



# Chemical Mixer

## STEM Sims

### Lesson 1: Feel the Beat

Writing the chemical formula of a compound involves listing the symbol that represents each element present in the substance and the proportion that each element occurs within the compound. The chemical symbol is represented by either one capital letter or one capital letter and one lowercase letter. Subscripts, small numbers located to the right of each symbol, indicate the number of atoms of that element that occur in one molecule of the compound. Can you use your musical ear to create the correct mix of elements in a compound?

### Doing the Science

1. Start the Chemical Mixer Simulation by clicking on the “Sim” tab.
2. Click the speaker icon above the Target Compound label in the lower left-hand corner of the screen. Listen carefully to the sound of the target compound. Note and record in Table 1 the name of the compound.
3. To build the target compound, click and drag an element into the empty box below Fader #1. Click on the red “Mix” button to hear the element’s sound. Listen carefully to the mix and decide whether this element is in the target compound or not. If used, record in Table 1.
4. To remove an element from the Mix box, either click and drag the element symbol back to the Periodic Table area or you can simply drag a different element symbol to that fader box to replace the element.
5. Repeat step 3 using the open Fader #2 and #3 boxes (if needed) until you have all of the correct elements in the compound.
6. You can click the “Check Answer” icon at any time to see how your build is progressing.
7. You can also click the speaker icon above the target compound to replay the target sound.
8. Once you have all of the correct elements in your mix, you now must select the correct proportion of each element. To add a second atom of a given element, slide the Fader slider up one notch. This position indicates that there are two atoms of that element present in the compound. Sliding the fader up to the next notch adds an additional atom to the compound.
9. When you are satisfied with your build, click the “Check Answer” icon and write the chemical formula of the compound in Table 1 next to the compound’s name.

**Table 1.**

Target Compound Name = _____ Chemical Formula = _____	
Element Used	Number of Atoms of this Element Used

### Do You Understand?

1. What is a subscript and what does it represent?
2. How is a molecule different from an atom?