

# Cosmos Episode 3 Worksheet

Cosmos Episode 3: \_\_\_\_\_ Name \_\_\_\_\_ Period \_\_\_\_\_

When Knowledge Conquered Fear (16 min)

1. Human intelligence is far superior than any other animal. Through the years \_\_\_\_\_ recognition, sharpened over eons of \_\_\_\_\_ have helped figure out how to survive.
2. What did early humans use to help them camp, migrate, and know when the weather changes were about to come?
3. What did most early humans believe a comet was?
4. T / F Most all comet messages at that time were considered a good sign.
5. In 3400 BC, what culture first started cataloging the comets?
6. What is a comet made of?
7. Where are most of the comets?
8. Name another astronomical discovery that Gunt made.
9. What objects in our solar system change the path of the comets as they fall towards the sun?
10. When does a comet get it's tail?
11. What year did the "Great Fire of London" take place?
12. T / F Edmund Haley's father was not very supportive of his son's scientific curiosities.
13. At the Royal Society of London there is a famous Latin saying "nullus in verba", what does it mean?
14. What famous biological discovery did Robert Hooke come up with?
15. Johannes Kepler discovered that the planet orbits were \_\_\_\_\_ and the closer the planet was to the sun the \_\_\_\_\_ it moved.
16. No one could do the math that explained the movements of the planets. Haley found a man that could. His name was \_\_\_\_\_.

**Cosmos Episode 3 Worksheet** is an essential educational tool designed to enhance understanding and retention of the fascinating concepts presented in the third episode of the acclaimed series "Cosmos: A Spacetime Odyssey." This episode, titled "When Knowledge Conquered Fear," delves into humanity's quest for knowledge, exploring the pivotal moments in history that have shaped our understanding of the universe. By utilizing a worksheet tailored to this episode, students and viewers can actively engage with the material, fostering a deeper appreciation of science and its impact on society.

## The Importance of Worksheets in Education

Worksheets serve as an invaluable resource for educators and students alike. They provide a structured way to engage with complex topics, encouraging critical thinking and active participation. Here are some key benefits of using worksheets in a learning environment:

- **Active Learning:** Worksheets promote hands-on interaction with the material, which can lead to better retention and understanding.
- **Assessment Tool:** They can be used to assess a student's comprehension of the episode's content.
- **Encouragement of Discussion:** Worksheets often include open-ended questions that encourage students to discuss and explore ideas collaboratively.

- **Resource for Review:** Worksheets can serve as a reference for students to revisit the key concepts covered in the episode.

## Overview of Cosmos Episode 3

In "When Knowledge Conquered Fear," Neil deGrasse Tyson takes viewers on a journey through history, highlighting the transformative power of knowledge. The episode explores several key themes:

### The Battle Against Ignorance

The episode illustrates how ignorance has historically led to fear and superstition. Tyson emphasizes the importance of seeking knowledge as a means to overcome these fears. Key historical figures, such as Galileo and Copernicus, are discussed in relation to their contributions to the scientific revolution, challenging long-held beliefs about the cosmos.

### The Role of Science in Society

Tyson also discusses the broader implications of scientific discovery on society. Knowledge is portrayed not just as an abstract concept, but as a practical tool that can lead to innovation and progress. The episode encourages viewers to consider how scientific advancements have improved quality of life, demonstrating that knowledge is a powerful ally against fear.

### Key Scientific Discoveries

The episode touches on several significant scientific breakthroughs that have shaped our understanding of the universe. Some of these include:

1. **Heliocentrism:** The shift from an Earth-centric view of the universe to a sun-centered model.
2. **Gravity:** Newton's laws of motion and universal gravitation.
3. **Evolution:** The impact of Darwin's theory of evolution on our understanding of life.
4. **Electromagnetism:** The discovery of electromagnetic waves and their implications for

communication.

## How to Use the Cosmos Episode 3 Worksheet

To maximize the benefits of the Cosmos Episode 3 worksheet, consider the following strategies:

### Before Watching the Episode

1. **Introduce Key Terms:** Familiarize students with important concepts and vocabulary that will be covered in the episode. This could include terms like "heliocentrism," "scientific method," and "empiricism."
2. **Set Learning Objectives:** Clearly outline what you hope students will learn from the episode. This could include understanding the historical context of scientific discoveries and their impact on society.

