

T3.JAM 2

NAME	DATE	SUBJECT SOCIAL STUDIES
LESSON #T3.JAM.2A	GRADE 4-5	TOPIC CONTEXT
TITLE YOU ARE NOT THE CENTER OF THE UNIVERSE		TIME NEEDED: 30 MINUTES

DESCRIPTION This JAM puts Galileo's contributions to science and society into historical context by creating one timeline based on multiple sets of cause and effect. Called to testify—*guilty or innocent*—how in God's name can one man defend science?

LESSON FOCUS & GOALS The focus of this lesson is to explore how scientific inquiry threatened & strengthened Europe's biggest power players throughout the 16th & 17th centuries. The goal of this lesson is to consider how despite multiple sets of cause & effect, examining details & organizing patterns gives us context to understand change over time.

MATERIALS NEEDED

Print enough copies of this packet so each student has (1) role to play T3.2A. Note, there are (4) roles/packet. If you have 20 students, print 5 copies. For extensions 2B-G, print 1 each/student. Pencils.

VOCABULARY

heliocentric with the sun as the center

scope extent or range of view, outlook, application, operation, effectiveness
(ex. **telescope**, **microscope**, **kaleidoscope**)

HOOK POST OR READ ALOUD

Galileo Galilee is on trial. Can you save him? Religious officials have accused him of heresy for blasphemy, for contradicting Church teachings. Specifically, Galileo hypothesized a heliocentric model of the universe, for suggesting the Earth revolves around the Sun.



DIRECTIONS

1) Divide your class into groups of 4. For each group, print and deliver enough copies of this packet, giving one role/position to each student/group. **2)** Working in small groups, give individuals 10 minutes to read, annotate and complete prompts at the bottom of each page. **3)** Gathering as a class, take 10 minutes to work through as many GUIDING QUESTIONS as possible. **4)** Return to small groups and give students 10 minutes to collaborate on the EXIT TICKET found on the following page. **With any JAM, students are tasked with diagnosing the embedded conflict. The purpose of taking a role, therefore, isn't to empathize too deeply, just enough to rationalize with the assigned viewpoint.*

TEACHER NOTES

Each JAM package is structured identically, 16 pages, including five (5) extensions, B-F, plus a debrief, to deepen comprehension & expand writing skills. *Tip: co-create a timeline during class discussion to illustrate scope & scale.*

T3.JAM.2A

GUIDING QUESTIONS

CLASS DISCUSSION

1. What is the **Reconquista**? Who accomplished this event, where, when, and why?
2. What is the **Doctrine of Discovery**? Who issued it, when, from where, and why?
3. What does Columbus have to do with this JAM? Was this timing a coincidence?
4. When did Copernicus live? What was the name of this historical era? What kind of thinkers led the Renaissance? How did this threaten the Catholic church?
5. What are the 4 R's in this JAM? [**Reconquista, Renaissance, Scientific Revolution, Roman Inquisition**].
6. Who is **Galileo**? What does he have to do with Copernicus?
7. Why did the Church launch the **Roman Inquisition**? Name the one detail that forced the Inquisition in 1634, versus 1623? [evidence; data from a **telescope**]
8. How does creating context exonerate Galileo—make free from guilt or blame?
9. What's the embedded conflict(s) that caused the most harm in this JAM?

T3.JAM.2B

FROM CONFUSION TO CLARITY

PARTNER/ INDIVIDUAL

This written re-tell incorporates 1) **retrieval practice** and 2) **complex syntax**.

T3.JAM.2C

STRUCTURED JOURNAL

INDIVIDUAL WORK

This exercise uses **meta-cognition** to help students identify what they're thinking. Gaps in comprehension related to the JAM will reveal themselves; prepare to guide/clarify.

