ARCHAEOLOGY

CSI:

CULTURAL SCENE INVESTIGATION

5TH GRADE CURRICULUM







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Lesson Plans to Incorporate Archaeology into the 5th grade Curriculum in the Southwest Michigan Public Schools

(aka Archaeology CSI, Cultural Scene Investigation)











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Masters' Internship Anthropology
October, 2016; Revised January 2021

Acknowledgements

First, I would like to thank the administration, Mrs. Teri Peters, Climax-Scotts Elementary School Principal, Mr. Doug Newington, Superintendent, and a special thank you to Mrs. Sarah Paige-Gruber for allowing me to incorporate archaeology into the 5th grade classrooms last Fall at Climax-Scotts Community Schools. I realize that it was out of the ordinary and took time from your planned lessons and for this I am truly thankful. I can attest that Climax-Scotts have a fantastic group of teachers that want to provide their students with the best possible education and are willing to look outside the box to achieve that. Thank you to all of the 5th grade students in her classroom and Mr. Jim Verdon's classroom that were patient, and full of enthusiasm while we worked our way through the lessons.

A special thank you to my professor, Dr. Michael Nassaney, who has always encouraged me for one more rewrite, let's revise this and try it again. While frustrating at times, he wanted to make sure I did the best job possible and his support and willingness to work with an older student that wasn't a full-time student was extremely helpful and I couldn't have come this far without his expertise and encouragement. My other committee members Elspeth Inglish, who has also been extremely encouraging and sees the value in what I'm doing, which makes it all worthwhile. Dr. LouAnn Wurst, while no longer at WMU has also been a source of encouragement throughout the last couple years.

The Fort St. Joseph Archaeological group from the summer of 2012 and all of the Anthropology graduate students that I have known over the last several years will forever be in my heart, as they are one of the best sources of encouragement and pats on the back just when you needed it most. You are all awesome! I wish you all the best in your future endeavors.

Lowe's Toolkit for Education deserves a big thank you for believing in my project by funding it for $5,000. Thank you for giving back to the communities you are in and believing in the future of our students. Kalamazoo Institute of Arts donated pottery from their students which helped to take our dig to the next level, thank you. To all my friends and family who found bits and pieces of bones, old toys, and interesting things here and there for me to bury in the dirt. Who would have thought you'd find something just to have it buried again. ☺

And finally, to my wonderful family, and my husband, Mark who created all of the archaeology boxes, even when it was too hot out and put up with my revisions, stubbornness, and questions at all times. To my Mom, who I know wishes I would slow down, but has always been supportive and there just to talk when I needed her. And to my sons, Chris and Dan, who have supported me and let their crazy Mom do something out of the ordinary and joined me in digging dirt, loading the archaeology boxes, breaking perfectly good dishes (I just couldn't do it), and being there when I just needed a hug.

Thank you all, your support means more than you can ever know.

Sue Reichert

Introduction

In the Fall of 2015 I had the privilege of working with the Climax-Scotts Elementary School and teachers from the school that agreed to incorporate Archaeology into their 5th grade curriculum. Sarah Paige-Gruber, one of the 5th grade teachers who teaches Social Studies to both 5th grade classes, agreed to work with me to make this happen. The summer of 2015 I had attended a week-long course offered by Project Archaeology with their new program, Investigating Nutrition, in order to go back and teach this program in my area. Because this was targeted towards 6th grade, I was able to use many of the lessons and made some slight alternations for the fifth-grade class. Having some of the lessons from Project Archaeology may draw some additional interest from teachers and more of the Project Archaeology lessons can be done at different grade levels. Lessons 1, 3, and 4 are available from Project Archaeology, a link is included to their website for those lessons, which are included in Investigating Nutrition.

We began teaching the lessons in early October 2015 doing two lessons per week, one class at a time. At the time, we only had 7 lessons, but based on feedback, I developed additional lessons to put more focus on the tools, and paperwork that is involved in conducting archeological investigations. Positive and constructive feedback from the teachers and students was extremely helpful in finalizing these lessons. Because of the success of the lessons, we will once again take this to the fifth-grade class in the Fall of 2016 with the revised lessons, which are now included. Having additional adults available for the actual archaeological investigations we feel would be extremely helpful, if not essential, to provide the students with the best opportunities.

Included is a brief summary of how each lesson is structured. It includes a suggestion for a pre-lesson on archaeology and archaeologists which gives the instructors some tools that are available to all to conduct it. Each lesson has an objective, student learning objectives, duration recommended for each lesson, class size, a list of materials needed for both the student and the teacher. A list of Michigan standards, which includes Common Core and Next Generation Science Standards (NGSS), Grade Level Content Expectations (GLCE) are included for most lessons. A list of vocabulary words that each lesson covers and background information for the instructors is in each lesson. All worksheets that are needed by the students are included and follow each lesson. Recommended assessments are listed and there is a final series of assessments at the end of the lessons which include fill in the blank, and true and false formats.

We were awarded a grant from Lowe's, Inc. for $5,000 and were able to build four simulated archaeology excavation boxes and able to purchase supplies to do a simulated dig. A huge thank you to Lowe's for this opportunity through their Lowe's Toolkit for Education grants. Because of this, included are instructions for the design of the boxes and a list of materials. While it is understandable that not all schools will be able to build simulated archaeology boxes, variations can be made to create a different type of simulated dig. It may be on a small scale in totes, or laying out photos, or actual items on paper will work. Some of the excitement that was felt by the students was the ability to get their hands dirty. Any time you can incorporate a hands-on lesson, the students will remember it for a long time, which reinforces what they have learned.

I hope with the excitement of these lessons, we will be able to teach students at an early age the importance of our heritage and the value that our past has on our future. The hands of our heritage will be in their hands, and I hope that you find the following lessons helpful in educating your students.

Sue Reichert

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Lesson Plan Format*

Objective: The main idea that students will acquire.

Essential Question(s): Questions that guide the lesson.

Student Learning Objective(s): A list of concepts and skills that students will learn.

Student Outcome: A list of activities that students will engage in to learn the concepts and grasp the understandings.

Subjects: Subjects that are covered in this lesson, including common core, state and other important standards.

Duration: Amount of class time that this lesson takes. These are recommended times and may need to be adjusted by the teacher due to available time. Some lessons may be split into sections as necessary.

Recommended class size: Recommended class size for this lesson.

Materials: Items needed to complete the lesson. Items needed for the student; the entire class; and items needed by the teacher.

Vocabulary words: New words covered in this lesson.

Background Information/Lesson Structure/Setting the Stage: Information on the direction of the lesson, how to plan for it, and content to be shared with students.

Assessment: Method for students to demonstrate that they understand the concepts and what was covered in the lesson.

**Not every one of these steps will be included in each lesson.*

Teachers: Before you start, there is something you need to know!

Archaeological inquiry draws on both scientific and historical inquiry to gather data, analyze that data, and to build multiple evidence-based interpretations based on the data at hand. For students to have the ability to build robust interpretations, they need to understand and apply basic principles of inquiry, including observation, inference, classification, using evidence appropriately, and the role of context in archaeology. In some cases, students may also need to understand the principles of stratigraphic relationships to interpret changes in lifeways over time.

Lessons 1, 3, and 4 are from the curriculum, *Project Archaeology: Investigating Nutrition.* To prepare your students for their archaeological project, I/we highly recommend using *Project Archaeology: Investigating Nutrition* available from Project Archaeology at https://projectarchaeology.org/product/investigating-nutrition/.

Project Archaeology was founded in 1990 to provide educators with high-quality instructional materials for the classroom that do not require mock excavations. All Project Archaeology materials are inquiry-based and employ authentic archaeological and historical data to help students build deep conceptual understandings of science, history, and culture. While many equate archaeology with excavation and discovery, archaeology is far more. Excavation is merely one way to gather data; other forms include surface survey, analysis of existing collections in museums, and non-invasive technology such as Ground Penetrating Radar. Project Archaeology encourages teachers and other educators to use classroom-tested educational materials based on sound principles of scientific and historical inquiry. Mock excavations are not necessary to build conceptual understanding of archaeological inquiry, to teach for cultural understanding, and to instill responsibility for our shared cultural heritage. (Henderson and Levstik 2016; Moe 2017).

The presentation of material and views expressed in "Archaeology CSI: Cultural Scene Investigation, 5th Grade Curriculum" are those of the authors and do not reflect the views or opinions of Project Archaeology. The lessons are being used in a format that has not been tested or approved by Project Archaeology. Copyright of Project Archaeology materials are held by Montana State University and must be purchased at www.projectarchaeology.org.

Lesson 1: Observation, Inference, and Evidence. This lesson is available within *Project Archaeology, Investigating Nutrition* beginning on page 45. *Please refer to the information above*. This lesson is a great beginning for your students giving them the skills they need to use tools of scientific inquiry. They will understand the differences between observation, inference, and evidence. It gives them a great foundation for the skills they will need.

Lesson 2: What is Archaeology? This lesson helps to define and understand what archaeology is and is not. It uses pictures, and actual objects so that students can use their observation, inference, and evidence skills to work.

Lesson 3: Context. This lesson is available within *Project Archaeology, Investigating Nutrition* beginning on page 51. *Please refer to the information above*. This lesson uses a game and discussion to demonstrate the importance of artifacts for learning about past people and the importance of where you find them in relation to each other and how it is crucial.

Lesson 4: Stratigraphy and Cross-Dating. This lesson is available within *Project Archaeology, Investigating Nutrition* beginning on page 59. *Please refer to the information above*. Students will learn how archaeologists determine how old things are by using stratigraphy and chronology. This lesson contains multiple worksheets to aid in your discussions, along with examples on how start your discussion on stratigraphy.

Lesson 5: Survey and Gridding a Site. An important aspect of what archaeologists do is documentation. This lesson may be divided into multiple sessions and introduces the importance of mathematics. Students are introduced to grids and how to use a map and the Cartesian coordinate system to document their archaeological site. This lesson contains multiple worksheets to assist in teaching this lesson.

Lesson 6: Getting Ready for Our Dig, Measuring & Documenting. In getting ready for your actual (or simulated) dig this lesson helps to make sure the proper techniques are used for documenting and measuring. Once again, multiple worksheets and examples are available to assist you.

Lesson 7: Getting Ready for Our Dig, Proper Techniques. Bringing many of the previous lessons together, this lesson prepares the student to use the proper technique of how to use a trowel, screens, buckets, dustpans, brushes, etc. It also reviews the measuring techniques from Lesson 6.

Lesson 8: The Dig (using archaeology boxes). Using activities from previous lessons, the students will conduct a 'dig' on a 1-meter square box using proper procedures to dig, document, and make inferences on the box they are excavating. It includes a list of items that are recommended for your 'dig'. Construction of the 1-meter boxes follow, along with a list of artifacts that can be used, after Lesson 9.

Lesson 9: After the Dig. Present and Protect. Using artifacts and the documentation from their dig that the students conducted, the students are tasked with making observations and inferences about the people that were at their site. This lesson helps to bring everything together as they discuss and present their findings to others in their classroom.

While each of the lessons build upon the previous one, it is recommended to complete them in order. However, based on time available with your students, you may find it easier to break some of the lessons into multiple sessions. The goal of this curriculum is to introduce a new generation of students to archaeology using scientific and historical inquiry to gather, analyze, and interpret data that they have been given. The skills that they develop through this curriculum, such as observation, inference, classification, and using evidence appropriately, will be a skill that will continue to help them throughout many other aspects of their life.

Pre-Lesson: Setting up for your Lessons

Pre-Lesson:

In order to set up for Lesson 1 it is recommended that the teachers and students do some preliminary work and watch at least one video and/or read a short story, or book/magazine on archaeology. A list of suggested materials follows. A list of tools used by archaeologists is included for familiarization that will be helpful for upcoming worksheets and discussions.

Materials:

Student: Tools Used by an Archaeologist Worksheet.

A list of resources available to everyone is listed below.

Helpful websites:

http://archaeology.mrdonn.org Contains numerous sections on tools, grids, labeling, record sheets, what is the job of an archaeology, lots of questions answered.

www.nps.gov/Archeology/public/kids/index.htm A site created by the National Park Service.

www.nps.gov/mwac/junior/juniorRangersweb.pdf Good resource document from the Midwest Archeological Center, National Park Service.

www.nps.gov/kids/pdf/JuniorArcheologist.pdf A Junior Ranger Activity Book for ages 6 – 12.

https://projectarchaeology.org This is a great resource for teachers and three lessons (1, 3, and 4) can be purchased through Project Archaeology. Additional books and classes are also available to teachers.

Videos available on line:

http://www.focusdesign.org/apps/videos/videos/show/17586780-how-to-properly-use-shaker-screen An educational short film by the Michigan State University Archaeology Program on how to properly use the shaker screens, 1:13.

https://kids.usa.gov/watch-videos/jobs/archaeologist/index.shtml A short video that also talks briefly about tools, including screens, that an archaeologist uses, 2:48.

http://news.discovery.com/history/videos/cool-jobs-archaeologist.com A short video interviewing an archaeologist, good overall view, 2:23.

http://pbskids.org/video/?pid=t3Pgif5auAyv9bJJ71U0aN_KqHDeBPy A longer video that begins as a cartoon, SciGirls, but follows two girls that attend an archaeology camp with real people. A good video that shows differences between pictographs, petroglyphs, troweling, documentation, measuring, screening, washing, cleaning and coming up with conclusions, 25:55.

Pre-Lesson: Setting up for your Lessons

http://www.pbs.org/time-team/experience-archaeology/tools-trade/ Archaeologists explain about the trowel and how they use it; Culture of the Trowel. Also at this site is a list of tools that archaeologists can use, 2:59.

http://www.pbs.org/video/2365014677/ So You Want to be an Archaeologist? A short video on deciding to be an archaeologist, including attending a field school, 2:49.

https://www.youtube.com/watch?v=qMzpA5oCGNY A short video by National Geographic Kids Dig into Archaeology, 1:02.

Books/Magazines:

Archaeology for Kids. Uncovering the Mysteries of Our Past, 25 activities. Panchyk, Richard. Ages 9 and up. Chicago, Illinois: Chicago Review Press, Inc. ISBN-13 9781556523953, 2001.

Dig into History magazine, published 9 times a year. Each issue is theme-related with a special 10 to 12-page section that focuses on an archaeological discovery or topic related to the issue's theme. It complements the principles of Common Core and offers a great springboard for discussion, curriculum-related projects, and cross-disciplinary lesson plans. Past issues are available. There is also an online teacher's guide available at www.cricketmedia.com/teacher-resources.

Hands-On Archaeology. Real-Life Activities for Kids. Grades 4 - 10. White, John R. Waco, Texas: Prufrock Press, Inc. ISBN 9781593631628, 2005.

Inquiry-Based Learning. Using Everyday Objects. Hands-on instructional strategies that promote active learning in Grades 3 – 8. Alvarado, Amy Edmonds and Herr, Patricia R. Thousand Oaks, California: Corwin Press, Inc. ISBN-10: 0761946802, ISBN-13: 9780761946809, 2003.

https://projectarchaeology.org Books on Intrigue of the Past, Investigating Shelter and Investigating Nutrition, along with other selections, are good resources for teachers. There is a special section for teachers and Project Archaeology also hold classes throughout the year for educators and archaeologists. Project Archaeology, Montana State University is a joint program of the U.S. Department of the Interior, Bureau of Land Management and Montana State University.

Name: _____

Tools Used by an Archaeologist

Here are only some tools that might be used by an archaeologist:



Shovels are used to carefully scrape away larger sections of soil (dirt)

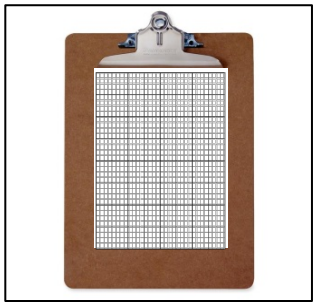


Trowels are used to carefully remove small amounts of soil (dirt)

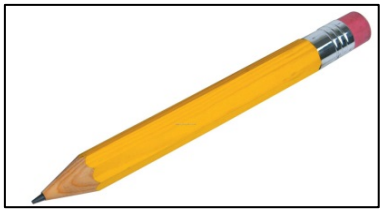


Measuring tools such as tape measures and rulers are used to document where an artifact or feature is found

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Lots of **Paperwork,** including grids, are used to document everything that is found



Pencils are used to help document everything



Paintbrushes are used to brush away small pieces of soil or debris from an artifact

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Dustpans can be used to move the dirt into the bucket to be screened, and the **broom** to carefully brush away dirt



Buckets are used to move the soil (dirt) to the screens



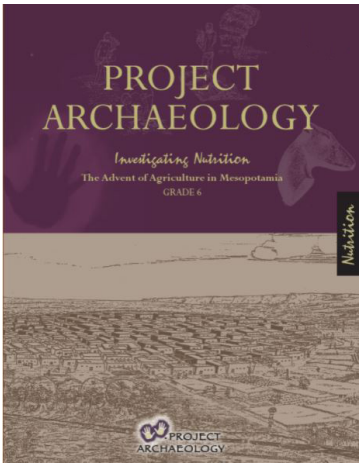
Screens are used to sift through **ALL** of the soil (dirt) to make sure no small pieces of artifacts or evidence are left behind

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Can you think of other tools that may be used? _____

Lesson 1 – Observation, Inference, and Evidence

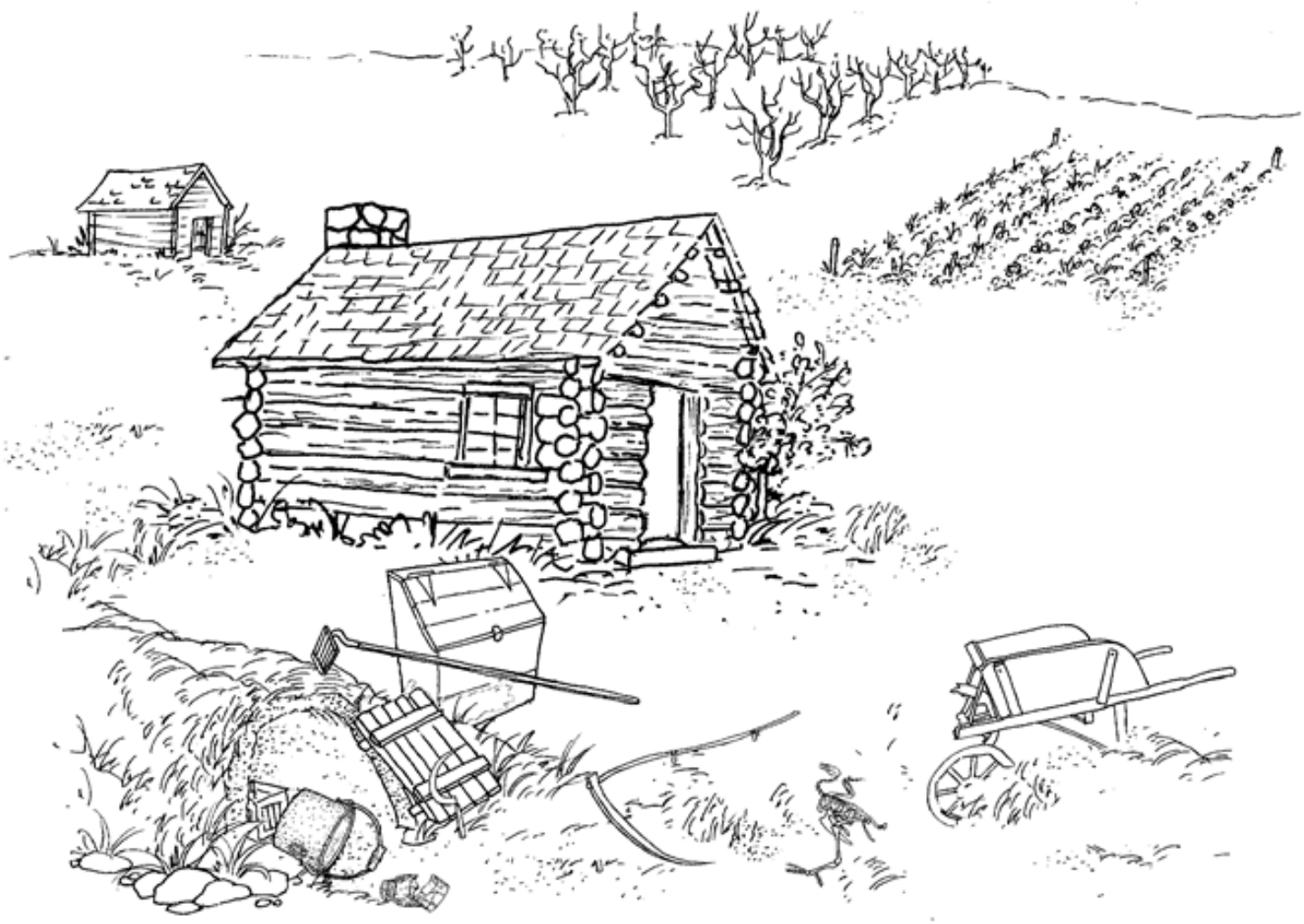
This lesson is available within *Project Archaeology, Investigating Nutrition* beginning on page 45. To teach this lesson you must purchase the curriculum at https://projectarchaeology.org/product/investigating-nutrition/.



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Investigating Nutrition

Observation, Inference, and Evidence Worksheet



*Reprinted with permission from Project Archaeology, Investigating Nutrition, The Advent of Agriculture in Mesopotamia, 2015, a joint program of the U.S. Department of the Interior, Bureau of Land Management and Montana State University.

Name: _____ Date: _____

Observation, Inference, and Evidence: Data Collection

In the chart below, list some of the objects that you see and make an observation and two inferences for each observation.

Object	Observation	Inference
trees	There are rows of trees behind the cabin.	The trees were a fruit orchard. The trees were a shelter belt.

1. As you observe the picture, what questions do you have about it, and about the people who may have lived there? Write three or more questions.

2. Think about what makes a good question. Choose your best question and write it below.

3. Answer your best question using the data chart above. What is your evidence?

*Reprinted with permission from Project Archaeology, Investigating Nutrition, The Advent of Agriculture in Mesopotamia, 2015, a joint program of the U.S. Department of the Interior, Bureau of Land Management and Montana State University.

Lesson 2 – What is Archaeology?

Objective: To define and understand what archaeology is and what an archaeologist does.

Student Learning Objectives:

-Students will be able to describe what topics an archaeologist would and would not study.
-Provide a written description of a modern object in a way that an archaeologist would describe an artifact.

Duration: 45 – 60 minutes (may be split into smaller sections)
Class Size: Any; groups of two to four

Materials Needed

Student:

- What is Archaeology Worksheet
- Mystery Object Worksheet

Teacher:

- ❑ 4–5 everyday objects that the students will examine (water bottle, coffee grinder, whisk, etc.)
- ❑ Pictures of different things studied by archaeologists (temples, rock images, dig sites, etc.)
- ❑ Pictures of things NOT studied by archaeologists (dinosaurs, animals, oceans, etc.)
- ❑ An empty soda can

Vocabulary Words:

- **Anthropology** – The study of humans, past and present to understand cultures across all of human history. Anthropology looks at knowledge from social and biological sciences as well as humanities and physical sciences.
- **Archaeology** – A method for studying past human cultures by analyzing material evidence through artifacts and sites.
- **Archaeologist** – A person who studies past human cultures through material remains.
- **Archaeological Site** – A place where human activity occurred and material objects were left behind.

Lesson structure (recommended):

Pass out *What is Archaeology?* worksheet and ask students to write down what they think archaeology is. Then ask them to circle those items that an archaeologist would study and place an "X" on those items that an archaeologist would not study.
What question would you like and try to answer using archaeology?
As an archaeologist, what would you look for to help answer your question?

Give them about 5 – 10 minutes to complete individually.

- Ask the students what objects an archaeologist would find if they were to look in their bedroom? (Give them an example to begin, "An archaeologist would find a lot of books in their bedroom.")

Lesson structure (recommended), continued:

- Tell the students that archaeology is one of many ways that scientists study humans. Explain why it is important to have multiple fields of anthropology, (*which is the study of humans and their cultures*). Briefly describe some other subfields of anthropology:
  - Linguistics (the study of language and the influence of language in social life)
  - Ethnology (Similarities/dissimilarities) / Cultural (workings of societies around the world)
  - Physical / Biological (long term development of the human variation; think Darwin)

- Describe what types of things archaeologists' study, discuss their worksheet.
- (Archaeologists do **NOT** study dinosaurs, paleontologists do.)
- Describe exactly what types of things archaeologists' study and introduce new vocabulary.
  - Objects and evidence of past human activities
  - Artifacts, features, plant/animal remains, organic material (aka ecofact), and sites.
- Describe things that an archaeologist would NOT study.
  - Dinosaurs, oceans, animals, etc.
- Emphasize to students that archaeology is **NOT** treasure hunting. Ask the class to come up with differences between archaeology and treasure hunting. Write answers on the board.
  - *Archaeology is a science and uses methodology, procedures, and has a code of ethics. Note keeping and protecting sites and artifacts is very important. Archaeologists want to share what they learn with others and work with diverse communities to learn about past human behaviors. It is extremely important that recording the context of finds is done.*
  - *Treasure hunting is done to gain money, **notes are not kept**, and the site/context is not protected. Treasure hunters care more about money than learning and rarely try to learn about past human behavior from their finds.*

- Discuss with students why archaeology is important. *It can shed light on past human behaviors, and is one way to learn about diverse cultures, many of whom did not leave written records.*

Now that the class has a better understanding of what archaeologists do, they will work in groups to describe some "mystery" objects in a way that an archaeologist would. "Now that you all know what an archaeologist studies, we are going to examine some objects that I've brought in".

