

Trial By Jury – The Great Solar System Debate: Scene 1

The judge comes out of his chambers!

Bailiff: This is docket number 2345, on this day Tuesday, August 29, 1515 the people of Thorn, Poland versus Nicolaus Copernicus. All rise. Judge Solarview is presiding.

The judge raps his gavel on the desk and says quiet in the court room.

Judge: Mr. Prosecutor please bring us up to date on why we're here.

Prosecutor: Today, your honor, the state is here to imprison Astronomer Copernicus, the son of a wealthy merchant who was born in Thorn, Poland on February 19, 1473, on charges of spreading viscous fallacies against the state. Copernicus has been saying that Greek Astronomer Ptolomy's theory about our solar system is hog wash. He has created heresy against the church. Your honor, he has no proof of his alleged theories, and he doesn't have any tools to support his claims. He's causing the entire community to be in an uproar.

Judge: What does the defense have to say?

Defense Council: Thank you, your honor. Astronomer Copernicus is a very scholarly and well respected member of the community. Yes, he is a proponent of the view of the Earth that Ptolomy proposed over 1,000 years ago. His investigations have been carried on quietly and alone, without help or consultation, for the last thirty years. He made his celestial observations from a turret situated on the protective wall around the cathedral and yes, his observations were made by "bare eyeball." However, he has sketches and notes that have been checked and re-checked by fellow experts, who agree with his theory. Today we have models for the court to view of Ptlolomy's and Copernicus theories.

Trial By Jury – The Great Solar System Debate: Scene 1 Assignment

1. Your group is to make a model of Ptolemy's view of the solar system and a model of Copernicus' view of the solar system. You can make a 3-D model, a sketch, a clay model, etc. Be creative! Model must be labeled with the names of the planets and other solar system identifications.
2. Acting as the lawyers, your group will present the models to the court, your fellow classmates. This presentation will be a visual and kinesthetic demonstration of the Earth's motion and of the planets as they differ in each view.

Trial By Jury – The Great Solar System Debate: Scene 2

100 years later waiting in the wings...

Galileo Galilei: *(taking the stand)* I support the heliocentric model of Copernicus. With the new invention of the telescope I have made two discoveries: One is that revolving around Jupiter are four moons. The second one is that Venus goes through phases similar to Earth's moon. The phases of Venus could not be explained if Earth were at the center of the systems of planets. So I state that Ptolemy's geocentric system could not be correct.

The court was in an uproar! This was totally against the Church's teaching. Galileo was taken from the courtroom, excommunicated from the Catholic Church, and placed under house arrest until his death.

Johannes Kepler, a German mathematician, now takes the stand.

Johannes Kepler: For the last twenty years Astronomer Brahe has been observing the positions of the planets and I've been using my mathematical talents to figure out the exact orbit of Mars. Copernicus and Ptolemy thought that the orbits of the planets are circles. This is the only part of Copernicus model that I disagree with. I've discovered that orbit of each planet is an

He was interrupted by the loud shouts of heresy of the court room spectators.

Several spectators wondered what was the shape of the planets orbit discovered by Kepler and how do the planets stay in orbit?

Over 400 years later...

News bulletin: February 12, 1990 Pope John Paul II said on behalf of the Catholic Church, we have forgiven Galileo and his model of the solar system is not in conflict with the teachings of the Church.

Astronomers understanding of the solar system continue to change every day. Who knows what new discoveries will be made in your lifetimes!

Trial By Jury – The Great Solar System Debate: Scene 2 Assignment

1. Chart and identify the phases of the moon for one month. You can visually track the moon or find a reliable source that tracks the moon daily.
2. Draw a diagram to show how the sun, Earth, and Venus are aligned as Venus passes through its phases. Compare this to the moon phases.
3. Compare and contrast the solar system as viewed by Copernicus and today. Discuss the differences. Present closing remarks to the jury (the class). The jury is to make a verdict based on the evidence you present.

Activity:

You will need:

- corrugated cardboard
- sheet of paper
- 30 cm string
- two pushpins placed 10 cm from each other

Tie the ends of the string together and place around the pins. Move the pencil around the inside of the string, keeping it nice and tight. Label the sketch.

Predict what would happen when the pin distances are changed to 5 cm apart.

Move the pins 5 cm apart and repeat the sketch. How does changing the distance affect the ellipse's shape?

Repeat the exercise with only one pin. Discuss the differences.

Trial By Jury – The Great Solar System Debate: Box Chart

<p style="text-align: center;"><u>Facts</u> (What we know right now)</p>	<p style="text-align: center;"><u>Questions</u> (Based on current knowledge)</p>
<p style="text-align: center;"><u>Hypotheses</u> (Based on facts and questions)</p>	<p style="text-align: center;"><u>Learning Issues</u> (What we need to learn)</p>

Student Evaluation

Your Name: _____ Group #: _____

*Instructions: Please circle the response with which you agree the most. This evaluation will only be read by your teacher and will **not** be shown to other students.*

1. How would you rate *your* participation in group discussion and group work?

5 Excellent 4 Very Good 3 Good 2 Fair 1 Poor

2. How would you rate *your* effort in completing the case?

5 Excellent 4 Very Good 3 Good 2 Fair 1 Poor

3. Did *you* complete the assigned homework? **Yes** **No**

If No, explain why:

4. How well did *you* work with everyone in your group?

5 Excellent 4 Very Good 3 Good 2 Fair 1 Poor

5. Overall, how would you rate *your* performance in this case?

5 Excellent 4 Very Good 3 Good 2 Fair 1 Poor

6. What praise or criticism do you have for other group members? What are your thoughts about the case?
