



Zubenelgenubi's Magical Sky

Teacher's resource kit

Thank you for scheduling a trip to your school with our portable planetarium. The fireball portable planetarium can hold up to 25 students and is wheelchair accessible. Using digital Newtonian two mirror projection system, the planetarium can create virtually any environment. You can be seated in the interior of a spacecraft, witness the birth of a star, stargaze at night over Newfoundland and Labrador, or travel in light among the stars of the Milky Way Galaxy.

We welcome any suggestions, comments or tips on the activities and resources in this kit, so we can improve these resources for you and your students in the Newfoundland and Labrador community.

About the show

In this lively participatory program, characters come alive as the daytime and nighttime skies are explored. During the show, the audience is reduced to Tracy telephone pole, Hydro the hydrant, a talking sun and moon. A section for

consolation dedication is provided, which is followed by a story in the stormy sky. Students pitch to help to blow the storm away and program ends when a peaceful sunrise and a new day.

Program objectives:

Upon completion of this program, students should be able to:

- explain perceived an actual movement of the sun, moon, and stars across the sky;
- identify objects in the sky such as stars, planets, and the moon;
- identify whether phenomena such as a storm, rainbows, and other items in the sky;:
- Identify simple star pattern such as the Big Dipper and the little dipper constellations such as Orion and Cassiopeia the Queen.
- Identify moon phases such as full moon and crescent.



Pre-visit activities Zubenelgenubi's magic sky focus on the sky questions

for you and your students to ponder before your visit.

Q; what can I see in the sky?

A: In the daytime sky, you can see the sun, the moon (sometimes), clouds, birds, airplanes and rainbows. On a clear night away from the city lights you can see stars the Milky Way the moon, planets, meteors, (sometimes called shooting stars) and comets.

Q: What are stars, and how far they from the earth?

A: Stars are Suns, many times further away from the earth than our own star the sun-also known as sol. The sun is at the center of the solar system, with its light and heat warming the planet. The sun's gravity keeps the planets orbiting around a consistent basis. The sun is approximately hundred and 80,000,000 km away and a beam of light takes eight minutes and 20 seconds to travel from the earth to the sun. Minera star, sensors is 24.3 trillion miles, or a beam of light would take four years two months and two weeks to reach earth. Many of the stars to see in the night sky range from six light years to over 1600 light years away from you.

Q: Why don't we see stars during the daytime?

A: The sun, are star, is so close to the earth that it shines much greater than all the other stars. This hides the stars, until the sunsets in the West. Then we can see the other stars in the sky, if it is clear. When it is cloudy, the clouds block out our view the sun and all the stars in the sky.

Q: Why do we see some stars any time during the year, under stars on it seen during one or two seasons?

A: From our location on earth, the sky appears to be an invisible sphere or ball, with the stars attached to the Speyer. The sphere appears to spin once every day, with the stars moving from the left to the right. Anyone watching the stars at night over several hours will see the slow drifting with stars appearing to rise out of the East, and appearing to set in the West only the stars in the northern hemisphere move differently, circling around a star name Polaris, the North star. Located in a spot in the sky that the earth's North Pole pointed towards, Polaris appears to be anchored around all other northern star spin.

Earth orbits the sun once a year, moving a little bit each of the 365 days it takes to complete each orbit.

As we circled the sun, our view of the stars also change the little bit every day. So stars seem in the night in the winter are seeing closer to the sun in the daytime during the summer. Only stars near the North Star are visible any night of the year.

Q: Why does the moon appear to change shape from night tonight?

A: The moon travels in a circular path around the earth sciences call and orbit. It takes the moon about 29 ½ days to go around the earth. As the moon goes around the earth, light from the sun hits the moon all the time, but the way the light hits the part of the moon facing the earth changes, making it look like the moon start small, and then grows until it becomes a full moon. The moon then appears to shrink until it so close to the sun, as seen from the earth, that we cannot see the moon until it starts a new trip, or orbit, around the earth.

Q: What are the planets?

A: Once thought to be to God, the planets (from the ancient Greek word for wanderer) are worlds made of either solid matter (terrestrial or earth-like and gas giants). Solid ones include Mercury, Venus, Earth, and Mars; gas joints include Jupiter, Saturn, Uranus, and Neptune.

Q How do you tell planets from Stars?

A: You can tell a planet from a star by watching its location among the stars every clear night. Stars will remain relatively fixed in one place, rising in the east and setting in the West. Planets move among the stationary stars over days and weeks. The further the planet is from the sun, the slower it moves in the sky.

