Image Analysis: Notice & Wonder

Directions: Look at the image and write down 3 things you **notice** (key details, main ideas, or themes) and then write down 3 things you **wonder** (questions you have because of the image or things you are curious about when you look at the image).

What do you notice?	

What do you notice?	

Read & Take Notes

Directions: Read the passage below. Take notes in the space provided.

Isaac Newton, a name synonymous with scientific brilliance, was born on Christmas Day in 1642, the same year Galileo Galilei, a pioneer in astronomy and physics, passed away. Newton's early life was marked by hardship. His father died before he was born, and he was a premature baby, so small that he could fit into a quart pot. His mother remarried when he was three years old, leaving him with his grandmother. He later attended the Grammar School in Grantham, where he developed a fascination with chemicals. His mother hoped he would return home to manage the family farm, but he proved to be a terrible farmer.

Fortunately, Newton's uncle, a clergyman, recognized his nephew's intellectual potential and persuaded his mother to send him to Cambridge University. Newton supported himself through his first three years at Trinity College by working as a servant, waiting tables and cleaning rooms for the faculty and wealthier students. In 1664, he was awarded a scholarship, providing him with financial security for the next four years. However, the bubonic plague, a devastating disease that swept across Europe, reached Cambridge in 1665, forcing the university to close. Newton returned home and spent the next two years immersed in mathematics and physics, laying the groundwork for his groundbreaking discoveries.

During this time of isolation, Newton made significant advancements in various fields. He developed the theory of gravitation, which explained the force that attracts objects to each other. He also made groundbreaking discoveries in optics, becoming the first to understand that white light is composed of all the colors of the rainbow. Furthermore, he made significant contributions to mathematics, including the development of integral and differential calculus and infinite series. Despite these remarkable achievements, Newton was hesitant to publish his work, fearing that others might claim credit for his discoveries.

Upon returning to Cambridge in 1667, Newton continued his research, delving into the field of alchemy. In 1668, Nicolas Mercator, a mathematician, published a book containing methods for dealing with infinite series, prompting Newton to write his own treatise, "De Analysi," which expanded upon Mercator's work. Newton's friend and mentor, Isaac Barrow, shared these discoveries with a mathematician in London, but only after weeks of persuasion did Newton allow his name to be attached to the work. This marked

Take Notes Here

Read & Take Notes

Directions: Read the passage below. Take notes in the space provided.

the beginning of Newton's public recognition as a brilliant mathematician and scientist.

Newton's most famous work, "Philosophiae Naturalis Principia Mathematica," or "Mathematical Principles of Natural Philosophy," was published in 1687. This groundbreaking book established the universal laws of motion and gravity, revolutionizing our understanding of the universe. Newton's three laws of motion, which describe how objects move, are still fundamental principles in modern physics. His theory of universal gravitation, which states that every object in the universe attracts every other object, explained the force that keeps planets in orbit around the sun.

Newton's influence extended beyond physics and mathematics. He also made significant contributions to optics, conducting experiments that revealed the nature of light. He built the first reflecting telescope, which used mirrors instead of lenses to focus light, a significant advancement in astronomical observation. Newton's work in optics, along with his discoveries in physics and mathematics, solidified his place as one of the most influential scientists of all time. His legacy continues to inspire generations of scientists and mathematicians, shaping our understanding of the universe and the laws that govern it.

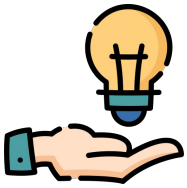
Take Notes Here

Key Vocabulary

Directions: For each term, use the word in a sentence that shows you understand its definition. Then create an image to represent the term. Be ready to explain the image.

Vocabulary Term	Use It In A Sentence:	An Image to Represent It:
synonymous *adjective* having the same meaning as another word or phrase.		
brilliance *noun* Exceptional intelligence, talent, or skill; the quality of being very bright or shining.		
treatise *noun* a written work dealing formally and systematically with a subject.		
calculus *noun* A branch of mathematics that deals with rates of change and accumulation. It involves concepts like derivatives, integrals, and limits.		
immersed *adjective* Completely surrounded or absorbed by something, especially an activity or feeling.		

3-2-1 Learning Reflection



Directions: Fill in the boxes below to reflect on your learning. Write down **three** new things you learned, **two** connections you made to what you already know, and **one** thing you want to learn more about.

3 THINGS I LEARNED

2 CONNECTIONS I MADE

1 THING I WANT TO LEARN MORE ABOUT

Answer and Explain

Directions: For each question, answer the question and then explain why you picked the answer you did using specific evidence from the text.

Question: **1. What did Newton do during the two years he spent at home due to the bubonic plague?**

Pick the Answer

A) He worked as a farmer.

B) He focused on his studies in mathematics and physics.

C) He traveled across Europe.

D) He wrote his most famous book, "Principia Mathematica."

Explain: Why did you pick that answer?

Question: **2. What was Newton's initial reaction to publishing his work?**

Pick the Answer

A) He was eager to share his discoveries with the world.

B) He was hesitant to publish, fearing others might take credit for his work.

C) He published his work anonymously.

D) He refused to publish any of his work.

Explain: Why did you pick that answer?

Question: **3. What significant contribution did Newton make to astronomy?**

Pick the Answer

A) He invented the telescope.

B) He discovered the laws of planetary motion.

C) He built the first reflecting telescope.

D) He mapped the constellations.

Explain: Why did you pick that answer?

Short Answer Questions

Directions: Answer each question in complete sentences. Use specific evidence from the text in each response.

Question

1. What was Newton's occupation before he went to Cambridge University?

Question

2. What prompted Newton to finally allow his name to be attached to his work on infinite series?

Question

3. What was the name of Newton's most famous work, and what did it establish?

Reflect and Discuss

Directions: Respond to the following question using the reading and your own knowledge and experiences. Be as thorough as possible.

1. Newton's early life was marked by hardship, but he eventually overcame these challenges to become one of the most influential scientists in history. Think about a time in your own life when you faced a difficult situation. How did you overcome it? What lessons did you learn from the experience?

Write Your Response Here. Be sure to use what you learned in the reading and your own knowledge and experiences to answer the question thoroughly.

Directions: When instructed, you will share your responses with your group. Take notes on their responses in the boxes below. Be sure to write their names at the top of each box.

Student #1: _____

Student #2: _____

Student #3: _____

Student #4: _____

Reflect and Discuss

Directions: Respond to the following question using the reading and your own knowledge and experiences. Be as thorough as possible.

2. Newton was hesitant to publish his work for fear that others might claim credit for his discoveries. Have you ever been hesitant to share your ideas or work with others? Why? What are the benefits and drawbacks of sharing your work with others?

Write Your Response Here. Be sure to use what you learned in the reading and your own knowledge and experiences to answer the question thoroughly.

Directions: When instructed, you will share your responses with your group. Take notes on their responses in the boxes below. Be sure to write their names at the top of each box.

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Reflect and Discuss

Directions: Respond to the following question using the reading and your own knowledge and experiences. Be as thorough as possible.

3. Newton's legacy continues to inspire generations of scientists and mathematicians. What are some of the things you hope to achieve in your life? How can you use your talents and abilities to make a positive impact on the world?

Write Your Response Here. Be sure to use what you learned in the reading and your own knowledge and experiences to answer the question thoroughly.

Directions: When instructed, you will share your responses with your group. Take notes on their responses in the boxes below. Be sure to write their names at the top of each box.

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