T3.JAM.2D

FROM CLARITY TO COMPLEXITY

PARTNER/INDIVIDUAL

This graphic organizer will help students transfer acquired knowledge from long-term memory back into working memory by 1) **retrieval practice** 2) **elaborating** ideas & details, 3) **analyzing** acquired knowledge by comparing & contrasting viewpoints

T3.JAM.2E

BECAUSE, BUT, SO

INDIVIDUAL WORK

Three sentence stems invite students to 1) **elaborate** details & ideas, 2) grapple with **complex syntax**, 3) manage **sequence**, flow & logic through conjunctions

T3.JAM.2F

CIRCLING THE TRUTH

GROUP WORK

This graphic organizer asks students to **interleave** schema, themes & details as they synthesize information into an elaborate re-tell. Great prep work for summary essay.

T3.JAM.2G

LISTEN

CLASS DISCUSSION

Students complete three sentence stems in preparation for a class-wide debrief.

PUTTING SCIENCE INTO THE SOCIAL SCIENCES

Science isn't just knowledge, it's a *process*. The scientific method is a step-by-step process that humans use to study phenomena. For our purposes, we'll use a 7-step process to run a JAM from start to finish. Use this template to help you organize a JAM.

BEFORE A JAM

1. **OBSERVATION** Engage with HOOK
2. **QUESTION** What do you find intriguing about this HOOK? _____

3. **HYPOTHESIS** Based on the HOOK we predict this JAM is going to address

 _____.

DURING A JAM

4. **EXPERIMENT** Divide your class into groups of four (4) students. If there are more than 4/group, that's fine! Some students can share a role. Next, run the JAM! Note, half-way through the JAM, re-convene small groups into one large group for a few minutes to answer GUIDING QUESTIONS found on next page.
5. **ANALYZE DATA** Organize data by using extensions B-F.

AFTER A JAM

6. **SHARE RESULTS** List the embedded conflict(s) here _____
 _____. What could historical figures have done to prevent injustice, violence & instability?

7. **NOTES** To prepare for the next JAM, list what students/players could do to maximize time, trust & creativity _____
 _____.

HELPFUL HINTS

Conflict is inevitable, yet humans have the capacity to choose how they engage. In that sense, managing conflict is an artform we could strive to master. JAMs are “task conflicts” based on historical records that position students to practice conflict by wrestling with multiple viewpoints in dynamic situations. The goal is to practice feeling uncomfortable so as to create a habit of invoking **metacognition**, thinking about what we’re feeling and thinking, before engaging in conflict. If so, we might be more apt to think before we speak, analyze seemingly opposite viewpoints, and find common ground. This includes identifying affect from cognition, keeping competing thoughts top of mind, and sequencing events into one timeline.

Rooted in rigor, JAMs aren’t easy. Competing data sets are discovered through skilled reading, healthy dialogue, and **phenomena**, occurrences or circumstances observed in real time. Taken together, students in a JAM are creating a living model of the past! At that rate, they’re facing a golden opportunity to practice the scientific method! See: **PUTTING SCIENCE INTO THE SOCIAL SCIENCES**. This includes following a step-by-step process whereby they’re thinking and behaving like scientists as they record, organize and analyze all data sets.

Anticipate confusion but be prepared for your students to grow and shine as they adapt and outwit history through this new learning strategy. These one-liners might help steady ‘em.

- *You are not the center of the universe.*
- *No person, no role, has all the answers; each role is merely one piece of the puzzle.*
- *If each role only presents a sliver of the world, what potential problem(s) might prevent your group from making sense of reality?*
- *What’s the wrinkle? What’s the embedded conflict? What’s the JAM?*
- *Can you name the “elephant in the room” without losing anyone’s confidence?*
- *Emotions are neither good nor bad; they’re merely signposts that offer guidance as we try to navigate learning.*
- *The trick is learning how to get out of a JAM without creating a bigger mess.*

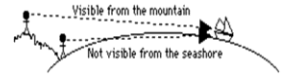
Name _____

L 690

1. NICOLAUS COPERNICUS

Nicolaus Copernicus (1473-1543) was a leading thinker during Europe's Renaissance who made massive contributions to society as a *polymath*, a mathematician, astronomer, physician, translator, diplomat, and an economist with a doctorate in Church law! Copernicus may have been most famous for suggesting the Earth is a sphere that tilts, rotates on its axis, and revolves around the sun. Or for publishing his novel ideas in his book titled, On the Revolutions of the Celestial Spheres. Or for inadvertently questioning Church authority since the Church's interpretation of the Bible claimed the sun revolved around the Earth.

