

## Modelling Molecules Lab

### Introduction

In this activity, your group will model the structure of molecules using colored wooden spheres to represent atoms and 2 kinds of connectors (metal spring or wood rod) to represent bonds.

The **wood rods** will be used to make **single bonds** (a pair of shared electrons). The **springs** will be used to make **double and triple bonds**.

Use your periodic table to fill in the table below.

Sphere Color	Element	Element Symbol	Lewis Structure	# of unpaired electrons (Holes)
Black	Carbon			
Yellow	Hydrogen			
Blue	Nitrogen			
Red	Oxygen			
Green	Chlorine			
Purple	Iodine			
Orange	Bromine			

### Procedure:

**Part 1 - Make a model of the following covalent molecules, then draw them out below.**

- Drawings should show the atoms as circles with the atomic symbol inside joined by bonds shown with lines connecting the circles.
- Every atom must have all available bonds used. In other words - ALL of the holes in each atom must be connected to a hole in another atom using a stick or a spring.
- You may have to try joining the atoms in different orders to get the order that allows you to make all of the needed bonds.
- Use sticks when you're joining one atom to another with ONE bond. Use the springs when you're joining one atom to another using TWO or THREE bonds.

Molecule Name	Formula	Drawing	Lewis dot structure
hydrogen	$\text{H}_2$		
carbon dioxide	$\text{CO}_2$		
hydrobromic acid	$\text{HBr}$		
water	$\text{H}_2\text{O}$		
methyl amine	$\text{CH}_3\text{NH}_2$		
formaldehyde	$\text{H}_2\text{CO}$		

formic acid	HCOOH		
hydrogen peroxide	H <sub>2</sub> O <sub>2</sub>		

**PART 2 - Make your own molecules.**

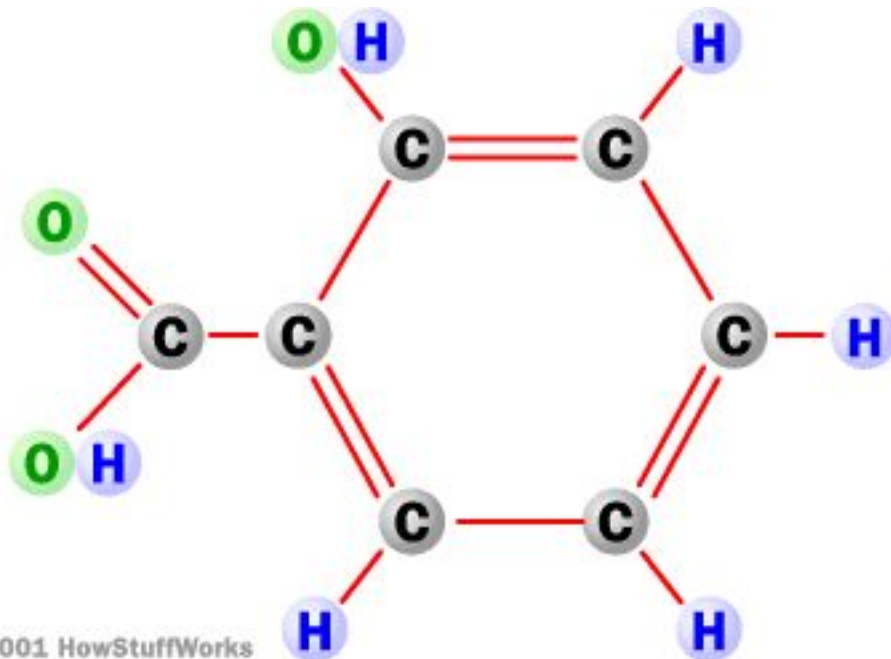
- Use the models to make your own molecules.
- Write the formulas for the models you make. Remember to use subscripts that tell the number of each element in your.

Picture	Lewis dot structure	Formula

## PART 3 - Modeling Drugs

- Make the following molecules using the structural formulas.
- Get your teacher's signature for EACH one you complete.

