what they did see, including the Pointers (Alpha & Beta Centauri), they incorporated into the Centaur.

The first European to see and name the Southern Cross was the Portuguese navigator Cadamosto in 1445. His was part of the on-going expeditions sent out by Prince Henry the Navigator to find the way around Africa and hence to the riches of Asia. These voyages were also spiced with religious zeal to find a way to link up with the legendary Prester John (a rich Christian monarch thought to be in mid-Africa). On a lonely voyage into the unknown, the beautiful stars of the Cross seemed like a message from Divinity.

### **Taurus, the Bull**

Jupiter, disguised as a snow-white bull, came down from Mount Olympus one day to where Europa, a beautiful maiden, was playing in the meadow. The bull was so gentle that Europa climbed on its back. Then off sped Jupiter to the seashore, where he plunged into the waves and swam with his captive Europa across to the island of Crete. There, Jupiter revealed himself as the king of the gods and won Europa as his bride.

### **Triangulum, the Triangle**

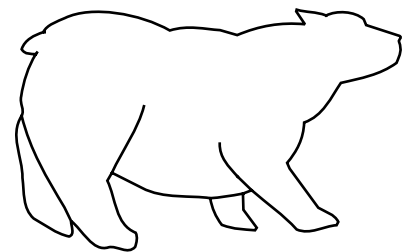
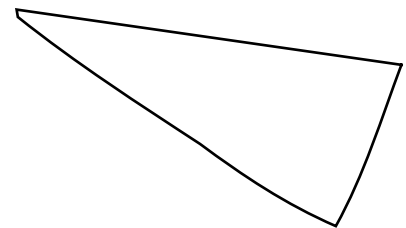
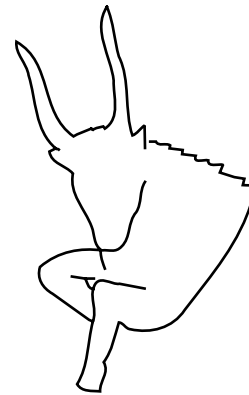
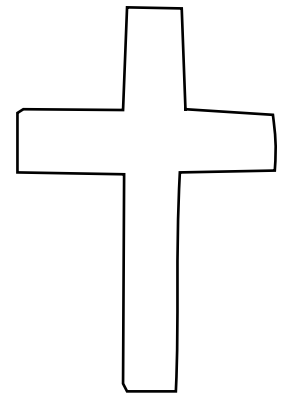
This constellation represents the triangle-shaped island of Sicily in Italy and was placed in the heavens by Jupiter at the request of Ceres, goddess of agriculture. Sicily was a land held in high esteem by Ceres because of the high quality of the crops raised there.

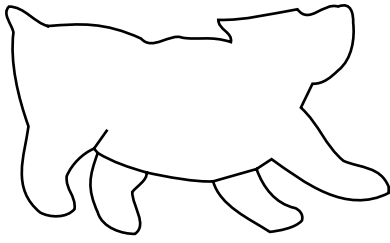
### **Ursa Major, the Big Bear**

Jupiter is said to have come down from Mount Olympus on many occasions to marry a beautiful Earth maiden. This enraged his goddess wife, Juno. One such maiden was named Callisto. Juno decided to seek revenge on Callisto by taking away her beauty — she turned Callisto into a mangy bear.

Callisto had a son, Arcas. While Callisto roamed as a bear, Arcas grew to be a young man and a famous hunter. One day while hunting in the woods, Arcas trailed a bear and was about to shoot it with an arrow when Jupiter intervened. The bear was, of course, Callisto, his mother. Jupiter turned Arcas into a bear to join his mother. He grasped both bears by their short, stumpy tails and heaved them high up into the heavens where they landed near the North Pole. The bears were so heavy, the strain on their tails caused them to be stretched to the unusual lengths seen in their heavenly constellations.

