

Name: _____

WATER KIT

This worksheet accompanies the online activity The Polar Nature of Water accessible at:
<https://cbm.msos.edu/modelingResources/molecularExplorations/water.html>.

1. Draw the chemical structure of a molecule of water. Be sure to label each atom as oxygen (O) and as hydrogen (H) and to use δ^+ and δ^- symbols to show which atom (or atoms) has a partially positive charge and which atom (or atoms) has a partially negative charge.
2. Briefly describe (or draw, with O and H atoms labeled) what happens when two oxygen atoms from two different water molecules collide.
3. Briefly describe (or draw, with O and H atoms labeled) what happens when two hydrogen atoms from two different water molecules collide.
4. Briefly describe (or draw, with O and H atoms labeled) what happens when an oxygen atom on one water molecule collides with a hydrogen atom on another water molecule.
5. What type of Intermolecular force (NOT a **chemical bond**) holds two water molecules together? Describe (or draw) what atoms are involved in this interaction.
6. What type of **chemical bond(s)** are keeping a single water molecule together? (What type of chemical bond is connecting the two hydrogen atoms (white) to the oxygen atom (red)?)
7. Your answers to Q5 and Q6 should be different answers. According to your models, which chemical bond is stronger?
8. Will water interact with sodium chloride (NaCl)? Why?

9. Draw the chemical structure of a molecule of ethane. Be sure to label which atoms are carbon (C) and which atoms are hydrogen (H).

10. Will ethane interact with water? Why or why not?

11. Draw the chemical structure of a molecule of ethanol. Be sure to label which atoms are carbon (C), which atoms are oxygen (O), which atoms are hydrogen (H).

12. Will ethanol (C_2H_5OH) interact with water? Why or why not?

13. Describe the differences you see between the way ethane interacts with water and the way ethanol interacts with water.

14. Explain **why** you observe differences between the ways ethane and ethanol interact with water.

15. Explain one way in which you found one model of your choice useful.

16. In addition to being larger than real-life molecules, describe one way in which the models you used are not exactly like the molecules in real life.