Where did Copernicus ideas originate? Long ago, in ancient Greece, philosopher Ptolemy said the Earth was a flat disc. By contrast, another Greek philosopher, Aristotle, reasoned the Earth was round like a ball after watching ships sail into the sunset from different locations. About a hundred years later, in 276 BCE, Eratosthenes, believing Aristotle was correct, conducted an experiment in support of this theory. Eratosthenes used data from his experiment to calculate the Earth's circumference, producing a surprisingly accurate number!



Nearly seventeen centuries later, explorations launched by Columbus and later Magellan delivered evidence, or proof, that the Earth was indeed a sphere! Meanwhile, Copernicus was observing and measuring planetary systems—including Mercury, Saturn and its moons—building out an entire model of the universe. Yet, he delayed publishing his ideas until the eve of his death for fear of upsetting the Church.

Who? _____

Where? _____

When? _____

What happened first? _____

What happened next? _____

What happened after that _____

Why? What was his intention? _____

Name _____

L 750

2. SPANISH MONARCHY

In 1478, Queen Isabella I and King Ferdinand II completed the *Reconquista*, restoring a Catholic monarch to Spain with the help of the Catholic Church. Before that time, for nearly 800 years, Spain was under Muslim rule. Still, Spain may have feared its future since the overland road to Asia had recently closed, cutting it off from the world.

To achieve the *Reconquista*, Queen Isabella and King Ferdinand expelled non-Christians from Spain, or else converted them to Catholicism. How did Spain's monarchs determine who to expel or convert? They used a fact-finding method, the Spanish Inquisition, to encourage non-Catholics to either convert to Catholicism or leave Spain. Anyone who questioned Church authority, committed *heresy*, or disrespected the Church was killed or expelled. In the end, the Spanish Inquisition strengthened Spain's Catholic monarchs' power by ensuring that only loyal Catholics remained in the country.

Meanwhile, Christopher Columbus approached the Catholic monarchs with a theory that suggested the Earth was round, and asking permission to sail west under the Spanish flag. Columbus explained the goal was to discover new trade routes to Asia, which would put Spain at the center of international trade, versus remaining on the periphery. The question is, would the Church allow Spain to support Columbus since it had long refused to admit the Earth was round. And, if the theory was true and Columbus discovered new lands en route to Asia, how could Spain claim it?

Who? _____

Where? _____

When? _____

What happened first? _____

What happened next? _____

Then what happened? _____

What happened after that? _____

Why? What was their intention? _____

Name _____

L 950

3. CHURCH

The Vatican, situated in Rome, Italy, serves as the base for the Catholic Church. Unlike other European nations, the Vatican prioritizes a religious mission over political objectives. This unique position allows the Church to connect with citizens in every country and participate in global initiatives, ones that transcend national boundaries.

For example, around 1492, the Church issued the *Doctrine of Discovery*, a series of letters that gave Europe's Catholic monarchs its blessing to claim and settle lands that weren't inhabited by Christians. The goal was to spread Biblical messages and values inside and outside of Europe, lessons based on the teachings of Jesus Christ that promoted tolerance, inclusivity, and unconditional love.

Prior to the Doctrine of Discovery, the Church faced many and countless challenges fulfilling its goals. At times, it found it necessary to defend itself and even bolster its power. For example, the Church sometimes helped launch inquisitions to investigate whether certain individuals were guilty of *heresy*, behaviors that contradict Church teachings and question its authority. Inquisitions began when the Vatican empowered Church officials to examine, judge, and punish the accused. Admittedly, some methods were harsh; yet justified. For example, in the case of the Spanish Inquisition, Queen Isabelle and King Ferdinand completed the *Reconquista*, an era marked by removing Islamic rulers and most Muslims from Spain to reinstall a Catholic monarchy.

