

Air Fire Water

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Objectives

- To test your observational skills
- To reinforce the difference between observation and conclusion
- To test your questioning skills
- To go through part of the Scientific Method for an open-ended problem of a scientific nature

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Set-up Instructions

- A number of you to a table – one of you must have a pencil or pen and a notebook
- Elect a speaker

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The Experiment

- You are going to perform an experiment.
- Pour some water in the dissection tray until it's about half-full.
- Light a candle provided and gently lower it on the water in the tray.
- You'll next invert the glass over the candle.

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Preparing for the Experiment

- Record as many different observations as you are able from when the glass is inverted to until the candle goes out.
- For every observation, write one or as many explanations as you are able
 - In other word, why did what you observed happen?
What's the reason?

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The Task

- If you had to investigate one question...
- If you wanted to find the answer to one question about the activity, what would it be?
- Write your question down
- Write as many hypotheses as you are able which tentatively answers the question.
- Your reasons and/or explanation **MUST** be backed up with evidence--**observations**

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Planning an Investigation

- Next, for each of your reason or explanation for why the water rose up the container and the candle went out, please describe how you would confirm it experimentally
- In other words, describe an investigation you would conduct which would provide support for your reason/ explanation
- Provide as much details about the experiment and justifications for the procedures as you are able.

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Elements of The Plan

- Obviously, the details must include a hypothesis
- A tentative explanation for the hypothesis
- Detailed procedure including details of experimental data to be collected as well as other relevant information to be collected
- Details of how the data will be analyzed and the conclusions to be drawn from the results

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Extension

- How do you know it's the candle wax that's burning and not something else? What evidence do you have or how can you prove that indeed it's the wax that's burning and not the wick?
- How do you know it's oxygen from the air that's combining with the wax and not another gas? I don't SEE or HEAR oxygen combining with the wax.
- How can you prove or show indirectly that indeed it is oxygen from the air that combines with the candle wax?
- How would the results of the experiment be different if a different liquid – like cooking oil – were used instead of water? Why?
- How would the length of the candle affect the results? Why?
- Would the size of the container inverted over the candle affect the results? Why or why not?

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