TEACHER'S PAGE

Ion Soup!

Summary
Students occasionally have difficulty understanding how positive and negative ions join together to form neutral compounds. This is especially true when polyatomic ions are involved. This activity emphasizes the fact that polyatomic ions should be treated as individual units when considering ionic bonding.

The goal is to determine how ions in an "ion soup" can be bonded together to form neutral compounds. Students must therefore first identify the charge on each ion, and then determine how the ions might join to form neutral compounds. No ions should remain unbonded by the end of the exercise.

The indivisible nature of polyatomic ions is emphasized by placing them in their own circles, just like the mono-atomic ions.

Duration
30 minutes.

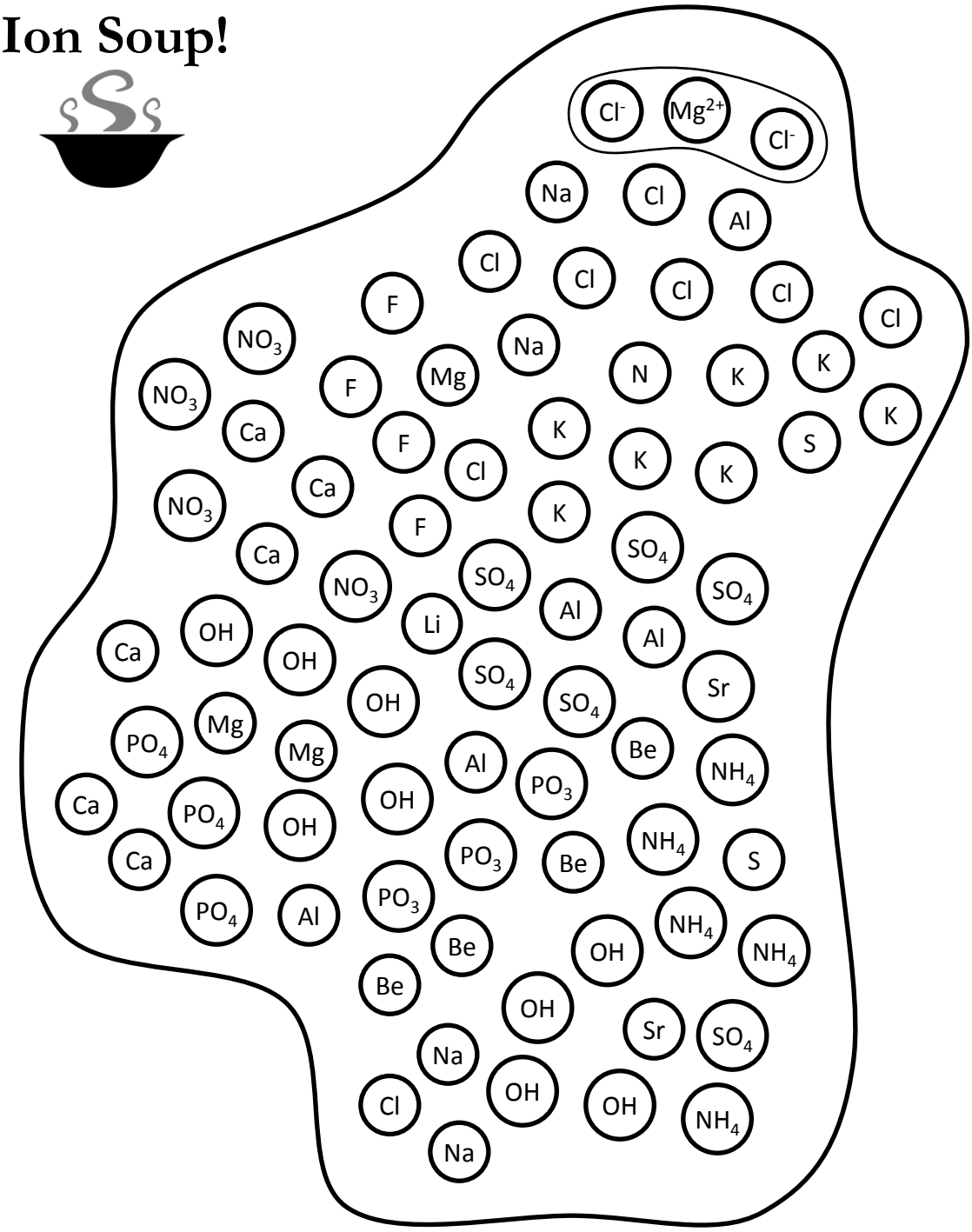
Materials
- Each student will need a copy of the Student Worksheet on the next page.
- Each student should have access to a periodic table.
- Each student should know, or have access to, the charges on a variety of polyatomic ions.

Lesson Plan
This activity is intended to be part of a larger lesson plan, of your own design, covering ionic bonding.

The following page is the Student Worksheet.

Name: _____

Ion Soup!



A soup of ions needs to be grouped into neutral ionic compounds. Unfortunately, the charges on the ions got lost when the soup was spilled. You'll have to work out the charges yourself so that you can put the compounds together. Also, you should have **no uncircled ions** when you're done.

The first compound has been completed to start you off. Good luck!