The power of inquisitions notwithstanding, the Church began to face another threat in around 1543, whereby different *polymaths*, persons with experience as mathematicians, architects, artists, and writers, kicked off a movement known as the Scientific Revolution, asking and answering questions that only God should answer.

Who? _____

Where? _____

When? _____

What happened first? _____

What happened next? _____

Why? What was their intention? _____

Name _____

L 1100

4. **GALILEO (1564-1642)**

In 1616, the Catholic Church banned and forbade any discussion related to concepts found in a book titled On the Revolutions of the Celestial Spheres, published by Nicolaus Copernicus in 1543. **Why? And why in 1616, but not 1543?**

Copernicus' theory, called **heliocentrism**, stated the Earth revolves around the sun. This ran contrary to the Church's claim that the sun revolves around Earth. If Copernicus was correct, it would appear he was undermining Church authority by explaining how the world works, thereby reducing the Church's authority to control knowledge of the world. Except Copernicus was no longer a threat to the Church since he died in 1543.

Then, in 1623, Galileo—a musician, mathematician, and astronomer—aimed to study **heliocentrism**. He asked the Pope, the head of the Church, for permission to do so, to which the Pope is reported to have shrugged since **heliocentrism** was merely a harmless collection of ideas at that time. What he didn't know was that Galileo was using a **telescope** to gather evidence, proof that supported **heliocentrism** beyond any doubt.

Next, Galileo published his findings, with data sets revealing Venus revolves around the Sun and Jupiter having moons that revolve around it. At that rate, the situation became very tense. Nearly an entire decade passed when, in 1634, the Church launched an inquisition, the **Roman Inquisition**, accusing Galileo of heresy, or disrespecting Church teachings. *The verdict?* Church sentenced Galileo to house arrest for life. Except it was too late! Copernicus had kicked off a **Scientific Revolution** that was taking hold of Europe.