As Juno saw the two bears shining brightly in the sky, she realized that Callisto was





again beautiful. Enraged, she went to Neptune, ruler of the seas, and asked him to drive the stars of the Big Bear (the Big Dipper) away from his waters every time they dropped down near the sea, never letting them bathe in the waves.

### **Ursa Minor, the Little Bear**

The Little Bear is better known as the Little Dipper. One of the stars in this constellation is Polaris, the North Star. It has been the guide star for those who sail their ships across the northern hemisphere and for those who travel across the land.



### **Virgo, the Virgin**

The best-known myth about Virgo identifies her as Ceres, goddess of growing things, to whom farmers offered their prayers.

Ceres had a daughter, Proserpina, who was kidnapped by Pluto, ruler of the underworld. Ceres declared that nothing was to grow on Earth until Proserpina was returned. Jupiter ordered Pluto to return Proserpina to Earth, but Pluto said it was not possible because Proserpina had eaten seeds while below in the underworld. Faced with the problem of what to do because she had eaten these seeds, and torn by the wishes of Pluto and Ceres, Jupiter worked out a compromise. Proserpina would spend six months with her mother and six months with Pluto. Now when Proserpina spends 6 months with her mother, Ceres shines brightly over the fields and brings forth crops. But when Proserpina returns to Hades, Ceres is sad and lonely and allows the world to become cold and dreary.

# **Three Activities for the STARLAB Greek Mythology Cylinder**

**by Gary D. Kratzer, Ed.S.**

## **Purpose**

The following three activities “Constellation Creations,” “Create a Myth” and “I’m Getting Dizzy!” examine the origin of legends, myths and fables and the impact on the Greek culture. These lessons will help students gain an understanding of apparent movements of celestial bodies.

## **Objectives**

1. To associate astronomical phenomena with Greek mythology.
2. To compare and contrast Greek mythology with that of other cultures.
3. To explain how life experiences were associated with the position of the stars.
4. To construct knowledge of the apparent motion of the stars as a result of experiences.

## **Suggestions**

The following activities were designed for use in a STARLAB but can be modified for use in the classroom. Special attention has been given to the use of process skills so that your students will be active participants rather than passive observers. Activities in this guide were based upon myths of ancient Greek culture. We realize that many variations of these myths exist and recommend modifications or substitutions if necessary.

## **Note**

*You can make red-covered flashlights by using red construction or bulletin board paper and taping it over the head of the flashlight. (Do not use tissue paper or cellophane because they are too thin and let through too much light.)*

## **MATERIALS**

- STARLAB Portable Planetarium
- Greek Mythology Cylinder
- Starfield Cylinder
- Native American Mythology Cylinder (optional)
- a red light system or red-covered flashlights\*
- copies of worksheet
- arrow pointers



## MATERIALS

- STARLAB Portable Planetarium
- Greek Mythology Cylinder
- Starfield Cylinder (optional)
- Transparent Cylinder (optional)
- constellation myths from past cultures
- black construction paper
- gum-backed stars
- white chalk

## Constellation Creations

### Objectives

1. Examine ways that ancient cultures identified, named, and explained the presence of constellations.
2. Design an imaginary constellation and write a myth to explain the origin and nature of that constellation.

### Grade Levels

3-8

### Process Skills

Questioning • observing • classifying • defining operationally • modeling • working cooperatively.

### Preparation

Students will drop and glue gum-backed stars onto the black paper, then take time to examine and discuss the patterns. After a few minutes, the students will exchange their constellation (stars) with another group. Then the students may connect the star patterns with chalk and begin the design of a myth to explain their constellation. This activity of identifying, naming, and telling a story about an imaginary constellation should be discussed in relation to the identification and naming of the constellations that are officially recognized by present day astronomers.