First, as an example I have this object (hold up a soda can), it seems to be made of metal and there is writing on the outside of it. There is a small opening at the top with an oval piece near the opening. The writing and the cylinder are different colors, and there are some numbers written on it as well. The object is quite light, and it is empty. I think it may have been used to hold something, and may have been worn as a necklace by threading a string through the oval tab." Sit the students in groups and pass out the *Mystery Object worksheet* and object. Give students about 10-15 minutes to complete the activity, and then gather back as a group, collecting the items from each group.

Note: *You may come up with another object to use to start the students thinking other than a soda can, use your imagination and have fun with it. You know your students better than anyone and what would capture their attention.*

Lesson 2 – What is Archaeology?

Discussion

1. Once all groups have finished their worksheets and the class is back together, hold up each item that each group had and ask the group that studied that item what they noticed about it and what they think it is. After the group that studied it has given their answers, ask the rest of the class if they notice anything else about the item or know what it is. Let them know what it is, if they haven't already identified it.

2. Ask the students what they used to study the objects (sight, touch, sound, etc.). Ask what other ways the objects could have been studied (weight, measurements, etc.)

3. Ask the student what all of the items have in common and write responses on the board. If after students have had a chance to answer and nobody has stated that all of the objects were made by humans, put this response on the board and discuss that an archaeologist could study all of these things because they were all made by humans.

4. Discuss with the class how archaeologists are only able to learn about the past if archaeological sites are protected, and that if people do not protect sites it will be almost impossible to learn about past human behaviors using archaeology.

5. Ask students to think about the question they wrote on their first worksheet, (what question would they like to try and answer using archaeology). Explain how once archaeologists have a question that they want to answer, the next step in the archaeological process is to find a site that will help answer their question.

Assessment: Informal teacher observation, worksheets, and responses given during discussion will be used to determine if the learning objectives have been met.

Name: _____

What is Archaeology?

Look at the following pictures. Circle the picture if it is something that an Archaeologist would study. Put an **"X"** over the picture if it is something that an archaeologist would **NOT** study.













What question would you like to try and answer using archaeology about one of the items above?

What would you look for to help answer your question?

Use the back page if necessary.

Names: _____

Modern Mystery Object

(Adapted from the National Park Service Midwest Archaeological Center's Junior Ranger Artifact Analysis Worksheet)

Type of Artifact:
Describe the material that the artifact is made from: bone, pottery, metal, wood, leather, glass, paper, cardboard, cotton, plastic, other material:

Special Qualities of the Artifact:
Describe how the artifact looks and feels: color, shape, texture, size, weight, moveable parts, anything printed, stamped or written on it.

The Artifact's Uses:
What might it have been used for?

Who might have used it?

Where might it have been used?

When might it have been used?

What does the Artifact Tell us?

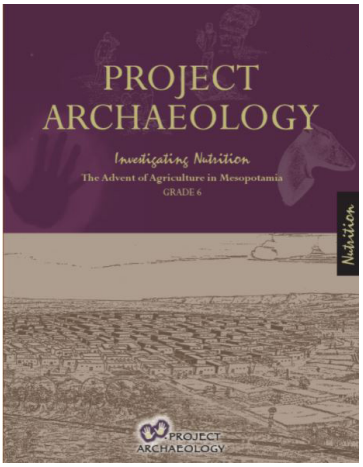
What does the artifact tell us about the technology of the time in which it was made and used?

What does the artifact tell us about the life and times of the people who made it and used it?

Sketch the Artifact Below:

Lesson 3 – Context

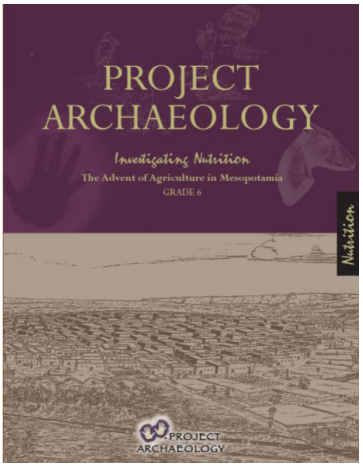
This lesson is available within *Project Archaeology, Investigating Nutrition* beginning on page 51. To teach this lesson you must purchase the curriculum at https://projectarchaeology.org/product/investigating-nutrition/.



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Lesson 4 – Stratigraphy and Cross-Dating

This lesson is available within *Project Archaeology, Investigating Nutrition* beginning on page 59. To teach this lesson you must purchase the curriculum at https://projectarchaeology.org/product/investigating-nutrition/.



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Lesson 4: Examples of Stratigraphy



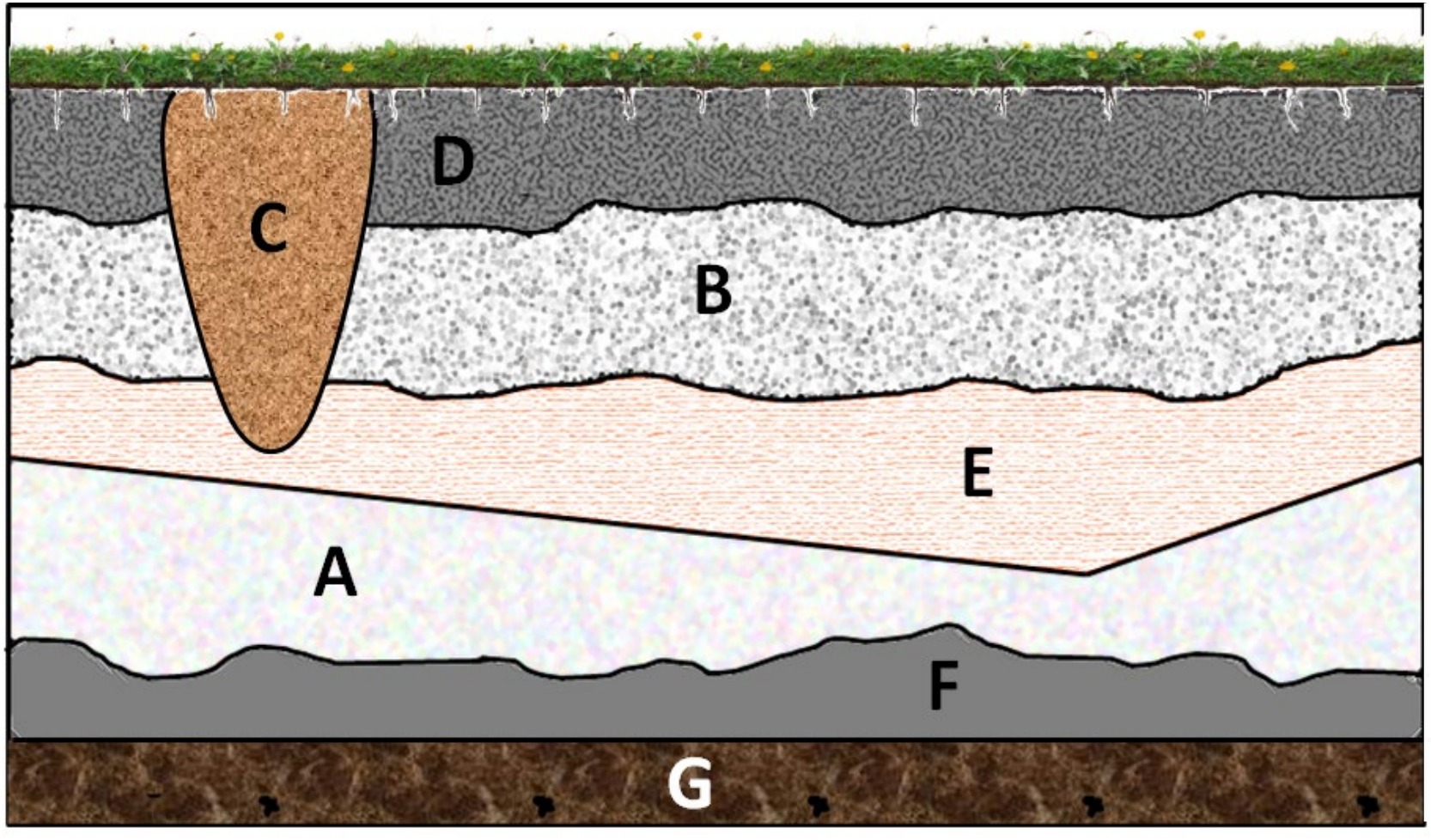


Stratigraphy Worksheet

Name: _____

List the stratigraphic layers from oldest to youngest:

_____ _____ _____ _____ _____ _____ _____



Name: _____

Site Near Climax-Scotts



Key

 tire

 pop can

 pottery

 mano & metate

 projectile point

 fire hearth

 pot sherd

 necklace

 basket

 rock

Lesson 4

Cross-dating

Name: _____

An archaeologist found these artifacts near your town. What is their approximate age?



1. _____



2. _____



3. _____



4. _____



5. _____

Lesson 5 – Survey and Gridding a Site

It may be necessary to split this lesson into multiple sessions so that students understand how to use the grids when recording the locations of the finds. Because of this, there are two procedures that can be followed depending on the level of experience of the students. If this lesson is done at the beginning of the year, graphs and grids are new, so beginning with Procedure 1 is recommended. If the students have experience, you may be able to skip to Procedure 2 without doing Procedure 1. However, for a complete understanding, which they will need when doing their simulated dig, doing both Procedures are recommended.

Student Learning Objective: In their study of gridding a site, students will use a map and the Cartesian coordinate system, to:

1. Establish a grid system over an archaeological site, labeling each grid square.

2. Determine the location of artifacts within each grid unit.

3. Construct a scientific inquiry concerning the location of artifacts on the site.

Student Outcome: Students will be able to place artifacts on a grid in the proper position, in preparation for the upcoming dig and understand the purpose and construct a scientific inquiry regarding the artifacts on the site.

Subjects: Mathematics, Language arts, Science
CCSS and NGSS: 5.GA.B3, 5.GA.1, 5.GA.2
Skills: Remember, understand, apply, analyze, evaluate
Understanding: Explanation, interpretation, application, self-knowledge

Duration: 30 – 60 minutes over multiple days
Class Size: Any; groups of four

Materials:
Students: Finding a Site Worksheet
Procedure 1:
- Beginning Grid Worksheets (blank graph and artifact sheet)
- Grid – Metric Scale Worksheets (blank graph and artifact sheet)
- Grid on a Level Sheet Worksheets (blank graph and artifact sheet)

Procedure 2:
- "The CS Site" Worksheet
- "The Grid Sheet"
- "Artifacts Location Record"
- Rulers for measurement

Lesson 5 – Survey and Gridding a Site

Materials: (continued)

Teacher: **Procedure 1:**

- ❑ On a slide, Beginning Grid Completed
- ❑ Grid – Metric Scale Completed
- ❑ Grid on a Level Sheet Completed

Procedure 2:

- ❑ On a slide, "The CS Site" and "The Grid Sheet" Worksheets

Vocabulary Words:

- **Datum**: something to use as a point of origin for measuring.
- **Site Datum**: an arbitrarily established point from which the entire site is measured and recorded.
- **Cartesian coordinate system**: two- or three-dimensional graph based on intersecting, perpendicular incremented lines or planes.
- **Flake**: a thin piece of stone removed from a nodule by striking it with a flaker made of bone, antler, or other stone. Flakes have sharp edges and could be used as cutting implements. Flakes were also further shaped into tools (e.g. arrowheads) or were left as waste by-products of flintknapping (arrowheads).
- **Grid Unit**: a specific spatial area on the Cartesian coordinate system, designated by the coordinate in one corner (usually the southwest corner).

Background Information:

1. Ask students what methods they use to look for things (jackets, homework, baseball, etc.)

2. Tell students that archaeologists usually have to look for the sites they want to study. Ask the students to recall the vocabulary covered in the first lesson and explain what an archaeological site is.

3. Describe different types of surveys archaeologists conduct and the pros and cons of each type. Tell them that regardless of the method they select to survey, archaeologists always take notes and use a process or pattern (science, not treasure hunting).
    A. Walking (pedestrian) survey
    B. Flying (aerial) survey

4. Pass out the "Find a Site" worksheet and have them complete the worksheets. After about 10 minutes, or when all students are done, quickly review the worksheet with the students.

Background Information: (continued)

5. What are some of the advantages and disadvantages of different types of surveys? (ie., flying surveys cover lots of ground but can only note large features, walking surveys can take time, but spot small items. Some sites in a jungle or desert may be impossible to walk to, or you can perhaps walk right by; however, aerial surveys allow you to spot changes in terrain and give you an idea where humans may have been at one time).

Once a site has been dug (or excavated); [or in the case of no depth to the site, the surface artifacts have been collected], it is gone forever, and it can never be replaced. Because sites are destroyed during the collection or excavation processes, archaeologists record them on paper to preserve the context of all the artifacts and structures. In the future, archaeologists can study a site if good notes and maps were made.

One way that archaeologists preserve context on paper is through the use of the rectangular grid, or Cartesian coordinate system. The first step in the excavation process is establishing a grid. A site datum is set at an arbitrarily chosen location and is designated as (0,0). Two perpendicular axes intersecting at the site datum are then established and a rectangular grid is superimposed over the entire site. Each square on the ground is marked with numbered stakes in the corners, so that each square has a unique "location" referred to by its coordinates. The coordinates indicate the distance of a given point north, south, east, or west from the site datum.

As an example, sites at Fort St. Joseph may be labeled as N22 W10 (22 meters north and 10 meters west of the datum point). So, this particular site, or unit, would be referred to as N22 W10.

Once the grid is established, all artifacts and structures are measured and recorded using the system. Before excavation actually begins all artifacts visible on the surface are collected and their locations on the grid are recorded. As the excavation proceeds, materials found under the surface are similarly recorded and collected. When the archaeologist returns to the laboratory, the maps and the data recorded in the field can be used to make inferences about past events and the lifeways of the site's inhabitants. The exact location of each artifact transported back to the lab is known – the object can be tied to its place in the site.

Being able to graph out locations of artifacts will be a critical tool for the students to use when digging and multiple lessons may be necessary to complete their understanding and mastery of the grids.

Lesson 5 – Survey and Gridding a Site

Procedure 1: Dependent upon the timing of the lessons, 5th grade students may not be familiar with grids yet. They may be familiar with grids with an X and Y axis and lines on the grid would be considered the degrees, therefore, intersecting lines (points) would represent a coordinate pair. It is recommended that students begin on a grid that is labeled for them, and then scaffold the lesson where everything is done at first and the teacher models the grid. Another lesson using a metric scale grid would be used next labeled in centimeters. The last grid exercise includes a grid similar to what they will be using on their dig. Students will have the option of filling in 5 centimeter points if they would find it helpful on their own.

Setting the Stage:

As archaeologists you have come across a site that has already been excavated and you need to document where the artifacts are located on a grid for that unit. Using the **"Beginning Grid"** blank graph provided they will look at the artifacts that were found and draw the artifacts on their graph using approximately the correct location. Direction coordinates of North, South, East, West and the Southwest Corner are also labeled. All archaeological units will be labeled by their southwest corner.

They will also be asked two questions:

1. Looking at the artifacts, what time period do you think this dig site represents?
   - _____ Now to 100 years ago (1900 – Current)
   - _____ 101 – 200 years ago (1700 – 1800's)
   - _____ More than 200 years ago? (Pre 1700's)

   These artifacts are quite new, and the correct answer would be *Now to 100 years ago*.

2. On the grid sheet; Looking at how these artifacts were found, what inferences can you make?

   You may decide to make the inferences as a class discussion. *Some potential inferences if they are struggling might be that this may have been a house that had several types of china and also had young children based on the toys that were found, perhaps boys. The one toy is quite recent and may have been dropped not too long ago.*

Next is another exercise using a more complicated grid using a metric scale which is labeled, **"Grid Metric Scale".** They will get another worksheet of artifacts and they are asked, once again, to graph out the location of the artifacts. They will also be asked the same two questions on these artifacts; what time period (*these are 101 – 200 years ago*); and what inferences can be made?

Some inferences could be there was a large fireplace in this home that may have been made with nails. There was also a girl that lived here based on the broken doll. What other inferences can be made?

Procedure 1: Setting the Stage: (continued)

The last exercise is for them to **"Grid on a Level Sheet"**, which is similar to what an archaeologist would use. This grid has more lines for greater accuracy, and all the coordinates are abbreviated and listed on the grid (NW, NE, SW, SE). They will be asked to graph out the artifacts presented to them, and the same two questions, what time period (*More than 200 years ago*) and to make inferences based on the artifacts found.

These three exercises should allow them to be quite comfortable in graphing out the location of artifacts on a grid and practice on making inferences based on what they have found.

Procedure 2:
Setting the Stage:

Have the students imagine they are a team of archaeologists who have found an archaeological site. Artifacts, including projectile points, pottery sherds, and stone flakes are scattered on the surface of the ground. They want to make a map of the site. How might they accurately record the location of the artifacts? Have the students brainstorm ideas.

When mapping out a large area, not just one unit as done in Procedure 1, but all of the units need to be placed on a grid so that accurate recording of data can be completed. This grid will be different as it contains the entire site. With that they will still use the southwest corner and each unit gets a coordinate such as (1,2); (2,2); (2,3), etc.

1. Project the map of the "CS Site" worksheet and explain this is the site they have found. Overlay a transparency grid matching the site datum points, to demonstrate that an archaeologist established a grid over the site to assist with accurate recording of data. Share background information about the importance of gridding a site for current and future study.

2. Distribute the "CS Site" worksheet to each team. Point out the site datum in the lower left corner and explain that this is the point from which the grid is established. The name of the site datum is (0,0).

3. STEP 3 and 4 IS OPTIONAL, you can use the grids already provided, however, they can create their own grid by using rulers, each team will establish a grid system using the scale 1" – 1 meter, starting from the tip of the datum (see "the Grid Sheet"). It is helpful to model this procedure on the overhead projector or using a Powerpoint presentation. As a reminder, their individual units are represented as one square on this grid system.

4. Label each point on the grid. The southwest corner of each unit becomes the reference (designation) for that unit. Example: (1,2); (2,2); (2,3). Each coordinate indicates the location east and north of the site datum.

Procedure 2: Setting the Stage: (continued)

5. Using the "Artifact Location Record" students will record the grid unit designation and count and name the artifacts in each grid unit.

6. Following the procedure of scientific inquiry ask:

   a. What do you notice about the distribution of the pot sherds? **(observation)**
   b. Why is there a concentration of pot sherds in part of the site? **(List some inferences)**
   c. Choose one inference and formulate a hypothesis from it. Describe how the hypothesis might be tested.

***Example**: There are a lot of pot sherds in one location. We might infer a pottery vessel broke here. If all of the sherds have similar attributes and fit together, then we could accept the hypothesis that a vessel broke in this location. What other reason could explain the concentration of sherds?*

Note: The students will not be able to actually test the hypothesis without access to the artifacts. This exercise is designed to have them think like archaeologists.

   d. Conduct a similar inquiry using the stone flakes or other artifacts.

Summarize the importance of gridding archaeological sites to assist with accurate recording and making inferences from data, now and in the future.

Assessment: Have students turn in their completed "Artifacts Location Record" for evaluation.

Optional: You can have the students precisely map artifacts within each grid unit. Measure the distance north and east of the grid unit's southwest corner to find the exact distance of each artifact from the site datum (0,0). Examples (2.1, 4.6) or (3.3, 8.8).

Procedure 1:
Lesson 5 Name: _____

Finding a Site

Identify what the best survey method (walking/pedestrian or flying/aerial) would be to locate the following sites:

1. A village in a desert: _____
2. Rock images: _____
3. A blacksmith's shop at a fort: _____
4. A group of temples: _____
5. Projectile points: _____

List six things that you could use to help you conduct an archaeological survey:

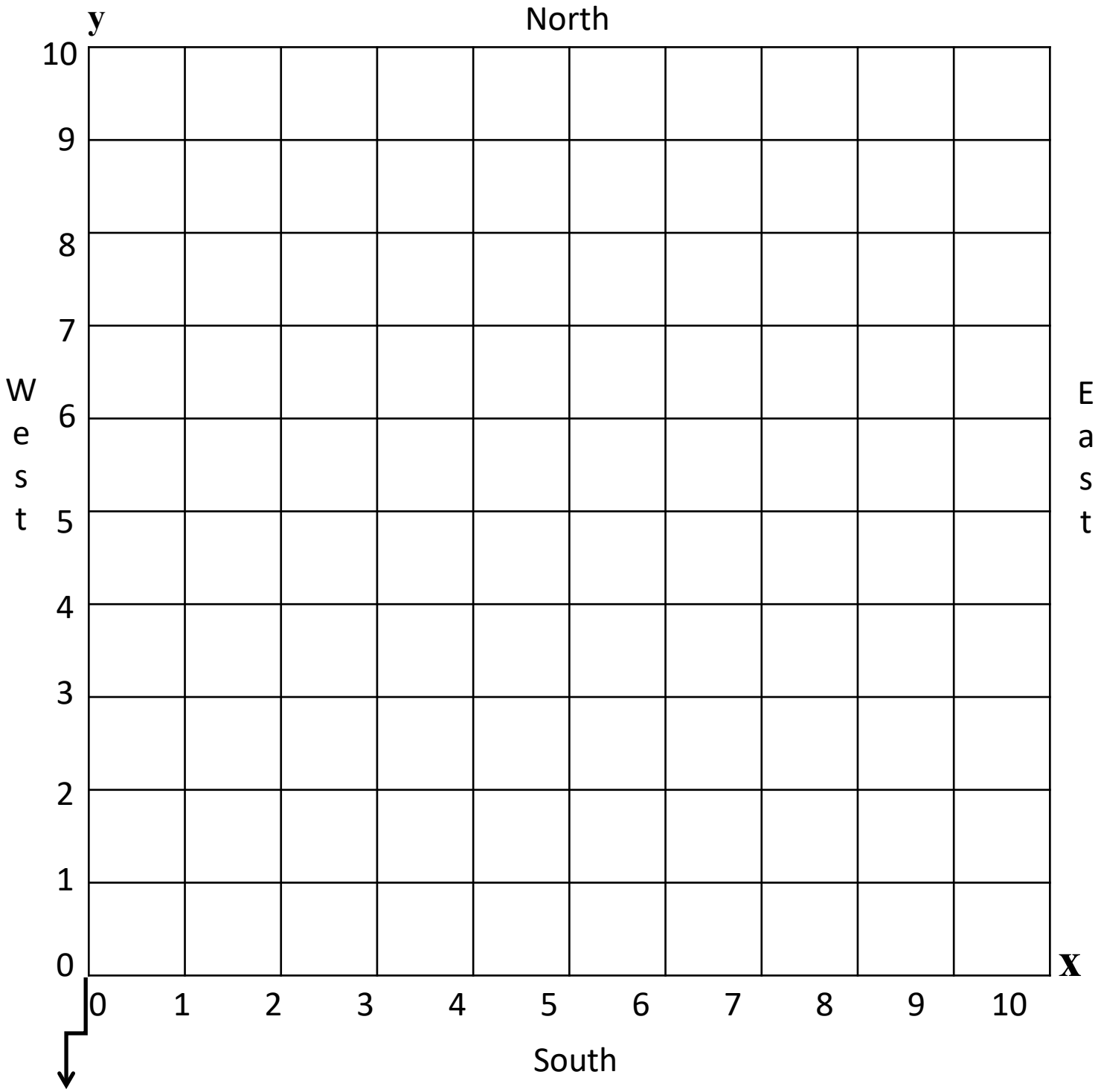
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

You have been asked to help a team of archaeologists find an ancient Maya city located deep in the Guatemalan jungle.

What survey method and tools would you use to help locate this site and why?

Procedure 1: Lesson 5 Beginning Grid

Name: _____



Looking at how these artifacts were found, what inferences can you make?

_____

_____

Procedure 1:

Lesson 5 Beginning Grid Name: _____

This what you uncovered at your dig site. Graph the items on your grid to document where the artifacts were found.

North

West

East

South

Southwest Corner











Looking at the artifacts, what time period do you think this dig site represents?

_____ Now to 100 years ago (1900 – Current)

_____ 101 – 200 years ago (1700 – 1800's)

_____ More than 200 years ago? (Pre 1700's)

Procedure 1:

Lesson 5 Beginning Grid Name: _____

This what you uncovered at your dig site. Graph the items on your grid to document where the artifacts were found.

North

West

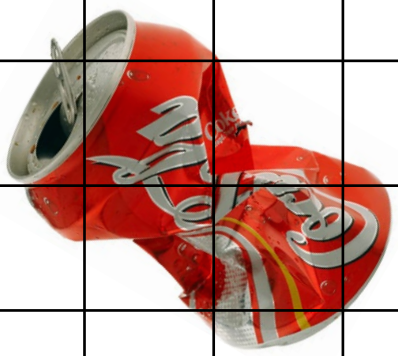
East

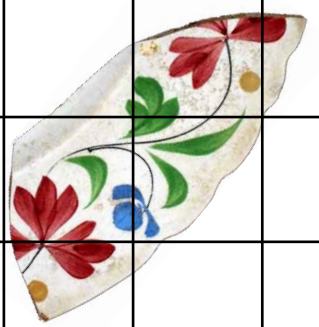
South

Southwest Corner











Looking at the artifacts, what time period do you think this dig site represents?

