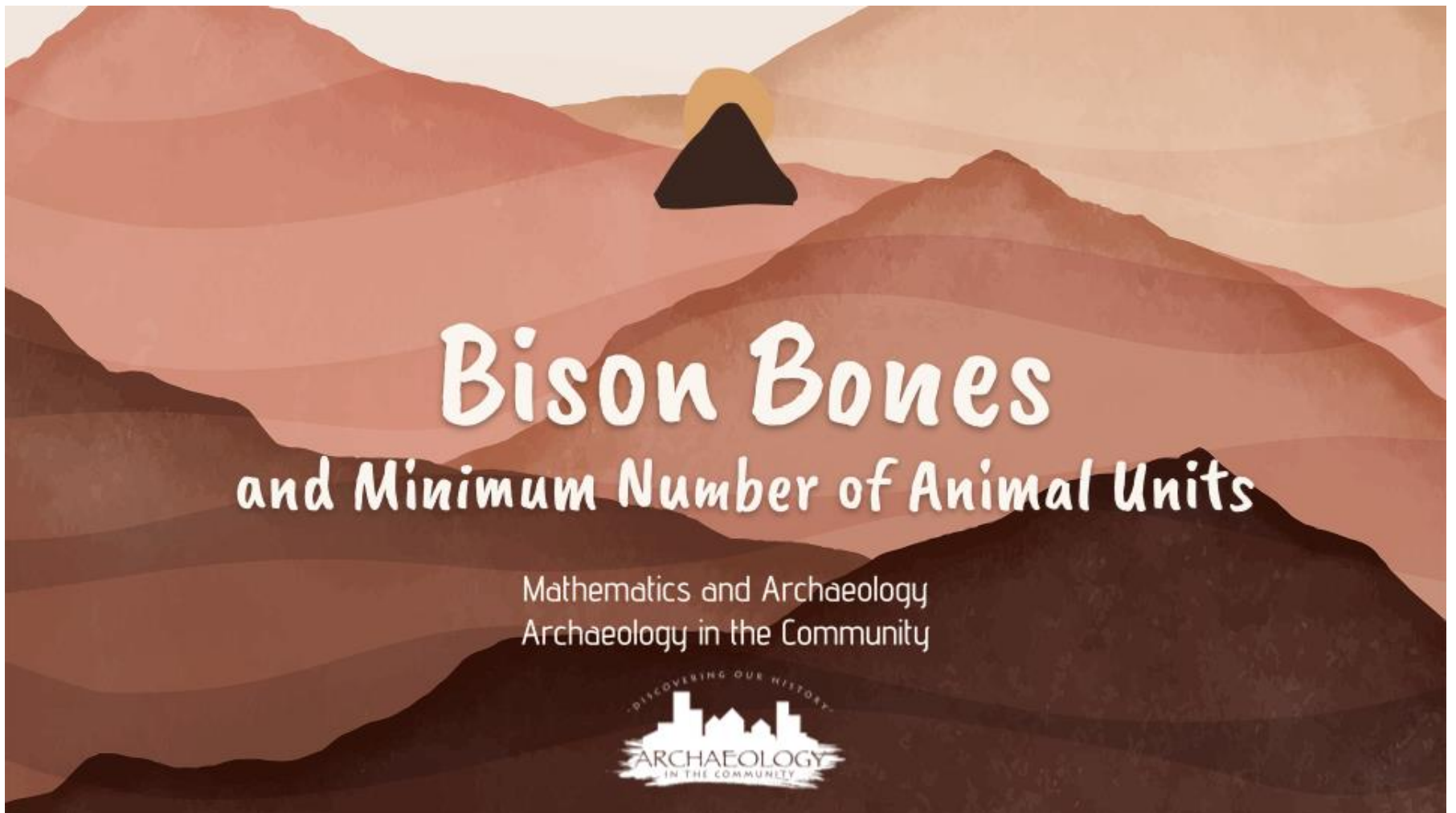


Grade 7

Math in Archaeology





Standards Alignments:

Common Core Standards for Mathematical Practice:

CCSS.MATH.CONTENT.7.RP.A.2

Recognize and represent proportional relationships between quantities.