### Procedure

1. Discuss how people in past cultures identified and named constellations, and how they created stories that explained (fictionally) the presence of those constellations in the sky.
2. View pictures of some of the constellations identified by people in past cultures, and read myths that were created about the constellations.
3. Working cooperatively in groups of 4 or 5 students, challenge them to create their own constellations by randomly dropping 8 to 10 gum-backed stars onto large sheets of black construction paper or bulletin board paper. After careful examination of the random patterns, allow the students to stick the stars to the sheet (do not allow them to alter the random patterns).
4. After the students have had enough time to examine their star patterns, using white chalk, each group should draw lines between the star patterns to create and write a myth about the constellation.
5. The constellations and myths created by each group should be shared and discussed with the rest of the class. (In STARLAB, the students can draw their constellations on the Transparent Cylinder, if available.)
6. After the students have presented their constellations and myths to the class (in the classroom or in STARLAB), bring the students into the STARLAB and project the Greek mythological constellations onto the dome. Challenge the students to find a Greek constellation that most closely resembles the constellation their group created.
7. After each group has located a Greek constellation that resembles their own design, the teacher can read the Greek myth associated with the constellation (the stories are found in the Greek Mythology section of Astronomy and More). Discuss the similarities between the student-generated constellations and the original Greek constellation.

## **Closure**

The legends and myths of ancient civilizations served as cultural reminders for future generations. Our generation, for the most part, does not seem to practice the sky-watching rituals of past generations. Why do you think this is so? Why do you think ancient civilizations created such unusual stories to explain star patterns? What would be different about star-stories today from those of past civilizations?

## **Extensions**

- After each group of students stick the stars to the large sheets of black paper, have them exchange their “constellation” with other groups. Using white chalk, allow the new group to connect the stars into a newly created pattern that is different from the first group’s observation.
- In STARLAB, use the Starfield Cylinder to project and identify the constellations visible at a particular night and time. Challenge your students to find these constellations in the real night sky.

## MATERIALS

- STARLAB Portable Planetarium
- Starfield Cylinder
- Greek Mythology Cylinder
- copies of Greek mythological stories
- 5" x 8" index cards
- glue
- tape
- red-covered flashlights
- arrow pointers

## Create a Myth

### Objectives

1. The students will discover the origin of legends, myths and fables.
2. The students will examine ancient Greek constellations and the mythology associated with them.
3. The students will write stories about the constellations that are relevant to the 20th century.

### Grade Level:

3-12

### Preparation

Conduct a study of the constellations as seen by the ancient Greeks. From the mythological stories provided with this guide, make copies and cut out individual stories and paste them to the index cards. Prepare flashlights for use in STARLAB by placing red paper around the lens which can be taped or held on with rubber bands. This will provide an adequate red light source for students to read their stories in the planetarium.

### Procedure

1. Set up the planetarium. Place the Starfield Cylinder on the cylinder platform and adjust the projector for your latitude. Once all of the students are seated, dim down the side lamps while increasing the brightness of the starfield.
2. Challenge your students to look for star patterns in the sky. Ask your students what these patterns might remind them of in their own world. Ask them to imagine that if they were about to create myths about the star patterns, what would they include in their stories?
3. After the discussion in procedure 2, dim down the Starfield Cylinder while increasing the side lamp brightness. Position the Starfield Cylinder vertically and switch to the Greek Mythology Cylinder. Readjust the latitude and slowly increase the brightness of the constellations while reducing the brightness of the side lamps. Give your students time to marvel at the characters of Greek mythology. Use the pointer to show some of the more popular Greek constellations, especially the ones along the zodiac such as: Virgo, Leo, Gemini, etc.
4. Tell the students that the incredible stories they will be studying were generated over centuries of watching the sky. The ancient Greeks immortalized important people, animals and objects by imagining them in the sky. In doing so, they would be seen for generations to come.
5. Tell the students that the next part of their assignment will involve creating their own mythology for the constellations. Slowly reduce the brightness of the projector while increasing the brightness of the side lamps.

### Guidelines for Creating Myths

- The students are to work in groups of 4 or 5.
- Each group will be assigned a particular Greek constellation and mythology to study.
- Myths must not be copied or be the same as the Greek version.