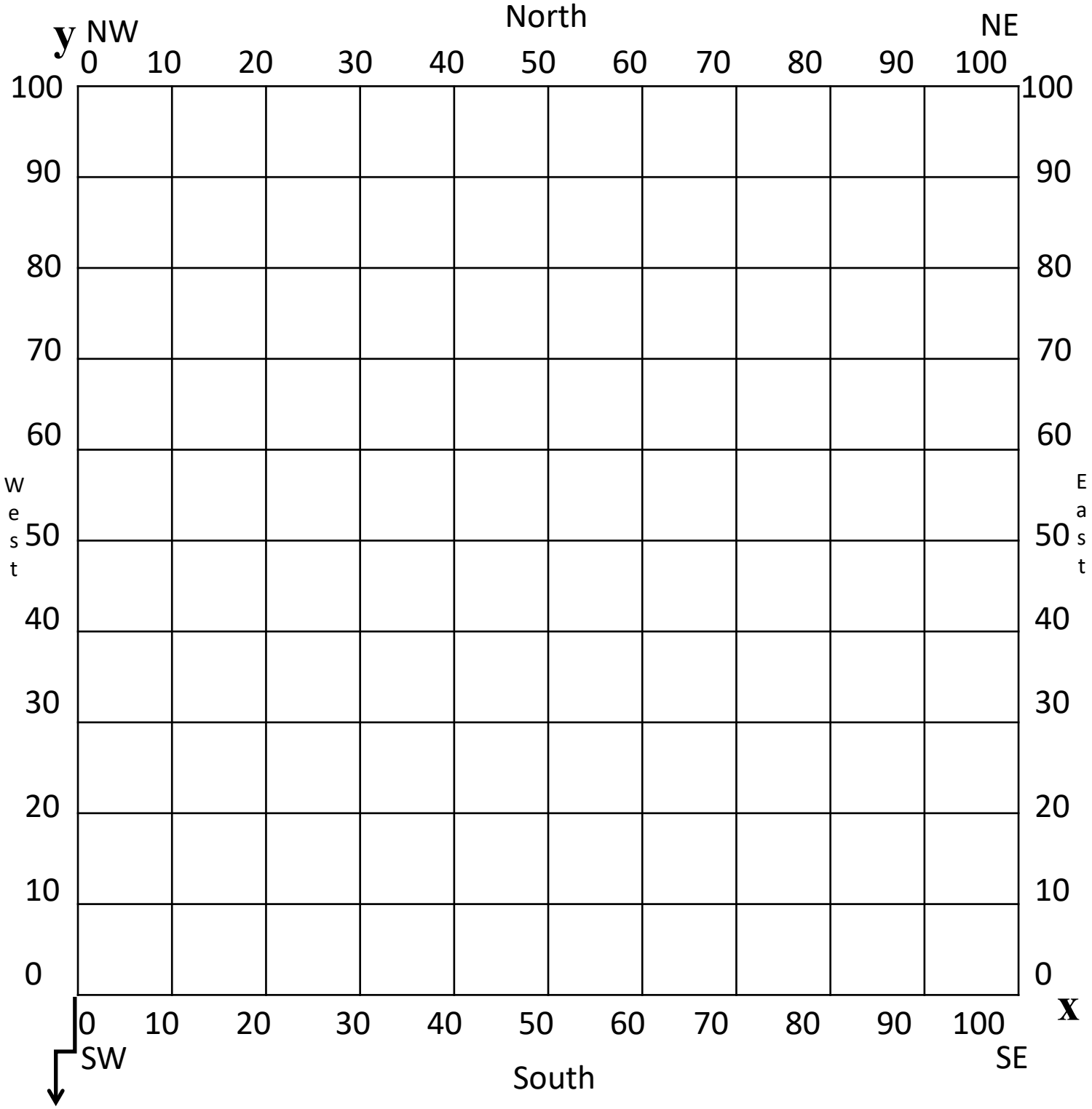
_____ Now to 100 years ago (1900 – Current)

_____ 101 – 200 years ago (1700 – 1800's)

_____ More than 200 years ago? (Pre 1700's)

Procedure 1:

Lesson 5 Grid – Metric Scale Name: _____



Southwest Corner

Looking at how these artifacts were found, what inferences can you make?

_____

_____

Procedure 1:

Lesson 5 Grid Metric Scale Name: _____

This what you uncovered at your dig site. Graph the items on your grid to document where the artifacts were found. **This time use the grid using the Metric scale. Lines are at every 10 centimeters.**

NW North NE



West

East

SW South SE

Southwest Corner

Looking at the artifacts, what time period do you think this dig site represents?

_____ Now to 100 years ago (1900 – Current)

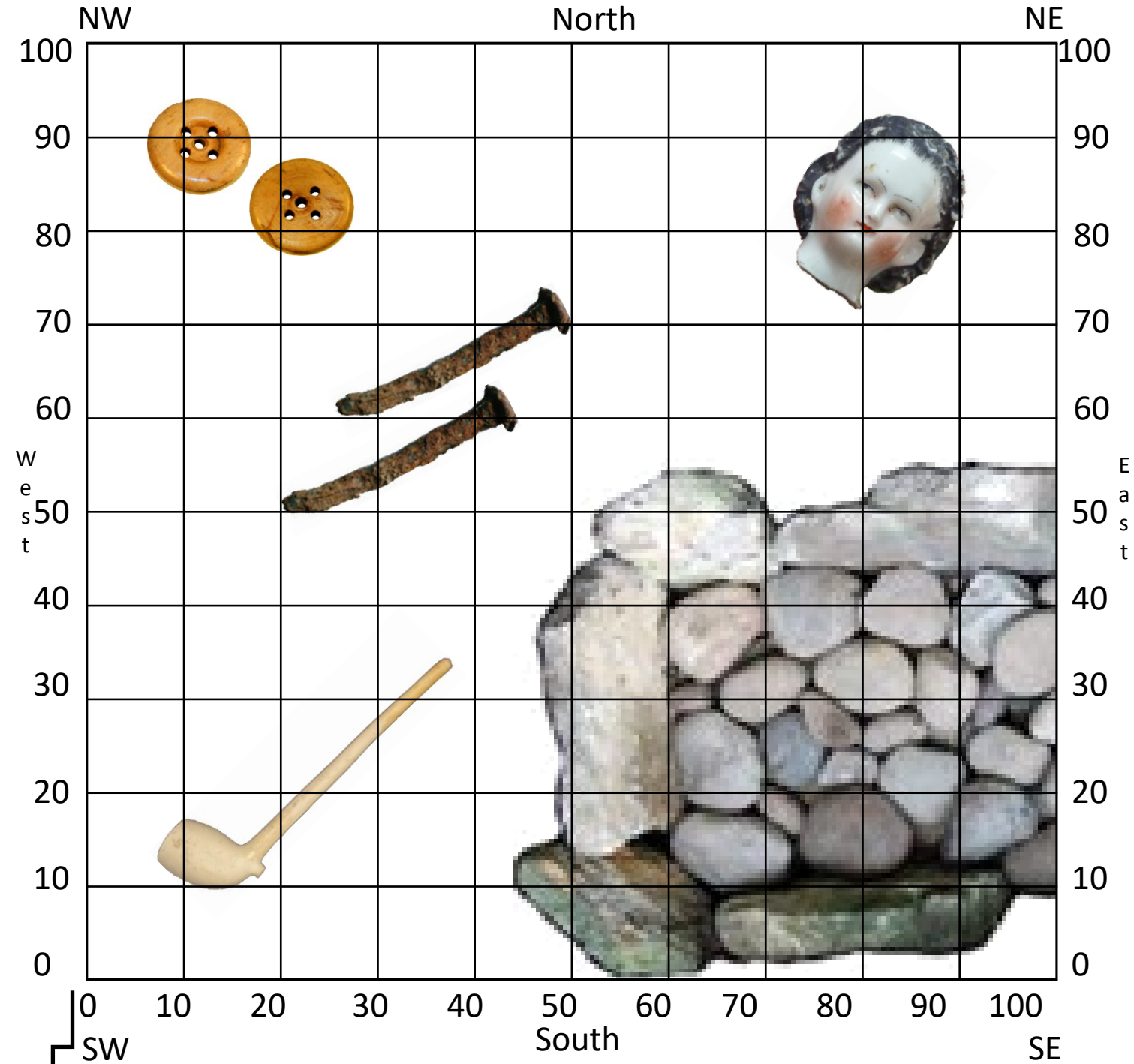
_____ 101 – 200 years ago (1700 – 1800's)

_____ More than 200 years ago? (Pre 1700's)

Procedure 1:

Lesson 5 Grid Metric Scale Name: _____

This what you uncovered at your dig site. Graph the items on your grid to document where the artifacts were found. **This time use the grid using the Metric scale. Lines are at every 10 centimeters.**



Southwest Corner

Now that you have placed your artifacts on a grid, can you tell the Size of the items?

What is the approximate size of the nail? _____

What is the size of the fireplace? _____

Procedure 1:

Lesson 5 Grid on a Level Sheet Name: _____

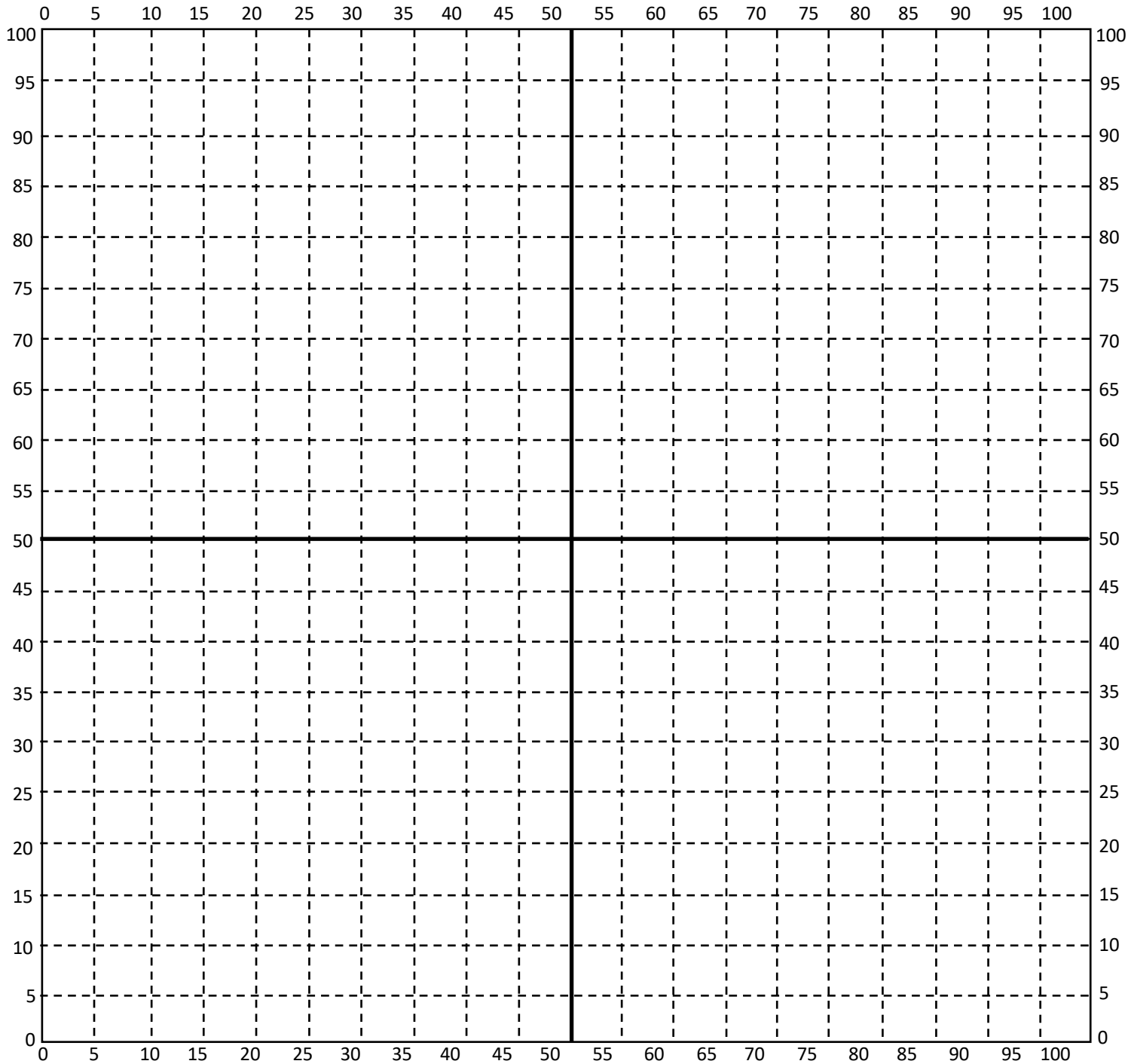
This is an example of what an archaeologist would use to graph their artifacts found using a grid with lines marked every 5 centimeters. Use this grid to graph out the last set of artifacts you have found. What time period do these represent?

_____ Now to 100 years ago (1900 – Current)

_____ 101 – 200 years ago (1700 – 1800's)

_____ More than 200 years ago? (Pre 1700's)

NW This edge is **North** **NE**



SW **South** **SE**

Grid numbers are listed in centimeters (cm)

Procedure 1:

Lesson 5 Grid on a Level Sheet Name: _____

This what you uncovered at your dig site. Graph the items on your grid to document where the artifacts were found. **This time use the Level sheet grid like an archaeologist. Lines are labeled at every 5 centimeters for more accuracy..**

NW This edge is **North** **NE**



SW **South** **SE**

Procedure 1:

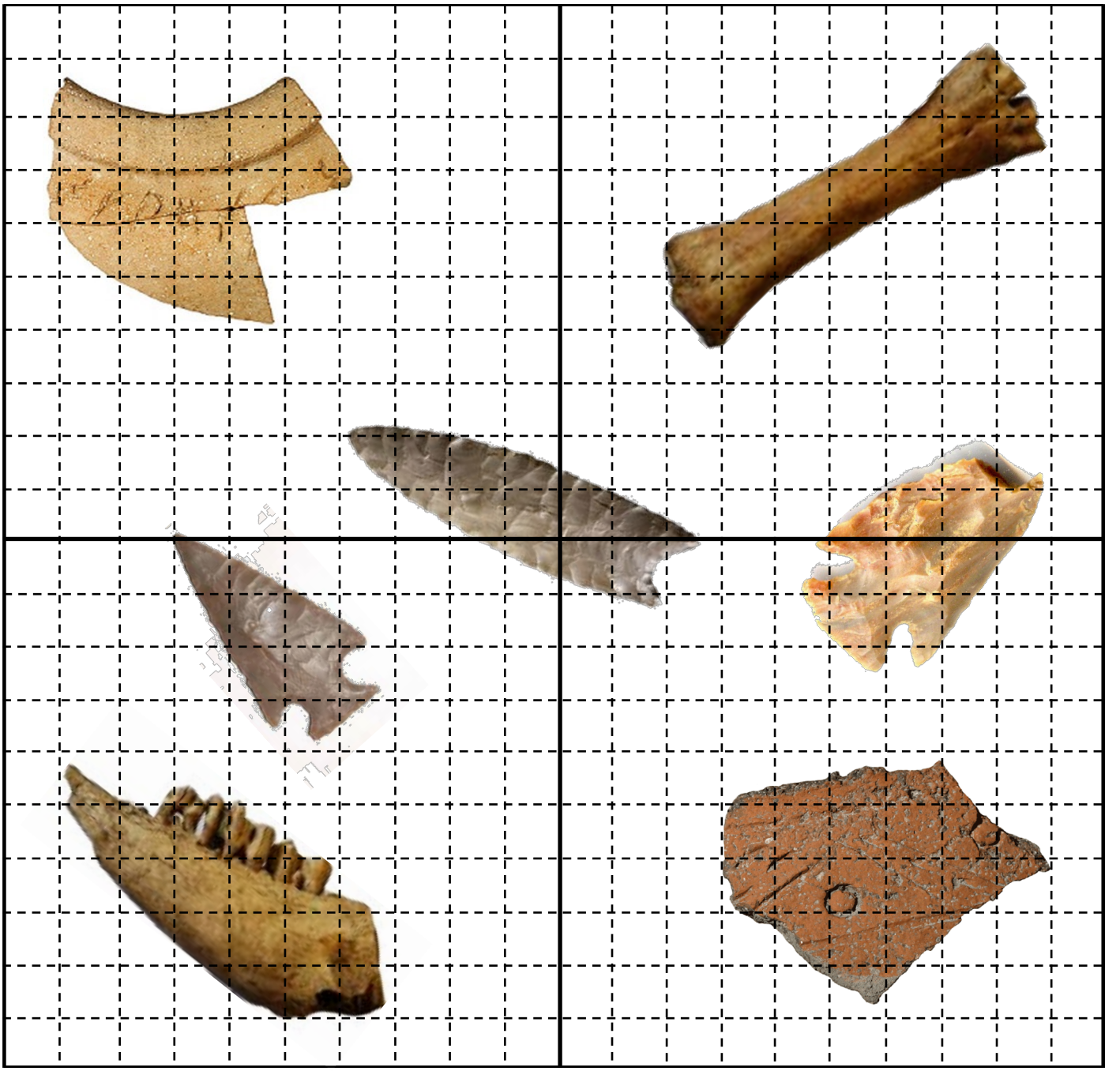
Lesson 5 Grid on a Level Sheet Name: _____

What kind of inferences can you make based on these artifacts?

_____

_____

NW This edge is **North** **NE**



SW **South** **SE**

Procedure 1: Lesson 5

Level Sheet

Unit #: _____ Area: 1 x 1 M

Excavation Unit Level Sheet

Level _____ Date: _____

Project: CS Elementary 5th Grade

Recorder(s): _____

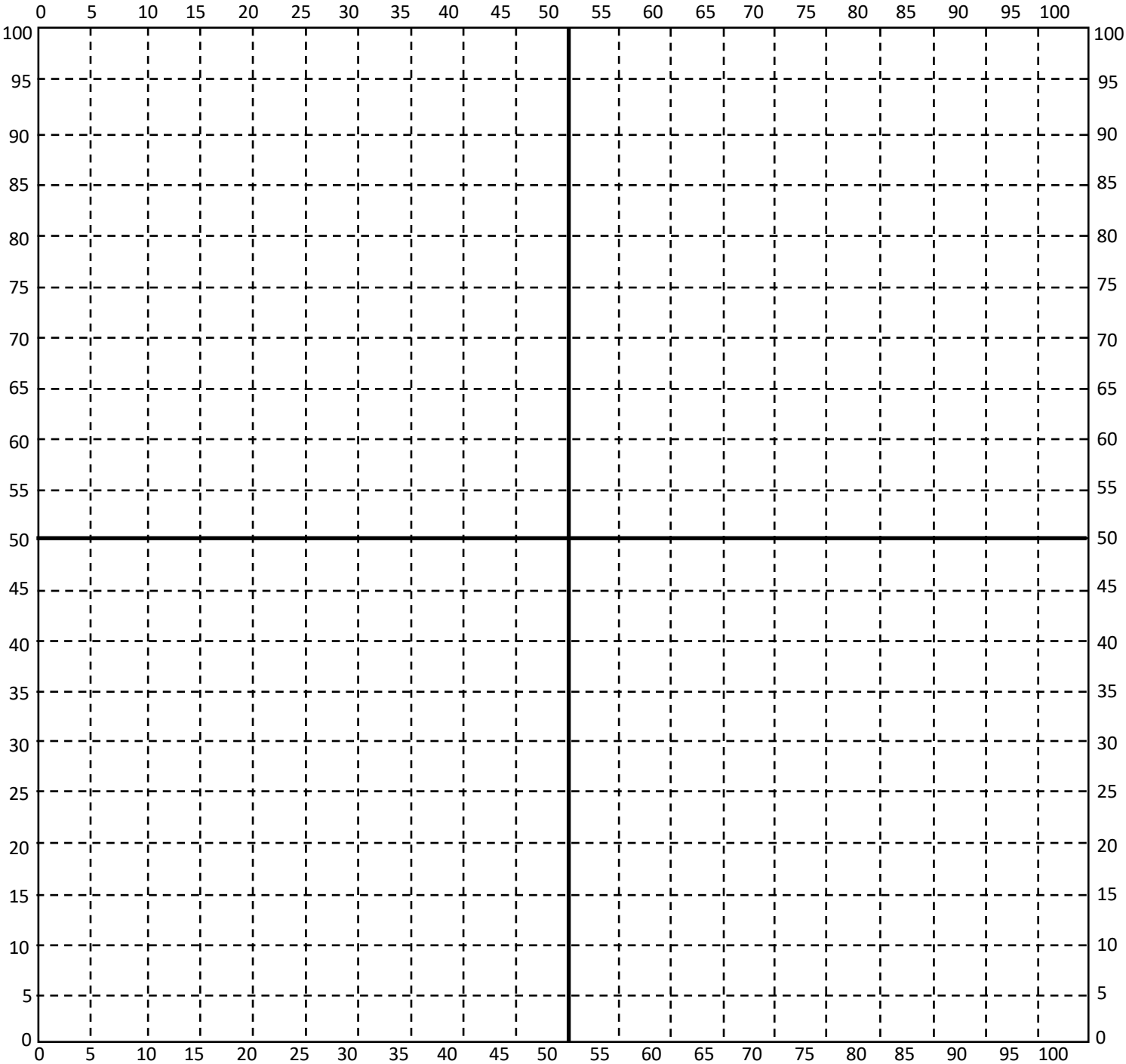
Site: 20KZ1516

Excavators: _____

Plan view below at _____

_____

NW This edge is **North** **NE**

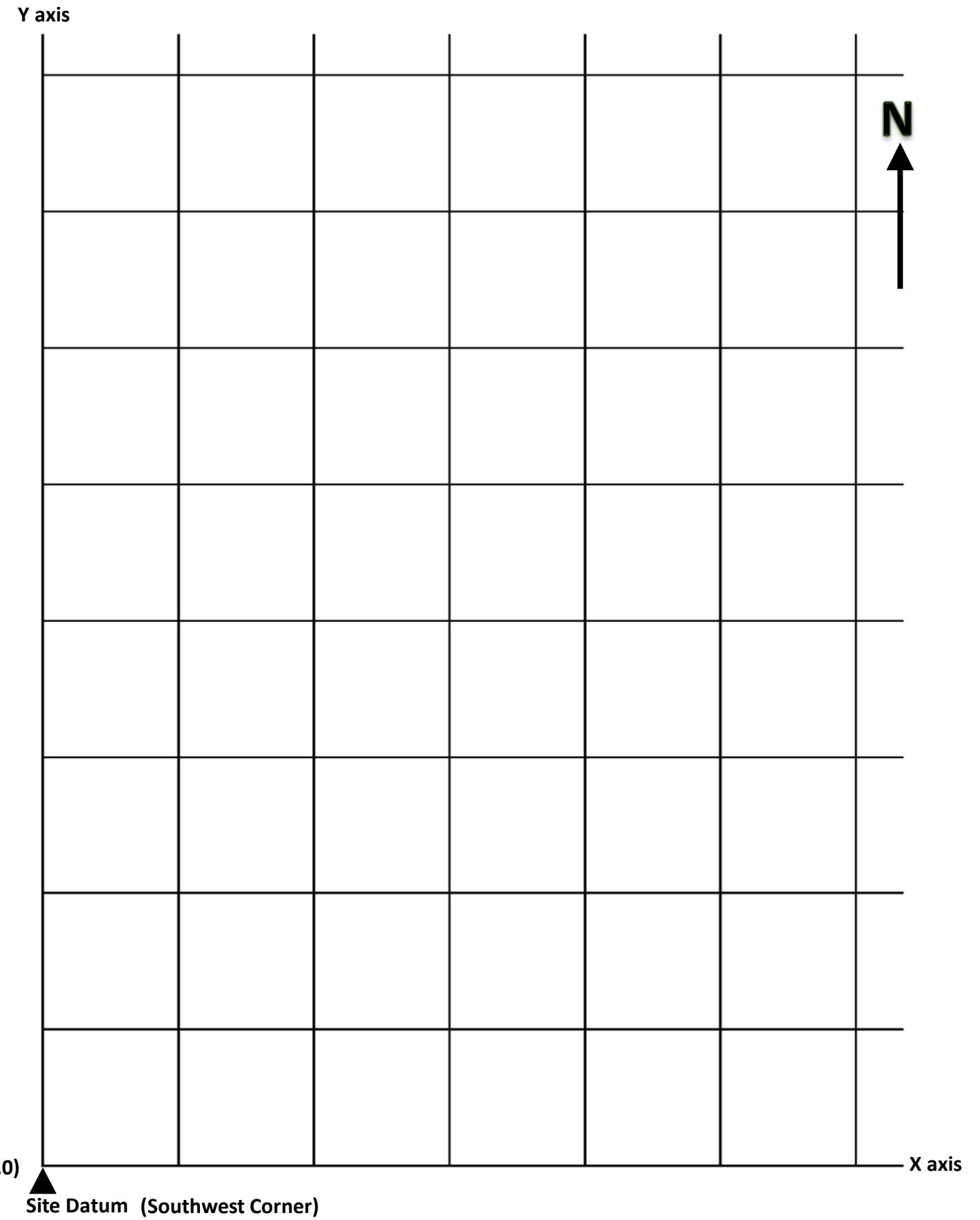


SW **South** **SE**

Grid numbers are listed in centimeters (cm)