- Identify proportional relationships from tables (7-N.7)

CCSS.MATH.CONTENT.7.RP.A.2.B

Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

- Find the constant of proportionality from a table (7-N.1)

Objectives:

Students will be able to connect their understanding of Bison Bones and their percentage to the uses of Bison by the Folsom people.

Students will be able to determine the proportionality of the Minimum Number of Animal Units (MAU), using the percentage formula.

Materials:

- [Bison Bones Presentation Slides](#)
- Bison Bones and Minimum Number of Animal Units worksheet
- Pencils
- Calculators (optional)

Lesson Timing: about 1 hour total

1. 10-minute introduction of concepts:

- Unpack objectives with students and then ask them their initial thoughts on the content questions.
- What questions are we setting out to answer?
 - *Who used bison and what parts of the animal did they use?*
 - *Why is their hunting and use of bison important?*
 - *What is the MAU and how is it valuable to archaeologists?*
- Students can record their initial thoughts on the corresponding worksheet.

2. 5-minute background explanation:

- Students read about the Folsom people and their relationship to bison. After having students read, pose the prior questions to discuss in partners or the whole group.
 - *Who used bison and what parts of the animal did they use?*
 - *Why is their hunting and use of bison important?*
 - *What is the MAU and how is it valuable to archaeologists?*
- Pose the question “What are some ways people would use bison other than food?”
- Potential responses:
 - For clothing
 - As tools or weapons
 - To help create homes/shelter
- Discuss the tools created by the Folsom people:
 - Awls: Created out of bison bones, these tools are small and pointed, they are used for piercing holes especially in leather.
 - Scrapers: Used to create projectile points by scraping away layers of stone.
 - Hand hoes: A farming tool.

3. 5 minutes to notice and wonder:

- Allow students to examine the bison’s skeleton and share what they see.
- Then move to the single bison count and ask students what they notice about the bones on the chart.
 - Why are these specific bones on the chart?
 - What might they have been used for?

4. 25 minutes for MAU explanation and problem solving:

- Use slides to explain what MAU is, ask students about the numerical relationships they predict they will see through the series of equations.
- Students should follow along and complete the corresponding problems on their packet.

5. 5 minutes for final questions and wrap-up:

- Finally, using their mathematical solutions, discuss the question: *What does this tell us about the people killing bison?*
- Possible responses:

- It tells us about the parts of the bison they potentially discarded without using them.
 - It tells us which parts they could have potentially used for food (then discarded bones)
- Students can write down answers independently, then discuss as a class or in small groups.
- Then the group can return to the originally questions posed and discuss what they learned and how they can better answer them now.

Name: _____



Bison Bones and Minimum Number of Animal Units

1. Record your predictions to these initial questions:

Who used bison and what parts of the animal did they use?

Why is their hunting and use of bison important?

What is the Minimum Number of Animal Units (MAU) and how is it valuable to archaeologists?

2. Case Study:

Archaeologists excavate a site and find bison bones. The archaeologists find what they think are 10 bison. The highest MAU is 10. There are 5 scapula, 240 ribs, 20 patella, and 20 humerus bones recovered. What is the MAU for each type of bone?

Single Bison Bone Count	
28	Ribs
2	Scapula
2	Patella
2	Humerus

a. Divide the number of bones excavated by the number of bones in the whole single animal:

Scapula: _____

Ribs: _____

Patella: _____

Humerus: _____

b. Divide the numbers you calculated by the highest MAU to obtain a percentage.

Highest MAU: _____

Scapula: _____

Ribs: _____

Patella: _____

Humerus: _____

3. What does this tell us about the people killing the bison?

4. Return to the initial questions. What do you know now?

Who used bison and what parts of the animal did they use?

Why is their hunting and use of bison important?

What is the Minimum Number of Animal Units (MAU) and how is it valuable to archaeologists?