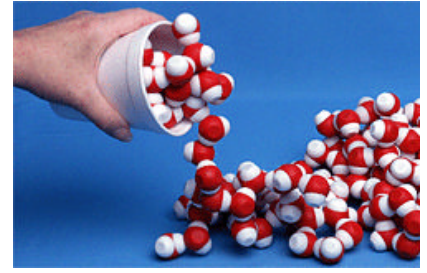


Water Kit



What is it about water that makes it so special and essential to life?

How are the properties of water we observe in the everyday world explained by the structure and behavior of the molecules?

The unique and somewhat anomalous properties of water have always made it difficult for students to understand the relationships between the molecular structure of water and its physical properties. Now, by using the Water Kit and the associated teaching resources, your students will be able to

- See and feel the three dimensional shape of H₂O
- Experience the sensation of repulsion when attempting to join two like atoms, hydrogen to hydrogen or oxygen to oxygen
- Experience the sensation of attraction when joining hydrogen to oxygen
- Hear the positively reinforcing clicks when joining hydrogen to oxygen
- Visualise air pockets in ice, capillary action, salt dissolving, intermolecular bonding, and much more.

Visit www.southernbiological.com to download the following teaching resources:

- **Basic Lesson Plans** - as well as a comprehensive glossary, this 26-page illustrated booklet in pdf form contains lesson plans for the following topics:
 - Polarity
 - Hydrogen bonding
 - Adhesion, cohesion and capillary action
 - Surface tension
 - States of water
 - Evaporation and condensation
 - Solubility
 - Ice cubes and snow flakes
 - Just for fun!
- **Water Q&A** – this illustrated pdf document presents information in a question and answer style to help you explain such things as the reason ice floats and why water forms droplets on the skin of an apple. Available in both flip chart and booklet styles for extra convenience.
- **Web Links** – click through the links for a range of articles and extra resources on the structure and properties of water and its importance in our lives.



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Assembling your 3D Water Molecules

Each Water Kit cup contains 24 red pieces and 24 white pieces. It will take approximately five minutes to assemble the 12 water molecules in each cup.



Start by selecting two red oxygen pieces and two white hydrogen pieces. Take one red piece in each hand. You will see one post and one hole on the inside rim of each red piece.



Position the post of one piece into the hole of the other piece. Place your thumbs on the flat surface of each oxygen piece and push the two pieces together until they fit tightly and you no longer see a space between the pieces.



The red oxygen atom will now roughly resemble a sphere with two knobs sticking out of each half.



Take the red oxygen atom in one hand and one white hydrogen piece in the other, and place the open side of the hydrogen piece onto the knob on the oxygen. Push the two together until the hydrogen fits tightly onto the oxygen, with no space between the two pieces.



Repeat with a second white hydrogen piece.



You now have one complete water molecule. Repeat steps 1 to 6 until all 12 water molecules are assembled.

Learning Moment

If you ask your students to assemble the water molecules, tell them to locate the embedded magnet in each piece.

Why are magnets in each piece?

The magnets let us see and feel how water molecules “stick” together. Water molecules are able to stick together because they are polar. While the magnets help us represent polarity in these models of water molecules, polarity is not magnetic.

Misconception Caution

Although the use of magnets to represent the partial positive and negative charges that exist on the hydrogen and oxygen atoms of water is a powerful teaching tool, it is important to explain to students that atoms are not magnets.

Please Note:

You may find that your water molecules are partially or entirely assembled. Whilst most Water Kits are shipped with the water molecules unassembled, the manufacturer carries out random assemblies as part of a continuous quality control program.