Q: What are constellations and who made them?

A: Constellations are imaginary pictures made up of stars visible from the earth. All peoples on the earth revise the star pictures, which were invented to honor heroes such as: (Hercules, Perseus, and Andromeda; royalty (King Cepheus, Queen Cassiopeia); animals (Ursa major and minor, Leo, scorpion, Canis majors) among others. Go out on a clear night, and make up your own constellations of stories for each.

Q; What is the solar system?

A: The solar system refers to our system of one star (the sun), eight planets and over hundred moons, and over 5000 asteroids, millions of comets and uncounted bits of dust and rock (meteoroids). Astronomers have found other stars with planets, but our system of one star and eight planets is known as the solar system.

Zubenelgenubi's Magic Sky

Word List

Red - the color of the sun at sunset.

Green - the color of leaves, grass, and the other plants.

Blue - the color of the sky during the day.

Mr. Sun - the day star that lights up and warms the earth and the other planets of our solar system. Mr. Sun's pull or gravity keeps the planets going around him

Craters - holes in the ground made by rocks falling from space that hit a planet or moon.

Ms. Moon - a small rocky and dusty world that orbits around the earth. It has craters and lots of holes that we call craters. 12 astronauts have walked on the moon.

Rainbow - usually seen after a storm or rainfall, the airborne water acts like a prism, splitting sunlight into separate colors.

Mercury - closest planet to Mr. Sun. Hot in the day, very cold at night. Many craters.

Venus - the hottest planet with lots of clouds and rocky ground. The clouds let the sun's heat in, but do not let anything get away.

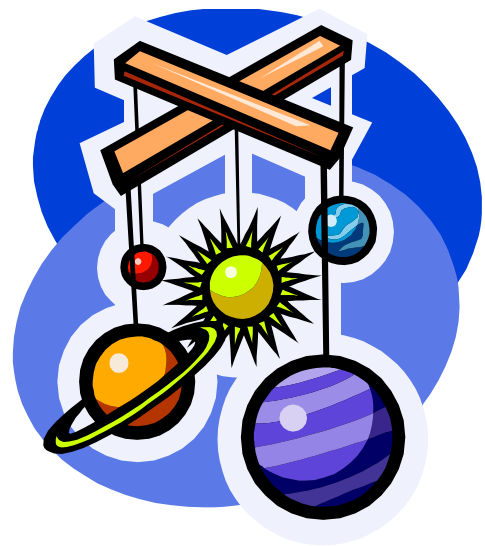
Mars - the red planet with huge volcanoes, deep canyons, orange color dirt and rocks.

Jupiter - the largest of all the planets with lots of colorful clouds and a big red storm called the Great Red Spot.

Saturn - the ringed wonder with 30 moons. The rings have lots of ice and rocks and dust. Saturn is so light it would float in a bathtub, if you could find one big enough!

Uranus - the sideways planet. It has lots of blue clouds. It has one special moon that fell apart but pulled itself back together again.

Neptune - blue planet with no water. Faint rings and is very cold.



Objective: to introduce the concept the constellations

Activities:

- class or group discussion about what a constellation is
- showing drawings of a few constellations
- having each child complete a dot to dot paper of two constellations

Materials: for each student:

- worksheets (one copy of each introduced in this packet)
- dot to dot worksheet
- make your own constellation worksheet
- pencil, crayon or marker