When you are done, answer the questions on the back.

List the formulas and names of all the compounds you circled in the ion soup. You do not need to list the same formula more than once.

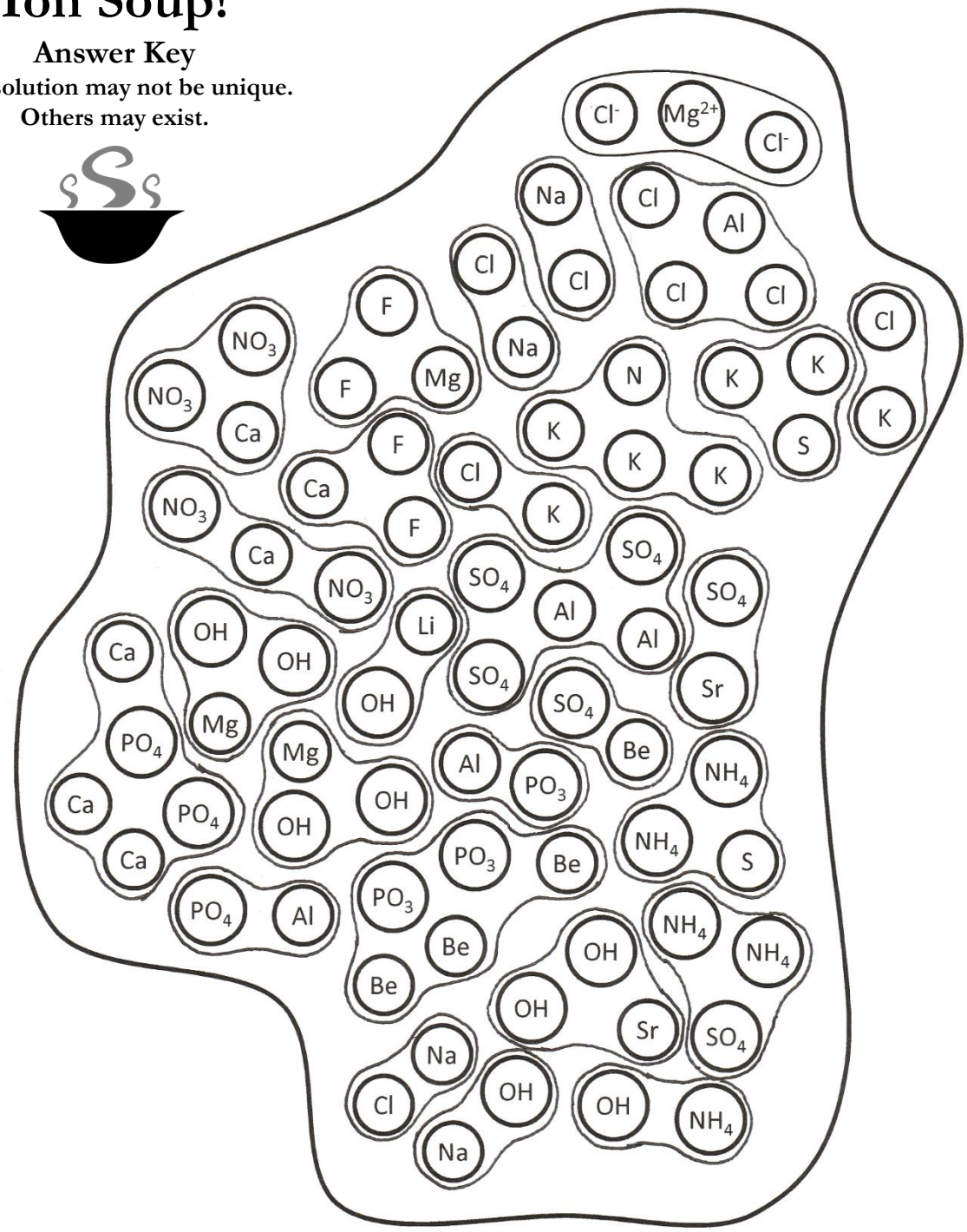
$MgCl_2$	magnesium chloride

Name: _____

Ion Soup!

Answer Key

This solution may not be unique.
Others may exist.



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$MgCl_2$	magnesium chloride
$AlCl_3$	aluminum chloride
NaCl	sodium chloride
MgF_2	magnesium fluoride
K_3N	potassium nitride
K_2S	potassium sulfide
KCl	potassium chloride
$Ca(NO_3)_2$	calcium nitrate
CaF_2	calcium fluoride
$Al_2(SO_4)_3$	aluminum sulfate
$SrSO_4$	strontium sulfate
LiOH	lithium hydroxide
$Mg(OH)_2$	magnesium hydroxide
$BeSO_4$	beryllium sulfate
$Ca_3(PO_4)_2$	calcium phosphate
$AlPO_4$	aluminum phosphate
$(NH_4)_2S$	ammonium sulfide
$Be_3(PO_4)_2$	beryllium phosphate
$(NH_4)_2SO_4$	ammonium sulfate
$Sr(OH)_2$	strontium hydroxide
NaOH	sodium hydroxide
NH_4OH	ammonium hydroxide

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Thank you for respecting my work!
Keith