

## Overview:

Students explore monuments as a teaching tool to help people be prepared for the future and reminded of past disasters. Students then design a monument, incorporating nature's forces that change the Earth's surface, geometry, and writing in the process.

## Targeted Alaska Grade Level Expectations:

### *Science*

- [3-4] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [3] SA1.2 The student demonstrates an understanding of the processes of science by observing and describing the student's own world to answer simple questions.
- [4] SD2.1 The student demonstrates an understanding of the forces that shape Earth by observing models of how waves, wind, water, and ice shape and reshape the Earth's surface by eroding rock and soil.
- [4] SD2.2 The student demonstrates an understanding of the forces that shape Earth by identifying causes (i.e., earthquakes, tsunamis, volcanoes, landslides, and avalanches) of rapid changes on the surface.
- [3] SF1.1-SF3.1 The student demonstrates an understanding of the dynamic relationships among scientific, cultural, social, and personal perspectives by exploring local or traditional stories that explain a natural event.
- [4] SF1.1-SF3.1 The student demonstrates an understanding of the dynamic relationships among scientific, cultural, social, and personal perspectives by connecting observations of nature to a local or traditional story that explains a natural event (e.g., animal adaptation, weather, rapid changes to Earth's surface).

### *Math*

- [K] G-3 The student demonstrates an understanding of geometric relationships by identifying triangle, circle, rectangle, and square (M5.1.1)
- [1-2] G-3 The student demonstrates an understanding of geometric relationships by relating real-world examples (e.g., a door is shaped like a rectangle) to the ideas and concepts of geometry (M5.1.2)
- [3] G-2 The student demonstrates an understanding of geometric relationships by using the attributes and properties of plane figures to [model L], identify, compare, or describe plane figures (circles, rectangles, squares, and triangles) [and solid figures (cubes, cylinders, or spheres) L] (M5.1.1 & M5.1.2)
- [4] G-2 The student demonstrates an understanding of geometric relationships by using the attributes and properties of solid figures (edges, vertices, or the number or shape of faces) to [model L], identify, compare, or describe solid figures (cubes, cylinders, rectangular prisms, or spheres) (e.g., cans, dice, boxes, balls) (M5.2.2)

### *Writing*

- [K] 1.1.2 The student writes about a topic by dictating or writing words, phrases, or sentences related to a single topic.
- [1] 1.1.2 The student writes about a topic by writing about a single topic using drawings and a minimum of three complete sentences.
- [2] 1.1.2 The student writes about a topic by writing and organizing thoughts into a topic sentence and two supporting sentences.
- [3] 1.1.2 The student writes about a topic by writing a paragraph on a single topic with two or more supporting details.

- [4] 2.1.1 The student writes about a topic by writing a paragraph that maintains a focused idea and includes details that support the main idea.

## Objectives:

The student will:

- explain the significance of monuments in hazard mitigation;
- design a monument that addresses local natural hazards; and
- describe monument designs using terms for plane figures (grades K-3) and solid figures (grades 3-4).

## Materials:

- Coloring and drawing supplies (colored pencils, crayons, markers, etc.)
- Fredericks, A. D., & Yee, T. (2007). *The tsunami quilt: Grandfather's story*. Tales of young Americans series. Chelsea, Mich: Sleeping Bear Press.
- Blocks
- Clay or other modeling compound
- STUDENT WORKSHEET: "My Monument Design"
- VISUAL AID: "Monuments"
- VISUAL AID: "Natural Hazards"

## Whole Picture:

Natural hazards that affect Alaska include earthquakes, landslides (slope failure), volcanic activity, flooding, severe storms, wildfire and erosion. Natural hazards are natural events that threaten lives and property.

Monuments are a teaching tool that can be used to help mitigate disaster by reminding and teaching people about past disasters and the need for preparedness. The Tsunami Quilt is centered around Hawaii's Laupahoehoe monument, which commemorates the children and teachers who lost their lives in the 1946 tsunami that was generated in the Aleutian Islands on April 1, 1946. Other monuments used in this lesson include:

**Waiakea Time Clock:** The town clock of Waiakea, a Hilo suburb, stopped at 1:04 a.m. when the biggest wave of the 1960 Chilean tsunami struck Hawai'i. The clock, still showing that time, now stands as a monument to the 1960 tsunami. (Atwater, 1999)

**Earthquake Park in Anchorage:** Anchorage endured the most property damage in the Good Friday Earthquake that struck Alaska on March 27, 1964. This powerful earthquake (magnitude 9.2) damaged or destroyed approximately 30 blocks of homes and commercial buildings. Landslides, triggered by the earthquake also caused much damage in Anchorage. The largest and most devastating landslide happened in Turnagain Heights and destroyed 75 homes. Earthquake Park commemorates the tragic event. It is a system of trails with interpretive signs and a monument.