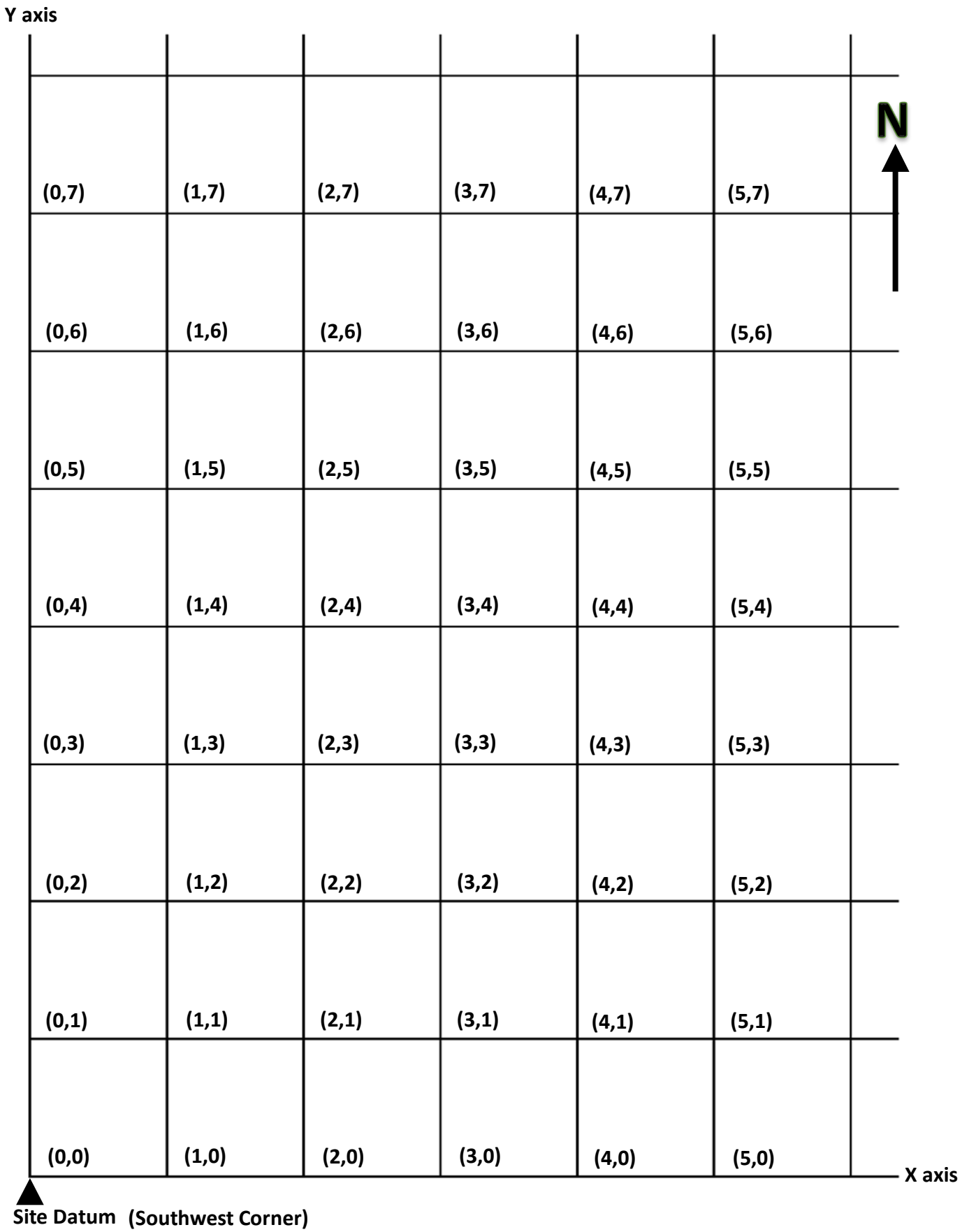
Procedure 2:
Lesson 5

The Grid Sheet



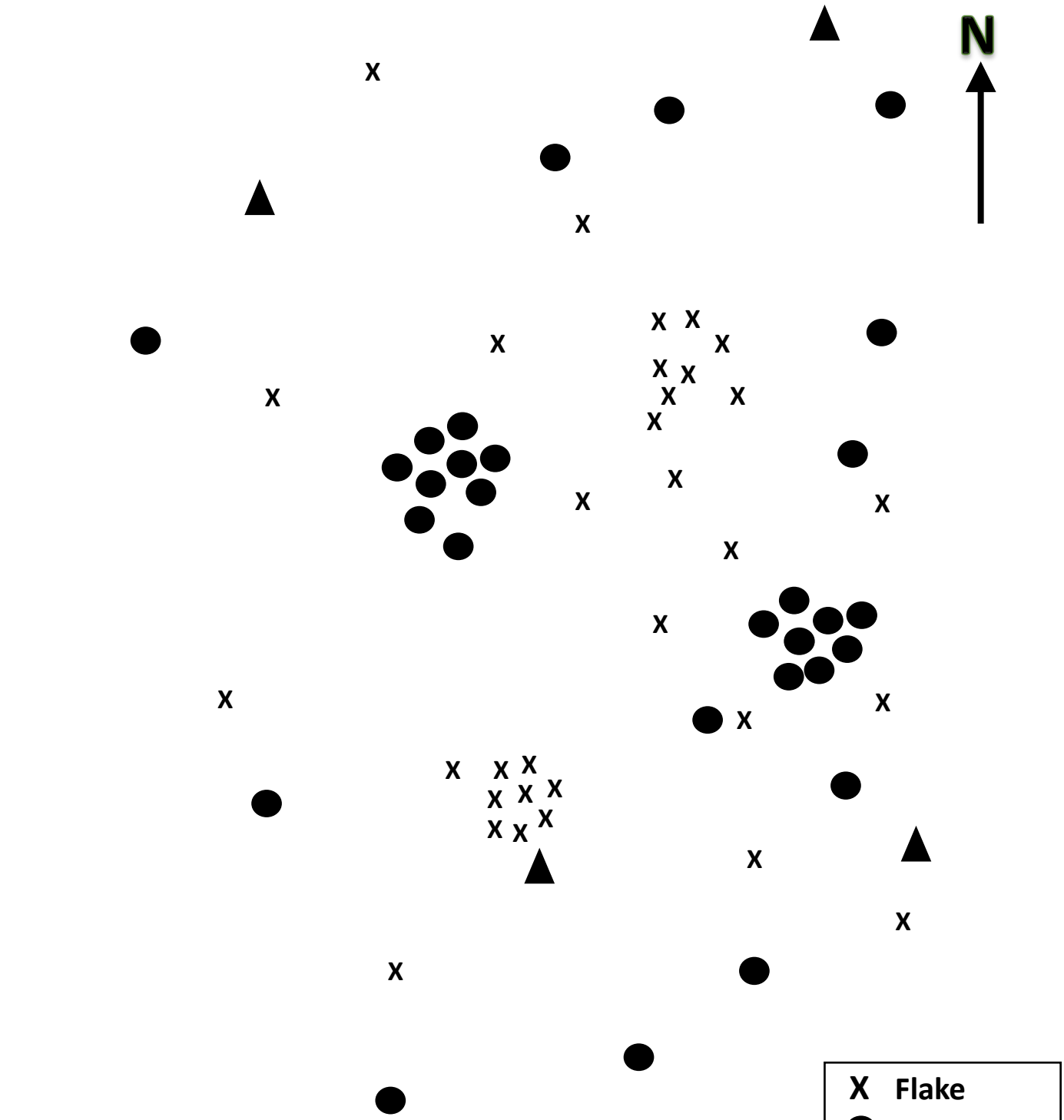
Procedure 2:
Lesson 5

The Grid Sheet



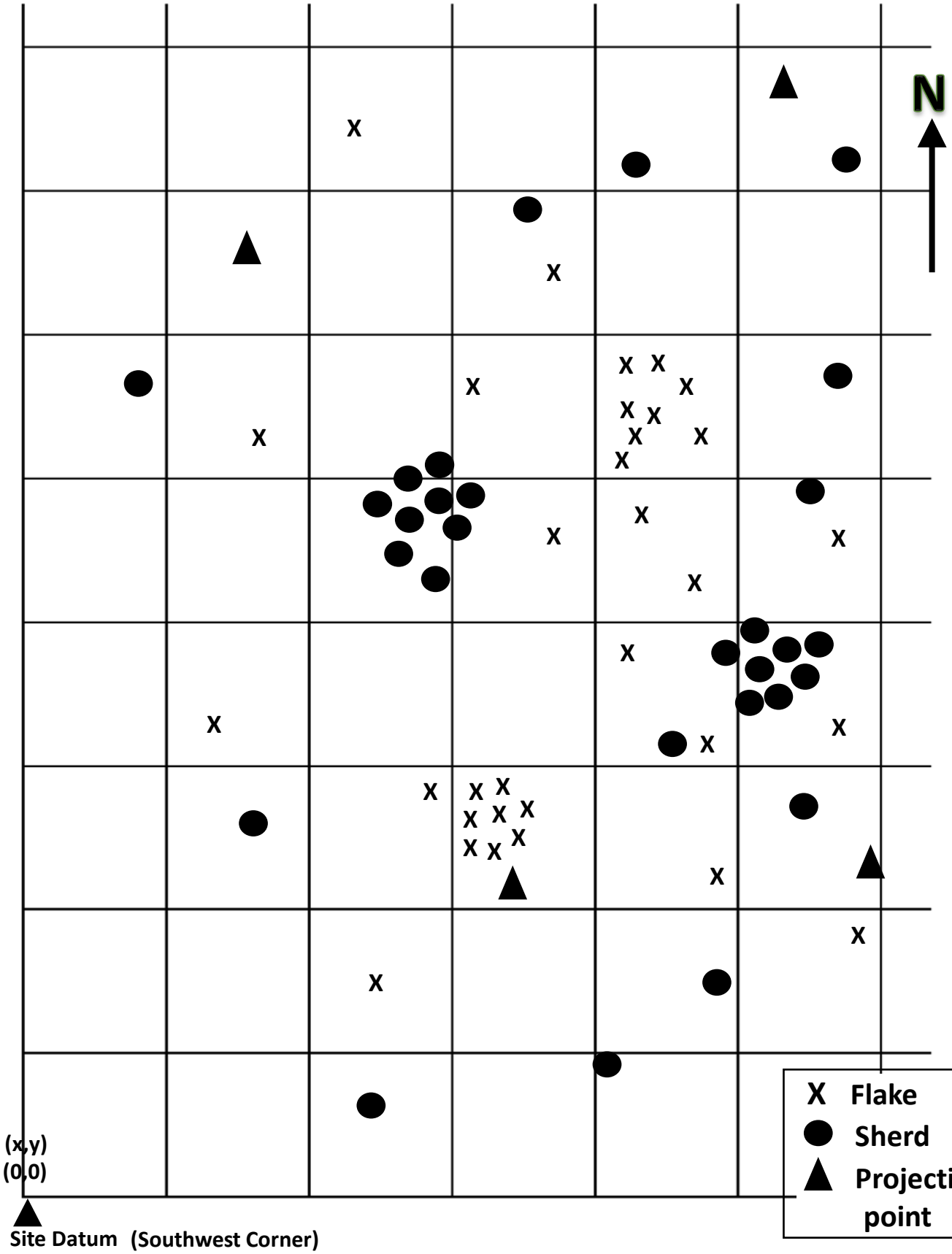
Procedure 2:
Lesson 5

The CS Site



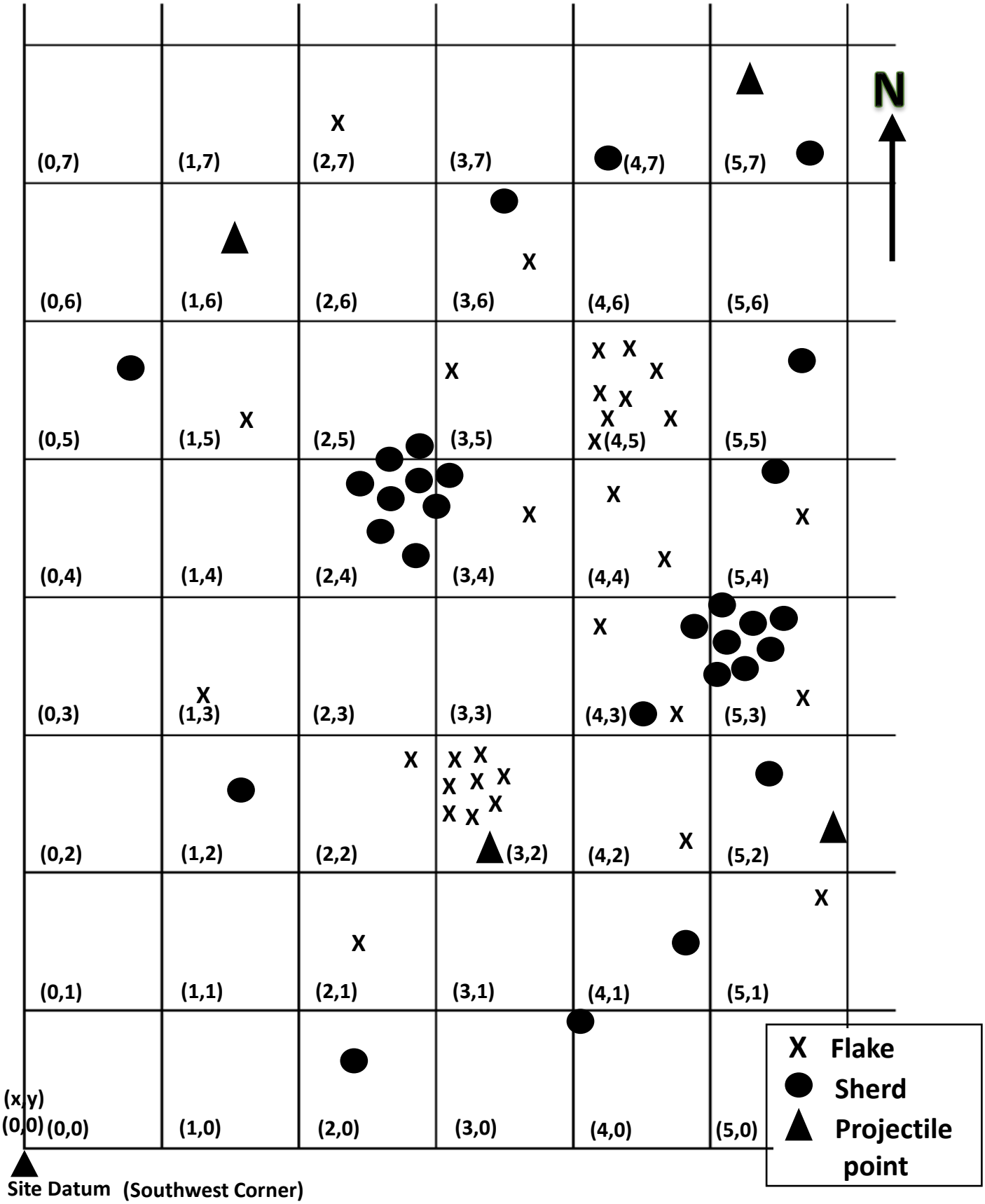
Procedure 2:
Lesson 5

The CS Site



Procedure 2:
Lesson 5

The CS Site



Artifact Location Record

Name: _____

Grid Unit	# Flakes	# Sherds	# Points

Procedure 2: Lesson 5 ANSWER SHEET

Artifact Location Record

Name: _____

Grid Unit	# Flakes	# Sherds	# Points
0,0	0	0	0
1,0	0	0	0
2,0	0	1	0
3,0	0	0	0
4,0	0	1	0
5,0	0	0	0
0,1	0	0	0
1,1	0	0	0
2,1	1	0	0
3,1	0	0	0
4,1	0	1	0
5,1	1	0	0
0,2	0	0	0
1,2	0	1	0
2,2	1	0	0
3,2,	8	0	1
4,2	1	0	0
5,2	0	1	1
0,3	0	0	0
1,3	1	0	0
2,3	0	0	0
3,3	0	0	0
4,3	2	2	0
5,3	1	7	0
0,4	0	0	0
1,4	0	0	0
2,4	0	5	0
3,4	1	2	0
4,4	2	0	0
5,4	1	1	0
0,5	0	1	0
1,5	1	0	0
2,5	0	2	0
3,5	1	0	0
4,5	7	0	0
5,5	0	1	0
0,6	0	0	0
1,6	0	0	1
2,6	0	0	0
3,6	1	1	0
4,6	0	0	0
5,6	0	0	0
0,7	0	0	0
1,7	0	0	0
2,7	1	0	0
3,7	0	0	0
4,7	0	1	0
5,7	0	1	1
	31	29	4

Lesson 6 – Getting Ready for Our Dig, Measuring & Documenting

Objective: Final preparation for the actual dig that students will be conducting. Make sure proper techniques are used for documenting and measuring.

Subjects: Social studies, Language arts, Mathematics
CCSS and NGSS: USHG ERA1 1.1, 1.2, USHG ERA2 2.1; 5-U1.1.1, U1.1.2, U1.1.3; 5-U1.2.1, U1.2.2; 5-U2.1.1, U2.1.3; 5.0A.B3
Skills: Remember, understand, apply, create, evaluate
Understanding: Explanation, interpretation, application, self-knowledge

Duration: At least 60 minutes.
Class Size: 16 - 24

Materials:

Students: Worksheets:

- The Art of Digging
- Measuring (How Deep?)
- Measuring (Location?)
- Placing the Artifact on Your Level Sheet

Teacher: Examples for projection on:

- ❑ Inches vs. Metric
- ❑ https://www.mathsisfun.com/measure/metric-length.html contains a short video on using metric to measure
- ❑ Measuring (How Deep?)
- ❑ Measuring (Location?)
- ❑ Placing the Artifact on Your Level Sheet
- ❑ Level Sheet
- ❑ Artifact Excavation Record
- ❑ Artifact Analysis Record
- ❑ Artifact Tag

Vocabulary Words:

Artifact: an object that was made or modified by humans.
Feature: something that cannot be removed from the site. A landscape modification like a fireplace.
Provenience: 2D location of artifact.

Lesson 6 – Getting Ready for Our Dig, Measuring & Documenting

Discussion:

On the board discuss the differences between an artifact and a feature. An artifact is something that can be picked up and moved without destroying it, however, a feature is something that cannot be removed without destroying it, like a fireplace, or an ash pit. Using the "The Art of Digging" worksheet have the students select those items that they think would be artifacts, and those that would be features. Review the worksheets with the students after completion.

Explain that we are getting close to being able to dig and there are some additional lessons that we need to do to make sure everyone understands the importance of documentation and proper procedures. We will be walking through the steps on measuring which will involve using the metric system.

Place the Inches vs. Metric on the overhead and explain how archaeologists and the scientific community use the metric system. They will be using centimeters to document their finds during the dig. The metric system is an international standard of measurement. Using the metric system, the entire world is able to communicate through common ways of measuring.

Using the Measuring (How Deep?) worksheet, display it on the screen and walk through the example of measuring the first artifact, a piece of pottery with inscriptions on it. When a unit is first laid out, a string is placed around the unit to mark the edges, and the ground level. They will be measuring the depth of each artifact when it is found using the string as their zero point. They will also be able to use a line level, however, at this time, we will not introduce that into the mix to avoid any confusion.

The illustration shows a side view on the wall if the artifact was still in place. Explain that it is important to take measurements and document the depth of the artifact. This particular artifact is not flat and will not be removed until it is completely uncovered. It is important NOT to pull artifacts out of the ground. Careful troweling will need to be done to make sure it is not disturbed until completely uncovered and documented.

Walk through the first question with them, How deep is the artifact when it was first found? Using the scale already on the worksheet, they will see that it is 5 centimeters. Then either walk through the next question or let them complete it on their own. Review the worksheet with the class when completed.

1. 5 centimeters
2. 9 centimeters
3. 12.5 centimeters
4. 14.5 centimeters

You may elect to round them up to the next centimeter.

Discussion: (continued)

Measuring (Location?) worksheet is next. Place the Measuring (Location?) up for display. Explain that not only is the depth of the artifact important, the location within the unit is also important. Remember how important documenting location was when trying to determine what went on at this site. Remind them this is important when looking at 'context' and making inferences. Next place the top view of Measuring (Location?) on the overhead. Walk through how each artifact is measured from the edges of the unit and that multiple measuring tools will be helpful in determining the precise location.

The first three questions have been completed and walk through each one with the class. There are then additional questions on the location of the bone (partial mandible) that the students can use the worksheet and answer. Using the coordinates of North, South, East, and West will also be important, using the Southwest corner as their beginning point.

1. North 13, East 6
2. North 13, East 11
3. North 8.5, East 7.5
4. North 5.5, East 14
5. North 3.5, East 8
6. North 4, East 16.5
7. North 2, East 14

They are also asked if there are other measurements that can be done? The more measurements they take the more accurate they will be.

The last worksheet, Placing the Artifact on your Level Sheet, explains how using the coordinates they can accurately place the artifact on their grid. The pottery piece is completed for them, however, they can use the coordinates they had for the bone to draw it in for practice.

THIS MAY BE A GOOD BREAKING PLACE IF TIME IS NOT AVAILABLE TO DEMONSTRATE PROPER USE OF TOOLS.

Lesson 6: The Art of Digging

Name: _____

List six tools an archaeologist may use to excavate a site:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Are the following items artifacts or features?



_____



_____



_____



_____



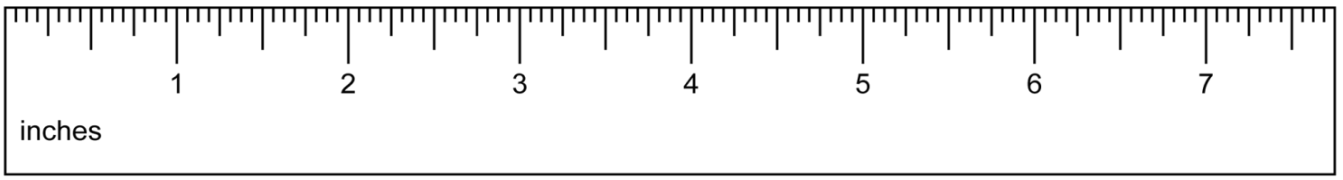
_____



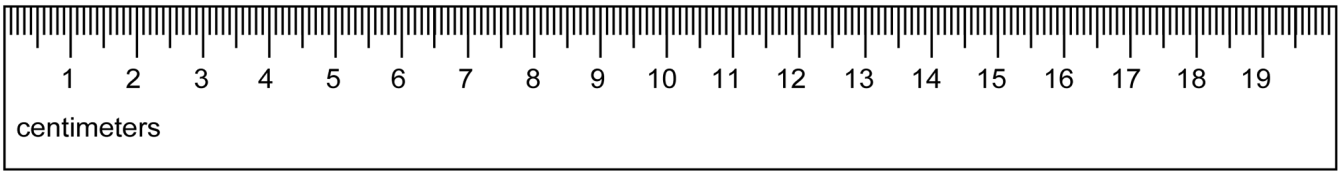
_____

Lesson 6: Inches versus Metric

Inches



Metric



Archaeologists use a metric scale when doing their documentation and you will also be using the metric scale during your dig. The scientific community only uses the metric system.

You will find the scale is easy to use. Your grids will be based on centimeters which is illustrated above.

Let's try some measurements for practice.

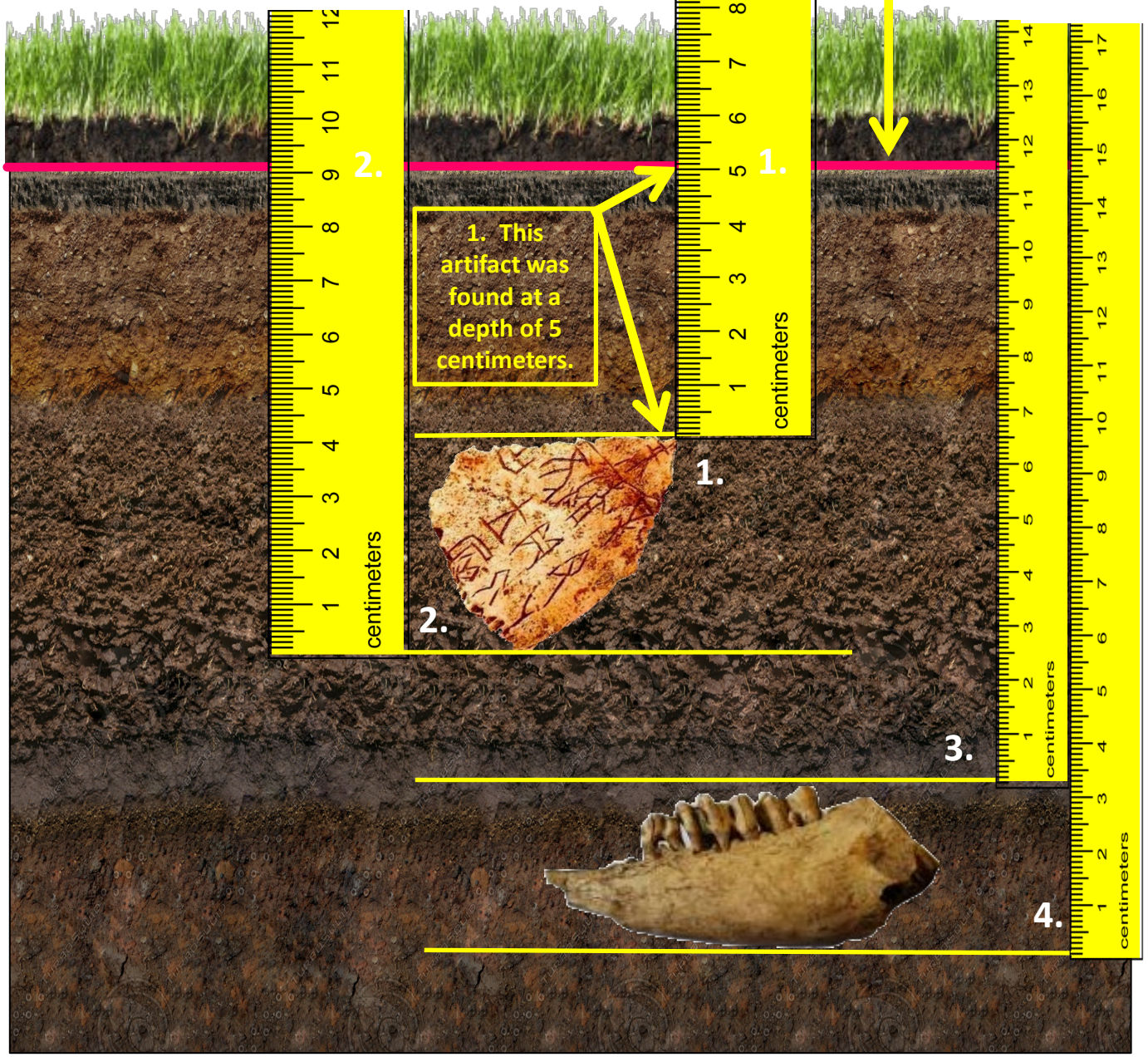
First, we will measure how deep an artifact is.