- Write about things that are important and relevant today.
  - The constellations can be renamed.
6. Upon exiting the dome and reseating in the classroom, assign students into groups of 4 or 5. Issue each group a particular Greek mythological constellation (attached to index card) and tell the groups to read and study the Greek version. After analyzing the Greek version, the students may begin creating their own 20th century version or an entirely new myth. (Remind students of the guidelines for creating myths, perhaps by writing them on the board or on an overhead transparency.) Monitor student work. Encourage creativity but discourage silliness.
  7. When the students have had time to complete the stories, have them return to the planetarium, sit together as a group and be prepared to present them. After the students are seated, slowly dim the side lamps and increase the brightness of the Greek constellations. Using the red-covered flashlights, have each group read the ancient Greek myth assigned to them while using a pointer to find and outline the constellation from the myth on the dome. Afterward, they are to read their present day version of that constellation's mythology. (The instructor may choose to place the Starfield Cylinder on after the reading of the Greek myths and just before the reading of the new versions.)
  8. After each group has read their myths in the planetarium, put on the Starfield Cylinder once again. Conclude the lesson by discussing the importance of the stars to generations before us.

### **Closure**

The myths of the ancient Greeks, as well as other cultures, were fascinating to their young people and served to sustain the memories of these great cultures to this very day. Our generation does not seem to place an importance on studying the sky as did past generations. Why do you think this is so? (Perhaps our generation has more distractions than ancient civilizations. Television, radio, computers and video games provide ample entertainment to young and old alike. Star watching is currently regaining popularity and has become a select hobby of many.)

### **Extensions**

- Study the mythologies of other cultures in STARLAB such as the Native Americans, Chinese, Africans, Lapp and Hindu.
- Take a younger brother, sister, or friend out with you and locate as many constellations as possible. Tell them the Greek mythological stories of these constellations you learned in STARLAB.

## ***I'm Getting Dizzy!***

### **MATERIALS**

- STARLAB Portable Planetarium
- Greek Mythology Cylinder
- The Story of Cassiopeia, the Queen (p. 24)
- copies of Worksheet 1
- safety scissors
- marking pens
- post-it
- glue sticks
- a waste basket
- clipboards
- arrow pointers
- red-covered flashlights

### **Objectives**

1. To observe the apparent motion of Cassiopeia around the North Star.
2. To discover the concept of circumpolar rotation.

### **Grade Levels**

K-3

### **Preparation**

Before entering the planetarium, engage the students in a discussion about constellations and their significance to ancient cultures. Read the story of Cassiopeia, the Queen (page 24) to the students. Ask the students if they have seen Cassiopeia in the night sky. Show pictures of the stars that make up the constellation Cassiopeia. Show the students the classic Greek drawing of Cassiopeia sitting on her throne. Point out the well-known "W" or "E" that the stars appear to make in the sky. Remind the students that the stars are actually shining during the day but that the sun's brightness keeps us from seeing the stars.

### **Procedure**

1. Once the students are seated in the planetarium, have them adjust their seating so that they can easily view the northern horizon. Pass out the Worksheet, clipboards and marking pens. Pass out the scissors and have the students cut out the four pictures of Cassiopeia at the bottom of the worksheet. Make sure they are careful not to misplace them in the low-light environment of STARLAB.

Use these months and times when setting the projector. All times should be set for the first of the month. Each setting represents 6 hours of advancing apparent sky motion for a particular 24 hour period.