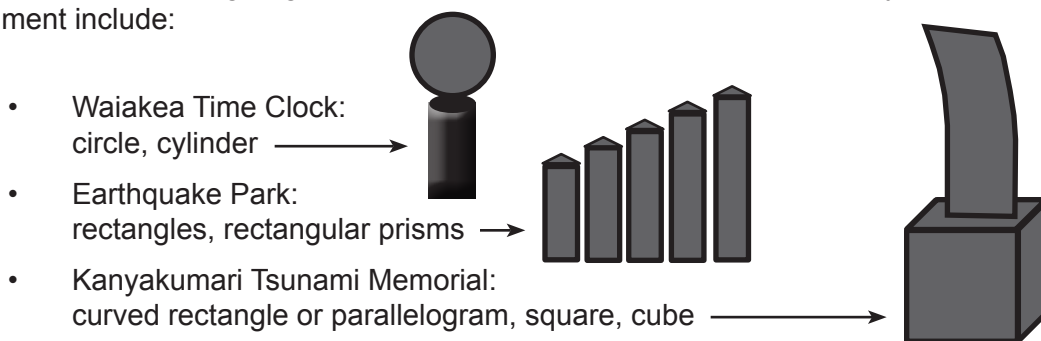
**Tsunami Memorial at Kanyakumari:** Kanyakumari is the southern most district in India. In the Indian Ocean Tsunami that occurred on December 26, 2004, many people died in this region and the Kanyakumari Tsunami Memorial stands to remember them and as a reminder of the ocean's power.

## Activity Preparation:

Determine which natural hazards present a danger to your community along with any associated stories or information.

## Activity Procedure:

1. Write the word “monument” on the board and ask students if they have heard of that word and if they know what a monument is. Explain that students will listen to a story about an important monument. Tell students that they will need to listen carefully so that they are able to tell what is so important about this monument.
2. Read the book *The Tsunami Quilt* to the class. Discuss the story and talk about the importance of the Laupahoehoe monument.
3. Display the VISUAL AID: “Monuments” and describe each example using the information found in the Whole Picture section.
4. After each monument is examined, go back through them to look for shapes used in the design. Possible vocabulary include (plane figures) circle, triangle, rectangle, square, rhombus, trapezoid, parallelogram, quadrilateral, pentagon, hexagon; (solid figures) sphere, cylinder, cone, square pyramid, cube, triangular prism, rectangular prism. Write the terms on the board that are most important for your students according to grade level expectations. Some terms that may be associated with each monument include:



5. Explain what natural hazards are, and display VISUAL AID: “Natural Hazards.” Point out hazards that present a danger to your community. Share any associated stories or information.
6. Tell students to imagine they were asked by the community to design a monument to help people in your community to be safe from natural hazards. Allow students to play with blocks, clay or other modeling compound to help with shapes and design of their monuments. Distribute STUDENT WORKSHEET: “My Monument Design” and tell students to identify the natural hazard, draw their monument, and include a written explanation as appropriate for their grade level. Explain that they will be asked to share their designs with the class and to point out any figures used in their monuments.
7. After students have completed STUDENT WORKSHEET: “My Monument Design,” ask students to share their designs with the whole class. Guide students in pointing out any figures (plane or solid) used in their monument.

## Answers:

*Answers will vary but monuments should depict education of a local natural hazard and student explanations should include use of at least two plane and/or solid figures in the design of the monument.*

## Lesson Information Sources:

Atwater, B. F. (1999). *Surviving a tsunami—lessons from Chile, Hawaii, and Japan*. Reston, Va: U.S. Dept. of the Interior, U.S. Geological Survey.

Fredericks, A. D., & Yee, T. (2007). *The tsunami quilt: Grandfather’s story*. Tales of young Americans series. Chelsea, Mich: Sleeping Bear Press.

USGS. Earthquake Hazards Program: Historic United States Earthquakes. Retrieved August 14, 2009. URL: <http://earthquake.usgs.gov/regional/states/historical.php>

Name: \_\_\_\_\_

# My Monument Design

## Student Worksheet



My monument will teach people about this natural hazard:

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I used these shapes: \_\_\_\_\_