Second, we will measure the location of the artifact that you will place on your grid.

All measurements will be documented.

Lesson 6: Measuring (How Deep?)

Below is an example of a dig site and the artifact that was found. Using the ruler, measure **how deep** the artifact is. Using multiple measuring tools can help you do those measurements. It is also important to work together to be the most accurate.

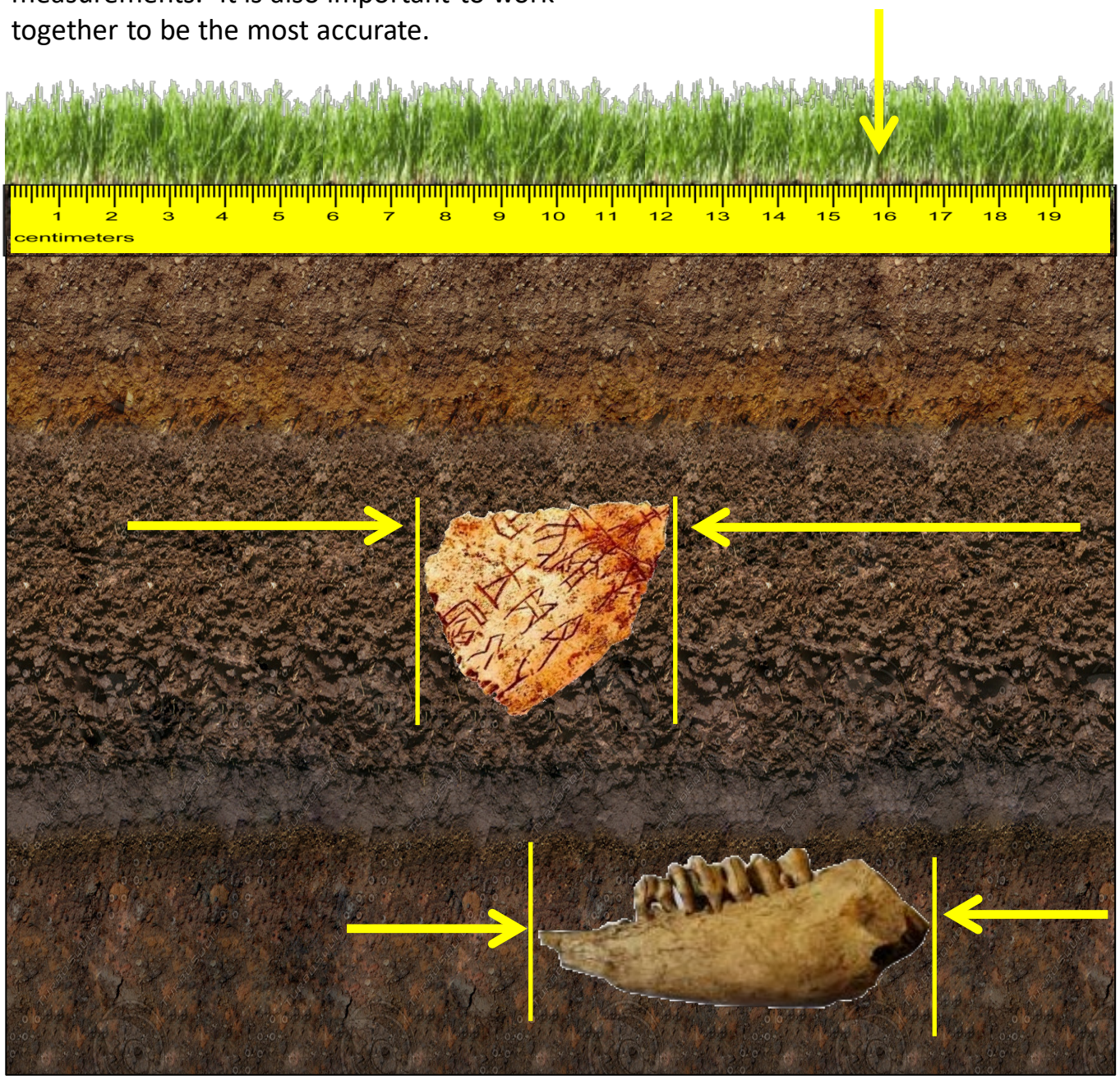


1. How deep is the artifact when it was first found? 5 centimeters (cm)
2. How deep is the lowest part of the artifact? _____
3. How deep is the top of the jaw with teeth? _____
4. How deep is the bottom of the jaw with teeth? _____

Lesson 6: Measuring (Location?)

Now that we have how deep the artifact is, we need to measure where it is located so we can place it on our grid. Again, using multiple measuring tools can help you do those measurements. It is also important to work together to be the most accurate.

Now you will have to place a tape measure or meter stick on the side of the unit to help determine where the artifact is located



These are the measurements that you will need in order to place them on your grid. You have the depths, or how deep the artifact is, now we need to measure where the artifact is within your unit.

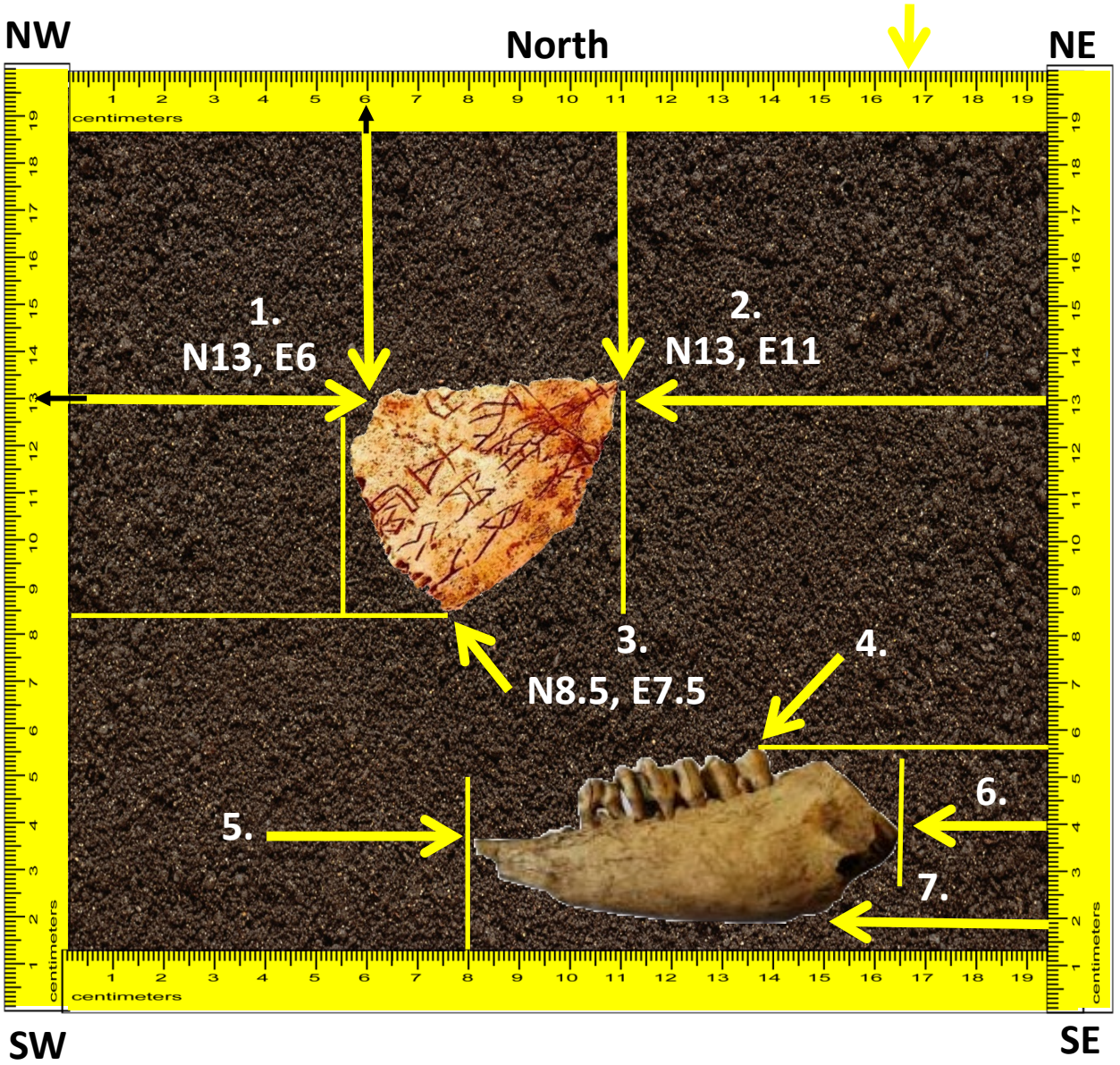
Let's go to an overhead view of the unit to help you in measuring.

Lesson 6: Measuring (Location?)

This is how your unit looks like when looking down. You will measure from the sides of the unit.

Taking a lot of measurements will help you to be the most accurate when placing the artifacts on a grid.

Now you will have to place a tape measure or meter stick on the side of the unit to help determine where the artifact is located



1. What are the coordinates of the upper left corner? N13, E6
2. What are the coordinates of the upper right corner? N13, E11
3. What are the coordinates of the lower piece of pottery? N8.5, E7.5
4. What are the coordinates of this piece of bone? _____
5. What are the coordinates of this piece of bone? _____
6. What are the coordinates of this piece of bone? _____
7. What are the coordinates of this piece of bone? _____
8. Are there other measurements that you could do? _____

Lesson 6: Placing the Artifact on your Level Sheet

Excavation Unit Level Sheet

Project: CS Elementary 5th Grade

Site: 20KZ1819

Plan view below at: 5 cm – 10 cm

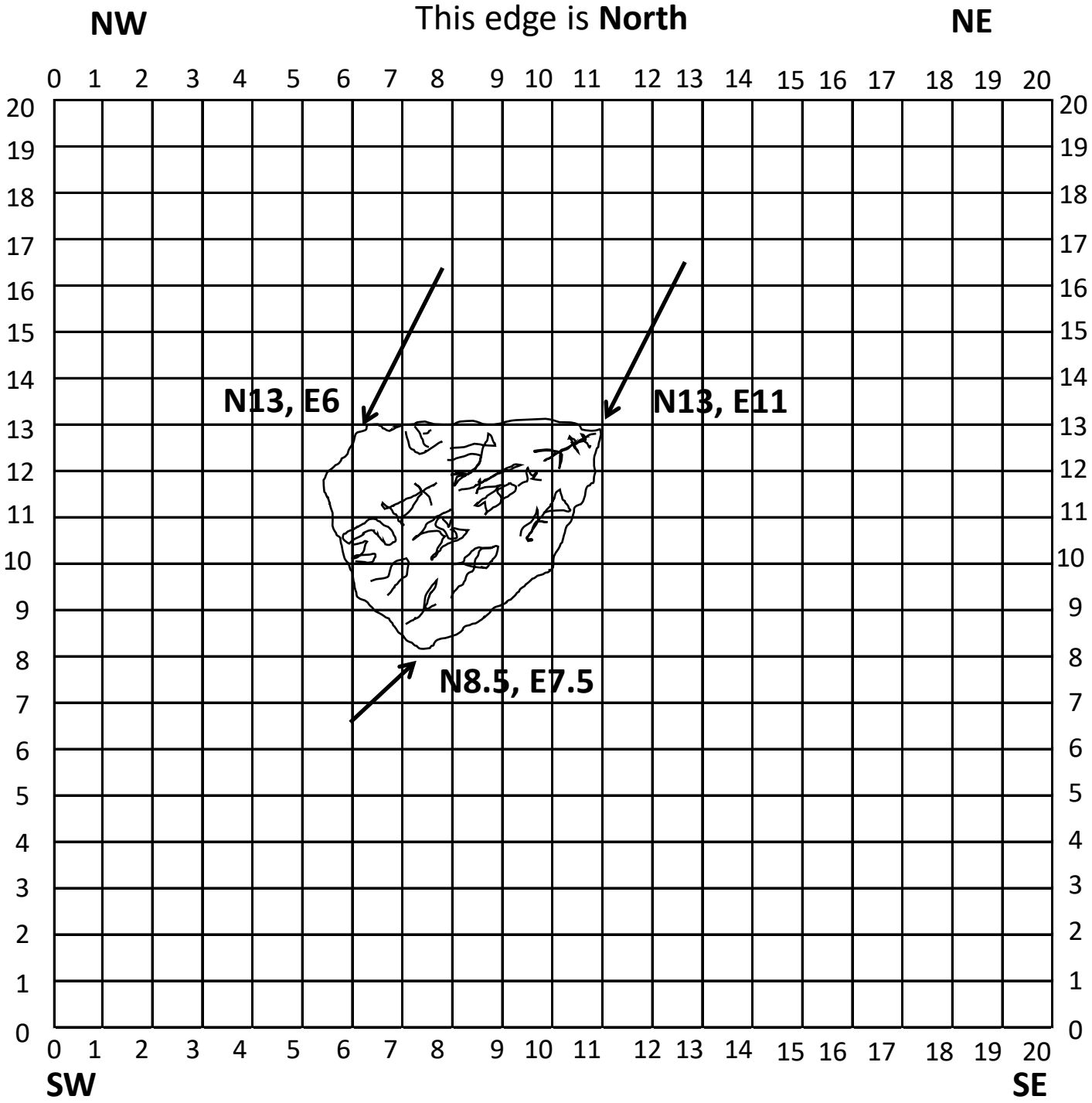
Unit #: 2 Area: 1 x 1 M

Level : II 0– 20 cm Date: 11/4/2018

Is this the I, II, III, or IV level (level dug)?

Recorder(s): Charlie Brown, Matt Clark

Excavators: Sally Jones, Lucy Smith



Graph the bone (partial mandible) based on your coordinates.

Lesson 6/7

Level Sheet

Unit #: _____ Area: 1 x 1 M

Excavation Unit Level Sheet

Level _____ Date: _____

Project: CS Elementary 5th Grade

Recorder(s): _____

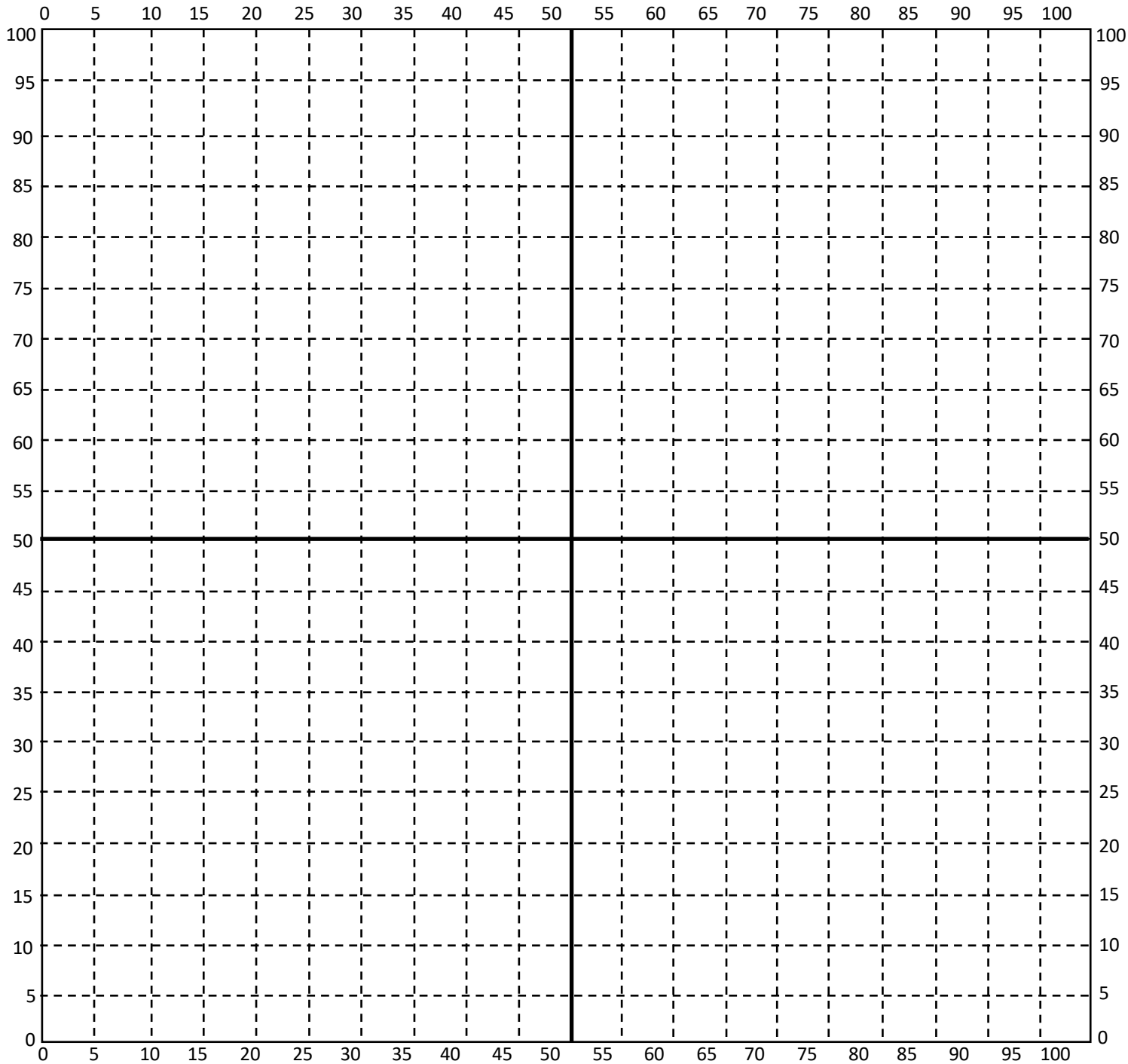
Site: 20KZ1819

Excavators: _____

Plan view below at _____

_____

NW This edge is **North** **NE**



SW **South** **SE**

Grid numbers are listed in centimeters (cm)

Lesson 6/7

Level Sheet Example

Excavation Unit Level Sheet

Project: CS Elementary 5th Grade

Site: 20KZ1819

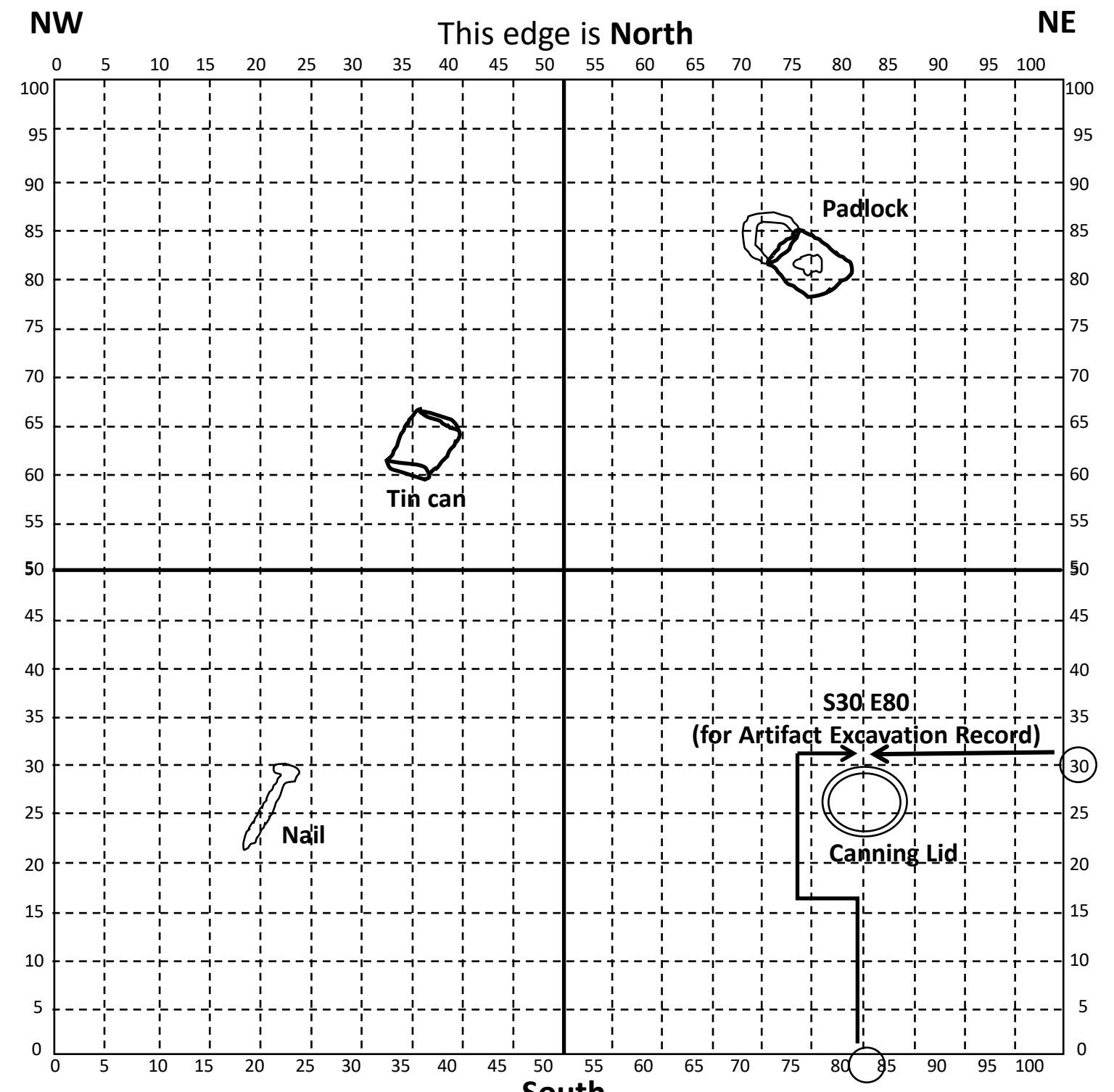
Plan view below at: 20 cm
(how deep was this view at, it will be one depth, not a range like the level)

Unit #: 2 Area: 1 x 1 M

Level : II 10 – 20 cm Date: 11/4/2018
Is this the I, II, III, or IV level (level dug)?

Recorder(s): Charlie Brown, Matt Clark

Excavators: Sally Jones, Lucy Smith, Aaron Scott, Maggie Greenwood



Grid numbers are listed in centimeters (cm)

Artifact Excavation Record

Unit #: _____ Area: 1 x 1 M

Excavation Unit Level Sheet

Level _____ Date: _____

Project: CS Elementary 5th Grade

Recorder(s): _____

Site: 20KZ1819

Excavators: _____

Depth and Grid Coordinates: _____

Excavation Procedure

How did you excavate? ☐ Shovel ☐ Hand (trowel) ☐ Screen

Screen size: 1/4" 1/8"

Comments: _____

Soil Type? (Sand, dirt, gravel) _____

Artifact / Feature Observations:

What is the artifact made of? (bone, pottery, metal, wood, etc.)

_____

Color: _____ Shape: _____ Size: _____

How was the artifact found: ☐ Shovel ☐ Hand (trowel) ☐ Screen

Screen size: 1/4" 1/8"

Other Observations: _____

Sketch the Artifact:

Artifact Excavation Record

Example

Excavation Unit Level Sheet

Project: CS Elementary 5th Grade

Site: 20KZ1819

Depth and Grid Coordinates: 20 cm deep, SE Corner
S30 E80 **(if found in the screen only give depth)**

Unit #: 2 Area: 1 x 1 M

Level: II 10-20 cm Date: 11/4/2018

Recorder(s): Charlie Brown, Matt Clark

Excavators: Sally Jones, Lucy Smith, Aaron Scott, Maggie Greenwood

Excavation Procedure

How did you excavate? [ ] Shovel [X] Hand (trowel) [ ] Screen

Screen size: 1/4" 1/8"

Comments: Laying flat on surface

Soil Type? (Sand, dirt, gravel) Dirt

Artifact / Feature Observations:

What is the artifact made of? (bone, pottery, metal, wood, etc.)

