

Mystery of Matter Part I

1. A practice of science is to ask questions that are based on an existing model of how the natural world works. What question was Brandt trying to answer about urine?
2. What do think “more than one kind of air” means?
3. One of the **science practices** that we will find in any scientific community is that scientists “*ask questions and define problems*”. Discuss at least one time that you see this happen during the video.
4. Another **science practice** involves *planning and implementing a procedure* for an experiment. Discuss at least one time you see this **science practice** in the video.
5. How did the discoveries of Black, Cavendish and Rutherford change understanding of the composition of air and its relationship to liquids and solids?
6. Considering that the scientists represented in the video did not know what atoms were yet, what kind of evidence did they use to form conclusions?
7. Scientific ideas are sometimes stumbled upon by accident (or serendipity) rather than following rigid scientific method. Briefly discuss at least one time this happens in the program.

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8. Most scientific discoveries are the result of teams of people working together. How did Marie Anne Lavoisier contribute to the work of Antoine Lavoisier?

9. *Analysis and interpretation of data* is a **science practice**. Another is *engaging in argument from evidence*. When do you see these practices represented during the video?

10. Why does Antoine Lavoisier think it is important to precisely measure the weights of each substance at the beginning and end of every chemical reaction?

11. Lavoisier hypothesized that the additional weight of the calx came from air. What evidence and reasoning supported this hypothesis?

12. One of Priestley's characteristics was his willingness to share his work. Why is it important to communicate experimental results in science? Are there negatives to sharing?

13. Priestley states that Lavoisier should have acknowledged his role in the discovery of oxygen. Do you think that Lavoisier should have done this? Why or why not?