

# WHAT DO YOU SEE?

Demonstrate differences between observations, inferences, and opinions

## OBJECTIVES

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At the end of the lesson, students will be able to:

- Define the differences between observations, inferences, and opinions
- Illustrate the differences by sorting and writing statements
- Design a hypothesis based on an inference

## MATERIALS

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- Image of painting, either printed for each student or projected for the class
- Printed worksheet for each student
- Pencils or pens

## VOCABULARY

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**Observation:** something noticed or perceived through your senses, such as: seeing, hearing, or touching something directly. "I hear thunder" is an observation.

**Inference:** a conclusion that is developed through evidence, reasoning, or past observations. "Because I hear thunder, it will rain" is an inference. It is not raining now, but in the past it has rained when I heard thunder.

**Opinion:** a personal feeling which isn't always based on facts. An opinion is a personal judgment that does not have to be proven or even true for everyone. "Thunder is scary" is an opinion. It might be different for different people.

**Hypothesis:** a guess, explanation, or inference that we can test. "If I hear thunder, then it will rain" is a hypothesis. By observing rain and thunder storms over time, we can wonder about and form conclusions about how often this is true.

## BACKGROUND

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Scientists gather information by observing the world. Archaeologists are scientists that study people in the past. Since we can't observe the past directly, archaeologists observe, infer, and make hypotheses from what people have left behind (like personal items, buildings, art, etc.). They use their observations to infer past behaviors, cultures, and events. These inferences can become hypotheses that archaeologists test by looking for more evidence. Inferences drive the research questions at the start of the scientific method and every archaeological investigation. You can think of this as a process of seeing, thinking, and wondering.

## GRADES: 3-6

**Subjects:** Science, Social Studies, Language Arts

**Standards:**

- [CCSS.ELA-Literacy.RST.6-8.8 ST.6-8.8](#)
- [TEKS 113.17](#)
- [TEKS 112.10](#)

**Skills:** inquiry, reasoning, analysis of source materials

**Duration:** 45-60 minutes

**Class size:** any; small groups of 2-4

The accompanying painting was made by Miguel Cabrera in 1763. Cabrera was mestizo (of European and indigenous American descent) and lived in the empire of New Spain, which is now Mexico. This painting was part of a series of casta paintings, which depicted interracial marriages. They include a wealth of information about traditional clothing, objects, and food, which archeologists use to better understand their culture. The paintings can also show stereotypes and racial biases of the artist's time.

## PROCEDURES

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1. Introduce the vocabulary words to the students. Discuss the differences and relationships between observation, inference, and opinion by finding examples in your classroom. Ask the students to observe what is in the room and share their observations, inferences, and opinions about their environment.
2. Share the accompanying painting with students, either as a handout or by projecting the image onto a shared screen. Observe the painting as a class. Everyone will notice different details, which is why archaeologists work best in teams.
3. Next have students complete Part A of the worksheet independently or in small groups.
4. Bring the class back together to review the answers. Discuss disagreements.
5. In Part B of the worksheet, students write their own observations, inferences, and opinions independently or in small groups.
6. Come together as a class to share students' statements. Students can read their statements out loud and ask the class to guess whether it is an observation, inference, or opinion to further test new knowledge.

## ASSESSMENT

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Answers to Part A of the worksheet:

1. The people in the painting are wearing pretty clothes: **Opinion**
2. The child is wearing white: **Observation**
3. The people in the painting are rich: **Inference**, based on observations about clothing, jewelry, and other personal items in the painting. We cannot directly observe their wealth from the painting.
4. The people in the painting are a family: **Inference**, based on there being two adults and a child. We do not know the relationship between them based on the painting alone.
5. This is a good painting: **Opinion**
6. The adult on the left is wearing jewelry: **Observation**

## WRAPPING UP

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Either as a class or in small groups, choose one inference to become a hypothesis. Ask students to develop ideas about what they wonder about the people in painting. Write the hypothesis as an if-then statement. What else would they need to observe or find out beyond this painting to test their hypothesis? This is how scientists begin the scientific process for understanding the world.



SOCIETY FOR AMERICAN ARCHAEOLOGY

Created by Beth Pruitt for Austin Public Archaeology Day on April 25, 2020. Reviewed in 2020 by teachers John Lemons, Mari Harris, and Bailey Cavender with funding from the Society for American Archaeology's Public Education Endowment and the Society for Historical Archaeology. Download teaching materials at:

[www.saa.org/education-outreach/teaching-archaeology/k-12-activities-resources](http://www.saa.org/education-outreach/teaching-archaeology/k-12-activities-resources)



# WHAT DO YOU SEE?

NAME \_\_\_\_\_

A. Each of these statements is either an observation (what you see), inference (what you think), or opinion (what you feel) about the painting. For each statement, decide which it is and check the box for that column. Discuss your choices as a class.

	Observation	Inference	Opinion
1. The people in the painting are wearing pretty clothes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. The child is wearing white.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The people in the painting are rich.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The people in the painting are a family.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. This is a good painting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. There are three people in the painting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B. Write your own! Below, write an observation, inference, and opinion about the painting. Be prepared to share and explain your statements with the class.

OBSERVATION: \_\_\_\_\_

INFERENCE: \_\_\_\_\_

OPINION: \_\_\_\_\_