<b>First Observation</b>	<b>Second Observation</b>	<b>Third Observation</b>	<b>Fourth Observation</b>	<b>Back to Beginning</b>
January 1, 9 p.m.	April 1, 9 p.m.	July 1, 9 p.m.	October 1, 9 p.m.	January 1, 9 p.m.
February 1, 9 p.m.	May 1, 9 p.m.	August 1, 9 p.m.	November 1, 9 p.m.	February 1, 9 p.m.
March 1, 9 p.m.	June 1, 9 p.m.	September 1, 9 p.m.	December 1, 9 p.m.	March 1, 9 p.m.
April 1, 9 p.m.	July 1, 9 p.m.	October 1, 9 p.m.	January 1, 9 p.m.	April 1, 9 p.m.
May 1, 9 p.m.	August 1, 9 p.m.	November 1, 9 p.m.	February 1, 9 p.m.	May 1, 9 p.m.
June 1, 9 p.m.	September 1, 9 p.m.	December 1, 9 p.m.	March 1, 9 p.m.	June 1, 9 p.m.
July 1, 9 p.m.	October 1, 9 p.m.	January 1, 9 p.m.	April 1, 9 p.m.	July 1, 9 p.m.
August 1, 9 p.m.	November 1, 9 p.m.	February 1, 9 p.m.	May 1, 9 p.m.	August 1, 9 p.m.
September 1, 9 p.m.	December 1, 9 p.m.	March 1, 9 p.m.	June 1, 9 p.m.	September 1, 9 p.m.
October 1, 9 p.m.	January 1, 9 p.m.	April 1, 9 p.m.	July 1, 9 p.m.	October 1, 9 p.m.
November 1, 9 p.m.	February 1, 9 p.m.	May 1, 9 p.m.	August 1, 9 p.m.	November 1, 9 p.m.
December 1, 9 p.m.	March 1, 9 p.m.	June 1, 9 p.m.	September 1, 9 p.m.	December 1, 9 p.m.

2. Set the planetarium projector for a particular month you want your students to observe. The time of the first observation will be listed in the chart below for the month you choose. For the subsequent observations, set the projector to the month and time listed. Each observation will be 6 hours ahead of the last.
3. After selecting the months and times your students will be observing, set the projector to the first time listed for the month the students are observing and then set the correct latitude. Example: January 9 p.m., 40° north latitude.
4. Make sure all of your students are facing north. Slowly darken the planetarium while increasing the brightness of the starfield.

(Read the following text in italics.)

*Now we are going to find Cassiopeia in the night sky. (Pause.) Has anyone found it yet? This is where it will be located tonight at 9 p.m. (Use the arrow pointer to point out the location.) Can anyone find the North Star? (Point out Polaris, the North Star.)*

**Note**

*Depending on your latitude, at some time of the day or night, Cassiopeia may appear below the northern horizon.*

*(Hand a student an arrow pointer to locate the “W” or “E” shape of Cassiopeia. Remind the students that this shape is not a constellation but a part of one known as an “asterism.”)*

*Today we will observe the stars during a 24 hour period. Since we are in STARLAB, we can turn off the sun (sidelamps) so that we can see the stars during the day. (Remind the students that we can not see the stars during the day due to the brightness of the sun.)*

6. After your students can find Cassiopeia with relative ease, turn up the side lamps. Tell the students to cut out and glue one of the four round pictures of Cassiopeia onto their worksheets in a position that corresponds to where they see it in the planetarium sky. Record the time it will be in that location. Be sure to monitor your students’ work! Note: Remind the students that unlike the real sky, the starfield in the planetarium is actually moving.
7. While the students are finishing up the gluing, set the projector for the next month and time indicated in the chart. Remember to reset the proper latitude. Note: the setting on the projector for your second observation places the star position 6 hours later or 3 a.m. Have the students repeat the steps used in procedure 6.