Who? _____

Where? _____

When? _____

What happened first? _____

What happened next? _____

What happened after that? _____

Why? What was his intention? _____

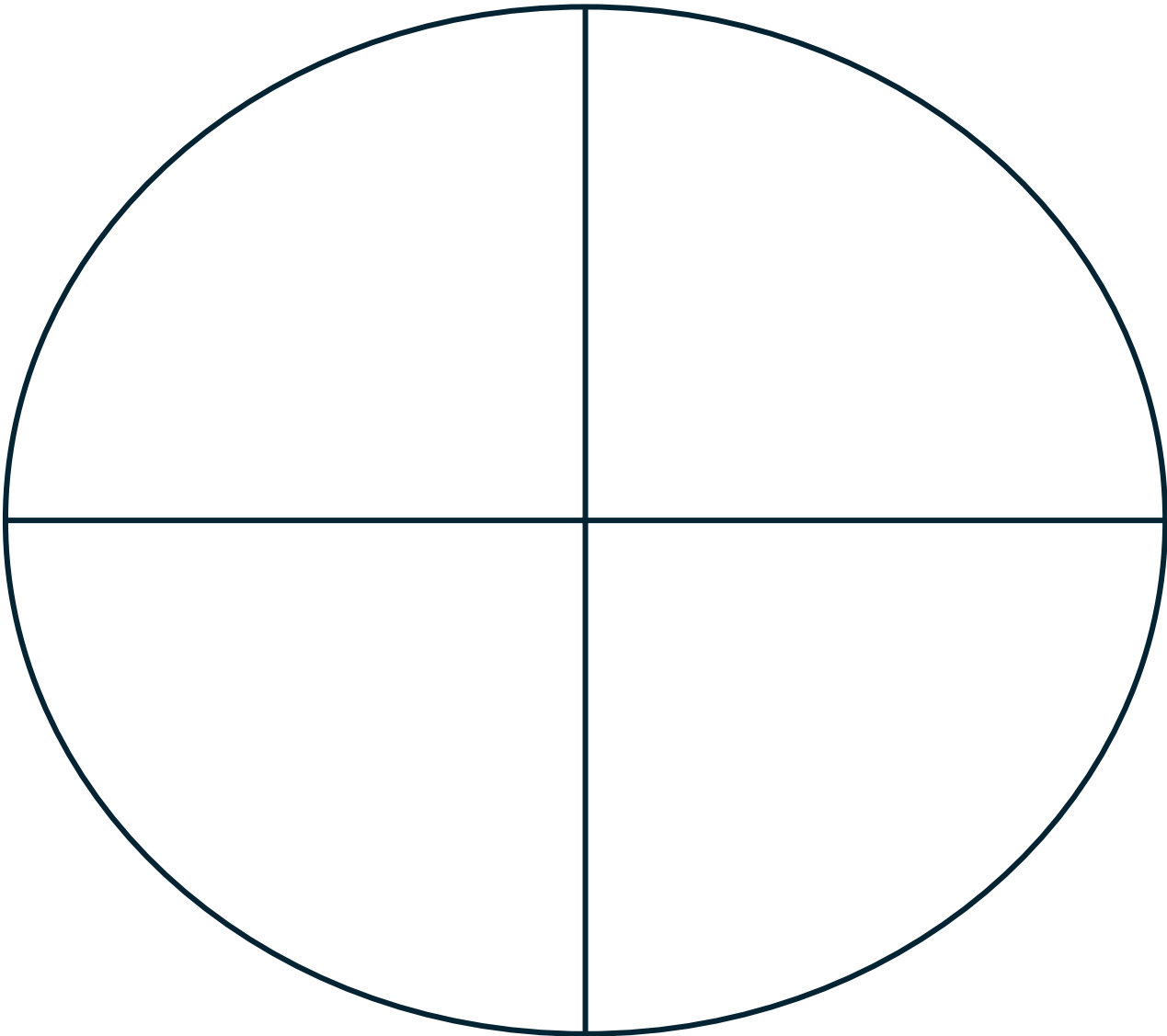
T3.JAM 2

Names _____, _____, _____, _____

EXIT TICKET WHAT'S THE JAM?

The JAM refers to the thread that connects the (4) viewpoints, the underlying issue few people say aloud. It's the sticky bit; the embedded conflict. *Delicate, nuanced & complex.*

DIRECTIONS 1) Label each quadrant: one role/quadrant. 2) Detail each quadrant with key events, players, including cause and effect—use your notes! 3) Gather as a class to answer GUIDING QUESTIONS. 4) Return to small groups to discuss/identify the wrinkle, aka, the “embedded conflict,” aka the JAM. 5) Name the JAM below.



The root cause of the JAM is _____.

TIMELINE TEMPLATE

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2026

NAME	DATE	SUBJECT SOCIAL STUDIES
LESSON #T3.JAM.2B	GRADE 4-5	SCHEMA CONTEXT
EXTENSION FROM CONFUSION TO CLARITY		

DIRECTIONS FILL IN THE BLANKS

Beginning around the 1300s, innovative thinkers in Europe called **p**_____, defined as persons with knowledge across several academic fields such as mathematics, music, art and astronomy, gave way to a new era, a kind of re-birth called the **R**_____. While accomplishments made during this era were exceptional, their contributions soon launched another era, called the Scientific **R**_____ that would change the balance of power not only across Europe, but across the world!

Up until the Renaissance and Scientific Revolution, there was consensus across Europe that the Earth was _____, and that it was the center of the _____. The Church, all powerful, supported this claim. Except one polymath, Copernicus, didn't; he hypothesized the Earth was round-ish, waiting until moments before his death to publish his theory for fear of upsetting the Church. The church had this much power! *And more!*

For example, Spain's Catholic monarchs relied heavily on the Church to conduct the **S**_____ **I**_____, a movement that accused many persons of **heresy**, or disrespecting Church authority. Many of the accused were either killed or forced to flee the Europe, resulting in the removal of Islamic persons in the **R**_____.

During this era, Columbus repeatedly approached Spain's Catholic monarchs in hopes of sailing west beneath the Spanish flag. His goal? Finding a new trade route to _____. But according to Church doctrine, Columbus' mission was doomed because the Earth was flat, not just the center of the universe. Nevertheless, Spain financed Columbus' trip, plus the Catholic church issued a series of letters referred to as the **Doctrine of** _____, giving European monarchs the right to claim "new" land provided it wasn't inhabited by Christians. This allowed Spain to colonize nearly all the Americas and parts of Asia.

