Introduction to: The Chemistry of Water
What do you know about water?
Outline

1. Outline of The Chemistry of Water Unit
2. Water Wonder – Wander Stations
3. HW – Wonder of Water Reading
New Unit!

Unit #4: Wonder of Water

Statement of Inquiry:

Unit Questions:
  * Factual:
  * Conceptual:
  * Debatable:

Global Context:
Statement of Inquiry

Water’s unique form and chemistry have wide-ranging impacts on its behavior and interaction with its environment.
Unit Questions

**Factual:**
What is the structure of a water molecule?

**Conceptual:**
How does a water molecule interact with other molecules around it?

**Debatable:**
Is our use of water sustainable?
Global Context

Identities and Relationships
Unit Outline:
The Chemistry of Water

Topics Covered:
• Structure of a water molecule
• Chemistry Basics
• Chemical vs. Physical Changes
• pH of water
• Temperature Curve of Water
• Solubility Curve for Water

2 Assessments Left!

Solubility Curves
Criterion C: Summative Assessment

Water on Zork Lab
Criterion A: Summative Assessment

No Textbook!
Water Wonder-Wander

Stations Activity
## Water Wonder - Wander

<table>
<thead>
<tr>
<th>Station #</th>
<th>Observations</th>
<th>Questions</th>
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Water Wonder – Wander Stations

Station 1 - Coin Race & Paper Clip Challenge

Station 2 - Meniscus on a graduated cylinder & Pepper and soap

Station 3 - Water Video (S. Billman & C.)

*Important*

- Video Links & PPT are on Google Drive
- CLEAN UP YOUR STATION WHEN YOU ARE DONE!

Start homework if you get done early!
Station #1 – Coin Race

Directions:
1. Each person in your group should take a 100 won coin & a pipette.
2. Take turns (one at a time) to see how many drops of water each person in your group can drop on their coin before the water falls off.
3. Each person gets 2 chances.
4. When you are done, Write down at least 3 observations and 1 question from this activity.

- When you are done –
*Try the other coins from different countries! Which one do you think can hold the most? The least? TRY IT!*
Station #1 – Paper Clip Challenge

Directions:
1. Try to get a paper clip to float on the top of the water!
2. If you are struggling, watch this video for some tips and tricks → https://www.youtube.com/watch?v=9MBHf7j7bVs
3. When you are done, write down at least 3 observations and a 1 question you have after doing this activity.

- When you are done –
See how many paper clips you can get to float on top of the water at the same time!
Station #2 – Meniscus on Graduated Cylinder

Directions:
1. Before you start, look up the word *meniscus*.
2. Next, pour some water into the graduated cylinder anywhere between 10ml and 30ml.
3. Take a picture CLOSE UP of the meniscus (like the one to the right), print it and label it and glue it into your notebook!
4. Write down at least 3 observations and 1 questions about what you see.

- **When you are done** –

  - *Fill the graduated cylinder as close to the top as you can. Then, use a pipette to add water to it drop by drop until water spills over the edges. What do you observe?*
Station #2 – Pepper & Soap

Directions:
1. Fill a 250ml beaker with 225ml of water
2. Sprinkle a pinch of pepper on the surface of the water.
3. Then, take a drop of soap and drop it in the middle of the pepper.
4. Write down at least 3 observations and one question about what you observed.
5. Optional - Try it again, but video tape it!

- When you are done –
- Clean out the beaker when you are complete!
Station #3 – Water Video

Directions:
1. Watch the YouTube Video Linked below:
   http://www.youtube.com/watch?v=DAiiC0sjvy0
2. When you are done, write down 3 observations (facts) you learned from the video and 1 question you still have.

   - If you get done early! –
   - Check out this Bill Nye the Science Guy episode about the water cycle. You won’t be able to finish it, but it might be useful later in our unit!

   Bill Nye Video Link -
   https://www.youtube.com/watch?v=Offi-nET3T8
As a table, select 1 observation & 1 question for each station to put on the board.
Wonder of Water

By MARY HOFF

As a gas (H2O), liquid (water), and solid (ice), the water molecule is the key to life as we know it. It is also a natural solvent, able to dissolve a wide variety of substances, making it essential for the chemical processes that keep the Earth's ecosystems healthy. Water is the most important compound on Earth, making up about 60% of the Earth's total mass. It is found in all the world's oceans, lakes, rivers, and streams, and it is the most abundant liquid on Earth. It is also a major component of all living things, making up about 60% of the human body. Water is essential for all life on Earth, and it is responsible for the Earth's climate, weather, and seasons. Without water, life as we know it would not exist.
Wonder of Water Reading Vocabulary

1. Atom
2. Molecule
3. Protons
4. Neutrons
5. Electrons
6. Hydrogen Bond
7. Solid

1. Liquid
2. Gas
3. Cohesion
4. Adhesion
5. Capillary Action
6. Surface Tension
7. Heat capacity