

Finding Your Way to Mars, Pennsylvania: An Astronomy and Geography Activity

by Andrew Fraknoi

Introduction

Did you know that between 1888 and 1896 Southeast Florida had a “Celestial Railroad”? (It ran over a 7-mile track, stopping at stations with names like Jupiter, Venus, and Mars.) Or that stamp collectors have sought out envelopes with stamps commemorating the Viking and Pathfinder missions to Mars that were postmarked in Mars, Pennsylvania?

The United States and other countries have many towns and natural landmarks with astronomical names. Some of the names come from mythology—such as the city of Ceres, in an agricultural region of California, named after the goddess of the grain whose name was also given to the first known [asteroid](#). Others, such as Orbit or Comet (both towns in Virginia) have a more unmistakably astronomical origin.

Procedure

During your unit on astronomy (or anytime after it), your students can explore a detailed atlas of the United States that lists the names of towns. Depending on their age and ability, either encourage them to find places whose names you give them, or let them roam all over the map (pardon the pun) searching out astronomical names. Students could look up the places they find on the web (using a good search engine) or even write to the Chamber of Commerce or town library, for information on how the name was derived.

Some specific ideas for astronomy and geography activities include:

1. Planet Cities

How many cities named after [planets](#) can your students find, and how many of them were actually named after the planets, rather than the Roman gods of mythology?

Among the possibilities are:

- Mercury in Nevada, Alabama, and Texas
- Venus in Texas, Florida, and Pennsylvania
- Earth in Texas
- Mars in Pennsylvania
- Jupiter in Florida and North Carolina
- Saturn in Texas
- Neptune in Ohio, Tennessee, West Virginia, and New Jersey
- Pluto in Mississippi and West Virginia

2. Constellation Names on the Map

Set your students to find how many **constellation** names they can find in the atlas. As with planet cities, students should try to determine how many of these names are connected with astronomy and how many with the mythological characters after whom many constellations are named.

A few examples include:

Orion, Alabama

Leo, Wyoming

Hercules, California and Missouri

Little Bear, Wyoming

This could also lead into a discussion of how constellations got their names and were assigned their boundaries in the sky. Astronomers have divided the sky into 88 sectors (boxes), each of which is named after a prominent pattern of stars in the box. The exact boundaries of the constellation boxes were drawn rather arbitrarily, much as were the boundaries of many U.S. states. Both are human constructs, designed to impose organization on a relatively random landscape (or starscape). A list of constellation names and their meanings is attached to this activity.

3. Astronomical Treasure Hunt

The sky's the limit in this activity. Divide the students into groups, give them a practical time limit (e.g. 30 minutes in class, a week for homework) and see how many astronomical place names each group can come up with. Depending on how many atlases are available, groups can either do the activity at the same time, or in sequence. See who finds Galaxy, South Carolina or Half Moon, North Carolina. Have *Mars* or *Milky Way* candy bars as prizes for the winners.

Resources

Although using a published atlas can be more satisfying, there is a very powerful way of finding geographical names on the web. The U.S. Geological Survey maintains a Geographical Names Information System at: <http://geonames.usgs.gov/pls/gnispublic>

Another (but less comprehensive) resource is the U.S. Census Bureau's TIGER Mapping Service at: http://factfinder.census.gov/home/saff/main.html?_lang=en

Follow-up Activities

*** Town Brochure**

More advanced students can use what they learned in astronomy to do some imaginative writing. Have them select a place on Earth that has an astronomical name and then write a brochure that uses some astronomical ideas or descriptions to attract visitors. So maybe Moonville, Indiana can be a place for crater burgers with green cheese, while tourists have a blast in Nova, Ohio.

* Establish Your Own Town with an Astronomical Name

Students again divide into groups and are appointed the planning team for a new community. They must come up with an astronomical name for the future town and then plan some businesses and local attractions that take advantage of the name. Each group produces a brochure that includes an explanation of why the name was selected and what the real astronomical object is like, as well as description of the town's attractions. Group reports could be judged by how much astronomical knowledge they use, as well as more down-to-earth criteria such as spelling, grammar, and creativity.

* Place Names on Other Worlds

Have students imagined that it is a hundred years from now: Spaceflight among the planets is common, and a new city is being established on some other world (good candidates might be the Moon, Mars, Saturn's moon Titan [which has a thick atmosphere], or one of the asteroids.) Student groups are asked to come up with a good name for the city on the new world, together with a paragraph or two explaining how they came to pick the name, and why it is appropriate for its environment.