Metal

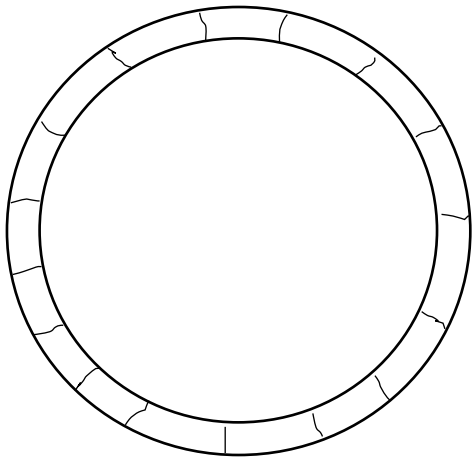
Color: Rusty Shape: Round Size: 8 cm (based on drawing)

How was the artifact found: [ ] Shovel [X] Hand (trowel) [ ] Screen

Screen size: 1/4" 1/8"

Other Observations: Found on same level as a nail, tin can, and padlock

Sketch the Artifact:



Artifact Analysis Record

Unit #: _____ Area: 1 x 1 M

Completed after excavation in the Lab

Level _____ Date: _____

Project: CS Elementary 5th Grade

Recorder(s): _____

Site: 20KZ1819

Excavators: _____

Depth and Grid Coordinates: _____

Artifact Observations:

What is the artifact made of? (bone, pottery, metal, wood, etc.)

_____

Color: _____ Shape: _____

Length: _____ Width: _____

Height: _____ Weight: _____

Other Observations: _____

Sketch the Artifact:

Was the artifact found by any other artifacts or features?

_____

_____

What do you think your artifact was used for? Why? _____

_____

_____

_____

Lesson 6

Artifact Analysis Record

Completed after excavation in the Lab

Example

Unit #: 2 Area: 1 x 1 M

Level: II 10-20 cm Date: 11/4/2018

Project: CS Elementary 5th Grade Recorder(s): Charlie Brown, Matt Clark

Site: 20KZ1819 Excavators: Sally Jones, Lucy Smith, Aaron Scott, Maggie Greenwood

Depth and Grid Coordinates: 20 cm deep, SE Corner S30 E80 **(if found in the screen only give depth)**

Artifact Observations:

What is the artifact made of? (bone, pottery, metal, wood, etc.)

Metal

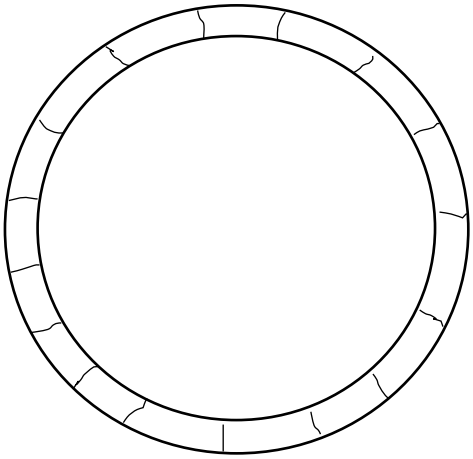
Color: Rusty, and brown Shape: Round, circle, ring shape

Length: 8 cm Width: 8 cm

Height: 2 cm high Weight: 20 grams

Other Observations: Not misshaped, still round, no damage, other than rusty

Sketch the Artifact:



Was the artifact found by any other artifacts or features?

Found at same level as a square nail, small padlock, and tin can with no writing or label

What do you think your artifact was used for? Why?

Used to can fruit or vegetables, no jars or glass found around it, not misshaped, or no dents, so it may have not been used. Just like canning lids used now.

Artifact Tag

Catalog No. _____
Site Name / Number:
CS Elementary / 20KZ1516
Unit #: _____
Level/Depth: _____
Horizontal Provenience: _____
Feature # _____
Date: _____
Contents: _____
Excavators: _____
_____
_____

Artifact Tag

Catalog No. _____
Site Name / Number:
CS Elementary / 20KZ1516
Unit #: _____
Level/Depth: _____
Horizontal Provenience: _____
Feature # _____
Date: _____
Contents: _____
Excavators: _____
_____
_____

Artifact Tag

Catalog No. _____
Site Name / Number:
CS Elementary / 20KZ1516
Unit #: _____
Level/Depth: _____
Horizontal Provenience: _____
Feature # _____
Date: _____
Contents: _____
Excavators: _____
_____
_____

Artifact Tag

Catalog No. _____
Site Name / Number:
CS Elementary / 20KZ1516
Unit #: _____
Level/Depth: _____
Horizontal Provenience: _____
Feature # _____
Date: _____
Contents: _____
Excavators: _____
_____
_____

Artifact Tag

Catalog No. _____
Site Name / Number:
CS Elementary / 20KZ1516
Unit #: _____
Level/Depth: _____
Horizontal Provenience: _____
Feature # _____
Date: _____
Contents: _____
Excavators: _____
_____
_____

Artifact Tag

Catalog No. _____
Site Name / Number:
CS Elementary / 20KZ1516
Unit #: _____
Level/Depth: _____
Horizontal Provenience: _____
Feature # _____
Date: _____
Contents: _____
Excavators: _____
_____
_____

Artifact Tag

Catalog No. ***Not used until Lab***
Site Name / Number:
CS Elementary / 20KZ1819
Unit #: 1
Level/Depth: Level 1 / 10 cm deep
Horizontal Provenience: NW
Feature # N/A – not a feature
Date: 11/4/2018
Contents: Glue stick, Phone case, Nail, Pencil
Excavators: Sally Jones, Lucy Smith, Aaron Scott, Maggie Greenwood

Example

Artifact Tag

Catalog No. ***Not used until Lab***
Site Name / Number:
CS Elementary / 20KZ1819
Unit #: 2
Level/Depth: Level 3 / 30 cm deep
Horizontal Provenience: SE
Feature # N/A – not a feature
Date: 11/4/2018
Contents: Canning lid, padlock, Nail, tin can
Excavators: Sally Jones, Lucy Smith, Aaron Scott, Maggie Greenwood

Artifact Tag

Catalog No. ***Not used until Lab***
Site Name / Number:
CS Elementary / 20KZ1819
Unit #: 3
Level/Depth: Level 2 / 20 cm deep
Horizontal Provenience: SW
Feature # N/A – not a feature
Date: 11/4/2018
Contents: Penny, doll head, nail, Aluminum bowl
Excavators: Sally Jones, Lucy Smith, Aaron Scott, Maggie Greenwood

Example

Artifact Tag

Catalog No. ***Not used until Lab***
Site Name / Number:
CS Elementary / 20KZ1819
Unit #: 4
Level/Depth: Level 4 / 40 cm deep
Horizontal Provenience: SW
Feature # 1 – potential fireplace
Date: 11/4/2018
Contents: Pottery piece, lead shot, corn cob, multiple nails
Excavators: Sally Jones, Lucy Smith, Aaron Scott, Maggie Greenwood

Lesson 7 – Getting Ready for Our Dig, Proper Techniques

Objective: Final preparation for the actual dig that students will be conducting. Proper technique of trowel, screening, buckets, dustpans, brushes, etc. Also review measuring techniques from Lesson 6.

Subjects: Social studies, Language arts, Mathematics
CCSS and NGSS: USHG ERA1 1.1, 1.2, USHG ERA2 2.1; 5-U1.1.1, U1.1.2, U1.1.3; 5-U1.2.1, U1.2.2; 5-U2.1.1, U2.1.3; 5.0A.B3
Skills: Remember, understand, apply, create, evaluate
Understanding: Explanation, interpretation, application, self-knowledge

Duration: Approximately 30 – 60 minutes.
Class Size: 16 – 24; groups of 4

Materials:

- 4 – 24" x 20" x 10" deep plastic tote filled with sandbox sand
- 4 trowels per tote
- Various play artifacts in each tote covered in sand at varying levels.
- Buckets (2)
- Screens (2)
- Multiple adults to assist with proper techniques

Teacher:

- ❑ Artifact Tag Example
- ❑ Level Sheet Example http://www.focusdesign.org/apps/videos/videos/show/17586780-how-to-properly-use-shaker-screen (Time 1:13 an educational short film by the MSU Archaeology Program on how to properly use the shaker screens).
- ❑ http://www.pbs.org/time-team/experience-archaeology/tools-trade/ (Time 2:59 archaeologists explaining about the trowel and how they use it; Culture of the Trowel. Also at this site is a list of tools that archaeologists can use).

Background:

1. There are multiple ways that an archaeologist can find a site to study. One is the walking (pedestrian) surveys, maps, and also aerial surveys. Technology is also being used more and more at archaeological sites, which includes using ground penetrating radar to locate potential sites. Shovel test pits are also done to help pinpoint areas of human cultural significance.

2. Looking back at previous lessons remind students that it is possible to find artifacts by just walking and looking at the ground. However, there are times when archaeologists need to locate older objects that are buried, and they need to find a site that they want to study. They often need to conduct an archaeological excavation to learn about the people who lived there.

Background: (continued)

3. Remind students that archaeology is a science, so it is important to have a careful procedure for excavating sites. Once a site is excavated, it can never be re-excavated, so archaeologists must take very careful and detailed notes. Ask students what groups might be interested in archaeological sites and why? Something has to be learned, otherwise sites should not be disturbed.

4. Ask students what tools they think archaeologists use to excavate and correct any misconceptions. Refer back to the Tools Used by an Archaeologist Worksheet from the pre-lesson.

    a. Trowels, shovels, paint brushes, picks, backhoes, etc.

5. Ask students what an archaeologist might find when they excavate a site and write down the examples on the board. When writing examples on the board, group examples of artifacts and features separately but do not explain the separation. Ask the students what the items in each group have in common? Ask them to give a few more examples of artifacts and features.

6. Ask the students to write down what questions they hope to answer by excavating this site.

7. Review proper excavation techniques with the students. Several videos are available that briefly highlight troweling and screening techniques.

    a. Before you begin to excavate take measurements of how deep the soil is using the measuring tape, string and the line level.
    b. Use the side of the trowel to pull small amounts of dirt towards you.
    Do NOT use the pointed end of the trowel.
    c. Remove all of the dirt from around an artifact before you take it out, **do NOT pull out artifacts**. Remember to record the location prior to removal.
    d. Record any artifact you find in your excavation unit, include notes on how deep the artifact was, how big the artifact is, and draw a picture of the artifact.

SHOW THEM THE EXAMPLES OF THE ARTIFACT TAGS AND LEVEL SHEETS AND DEMONSTRATE HOW TO PROPERLY FILL THEM OUT. MAKE SURE EXAMPLES ARE AVAILABLE ON EACH CLIPBOARD FOR EACH UNIT.

    e. After you record the location of an artifact, place it in your artifact bag or container.
    f. Once you have filled your bucket, go to the sifting station with a partner. Help each other sift the dirt and place any artifacts you find in your artifact bag or container.

Lesson 7 – Getting Ready for Our Dig, Proper Techniques

Background: (continued)

Proper techniques need to be demonstrated and practiced by the students prior to the actual dig.

Shallow totes can be used to demonstrate the proper troweling procedures listed above.

Have each student practice troweling and correct any improper techniques. Remind them the importance of good excavating and documentation. Make sure each student has had a chance to practice proper troweling techniques.

Demonstrating screening should be done outside. It is important for the students to **NOT** fill the screens with dirt and use small amounts so that no artifacts will be missed during screening.

Good coordination between those 'digging' and those screening is essential.

Lesson 7 – Examples of Proper Techniques



Use of trowels and removing dirt





Screening techniques





Document, Document, Document

Lesson 8 – The Dig (using archaeology boxes)

Objective: Using activities from previous lessons, conduct a 'dig' on a 1 meter square box using proper procedures to dig, document, and make inferences on the box they are excavating.

Review prior learnings and vocabulary words.

Break into groups of 4 – 6 per box

1 – 2 students will be responsible for 'digging' (ideally 2 diggers, but could be up to 4 digging at one time)
1 – 2 students will be screening dirt for artifacts not found while digging
1 – 2 students will be documenting

Recommend rotating positions during the dig

Subjects: Social studies, Language arts, Mathematics
CCSS and NGSS: USHG ERA1 1.1, 1.2, USHG ERA2 2.1; 5-U1.1.1, U1.1.2, U1.1.3; 5-U1.2.1, U1.2.2; 5-U2.1.1, U2.1.3; 5.0A.B3
Skills: Remember, understand, apply, create, evaluate
Understanding: Explanation, interpretation, application, self-knowledge

Duration: At least 60 minutes
Class Size: 16 - 24; groups of 4 – 6

Materials:
4 archaeology boxes (1 meter x 1 meter x 24 inches deep, filled with top soil [stratigraphy on inside walls]

Per box the following supplies will be needed:
1 - 2 trowels per box (dependent upon number of students per box, can use more)
1 dustpan
1 whisk broom
2 buckets
1 clipboard with grid sheet, artifact tags, and pencil(s)
1 – 2 small paintbrushes
1 artifact bag or container
Gloves (optional)
1 metal meter stick
1 tape measure (metric)
4 metal pins/round bolts for corners
string/cording
1 sifting screen unit (1 screen for each box)
1 empty dirt box [another 1 meter x 1 meter box to screen dirt into; match numbers of box, for example, Box #1 will use Box #1D; Box #2 will use Box #2D, etc. D = Dirt]

Lesson 8 – The Dig (using archaeology boxes)

Break the students into four groups, one group per excavation box. During the dig, two - four students will dig while the other two – four will screen and record (be sure and rotate positions). Proceed to dig area where the following items will be waiting for them:

1. Clipboard with papers (grid sheet, artifact tags and examples)
2. 2 - 4 trowels
3. 1 tape measure (metric)
4. 1 folding ruler (metric)
5. 2 paintbrushes
6. 1 whisk broom
7. 1 dust pan
8. Pencils (at least 2)
9. Bucket containing:
    a. 1 line level
    b. string/cording
    c. 4 corner pins (already in place in the built box)
    d. 1 artifact bag or container

Having additional adults available is extremely helpful to allow close monitoring of the students and to assist them with any questions and help needed in digging skills, including troweling, screening, measuring, etc.

Give the students allotted time to excavate. Once the time is over, ask the students to take their final measurements and record on their sheets before placing their artifact bags/containers in their buckets along with their trowels and other supplies and place it in the middle of their excavation box. Their clipboards can be taken back to class or placed together with their artifact bags in a large tote labeled properly or placed in their toolboxes if additional digging will be done.

Once the dig is complete, have the students do the following:

Make sure all documentation is complete, this includes all mapping, artifacts, and labeling.
Place clipboard, documentation and artifacts where instructed.

Recommended is a tote labeled for each box.

Collect all tools and place them back in their toolbox (bucket) and confirm that all tools have been returned. Any tools missing should be documented and reported to the teacher.

Your tool bucket contains the following items:

(Make sure all items are placed in the bucket after your day of excavating, your group is responsible to make sure all items make it back in the bucket. If anything is missing, please report it directly to your teacher.)

All items should be cleaned as good as possible prior to putting them in your tool bucket. A wire brush to clean your trowels will be available.

All items are labeled with your Box Number, except string.

5 Trowels (Labeled with Box Number and A,B,C,D,E on end of handle)
2 Tape measures
2 Paint brushes, 1 inch
2 Paint brushes, 2 inch
1 Whisk broom
2 Dust pan and broom
1 Line Level
1 Cord of string
6 Pairs of Gloves
1 White lid for tool bucket

These items will NOT fit in your bucket, but should be included as part of your tools you are responsible for:

2 Clipboards with 3 pencils
1 Metal metric stick
1 Lid opener to help with opening the lid of your tool bucket, this is attached to your bucket with cord.
2 Buckets for excavated soil (dirt) for screening
1 Screening unit

Lesson 9 – After the Dig. Present and Protect.

Objective: Using artifacts from the Dig that was conducted on the 1x1 meter square archaeology boxes, make observations and inferences about the people that were at this site. If all of the boxes were completely excavated, there will be four main time periods at various levels:

1. Current (1960 - Current)
2. 1900 - 1960
3. 1600 - 1900
4. Pre 1600

Two of the boxes 1600 - 1900 will contain artifacts from the Eastern Woodlands and French and British occupation. One box 1600 - 1900 will contain artifacts specific from the Pacific Northwest region, and the final box 1600 - 1900 will contain artifacts specific to the Southwest/Plains region. These fit within the fifth-grade curriculum.

Subjects: Social studies, Language arts
CCSS and NGSS: SL.5.1.A-C-D, SL.5.3, SL.5.4, W.5.1, W.5.9, W.5.7, RI.5.9, S.DS.03.04, S.DS.04.04
Skills: Remember, understand, apply, create, evaluate
Understanding: Explanation, interpretation, application, self-knowledge

Duration: At least 60 minutes
Class Size: 16 – 24; groups of 4 – 6

Materials:

Student:

- All artifacts from the archeology boxes, including documentation which will be an important part of their investigation.
- Large paper (~ 48 inches wide) for each group to lay out their artifacts in the same order that they were excavated.
- "What Was This Site" worksheet

Vocabulary Words:

Curate: organize or manage a collection

Discussion:

The archaeologist work does not stop after excavating the artifacts, and it doesn't stop after the documentation is completed at the archaeological site. All artifacts will need to be cleaned, sorted, photographed and reviewing the grid sheets is also done. All these things help to make the inferences and answer the questions that you had prior to your 'dig'. ***Remember what those questions were?***

After a dig is complete, all of the items need to be curated. This means they need to be organized and stored for future research or as a collection, perhaps in a museum.

Lesson 9 – After the Dig. Present and Protect.

Teacher: If time is available, cleaning the artifacts with small brushes, or toothbrushes can be done. It is recommended **NOT** to use water for the artifacts that they had uncovered, if for no other reason than the mess that it can produce, and most artifacts were recently placed in the boxes and should not be too caked with dirt.

1. Congratulate students on a great excavation and have them get back in their groups.

2. Have the students place the artifacts on the large sheet of paper using their Level Sheet and Artifact Tags to put the artifacts in approximately the same order that they were excavated.

-It is recommended that they draw lines on their paper indicating the different levels that their artifacts were found. The depths should be available on their level sheets and their artifact tags. The first items excavated (the most modern artifacts) should be placed at the top of their paper, and the last items found (should be the oldest artifacts) will be towards the bottom of their paper.

-Give them time to sort through their artifacts and place them in the correct order on their sheets. This may require more than one class period; so being able to leave the artifacts out where they will not be disturbed is recommended.

3. Have them answer the questions on their "*What Was This Site?"* worksheet.

    a. What do you think the site was used for?

    b. What do the artifacts you found tell us about the people who used the site? *Some questions you may want to ask: What did they do? How did they live? What items may have been made there, or purchased?*

    c. Put together a history and identify the different people that may have lived here based on the artifacts you found. *(Observation, context, and inference)*

    d. Support your conclusions with evidence you found.

4. Ask the students if they were able to answer the questions that they wrote at the beginning before they started to dig, why or why not? Ask the students what other things they would like to learn about the people who used the site they excavated, what would they need to find to answer these new questions?

    a. Explain that excavations do not always answer the questions that archaeologists were looking for, however, questions should be aligned with the type of evidence potentially available. Also discuss how findings from an excavation can lead archaeologists to ask new questions which can start the archaeological process over again.

5. Ask students if they could put the site back together again (every single piece of dirt in the same place they found it). Discuss how archaeology is a destructive process, which is why note taking is so important. Tell the students to think of archaeological sites as non-renewable resources, once the site is excavated it is gone. Ask students to think of ways to protect archaeological sites (excavate only part of a site, do not excavate at all, tell an archaeologist if you find a site, etc.).

6. Explain that after archaeologists excavate a site they need to analyze the artifacts they have found and discover ways to protect their findings. Now that the excavation is complete, the next step in the archaeological process is to learn as much as we can from the artifacts that we found. Archaeologists also need to think about ways to protect the artifacts that they excavated as well as the sites that the artifacts came from. This is the curation process.

Once you are complete, it is recommended that each group place all of their artifacts back in their bags and keep artifacts from each box together for each level. This will allow them to be reused and buried again for the next class without having to start from the beginning.

Proposed boxes to excavate (to tie in with Social Studies units on Indians). Other boxes can be done to link in other social studies units:

Pacific Northwest	**Southwest (Pueblo)**	**Plains**	**Eastern Woodland***
Salmon bones (fish)	Beans, squash	Buffalo hides	Deer bones
Totem poles / ivory	Turquoise	Coup (koo) sticks	Shell beads, tinkling cones
Dishes/pottery	Deer bones	Stone tools	Maize, squash, beans
Stone tools	Pottery	Pottery	Stone tools
	Stone tools		

*Some of the boxes can be linked to the French Fur Trade, Jesuit/Catholic presence, European occupation on earlier levels, which will include items such as European stoneware, metals such as nails, etc. Fort St. Joseph in Niles, Michigan is a close site and on-going excavation is done each summer by students at Western Michigan University. The Fort St. Joseph Museum also has information available.

Assessment: Provided are three worksheets for the students to test how well they remembered the information from the lessons. These can be used as the final assessment of all of these lessons

Lesson 9

What Was This Site?

Unit #: _____ Area: 1 x 1 M

Excavation Unit Level Sheet

Project: CS Elementary 5th Grade

Site: 20KZ1819

20 = Michigan
KZ = Kalamazoo County
1819 = School Year

Members of the Excavation Team:

_____

_____

_____

_____

Now that you have completed excavating your Box, arrange the artifacts on the large paper in the order that they were excavated using your Level Sheets, artifact tags and other documentation. *(Use the back of the paper if you need more room to write).*

1. What do you think the site was used for?

2. What do the artifacts you found tell us about the people who used the site?
   Some questions you may want to ask: What did they do? What did they eat? How did they live? What items may have been made there, or purchased/traded?