*The projector in STARLAB is like a time machine. It allows us to project the stars exactly where they will be 6 hours later than our last observation. Can anyone find Cassiopeia? What appears to have happened to Cassiopeia from 9 p.m. until now? What time would it be 6 hours later than 9 p.m.? (Answer: 3 a.m. Point out Polaris. The students will notice that it has not moved much.)*

**Note**

*Your students should notice a significant apparent shift of Cassiopeia’s position in six hours. Make sure they are gluing the next Cassiopeia picture in the appropriate location with the correct time recorded. Be sure to monitor your students’ work! When the students are ready, return to darkness and have the students observe the location of Cassiopeia in another six hours (example: 6 hours later would be 9 a.m.).*

*Now we will observe the night sky 6 hours later than our last observation which was 3 a.m. Can anyone find Cassiopeia? What time will it be? (Answer: 9 a.m.).*

*Why would we not really be able to see Cassiopeia during the day? (Answer: because the sun is too bright and lights up the whole sky. Point out Polaris.)*

8. Repeat procedure 7 for six hours later (example: 6 hours later would be 3 p.m.). Be sure to monitor your students' work!

*Now we will observe the night sky 6 hours later than our last observation which was 9 a.m. Can you find Cassiopeia? What time will it be? (Answer: 3 p.m.). What did you notice about the North Star in each observation? (Answer: it stayed in the same place. Point out Polaris.)*

9. After your students have completed the four observations and have glued Cassiopeia in the correct positions and recorded the time of day, ask your students to draw arrows from box to box to indicate the direction Cassiopeia appeared to move.

*How is the motion we observed different from a clock's motion? (Answer: the motion was counter-clockwise and a clock rotates clockwise.) Now draw some arrows from one Cassiopeia to the next to show the direction the stars appeared to move. How long does it appear for Cassiopeia to make a complete circle around Polaris, the North Star? (Answer: 24 hrs.). How long does it take the Earth to rotate once on its axis? (Answer: 24 hrs.).*

### **Closure**

- Tell the students that the constellation Cassiopeia only appears to make a circle around the North Star. The Earth is turning around (rotating on its axis) and moving us along with it like a merry-go-round so the stars appear to make a circle around Polaris when looking at the northern sky. This concept is known as circumpolar rotation.
- To reinforce the concept of apparent motion, have your students imagine they are traveling on a highway in the back seat of a car. What do the fence posts and telephone poles along the highway appear to be doing? Are they really moving? Remind them that the car and you are moving and it just seems like the posts are moving.
- Students can stand up near the planetarium wall and look at the starfield at the top of the dome while turning counter clockwise like the Earth. Remind the students that the stars on the dome appear to be moving when actually they are not.
- Clarify students' understanding of the motion of the stars by explaining that stars really do move in space but that they are so far away from us we do not notice their movement for thousands of years.

### **Extensions**

- Have your students observe the apparent motion of the sun or moon in STARLAB. Where does the sun appear to rise? Where does the moon appear to rise? Where do they both appear to set?
- Set the projector to 0° latitude (equator) and have the students observe the apparent motion of stars seen in the southern sky (in STARLAB). Ask: "Do these stars move differently from those seen in the northern sky? Which way do they appear to be moving?" (Answer: east to west in a clockwise motion). This is an excellent opportunity to introduce the term perspective. Explain that sometimes the way things seem to move from one place will appear different when seen from another place or direction. Ask the students if they think the stars in the southern sky really move in a different direction from those seen in the northern sky?



