

Popcorn Population

Author	Karen Guerrero
Grade Level	3
Duration	2 class periods

National Standards

GEOGRAPHY

Element 1: The World in Spatial Terms

2. How to use mental maps to organize information about people, places, and environments in a spatial context

Element 4: Human Systems

10. The characteristics, distribution and complexity of Earth's cultural mosaics.

Element 6: The Uses of Geography

17. How to apply geography to interpret the past

18. How to apply geography to interpret the present and plan for the future

AZ Standards

MATHEMATICS

Measurement and Data

3.MD.B.3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories.

Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.

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.

Global interconnections and spatial patterns are a necessary part of geographical reasoning.

3.G4.1 Describe how Arizona has changed over time.

HISTORY

Economic, political, and religious ideas and institutions have influenced history and continue to shape the modern world.

3.H3.2 Use primary and secondary sources to analyze the changes that have taken place in Arizona which could include the use of current events.

Overview

Arizona's population has grown from 204,354 in 1910 to almost 7 million in 2010. Students will explore and speculate on the growth of Arizona's population over the past 100 years. They then will sequence the data from the US Census Bureau and eventually gather data to create a picture graph based on a class activity.

Purpose

In this lesson students will learn about Arizona's growth in population over the past 100 years. They then will collect and graph data based on information gathered.

Materials

- US Political Map
- Arizona Census Data found at: https://en.wikipedia.org/wiki/Demographics_of_Arizona
- Timeline Pieces

- Arizona Population Popcorn worksheet
- Popcorn Picture Graph
- (Optional) Arizona Population Popcorn Poster (enlarged)
- Popcorn Piece for Self-Portrait
- Markers, crayons or colored pencils
- 3 different types (kettle, buttered, low fat, etc) of popcorn
- String or yarn or masking tape

Objectives

The student will be able to:

1. Create a timeline to sequence historical data.
2. Gather, organize, and interpret data.
3. Describe how Arizona has changed in population from statehood to now.

Procedures

Prior to the lesson: Cut out the Popcorn Timeline Pieces. Open up the Census data ahead of time for viewing.

Popcorn Population: Explore Arizona's Population

SESSION ONE

1. Introduce the lesson by explaining that every 10 years, the United States Government will count everyone living in America. This practice started over 200 years ago and the next/last census will be/was in 2020. When we refer to this number of people living in the U.S., we call it our U.S. population. Ask students whether they think Arizona's population is more than or less than what it was 100 years ago. Have students explain why they think so.
2. Project the census figures for 1910 (about the time AZ became a state) and the latest figures. https://en.wikipedia.org/wiki/Demographics_of_Arizona
3. After reviewing the online data, distribute the Timeline Pieces have students in pairs or groups put the popcorn population pieces into a timeline (using a string or piece of tape for the timeline). Have them check their timeline with the online site. Then distribute the Arizona Population Popcorn worksheet and have the students visualize the numbers in a graph. Have students add the population numbers into the clouds at the top of each bar corresponding to the year.
4. Distribute one Popcorn Piece for Self-Portrait to each student and tell them that they will be collecting data on the classroom population tomorrow. They will need to draw a picture of themselves on their Popcorn Piece for Self-Portrait as homework.

SESSION TWO

Prior to the lesson: Pop the 3 kinds/colors of popcorn for data collection activity. Create the large popcorn population chart on the wall for review.

5. (Optional beginning to Lesson) Look at the Arizona Population Popcorn Poster. Have students comment on what they see and why they think Arizona's population grew so much.
6. Explain that today they will be collecting and charting data and then will display the data in a graph just like the population of Arizona was shown.
7. Explain that they will chart this data creating a picture graph. Create a vertical line on the white board. Underneath this line write **Like**. Then draw a second vertical line with words **Don't Like** underneath. Add a title to the top: **Popcorn**.
8. Have the students take out their Popcorn Piece for Self-Portrait from yesterday. Ask students how many of them like popcorn, collect their self portraits, and create a picture graph by affixing

- the self-portraits to the first vertical line. Ask how many do not like popcorn, collect their self-portraits, and affix to the second vertical line.
9. Now add **Number of Students** and numerals to the left of the bar graph (as single numbers up to the maximum number in a category or by 2's or 5's depending on grade level).
 10. Ask students a series of questions:
 - How many students like popcorn?
 - How many students don't like popcorn?
 - Are there more of less students who like popcorn?
 - If we add all the responses together, how many people gave a response?
 - How many more people like popcorn than don't like popcorn?
 11. Take the self-portraits off the board. Repeat the activity with new labels. Title the graph: **Class Population**. The three vertical lines will be: **Born in Arizona, Born in Another State, and Born in Another Country**.
 12. Use the self-portrait pieces from the previous session to create a picture graph of the class. Again ask problem solving questions like before.
 13. Pass out a small amount of 3 different types of popcorn to each group. Give the class a chance to think of names for the vertical and horizontal axes as well as the title. This time instead of using the self-portraits, have the groups tally their preference in regards to the 3 varieties of popcorn using scrap pieces of paper. As they finish their snack, have students call out the data to create a class tally sheet on the board.
 14. Have students use their Popcorn Picture Graph to graph the data.

Assessment

Mathematics and Social Science

The Arizona Population Popcorn worksheet and the timeline crated can be graded for accuracy and completeness. Mastery will be considered a score of 80% or higher.

The Popcorn Picture Graph can be graded in the following way:

- Title (5 pts)
- Accurate data (10 pts)
- Labels for both axes (10 pts)
- Numerals on Y axis (5 pts)

Mastery will be considered a score of 80% or higher.

Extensions

Popcorn Population: Explore Arizona's Population

Students can continue to use their self-portrait popcorn pieces to graph new data on other preferences (favorite color, places they've been, etc)

Students can conduct another data collection activity using another food/drink of choice during snack time.

Wikipedia (fastest way to get state population figures)

https://en.wikipedia.org/wiki/Demographics_of_Arizona

U.S. Census <https://www.census.gov/>

Sources