As Spain's power grew, so too did the Church's. Then, in 1634, a new polymath, Galileo, appeared on a collision course with the Church. Galileo was using a _____ to gather _____ that proved our solar system's planets, including Earth, move around the ____! Again, this data not only contradicted Church doctrine, it questioned Church _____. In response, the Church launched an inquiry, the **R**_____ **I**_____, judging Galileo guilty of _____ and sentencing him to house arrest. *But it was too late!* Scientific inquiry was giving people power, not through religion, but through _____!

NAME	DATE	SUBJECT SOCIAL STUDIES
LESSON #T3.JAM.2C	GRADE 4-5	SCHEMA CONTEXT
EXTENSION STRUCTURED JOURNALING		

1. What are the most important ideas in this JAM? _____

2. This is what I don't completely understand ... _____

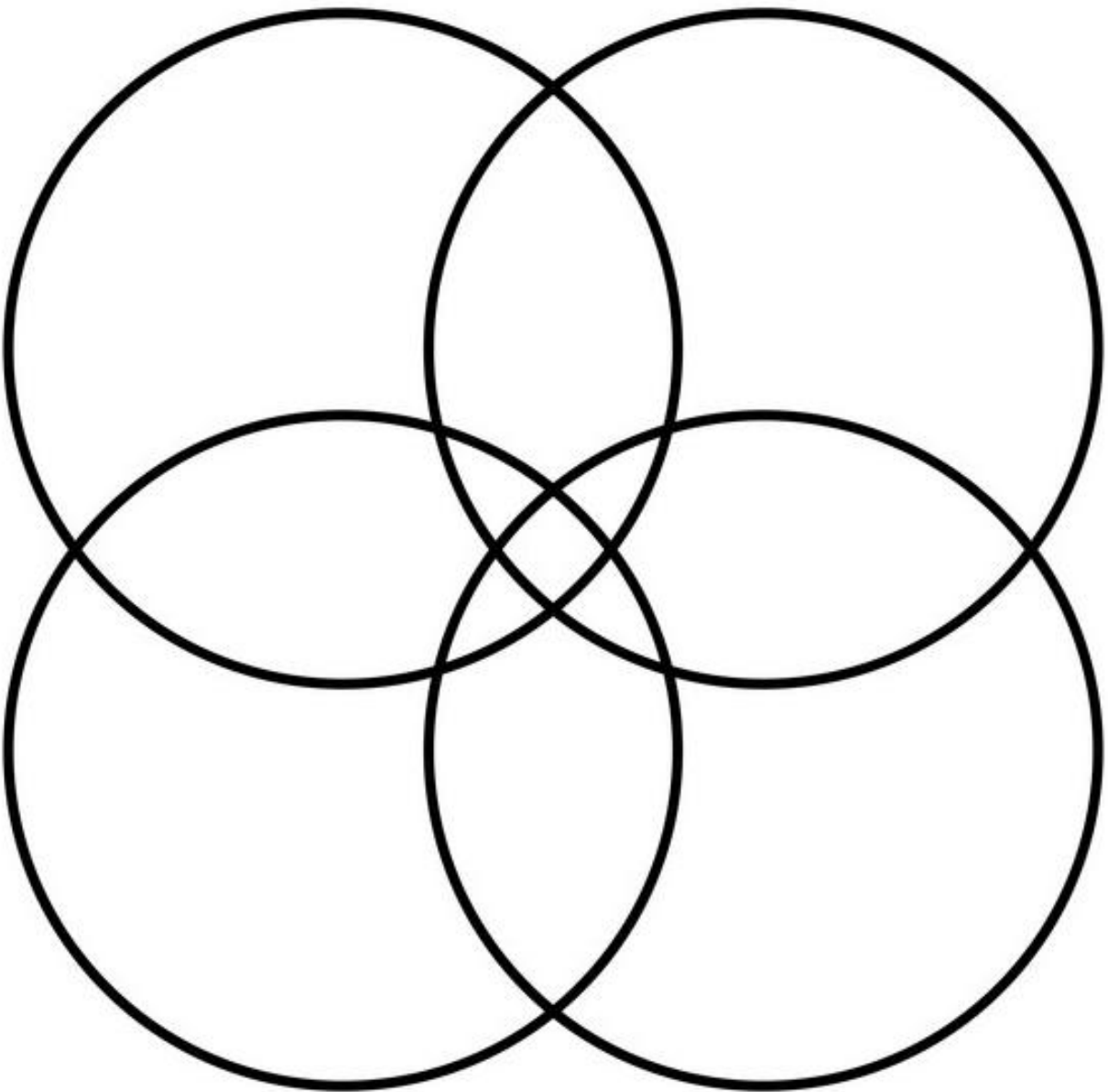
3. This JAM connects to my reality in that ... _____