### During the Viewing

1. **Encourage Note-Taking:** Ask students to jot down key points, interesting facts, and questions that arise as they watch the episode. This will help them engage more deeply with the material.
2. **Pause for Discussion:** Take breaks at crucial moments to discuss what has been covered. This can reinforce understanding and encourage students to think critically about the content.

### After Watching the Episode

1. **Complete the Worksheet:** Have students fill out the worksheet, which should include a mix of multiple-choice questions, short answer questions, and prompts for reflective writing.
2. **Group Discussion:** Organize a class discussion based on the worksheet answers. This allows students to share their perspectives and deepen their understanding through dialogue.
3. **Further Research:** Encourage students to select a topic from the episode to research further. This could include a historical figure, a specific scientific discovery, or a relevant concept in modern science.

## Key Questions to Include in the Worksheet

Creating a worksheet tailored to "When Knowledge Conquered Fear" can enhance student engagement and understanding. Here are some key questions to consider including:

## Multiple-Choice Questions

1. Who proposed the heliocentric model of the universe?
  - a) Aristotle
  - b) Copernicus
  - c) Newton
  - d) Galileo
  
2. What was the main consequence of Galileo's discoveries?
  - a) They were widely accepted without question.
  - b) They confirmed the church's teachings.
  - c) They sparked controversy and fear among religious leaders.
  - d) They resulted in the immediate advancement of technology.

## Short Answer Questions

1. Describe how ignorance can lead to fear according to the episode.
2. Explain the significance of the scientific method in the pursuit of knowledge.

## Reflective Prompts

1. Reflect on a time when you overcame a fear through knowledge. What did you learn?
2. How do you think scientific discoveries can influence society's values and beliefs?

## Conclusion

In summary, the **Cosmos Episode 3 Worksheet** is a powerful educational resource that enhances the learning experience surrounding one of the most important episodes of the "Cosmos" series. By encouraging active engagement with the material, fostering critical thinking, and facilitating discussion, this worksheet can help students not only understand the historical significance of scientific discoveries but also appreciate the ongoing journey of humanity's quest for knowledge. As we continue to explore the universe, it is essential to remember that knowledge is indeed the key to conquering fear and embracing the wonders of the cosmos.

# Frequently Asked Questions

## What is the main theme of Episode 3 of Cosmos?

The main theme of Episode 3, titled 'The Harmony of the Worlds,' focuses on the historical development of the understanding of gravity and its fundamental role in the structure of the universe.

## Which scientists are highlighted in Episode 3 of Cosmos?

Episode 3 highlights key figures such as Johannes Kepler, Isaac Newton, and Albert Einstein, discussing their contributions to our understanding of planetary motion and gravity.

## What key scientific principle is explained in Episode 3?

The episode explains the law of universal gravitation, detailing how gravity governs the motion of celestial bodies and the orbits of planets.

## How does Episode 3 illustrate the concept of orbits?

Episode 3 uses visual animations and historical illustrations to demonstrate how planets orbit the sun in elliptical paths, as proposed by Kepler.

## What historical context is provided in Episode 3 regarding the acceptance of gravity?

The episode provides historical context on how the understanding of gravity faced skepticism and how it evolved through the works of various scientists over centuries.

## What role do visuals play in Episode 3 of Cosmos?

Visuals in Episode 3 enhance the storytelling by providing stunning representations of the universe, the movements of celestial bodies, and the scientific concepts being discussed.

## How does the episode connect gravity to modern science?

The episode connects gravity to modern science by discussing its implications in areas such as astrophysics and the study of black holes, emphasizing its ongoing relevance.

## What educational resources are available for Episode 3 of Cosmos?

Educational resources such as worksheets, discussion guides, and additional reading materials are available online for Episode 3 to help viewers deepen their understanding of the concepts presented.

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## **Cosmos Episode 3 Worksheet**

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