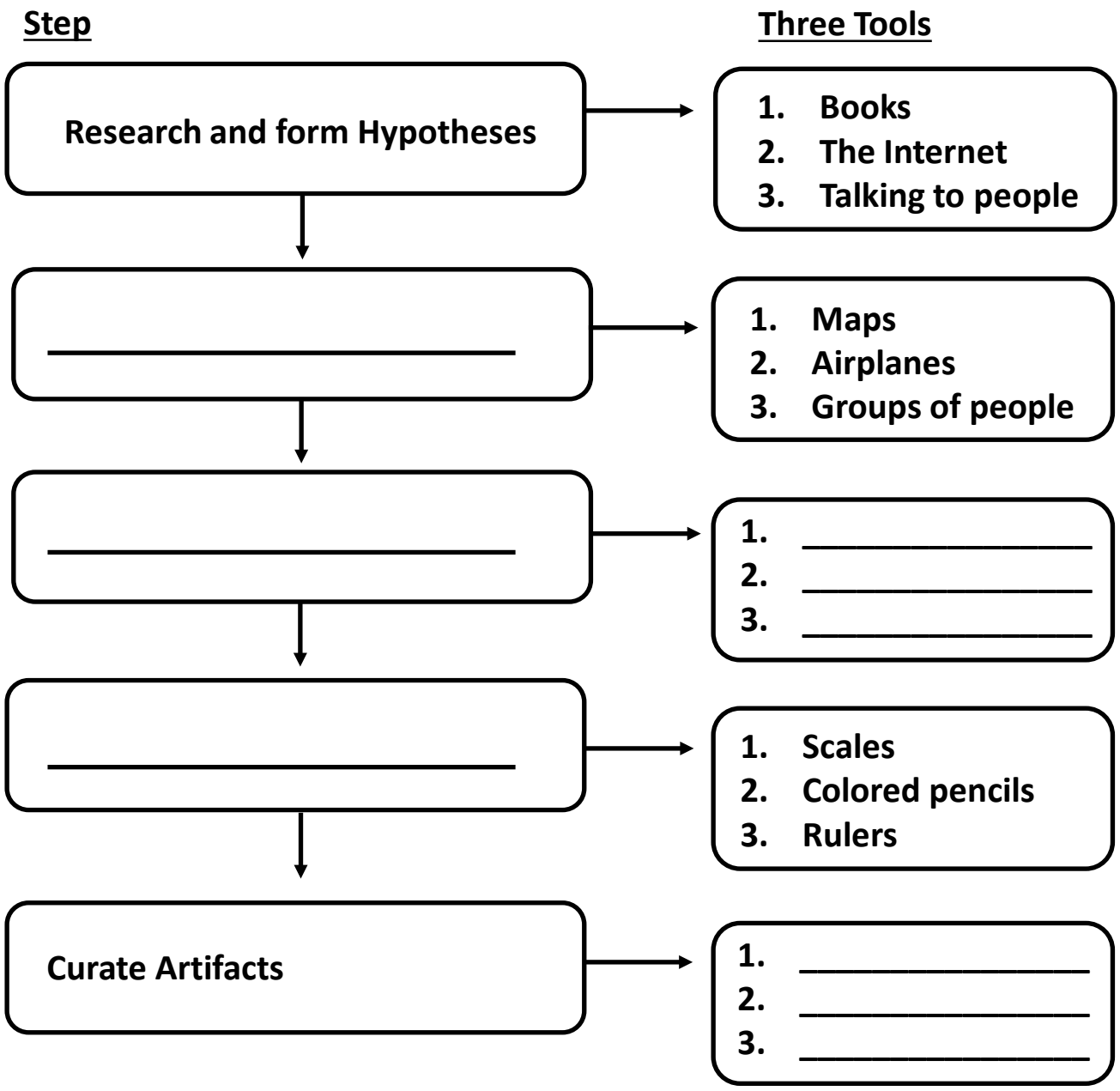
3. Put together a history and identify the different people that may have lived here based on the artifacts you found. *(Observation, context, and inference)*

4. Support your conclusions with evidence you found.

Name: _____

Use your knowledge of archaeology to complete the concept map

The Archaeological Process



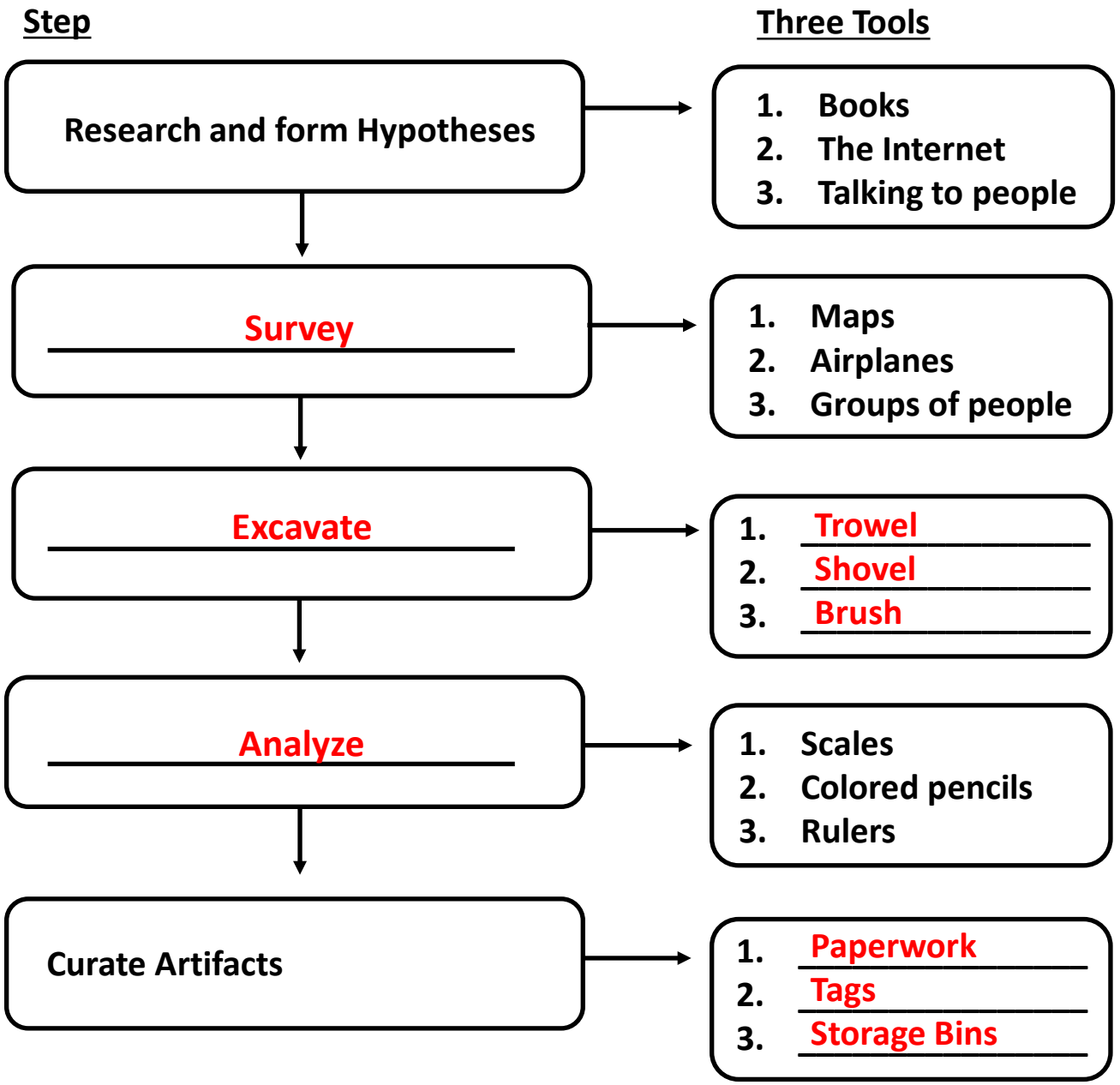
Finally, the step in the archaeological process that is ALWAYS happening is the _____ of archaeological sites.

Final Assessment 1 **Answer Sheet**

Name: _____

Use your knowledge of archaeology to complete the concept map

The Archaeological Process



Finally, the step in the archaeological process that is ALWAYS happening is the _____Protection_____ of archaeological sites.

Name: _____

Use the following word bank to fill in the blanks:

Research Protect Excavate Survey Analyze Walking

Questions Artifact Flying Test Hypotheses

Feature Curate

1. It is important that people _____ archaeological sites so they can be studied in the future.
2. The first steps in the archaeological process are to _____ and form _____ about the topic that archaeologists want to study.
3. The second step in the archaeological process is to conduct a _____.
4. Archaeologists use _____ and _____ surveys to find archaeological sites.
5. The third step in the archaeological process is to _____ a site.
6. An _____ is something that can be picked up at a site.
7. A _____ is something that **cannot** be picked up at a site.
8. The fourth step in the archaeological process is to _____ objects.
9. The fifth step in the archaeological process is to _____ objects.
10. The archaeological process can _____ hypotheses, and can also create new _____.

Name: _____

Use the following word bank to fill in the blanks: *(Answer Sheet)*

Research Protect Excavate Survey Analyze Walking

Questions Artifact Flying Test Hypotheses

Feature Curate

1. It is important that people ***PROTECT*** archaeological sites so they can be studied in the future.
2. The first steps in the archaeological process are to ***RESEARCH*** and form ***QUESTIONS*** about the topic that archaeologists want to study.
3. The second step in the archaeological process is to conduct a ***SURVEY.***
4. Archaeologists use ***FLYING*** and ***WALKING*** surveys to find archaeological sites.
5. The third step in the archaeological process is to ***EXCAVATE*** a site.
6. An ***ARTIFACT*** is something that can be picked up at a site.
7. A ***FEATURE*** is something that **cannot** be picked up at a site.
8. The fourth step in the archaeological process is to ***ANALYZE*** objects.
9. The fifth step in the archaeological process is to ***CURATE*** objects.
10. The archaeological process can ***TEST*** hypotheses, and can also create new ***HYPOTHESES.***

Name: _____

Please answer the following questions based on what you know about archaeology.

Part One: Please mark the following statements as True ("T"), False ("F") or don't know ("DK").

1. _____ Archaeology is the study of fossils.
2. _____ Some of the tools archaeologists use are bulldozers, shovels and trowels.
3. _____ Archaeologists excavate sites to look for rare, valuable buried treasure.
4. _____ Archaeologists seek to understand past societies by studying what their citizens left behind.
5. _____ When all the objects have been removed form a site, the archaeological project is finished.
6. _____ It's ok to take cool artifacts when you are visiting an archaeological site.
7. _____ You can help protect archaeological sites.
8. _____ Where an artifact was found is not really important.
9. _____ Archaeologists look for dinosaurs.
10. _____ Everything a person learns using archaeology can be found in history books.
11. _____ A person does not need special training to be an archaeologist.
12. _____ An archaeological survey involves digging up artifacts.

Part Two: Please use your knowledge of archaeology to fill in the blanks.

List five (5) tools that archaeologists use:

1. _____
2. _____
3. _____
4. _____
5. _____

Name: _____ ***(Answer sheet)***

Please answer the following questions based on what you know about archaeology.

Part One: Please mark the following statements as True ("T"), False ("F") or don't know ("DK").

1. **F** Archaeology is the study of fossils.

2. **T** Some of the tools archaeologists use are bulldozers, shovels and trowels.

3. **F** Archaeologists excavate sites to look for rare, valuable buried treasure.

4. **T** Archaeologists seek to understand past societies by studying what their citizens left behind.

5. **F** When all the objects have been removed form a site, the archaeological project is finished.

6. **F** It's ok to take cool artifacts when you are visiting an archaeological site.

7. **T** You can help protect archaeological sites.

8. **F** Where an artifact was found is not really important.

9. **F** Archaeologists look for dinosaurs.

10. **F** Everything a person learns using archaeology can be found in history books.

11. **F** A person does not need special training to be an archaeologist.

12. **F** An archaeological survey involves digging up artifacts.

Part Two: Please use your knowledge of archaeology to fill in the blanks.

List five (5) tools that archaeologists use: Trowel, Bucket, Dustpan, Brush, Paintbrush, Screen, Clipboard, Papers, Grids, Pencils, Measuring tools, Shovels, others?

1. _____
2. _____
3. _____
4. _____
5. _____

Artifact Information for Archaeology Boxes

On the following pages is a layout of how the artifacts were placed in each box and approximate depth to correspond to the following levels and time periods.
Also included is the name of the artifact and total number of artifacts per box.
Photos of each artifact used is following each box layout.

Not all artifacts are included in the photos.
All artifacts were produced by hand, reproductions, or obtained legally.

Because Eastern Woodlands is common in Michigan, it was important to have two Eastern Woodland boxes. Depending upon your area, any number of boxes can be devoted to the area of interest. These are only suggestions on what can be used.

Area Represented
Pacific Northwest
Southwest / Plains
Eastern Woodlands A
Eastern Woodlands B

Level of Artifacts
Current
1901 – Current (Plow Zone)
1600 – 1900 (Occupation)
Pre-1600
Ancient

Box # 1 Name: Pacific Northwest

Current	Spoon, Padlock, Toy Soldier, Can Opener	**2”** **(to 3”)**
1901 – Current **(Plow Zone)**	Ice Fishing Weight, Heavy Wire, China More modern	**4”** **(to 7”)**
1600 – 1900 **Occupation**	Square Nails, Buttons, Mandible, Lead Balls/Shot, Large Animal Knee, Skull, Partial Mandible, Charred Rock, Turkey Bones, Charcoal	**9”** **(to 16”)**
Pre-1600	Totem, Ivory Statutes (2), Wood Fish Hook	**4”** **(to 20”)**
Ancient	Arrowhead, Arrowhead	**5”** **(to 24”)**

artifacts 22

Box # 1 Name: Pacific Northwest

Current





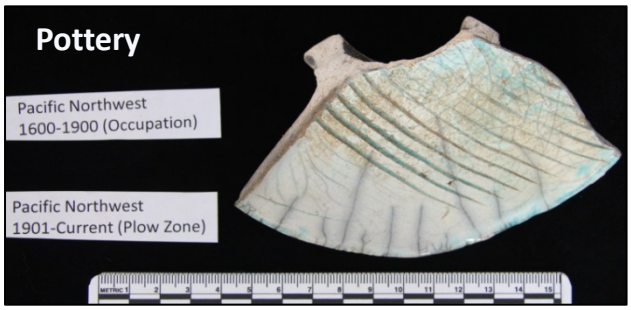


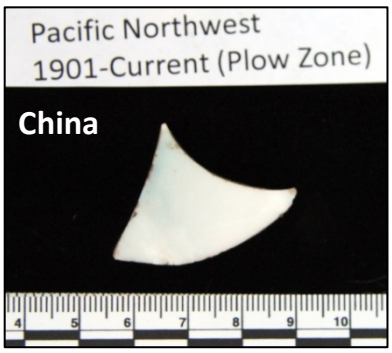


1901 – Current (Plow Zone)

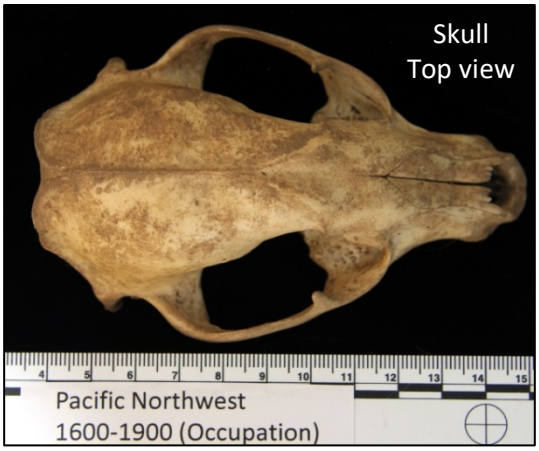








Box # 1 Name: Pacific Northwest



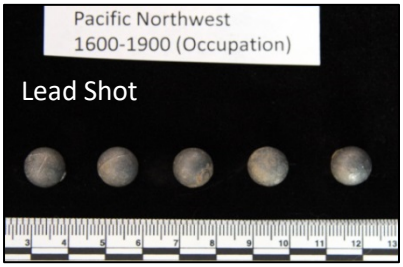
1600 – 1900 (Occupation)



Not pictured:
Turkey Bones









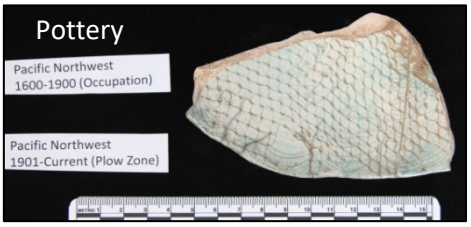


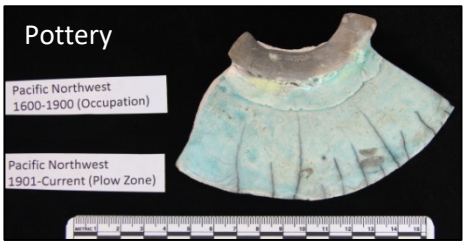


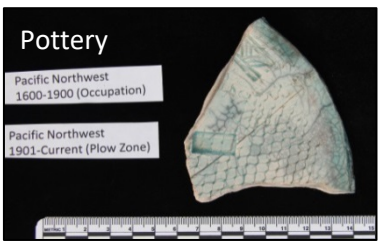












Box # 1 Name: Pacific Northwest



Pre – 1600







Ancient

(Arrowhead reproductions were obtained from Fort St. Joseph Museum, Niles, Michigan)



Box # 2 Name: Southwest / Plains

Current	Red Bell Wood Cross Pencil	**2”** **(to 3”)**
1901 – Current **(Plow Zone)**	Toy Truck Aluminum Bowl Nails	**4”** **(to 7”)**
1600 – 1900 **Occupation**	Buttons Mandible Pottery Nails Pottery Charcoal Metal Cross w/Turquoise Pottery Skull Pottery Lead Shot Turquoise Large Bone	**9”** **(to 16”)**
Pre-1600	Tooth Turquoise Small / pcs. Turkey Bones	**4”** **(to 20”)**
Ancient	Arrowhead Arrowhead	**5”** **(to 24”)**

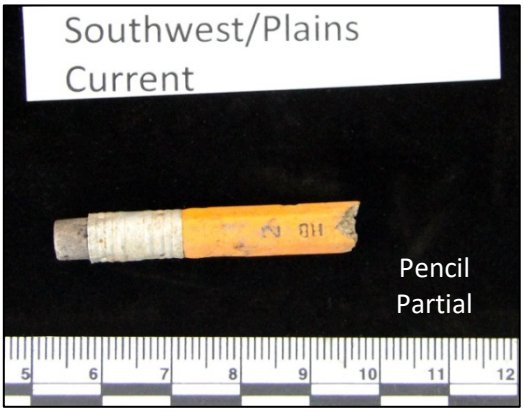
artifacts
24

Box # 2 Name: Southwest / Plains

Current







1901 – Current (Plow Zone)









Box # 2 Name: Southwest / Plains

1600 – 1900 (Occupation)











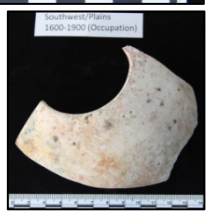


























Pottery Pieces





Box # 2 Name: Southwest / Plains



Pre – 1600





Ancient

(Arrowhead reproductions were obtained from Fort St. Joseph Museum, Niles, Michigan)



Box # 3 Name: Eastern Woodlands A

Current	Doll Head School glue stick Spartan Phone Case	**2”** **(to 3”)**
1901 – Current **(Plow Zone)**	Rocks Railroad Cement Nails	**4”** **(to 7”)**
1600 – 1900 **Occupation**	Buttons Nails Lead Shot Mandible Flints – French Clay Pipe Pieces Metal Cross Lead Seal Charred Rock Beads China Charcoal	**9”** **(to 16”)**
Pre-1600	Tinkling Cones Acorns Deer Antler Corn Turkey Bones	**4”** **(to 20”)**
Ancient # artifacts 25	Arrowhead Arrowhead	**5”** **(to 24”)**

Box # 3 Name: Eastern Woodlands A



Current





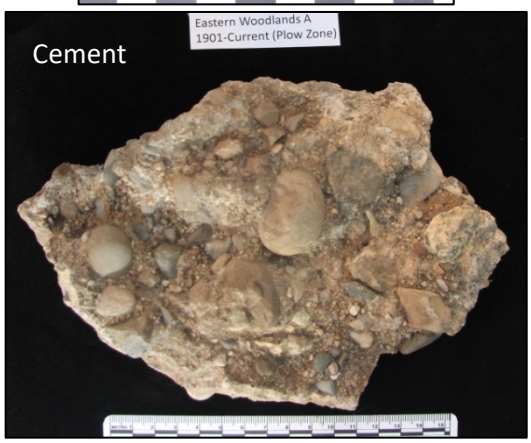




1901 – Current (Plow Zone)







Box # 3 Name: Eastern Woodlands A

1600 – 1900 (Occupation)















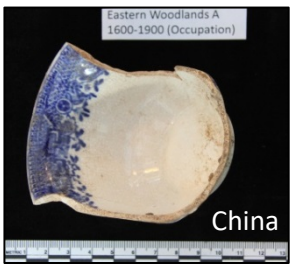




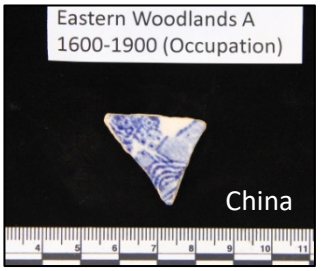


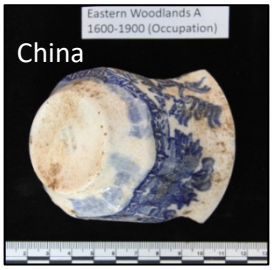


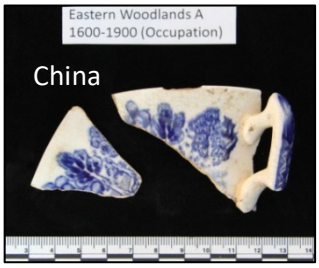














Box # 3 Name: Eastern Woodlands A

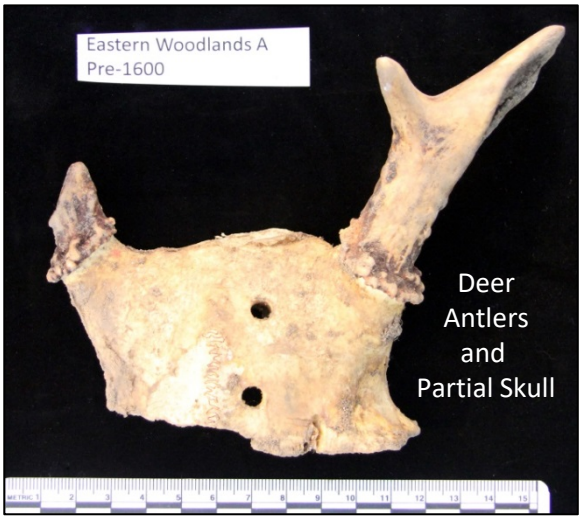


Pre – 1600

Not pictured: Acorns







Ancient

(Arrowhead reproductions were obtained from Fort St. Joseph Museum, Niles, Michigan)



Box # 4 Name: Eastern Woodlands B

Current	Baby Food Jar	Canning Lid	Toy Tires	**2” (to 3”)**
1901 – Current (Plow Zone)	Cement	Sauce Pan	Nails	**4” (to 7”)**
1600 – 1900 Occupation	China Flints – British Lead Seal Clay Pipe Pieces Tinkling Cones	Buttons Metal Cross Large Foundation Rocks	Turkey Bones Charcoal Lead Shot Beads	**9” (to 16”)**
Pre-1600	Corn Deer Antler	Acorns	Mandible	**4” (to 20”)**
Ancient	Arrowhead		Arrowhead	**5” (to 24”)**

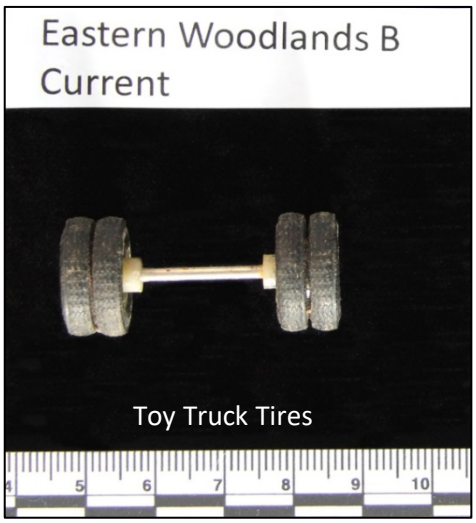
artifacts 24

Box # 4 Name: Eastern Woodlands B

Current











1901 – Current (Plow Zone)



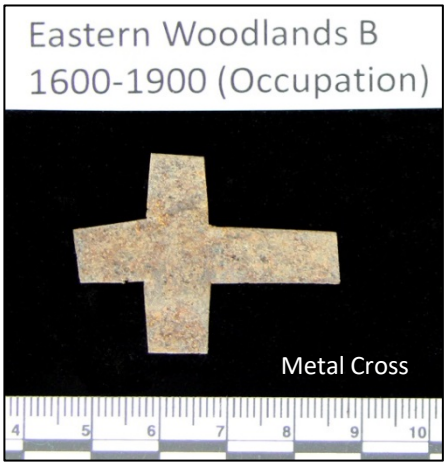
Not pictured:
Cement

Box # 4 Name: Eastern Woodlands B



1600 – 1900 (Occupation)



















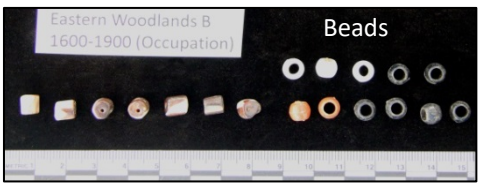












Not pictured:
Large Foundation Rocks

Box # 4 Name: Eastern Woodlands B





Pre – 1600



Not pictured:
Acorns

Ancient

(Arrowhead reproductions were obtained from Fort St. Joseph Museum, Niles, Michigan)



How to build an archaeology box

A total of 8 boxes were built and used in Lesson 8.

Four (4) boxes were filled with dirt and artifacts; and labeled with a number from 1 to 4. Four (4) more boxes were built (without stratigraphy on the inside walls), and were used to screen all dirt into to keep the dirt confined within the empty boxes.

The dirt boxes were also labeled 1 through 4, as follows, 1D, 2D, 3D, 4D and correspond to each box. Each Group was assigned two boxes, 1 and 1D; 2 and 2D; 3 and 3D; and 4 and 4D.

Supplies for one (1) box:

6 2" x 4" pine boards, treated, 8' long (4' will be left over to use on next box)
2 ¾", 4' x 8' **exterior grade plywood**
136 2" **stainless steel** screws (this is minimum amount, 1 lb. = ~ 128 screws)
20 3" **stainless steel** screws (this is minimum amount, 1 lb. = ~ 82 screws)

1 Wood pallet
4 **Stainless steel** hooks

1 Set of large (recommend 4") Stencils
1 Set of medium (recommend 3") Stencils
1 - 2 King Size Permanent Black Markers
Wood stain in the following colors for stratigraphy on walls
(we used Minwax® Wood Finish Penetrating Stain)

- Ebony
- Dark Walnut 2716
- Honey 272
- Red Mahogany 225
- Golden Pecan 245



Exterior grade plywood was used on all boxes for the bottom, sides, and top. Treated 2" x 4" pine boards were used for remainder of the wood for construction.

The use of 2" stainless steel screws is recommended for all, except when constructing the top frame when 3" stainless screws were used.

Overall dimensions:

Bottom of each box is 44" square.
Top of each box is 48" square.
Sides, long sides x 2 is 24" x 44"
Sides, short sides x 2 is 24" x 42 ½"

Overview



This is an example of the box with a lid prior to stenciling, and prior to sealant applied to the top of the lid.

The top of the box is 48” square

This is an example of the finished box without a lid, but has stenciling (notice ‘3’ – on 2 sides) and directions, N=North; S=South; E=East; W=West





Notice the stratigraphy on the inside walls.