4. I wonder... _____

5. I also wonder... _____

NAME	DATE	SUBJECT SOCIAL STUDIES
LESSON #T3.JAM.2D	GRADE 4-5	SCHEMA CONTEXT
EXTENSION FROM CLARITY TO COMPLEXITY		

DIRECTIONS *How is this graphic organizer different from the first one?* **1)** In the margin of this 4-Way Venn Diagram, label each circle with the JAM's (4) viewpoints. **2)** Consider how some viewpoints' characteristics overlap, or share intentions, goals or actions. **3)** In the shapes *don't* overlap with others, list what makes that viewpoint unique from all others.



NAME	DATE	SUBJECT SOCIAL STUDIES
LESSON #T3.JAM.2E	GRADE 4-5	SCHEMA CONTEXT
ASSESSMENT BECAUSE, BUT, SO		

DIRECTIONS Complete the following sentence stems in a way that demonstrates as much perspective as you're able, putting history into its full context:

1. Galileo proved the Earth revolved around the sun **because**

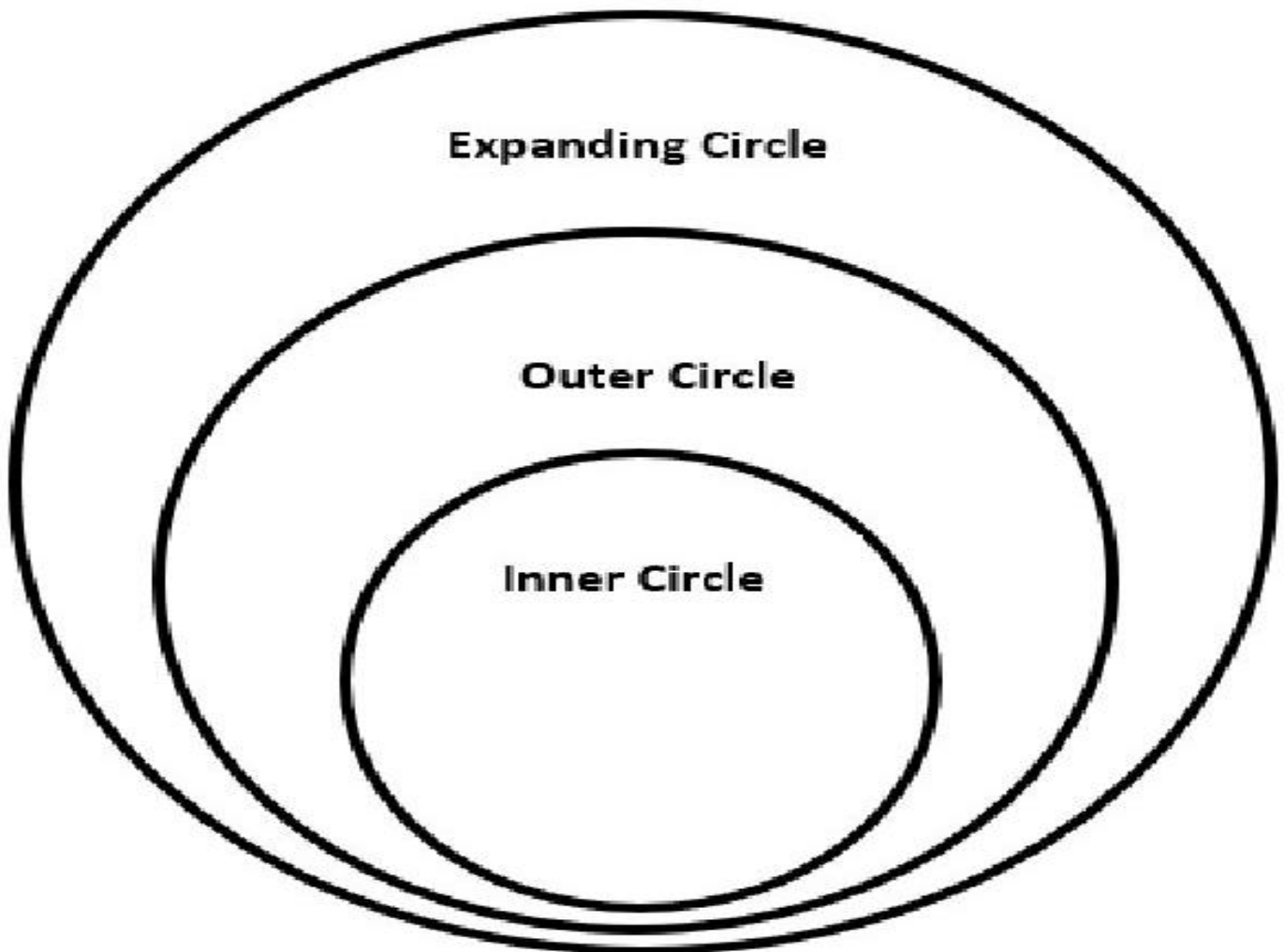
2. Galileo proved the Earth revolved around the sun **but** _____

