

Making a Salt Dough Map of Arizona

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Grade Level 3-5
Duration 2 class periods

National Standards

GEOGRAPHY

Element 1: The World in Spatial Terms

1. How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information
 2. How to use mental maps (a person's internalized picture of a part of Earth's surface) to organize information about people places, and environments in a spatial context
 3. How to analyze the spatial organization of people, places, and environments on Earth's surface
- #### Element 2: Places and Regions
4. The physical and human characteristics of places.

AZ Standards

ELA

Reading

Integration of Knowledge and Ideas

3.RI.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

Writing

Production and Distribution of Writing

3.W.4 With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.

MATHEMATICS

Number and Operations— Fractions

- 4.NF.B.3 Understand a fraction a/b with $a > 1$ as a sum of fractions c . Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
- 5.NR.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators by using a variety of representations, equations, and visual models to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers (e.g. recognize an incorrect result $2/5 + 1/2 = 3/7$, by observing that $3/7 < 1/2$).

Arizona Social Science Standards

GEOGRAPHY

The use of geographic representations and tools helps individuals understand their world.

3.G1.1 Use and construct maps and graphs to represent changes in Arizona over time.

Key concepts include but are not limited to locating physical features including the Grand Canyon, Mogollon Rim, Colorado River, Salt River, Gila River Key concepts include but are not limited to locating human features including major cities, counties, Hoover Dam, Roosevelt Dam, and state capital Key concepts include but are not limited to distinct physical and cultural characteristics of Arizona including landforms, the 5C's, climate zones, elevations, plants, animals, Arizona's 22 Indian Nations, diverse ethnic, racial, and religious cultures

4.G1.1 Use and construct maps and graphs to represent changes in the Americas over time.

Key concepts include but are not limited to human and physical features of the Americas, trade and exploration routes, the location of civilizations and societies in the Americas including indigenous peoples, and settlement patterns including the development of the Southern, Middle, and New England Colonies

5.G1.1 Use and construct maps and graphs to represent changes in the United States.

Key concepts include but are not limited to physical and human features of the United States, the regions of the United States and their characteristics, geographic location of major events, the growth of the United States through territorial expansion, demographic changes, and the states and their capitals

Overview

Maps show location and direction. A map that shows the shape or relief of the land is called a topographic

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map. A topographic map can help students visualize their state.

Purpose

In this lesson, students will gain a better understanding of the 3 regions of Arizona (mountain, plateau, and desert) by using a 3 to 1 ratio to build a 3D map of Arizona.

Materials

- 3 D relief map of Arizona
<https://geoalliance.asu.edu/sites/default/files/maps/ArizonaRelief.gif>
- Flour, salt, water
- Paper cups or containers
- Tablespoons
- Popsicle sticks
- Arizona's Topography and Rivers map
<https://geoalliance.asu.edu/sites/default/files/maps/AZTOPO.PDF>
- Landform Regions of Arizona map (unlabeled)
https://geoalliance.asu.edu/sites/default/files/maps/AZLNDFRM_blank.pdf
- Landform Regions of Arizona map (labeled)
<https://geoalliance.asu.edu/sites/default/files/maps/AZLNDFRM.pdf>
- Tempera Paints: orange, brown, yellow
- Small brushes or cotton swabs
- Arizona Regions: Salt Dough Maps Rubric (3rd grade)
- Arizona Regions: Salt Dough Maps Assessment and Answer Key (4th and 5th grade)
- Newspaper to cover desks
- Flour – Salt – Water: Salt Dough Recipe

Objectives

The student will be able to:

1. Identify the 3 regions of Arizona on a map.
2. Practice measuring fractional parts then adding and subtracting. (4th and 5th grade)
3. Gain information from a map.

Procedures

Prior knowledge: Students should have knowledge of landforms.

1. Project the relief map of Arizona.
<https://geoalliance.asu.edu/sites/default/files/maps/ArizonaRelief.gif>
2. Ask what the bumps mean on the map. What do the colors represent? Have students compare the relief map to Arizona's Landforms and

Rivers map. Then have students compare the Landforms and Rivers map to the Landform Regions of Arizona map and discuss the similarities and differences. Elicit the three regions of Arizona.

3. Explain that they are going to make their own relief map. They will mix their own salt dough and apply it to a paper map. Then they will identify the plateau, mountain, and desert regions.
4. Distribute the unlabeled version of the Landforms of Arizona map and the Flour – Salt – Water: Salt Dough Recipe to each group or each student. Each group/student needs a small cup or container. Using the tablespoon, they will put 3 tablespoons of salt to 1 tablespoon of flour and mix well with the popsicle stick. Caution students to add water a little at a time depending on what landform is being made. Note that 3 out of the 4 tablespoons (3/4) and (1/4) equal one whole mix (In the interest of time, teacher could demonstrate a class batch using a cup of flour to 3 cups of salt).
5. Create the mountains first. Add just enough water to moisten salt dough. Apply to the paper and form peaks.
6. For the plateau, add a little more water. The plateau region should be high in elevation but flat.
7. Add water to make the salt dough runny. The desert will simply be a film on the paper.
8. Allow map to dry overnight.
9. Paint the regions using brown for mountains, orange for plateau, and yellow for desert. Have students follow the rest of the instructions on the Flour – Salt – Water: Salt Dough Recipe sheet.
10. Fourth and fifth grade students can complete the Arizona Regions: Salt Dough Maps Assessment.

Assessment

Geography and ELA

The final project will be measured using the Arizona Regions: Salt Dough Maps Rubric. A score of 3 or higher is considered mastery.

Mathematics

Arizona Regions: Salt Dough Maps Assessment can be used to assess mastery of fractions. Mastery is considered a score of 80% or higher on the assessment.