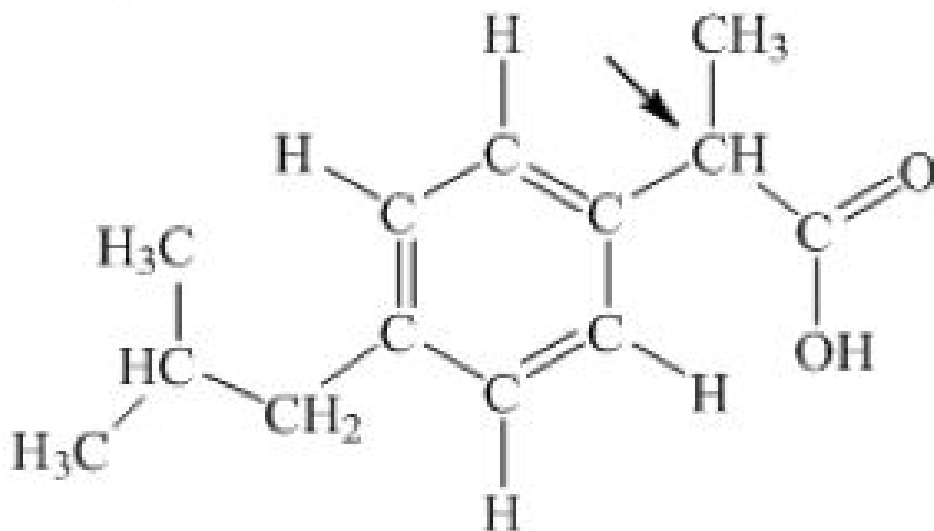
### 1. aspirin



Teacher Signature \_\_\_\_\_

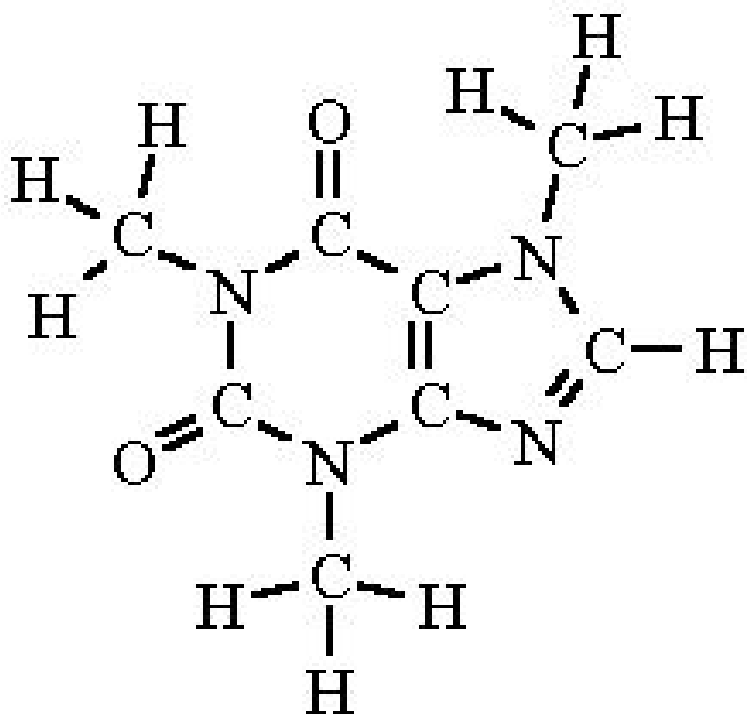
### 2. ibuprofen (ignore the arrow) You will need to work with another group to make this!

Keep track of how many of each atom each group uses so you don't mess up the kits!!



Teacher Signature \_\_\_\_\_

**3. caffeine** (again, you'll need to pair up with another group) **Keep track of how many of each atom each group uses so you don't mess up the kits!!**



Teacher Signature \_\_\_\_\_

### Clean-Up Instructions

1. Put everything back in the box, neatly sorted
2. Do not leave your partner/s to 'finish cleanup'.