The bottom of the box is 44” square

The sides of the box

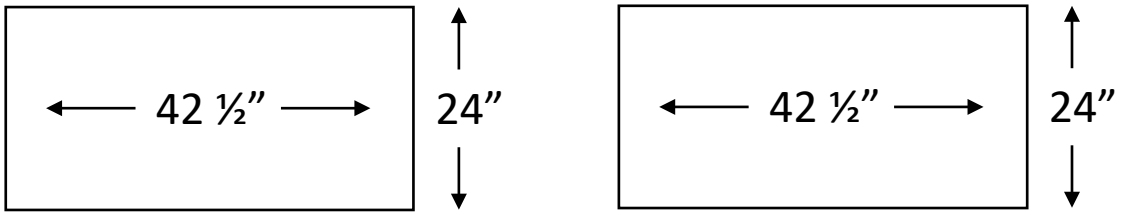
Step 1: Using the 2" x 4" boards, rip 4 in half to create 8 - 2" x 2" boards, 8' long
(Note: 2 - 2" x 4" boards will be left to create ledge on top)

- Cut 4 – 2" x 2" boards to 42-3/8" [Step 3A and 3B]
- Cut 4 – 2" x 2" boards to fit on sides as illustrated below [Step 3C/D] (size may vary)

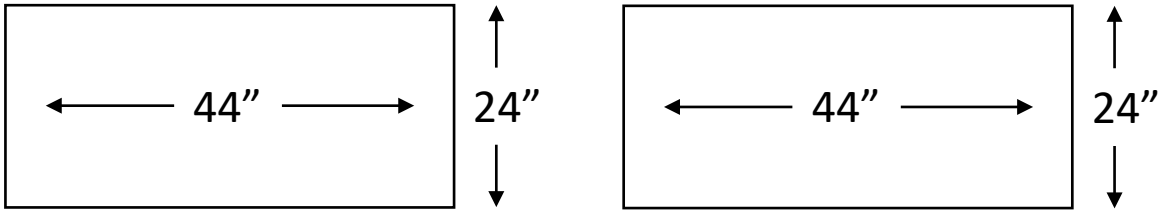
Step 2: Using 4' x 8' sheet of exterior grade plywood, cut sides to the following dimensions:

* *Lowe's® will cut the 4' x 8' plywood pieces to size which is extremely helpful*

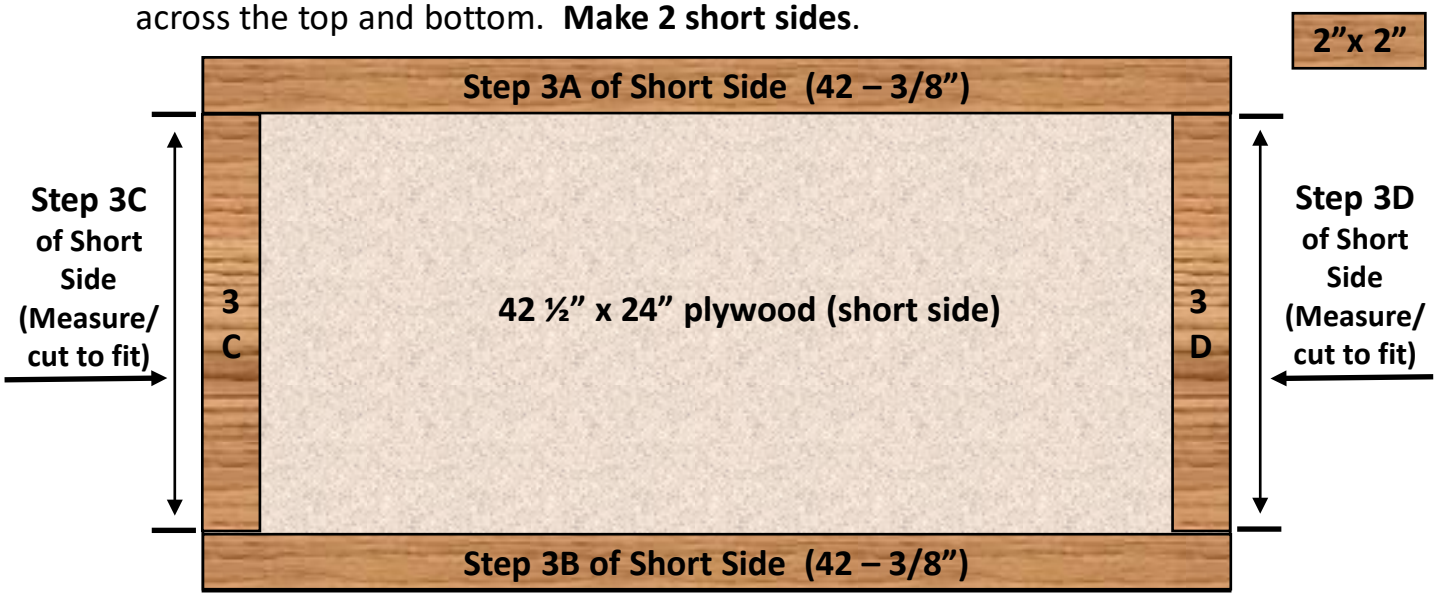
- 2 short side pieces cut to 42 ½" long x 24" wide



- 2 long side pieces cut to 44" long x 24" wide



Step 3: Place the short side (42 ½ " x 24") flat then place the 2" x 2" as illustrated. Using 2" stainless screws, screw into place (~ 4 screws on sides, and ~ 7 screws across the top and bottom. **Make 2 short sides**.



Bottom

The sides of the box (continued)

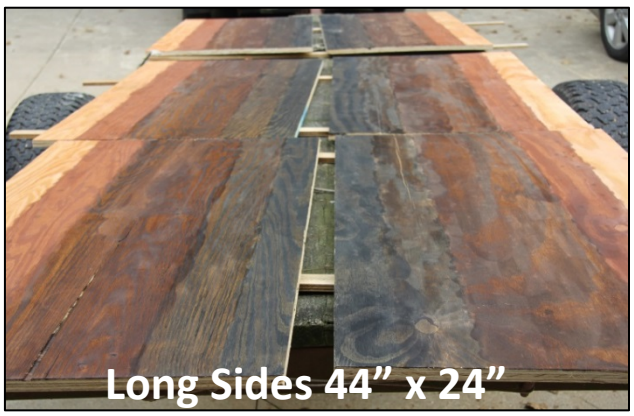
Step 4: **Stratigraphy.** It is helpful to paint/stain the wood prior to putting the box together. It can be done after the box is together, but you will have to crawl inside the box to do this.

Note that the short sides have already been screwed together with the 2" x 2", but the long sides have not yet been attached to the short sides.

Below are photos of various levels of stratigraphy prior to putting the box together. Using a permanent felt marker to make rocks prior to staining can be done if desired. The dirt box (labeled 'D') does not need to have stratigraphy. Stratigraphy is optional, but does reinforce Lesson 4 on Stratigraphy when using. The use of Minwax® stains were used on the following illustrations to represent changes in soil colors.
Use of a Munsell Soil Color Chart can also be used.

Wood stain in the following colors for stratigraphy on walls
(we used Minwax® Wood Finish Penetrating Stain)
Ebony (Top)
Dark Walnut 2716
Honey 272
Red Mahogany 225
Golden Pecan 245 (Bottom)





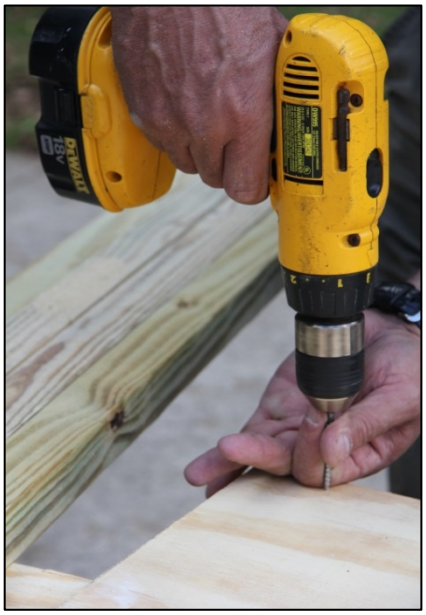


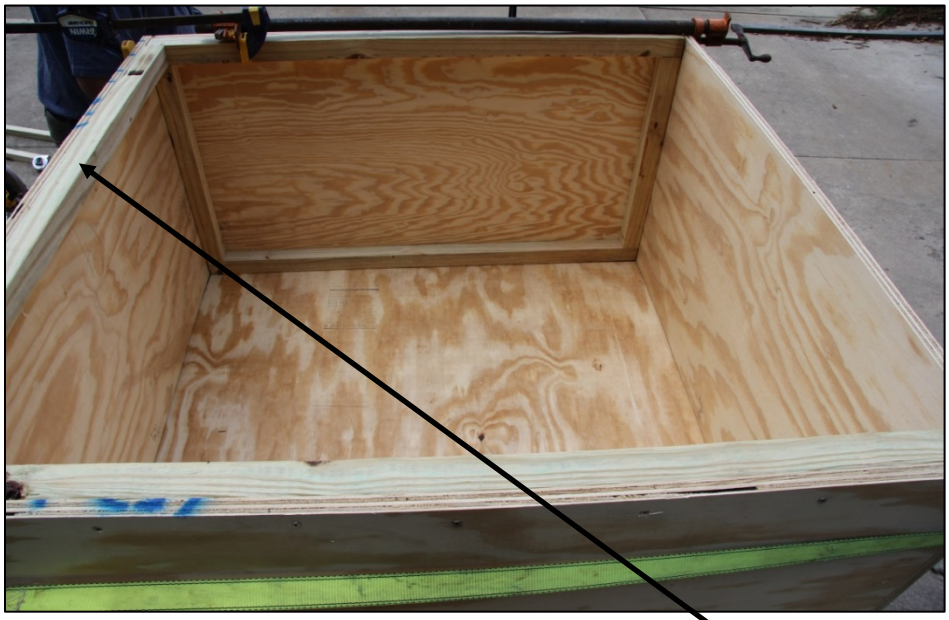


The sides of the box (continued)

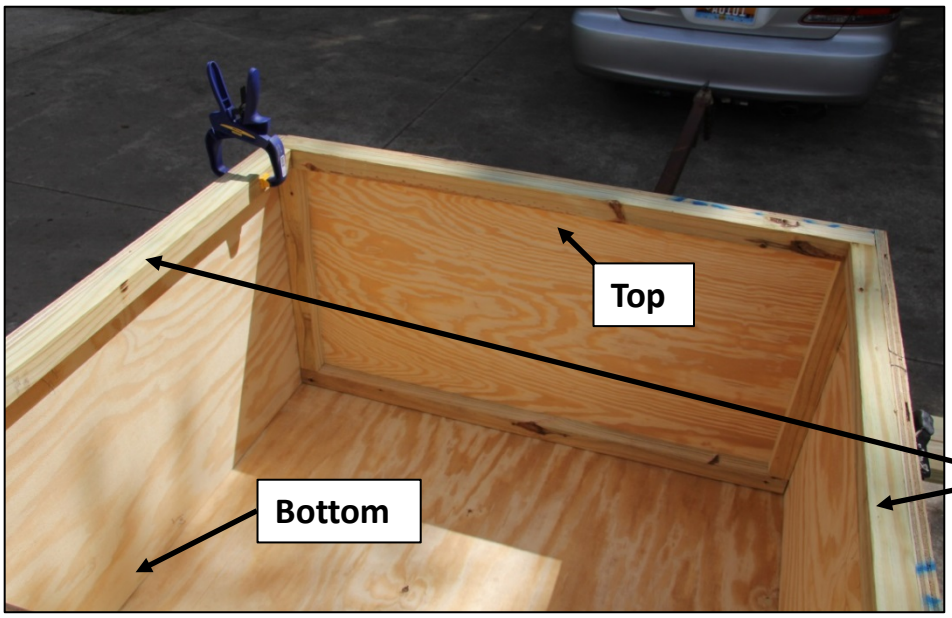
Step 5: Match up the top edge of the 44” x 24” [long side] to the framed 42 ½” x 24” [short side] ***(make sure you have the bottoms correctly lined up, especially if you have done the stratigraphy).*** Using 2 screws, screw in the top and bottom of one short and one long side together. Then add the other long side, screwing together, and finally the other short side.

- Add a long 2” x 2” to the long side to the top edge, measure/cut to fit.
- Leave a slight 1/8” gap on the long sides so that it lines up with the short sides.
- Invert box and add another long 2” x 2” to the bottom, measure/cut to fit.
- Finish by screwing in additional screws in each section to reinforce.
- Match the outside corners.





Placing the long 2” x 2” to the top edge.



Both long sides on top complete, invert and repeat on the bottom.

Making the lid for your box

Step 6: Cut a 44" square bottom using your ¾" exterior grade plywood. While the box is inverted, square this up to the bottom of the sides and screw in place. Make sure that your box is square prior to setting your screws.

[Make sure if you have done stratigraphy that you are putting it on 'the bottom' of the box.]

Step 7: Invert back to the upright position and add the top frame using a 2" x 4", matching the 2" x 2" board inside. Measure/cut to fit using 2 long sides and 2 short sides.

- Use 3" stainless steel screws to hold in place. You should use ~ 5 screws per side.



Clamping the 2" x 4" in place is helpful to line it up properly prior to putting the screws in place.

Putting the ledge on the box not only gives it a nice clean look, but gives the students a nice platform to lean against and place their tools.

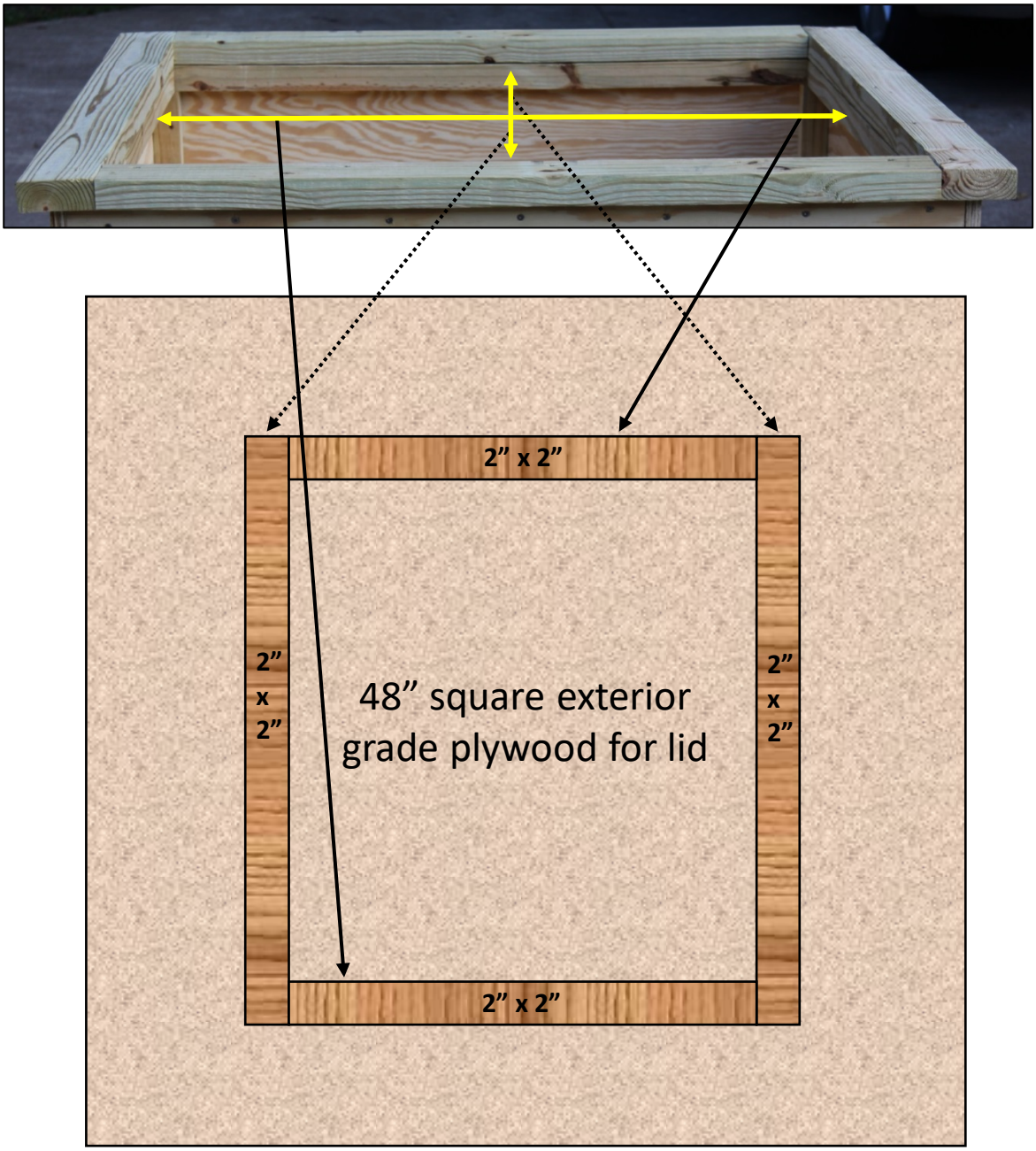
Your lid should fit nicely within the ledge. Lid instructions begin with Step 8.



Constructing the lid for the box

Step 8: It is important to make the frame inside the lid to fit loosely inside the top frame and to oversize the actual lid so that it overhangs the edges of the box to keep it as dry as possible.

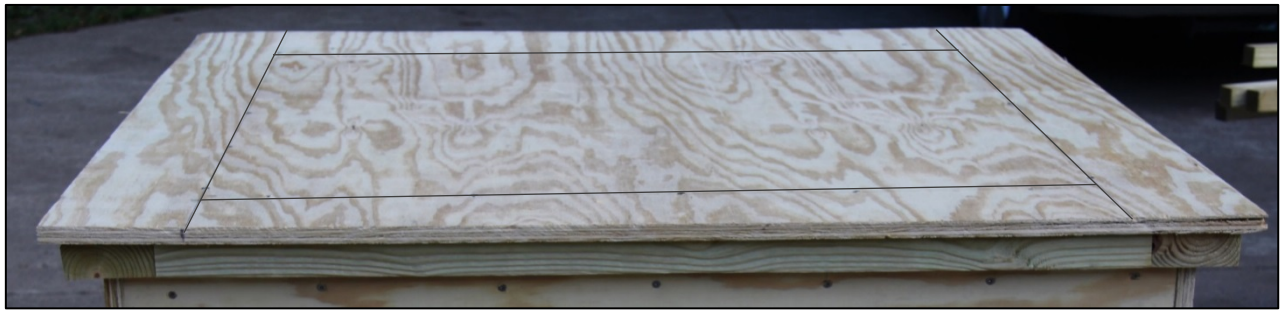
- Cut a 48” square lid using your ¾” exterior grade plywood.
- Measure the inside of your box to determine position of 2” x 2” boards, and subtract ~ 1-2 inches so lid fits inside the box.



See example on next page on how you can draw a line on your lid to help determine where to place your 2” x 2” frame

Constructing the lid for the box (continued)

Step 8, continued: Below is an illustration of how the inside of the box was marked on the lid using a pencil. This helps with correct placement of the 2" x 2" boards that will fit inside the box to make a stable lid. Screw 2" x 2" boards into place.





Constructing the lid like this allowed us to turn the lid cock-eyed to allow air to get into the boxes so that moisture or mold was not a problem. Boxes were stored in an open shed at the school with lids cock-eyed and tarps placed on top and secured as illustrated below.



Sealing the lid against weather

Step 9: Because we used exterior grade plywood (you may want to consider marine plywood, however, it is costly), we wanted to help protect the lid and box from moisture damage, so we applied a spar urethane coating to the top and sides of each lid. We put approximately 3-4 coats of this on each lid.



Lids with spar urethane coating on top



We used the Minwax® Indoor/Outdoor Helmsman Spar Urethane, Clear Gloss on the archaeology box lids for protection

Drainage holes and the pallet

Step 10: Drilling drainage holes in the bottom of the box is recommended in case any water collects inside. Drilling the drainage holes can be done at any time, but it is recommended to do them prior to placing the box on the pallet; recommended is at least 3/8" to ½" holes, at least 9 of them.



Lids with polyurethane coating on top and placed on pallets

Step 11: We originally were going to attach each box to a pallet, however, due to the weight of the boxes, we felt it was not necessary and placed the boxes on the pallets without attaching them. We invested in a pallet jack which made moving the boxes around much easier.

A 2.5 ton pallet jack made moving the boxes around much easier



Finishing Touches (Hooks)

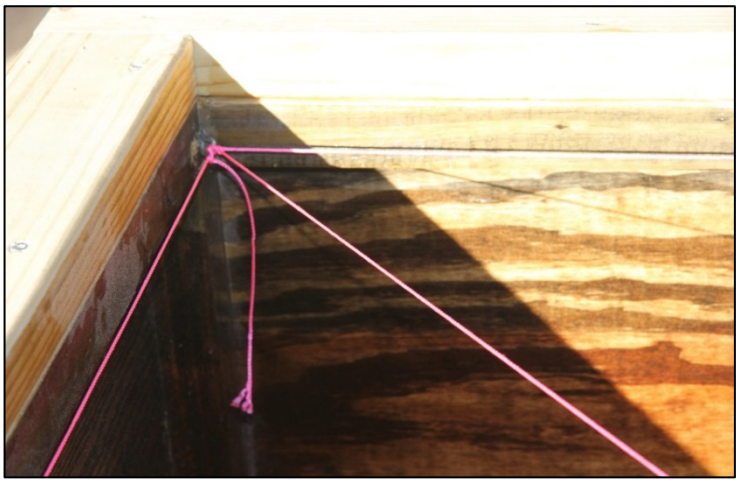
Step 12: We wanted the students to be able to experience as close as possible a real archaeological dig site, so we placed stainless steel hooks in the corners of the box where they could put in a string to simulate their actual dig site as illustrated below.

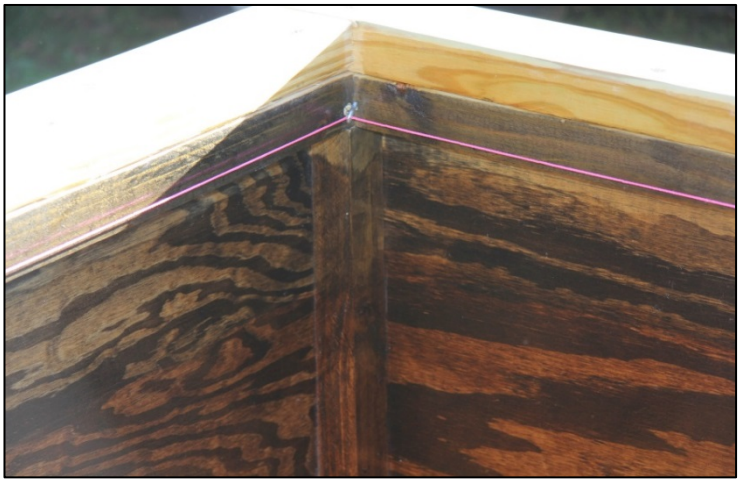


Stainless hooks that we squeezed together the hook part slightly using a pair of pliers so that it did not stick out and cause an injury to the students



The stainless hooks were screwed in at each corner, low enough to miss the lid when placed on top





Above are examples when string was placed in the hooks to simulate an actual archaeological dig site

Finishing Touches (Stencils)

Step 13: To incorporate compass directions into the boxes, the directions of N = North, S = South, E = East, and W = West were stenciled on the ledge of the box. 3" stencils were used. A King Size permanent black marker was used to stencil them in.



Using a 3" stencil and a King Size permanent marker, N, S, E, W were placed on the appropriate sides of the ledge on the box

Step 14: Because we had multiple boxes, and one box for dirt (with no stratigraphy) it is recommended that using 4" stencils you label the box on at least 2 sides with a number and the corresponding dirt box with the same number and the letter 'D'. A King Size permanent black marker was used to stencil them in.





Above and Right are examples of boxes with stenciled numbers on them.



Additional Notes

We had 8 yards of top dirt (which has not been processed, so it contains roots, sticks, and rocks) delivered to the school. Each box took approximately 2/3 yard of dirt. Artifacts were layered in the boxes with the oldest planted first, and so on. Please see lesson 8 for the dig. Beginning on page 96 contains examples of how the artifacts were placed.

Below are photos of placing the artifacts and the set up prior to students starting the dig.







This is how we set up 4 boxes, the dirt boxes contained the screens, so that the students screened the dirt directly into the empty dirt box.

When empty, or near empty, the boxes also served as a great storage place for their bucket of tools, buckets for dirt, and screens.

Everything was labeled with box numbers that the students were assigned and responsible for.





Additional Photos











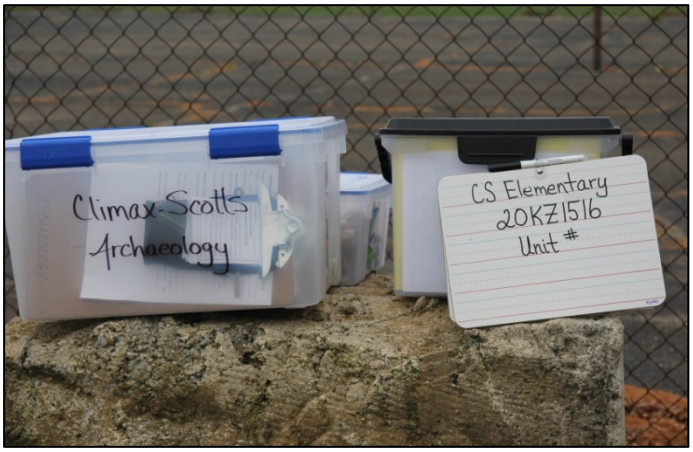






Students rotated positions between digging, screening, measuring and recording.

Additional Photos















Using archaeology to develop strategies that can be used to support state curriculum requirements in science, social studies, language arts, mathematics which include scientific inquiry, problem solving, and higher thinking skills can be achieved. It gives the students a hands-on opportunity that they will remember for many years to come.