

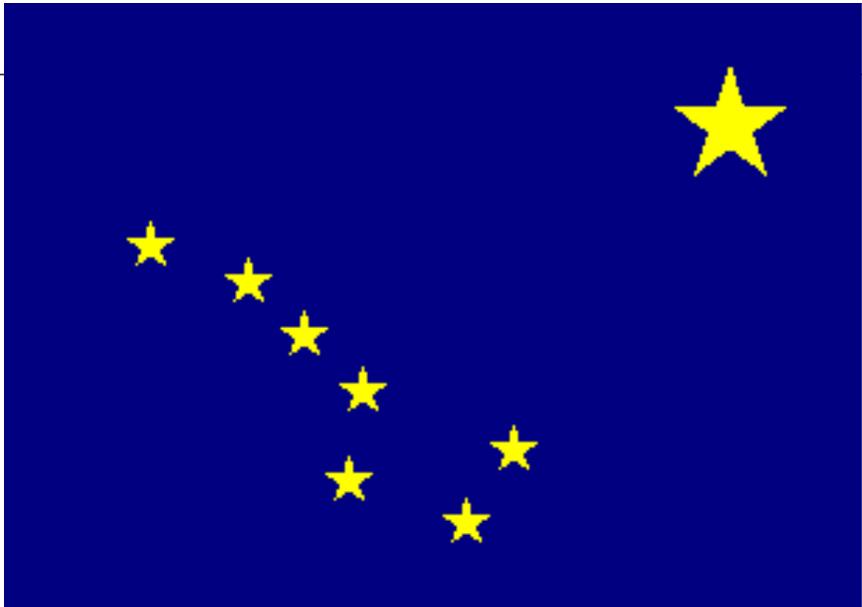
LEARNING ABOUT CONSTELLATIONS

Why is the Big Dipper on the Alaska flag?

Level: Primary (K-2)

Background

Ancient people told stories about the stars they saw in the night sky. Alaska's flag uses the constellation of the Big Dipper (Ursa Major) and the North Star (Polaris) to symbolize the most northern state and its strength.



Summary

Children count the stars on Alaska's flag and make graphs or charts recording the stars they see. They explore a star map, find a "personal" constellation on the map, and make up a story about the constellation they "found."

Estimated Time

- 30 minutes for Part One. A few minutes of reporting each day for a week, and to chart the stars viewed (or more, at the teacher's discretion)
- 30-50 minutes to complete the "Unique Constellations" booklet, Parts Two & Three

In this activity students will focus on the following:

Alaska Performance Standards at Benchmark 1

Math - Statistics/ Probability

1. Collect, record, display, explain data
2. Describe data from a variety of visual displays including bar graphs

Alaska Content Standards

Math

- A.1 Understand and use numeration
- A.4 Use methods such as tables and graphs
- C.1 Express mathematical ideas using pictures, graphs, charts

E.2 Use mathematics in daily life

English/Language Arts

- A.4 Speak and write to inform and describe

Activities

Part One: Count stars and predict

- Before this activity, measure several sheets of paper to cover the top of an overhead projector. Punch a series of different holes in each paper with a sharp object such as the point of scissors. The number of holes should be large enough to be countable for the children in your class. You may wish to punch holes in various shapes/designs so children can count the holes and talk about the shapes and designs they see.
- Look at the design of the Alaska flag. Count the stars on the flag and talk about its shape. Ask the children what the design is usually called. (Big Dipper and North Star)
- Explain to the students how in earlier days, people used to look up at the night sky and see many different shapes and designs in the stars and gave them names. Tell the children that for the next week (or longer, if desired), the class is going to make a chart of the stars seen at night. Ask them to predict the number of stars they think they will see and record their predictions on a chart for display in the classroom. Using the overhead projector, practice counting stars using the paper you have pre-cut. (See above.)

Part Two: Observe and graph stars

- Make a class graph of 'Stars Seen at Night.' Depending on where you live, and the probability of seeing stars in your area, you can make the graphs more detailed if you wish. (See sample.) If you live in a place where stars are not typically seen at this time of year or in a location where it is frequently cloudy, you could

do a simple chart of Yes or No each night, with one child per night being assigned as the "stargazer" who reports the next morning.

Part Three: Create constellations, imagine their stories and write

- Print out and give each child a star map. Tell the students that this is a map of the night sky, with all the major stars, even the ones that we can't always see. Ask the students to use their fingers, to outline the shape of a symbol that their can see in the map. Have the students count out loud the number of stars in their shape/symbol. Then have the students outline their symbol using a highlighter or fine magic marker, again counting the number of stars in the outline of the shape. Then have each student share with another child what his/her saw in the sky.
- After each student has shared his/her own star symbol with another child, have the students dictate/write a story to a parent or an older reader buddy to go along with their shape/symbol.
- Make a class "unique constellations" booklet, assembling each child's entry.
- OPTION: Throughout these activities read selections from *Star Tales: North American Indian Stories About the Stars* or similar book.

Extension Activities

"Star Math" Make up a number of Star Math problems. For example, "If there are four stars and they all have five points, how many star points are there?" "If the Big Dipper lost one star, how many stars would be on the Alaska flag?" For homework, have second graders make up three or four of their own Star Math problems to stump their friends. The next day, have Star Math time with children exchanging their math problems.

Assessment

- Ask each child to explain which constellation is on the Alaska flag and what it means.
- Have each child explain his/her star map to another child or an adult, counting stars as he/she tells the story that goes with the map.

Materials

- Chart pad to make graphs, or graph paper
- Star maps, one per child (See sample or use website resource)
- Alaska flag
- Fine-point magic markers
- Drawing paper
- Overhead projector
- Copy or make star chart to use with the overhead projector
- Class graph (See sample)

Resources

Mayo, Gretchen Will. *Star Tales: North American Indian Stories About the Stars*. Illustrated by the author, New York: Walk & Co., 1987. 96 pp. Ages 8+. ISBN: 0-8027-6672-2
This book is a folktale collection about the nighttime sky taken from many northern United States and Canadian Indians. Each story has a carefully researched introduction concerning its origin. This well done book tells the legends with simplicity and humor.

Monroe, Jean Guard & Roy A. Williamson. *They Dance in the Sky*. Illustrated by Edgar Steward, Boston, MA: Houghton Mifflin Co., 1987. 130 pp. All Ages. ISBN: 0-395-39970-X Chapter Two, "The Celestial Bear, Stories of the Big Dipper" is especially appropriate. This collection of legends from various North American Indian cultures explains the sky world. It includes a bibliography, index and glossary.

Amazing Space

<http://amazing-space.stsci.edu/>

This website has classroom activities on astronomy

Dept. of Astronomy & Astrophysics, Penn State University
www.astro.psu.edu/users/jangren/const/filb.htm
This excellent constellation website with variations of star maps and background information, is suitable for all levels. It includes a star map with 30 constellations.

Vocabulary

constellation n. A group of fixed stars

Big Dipper n. Ursa Major

Star Chart Sample

Stars Seen at Night

Students' Names	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday

Star Map

www.astro.psu.edu/users/jangren/const/filb.htm