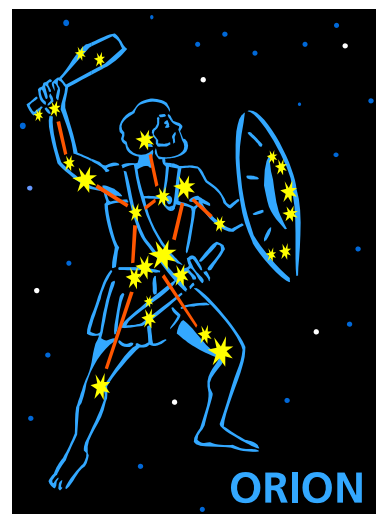
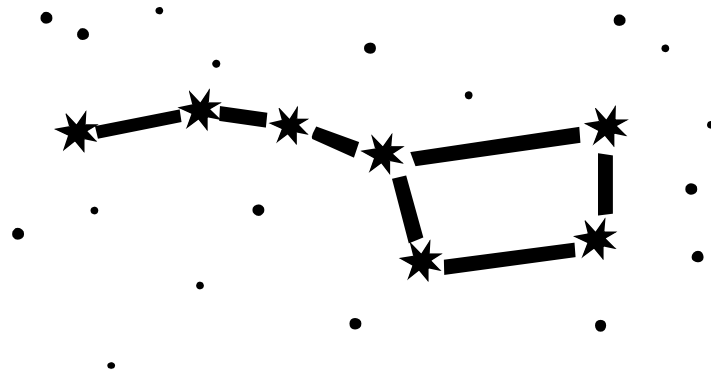
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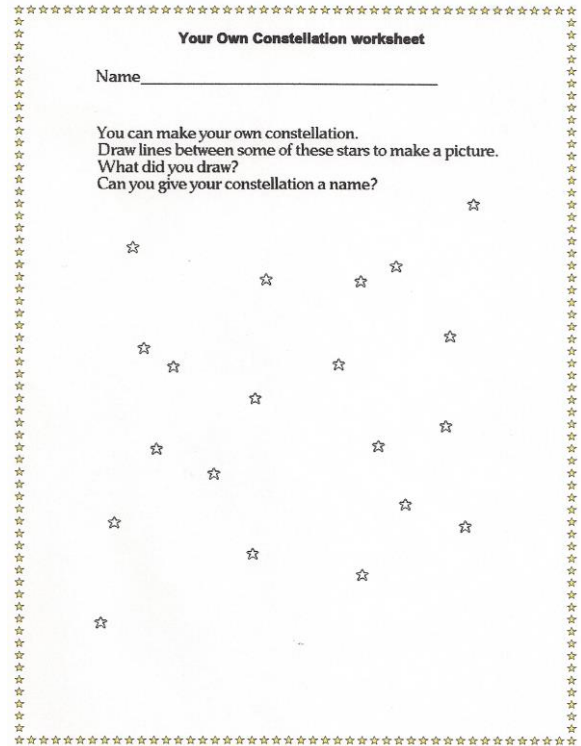
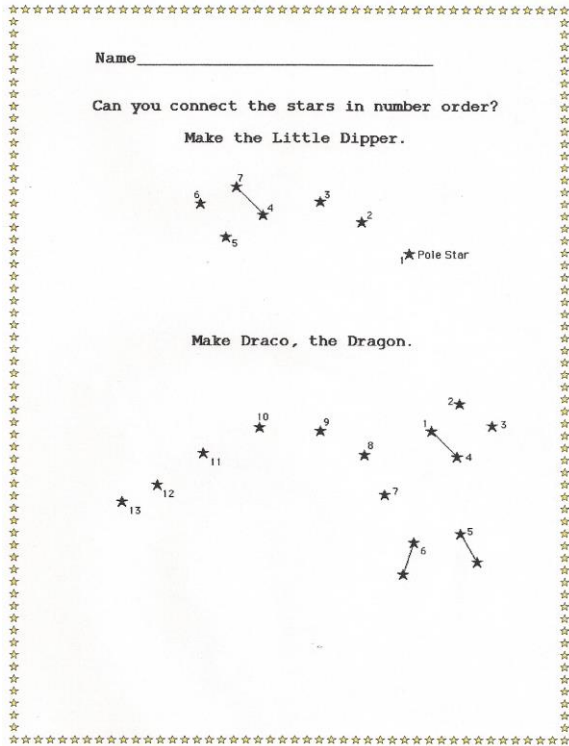
- pictures of constellations (a few are included in this packet; can also use a book or star map that shows them)

Procedure:

1. Explain that constellations are groups of stars that can be seen in the night sky. People draw imaginary lines between stars to make pictures of animals, people or things. Each picture is a constellation. Some of the more famous constellations are the Big Dipper and Orion the Hunter (or name the constellation show pictures of. Show the children pictures of constellations.

2. You can continue by saying that there are many constellations in the sky, but you can see all of them at once. Which constellations you see depends on the time of the year, time of the night and where you are on the earth.
3. The students can complete the dot to dot worksheets of the little dipper and Draco the Dragon, two constellations that can be found in our sky.
4. The students can complete the make your own constellation sheet.





Astronomy and space exploration websites

<http://www.heavens-above.com>

Heavens above and astronomical website for current star maps along with information about on how to observe satellites from your backyard, including the international space station!

www.cascaeducation.ca

Canadian astronomy resources

<http://www.asc-csa.gc.ca>

Canadian Space agency

<http://starchild.gsfc.nasa.gov/docs/StarChild/StarChild.html>

Starchild is a learning center for Elementary or middle school astronomers.

<http://www.rasc.ca/>

Canadian astronomy with teacher's resources.