Older students (or teachers) may enjoy researching how we have been naming natural features on other worlds. Here are a few useful sources:

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- Hodge, P. "Naming the Man in the Moon" in *Astronomy*, Feb. 1999, p. 82. On scientists who have a lunar crater named after them.
 - Kross, J. "What's in a Name?" in *Sky & Telescope*, May 1995, p. 28.
 - Millman, P. "Names on Other Worlds" in *Sky & Telescope*, Jan. 1984, p. 23.
 - Sagan, C. "A Planet Named George?" in *Broca's Brain*. 1979, Random House.

Web Sites:

Gazetteer of Planetary Nomenclature: <http://planetarynames.wr.usgs.gov/> (U.S. Geological Survey's official web site with information about naming of objects and features)

Names and Discoverers of Planets and Moons: <http://planetarynames.wr.usgs.gov/append7.html>

Guidelines for the Naming of Asteroids: <http://cfa-www.harvard.edu/iau/info/HowNamed.html>

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The Constellations and What Their Names Mean (plus their astronomical abbreviation)

Andromeda	Princess of Ethiopia	And
Antila	Air pump	Ant
Apus	Bird of Paradise	Aps
Aquarius	Water bearer	Aqr
Aquila	Eagle	Aql
Ara	Altar	Ara
Aries	Ram	Ari
Auriga	Charioteer	Aur
Boötes	Herdsman	Boo
Caelum	Graving tool	Cae
Camelopardus	Giraffe	Cam
Cancer	Crab	Cnc
Canes Venatici	Hunting dogs	CVn
Canis Major	Big dog	CMA
Canis Minor	Little dog	CMi
Capricornus	Capricorni	Cap
Carina	Keel of Argonauts' ship	Car
Cassiopeia	Queen of Ethiopia	Cas
Centaurus	Centaur	Cen
Cepheus	King of Ethiopia	Cep
Cetus	Sea monster (whale)	Cet
Chamaeleon	Chameleon	Cha
Circinus	Compasses	Cir
Columba	Dove	Col
Coma Berenices	Berenice's hair	Com
Corona Australis	Southern crown	CrA
Corona Borealis	Northern crown	CrB
Corvus	Crow	Crv
Crater	Cup	Crt
Crux	Cross (southern)	Cru
Cygnus	Swan	Cyg
Delphinus	Porpoise	Del
Dorado	Swordfish	Dor
Draco	Dragon	Dra
Equuleus	Little horse	Equ
Eridanus	River	Eri
Fornax	Furnace	For
Gemini	Twins	Gem
Grus	Crane	Gru
Hercules	Hercules, son of Zeus	Her

Horologium	Clock	Hor
Hydra	Sea serpent	Hya
Hydrus	Water snake	Hyi
Indus	Indian	Ind
Lacerta	Lizard	Lac
Leo	Lion	Leo
Leo Minor	Little lion	LMi
Lepus	Hare	Lep
Libra	Balance	Lib
Lupus	Wolf	Lup
Lynx	Lynx	Lyn
Lyra	Lyre or harp	Lyr
Mensa	Table Mountain	Men
Microscopium	Microscope	Mic
Monoceros	Unicorn	Mon
Musca	Fly	Mus
Norma	Carpenter's level	Nor
Octans	Octant	Oct
Ophiuchus	Holder of serpent	Oph
Orion	The hunter of ancient lore	Ori
Pavo	Peacock	Pav
Pegasus	Pegasus, the winged horse	Peg
Perseus	Perseus, hero who saved Andromeda	Per
Phoenix	Phoenix	Phe
Pictor	Easel	Pic
Pisces	Fishes	Psc
Piscis Austrinus	Southern fish	PsA
Puppis	Stern of Argonauts' ship	Pup
Pyxis (= Malus)	Compass of Argonauts' ship	Pyx
Reticulum	Net	Ret
Sagitta	Arrow	Sge
Sagittarius	Archer	Sgr
Scorpius	Scorpion	Sco
Sculptor	Sculptor's tools	Scl
Scutum	Shield	Sct
Serpens	Serpent	Ser
Sextans	Sextant	Sex
Taurus	Bull	Tau
Telescopium	Telescope	Tel
Triangulum	Triangle	Tri
Triangulum Australe	Southern triangle	TrA
Tucana	Toucan	Tuc

Ursa Major	Big bear	UMa
Ursa Minor	Little bear	UMi
Vela	Sail of Argonauts' ship	Vel
Virgo	Virgin	Vir
Volans	Flying fish	Vol
Vulpecula	Fox	Vul