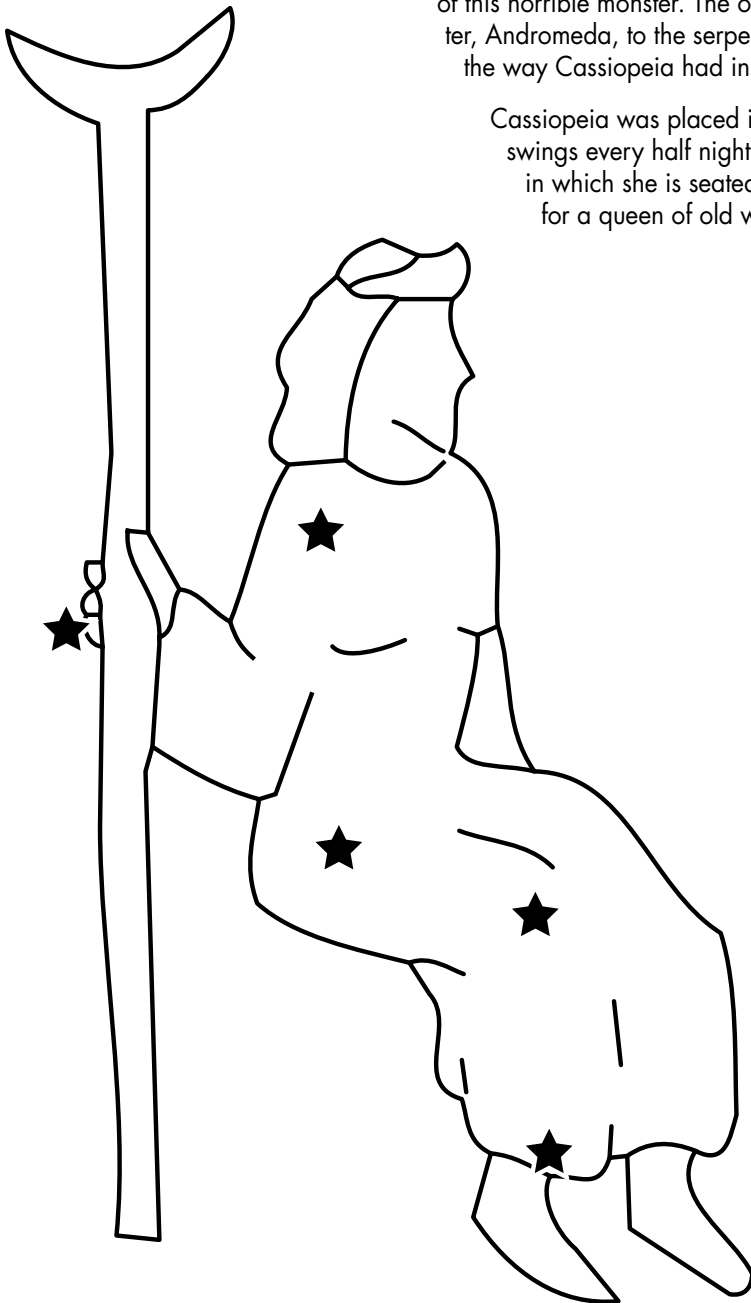
(Remind them the apparent motion was east to west as well.) Call attention to the movement of the Starfield Cylinder (with the daily motion engaged) to act as a concrete model to assist in the students' examination of their own thinking and ideas about apparent star motion.

## ***The Story of Cassiopeia, the Queen***

Cassiopeia was a beautiful woman who was fond of boasting about her beauty. The maidens who attended King Neptune in his underwater kingdom learned that she boasted of being far more beautiful than any of them. They demanded Neptune punish her.

Neptune sent a monster sea serpent, Cetus, to terrify all who lived along the coast of the country ruled by King Cepheus and Queen Cassiopeia. The Serpent snatched women and children whom he found on the shore. Troubled by this problem in his kingdom, King Cepheus went to an oracle to find out how he could rid his kingdom of this horrible monster. The oracle's answer was that only if he sacrificed his daughter, Andromeda, to the serpent would the maidens feel they had been avenged for the way Cassiopeia had insulted them and ask Neptune to recall the serpent.

Cassiopeia was placed in the heavens to be punished rather than honored. She swings every half night around the North Star. She is upside down in the chair in which she is seated, hanging on for dear life in a position most humiliating for a queen of old who was so proud of her beauty.



Name \_\_\_\_\_

Date \_\_\_\_\_

## I'm Getting Dizzy Worksheet

### Directions

1. Cut out the four pictures of Cassiopeia below.
2. While the teacher points out Cassiopeia in the planetarium sky, glue one of the pictures on to the worksheet below so that it matches how you see it and where you see it in the sky.
3. Write the time of your observation below the picture of Cassiopeia.
4. Draw arrows showing the direction Cassiopeia appears to move during a 24 hour period.

●  
North Star (Polaris)