3. Galileo proved the Earth revolved around the sun **so** _____

NAME	DATE	SUBJECT SOCIAL STUDIES
LESSON #T3.JAM.2F	GRADE 4-5	SCHEMA CONTEXT
EXTENSION CIRCLING THE TRUTH		

DIRECTIONS 1) Select ONE theme (perhaps the embedded conflict you named at the end of the JAM) that you believe unites all (4) viewpoints. Write it down in the *Inner Circle*. 2) Choose any (3) of the “5 Strands” of Social Studies—**geography, history, government, culture, economics**—that you think demonstrate *how and why* different roles chose the paths or strategies they did. Write those words in the *Outer Circle*. 3) Use “Retrieval Practice” to list details that support the three strands you listed in the outer circle. **BONUS:** Use this graphic organizer to write a one-paragraph summary essay.

POTENTIAL THEMES (CHOOSE ONE): POWER, MONEY, DEMOCRACY, AUTHORITY, MONEY, BALANCE, KNOWLEDGE,



NAME**DATE****SUBJECT** SOCIAL STUDIES**LESSON** #T3.JAM.2G**GRADE** 4-5**SCHEMA** GAME THEORY**EXTENSION** LISTEN: CLASS-WIDE DEBRIEF

DID YOU KNOW? Oral storytelling is an integral component of Native nations culture that offers neurological and cognitive benefits. For example, storytelling supports resiliency by promoting early literacy through social cognition, language processing, and memory storage. This is evidenced by the fact that Native nation stories have been scientifically validated as reliable records of historical events going back thousands of years. In summary: *active listening is an unparalleled learning strategy.*

DIRECTIONS Complete these sentence stems to summarize your thoughts (5-7 minutes). Next, bring these pearls of wisdom to share in a class-wide debrief so you and your classmates can practice speaking & listening.

1. One historical event that happened during this JAM that the world needs to spend more time thinking about is _____

_____.
2. One behavioral pattern that I noticed during the historical events of this JAM that could support sustainability in the world today is _____

_____.
3. One thing my small group did well in this JAM, a behavioral pattern that I believe could make the world safer or more sustainable is _____

_____.