

Name: \_\_\_\_\_

Collisions Username: \_\_\_\_\_

Class: \_\_\_\_\_

## Intermolecular Forces Quest

Now that you have completed the Intermolecular Forces Challenges, you are ready to conduct this Intermolecular Forces Quest.

### MISSION 1. GATHER YOUR INTEL

Use your Collisions gameplay experience to gather the following intel:

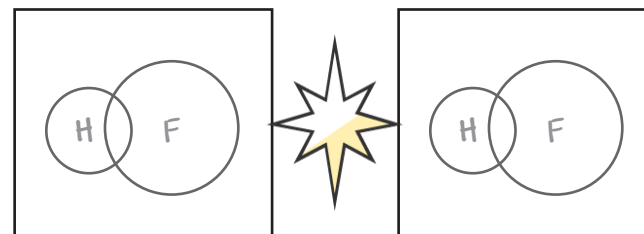
1. Write the chemical formula of the target molecule (or the atomic symbol of the target atom) in both boxes.

### MISSION 2. EXPOSE THE DETAILS

Use your expertise to expose the following information.

Sample Level

Target 1



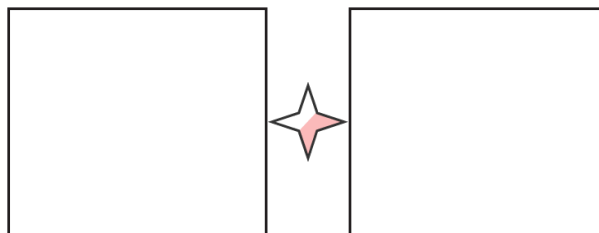
	Target 1
Molecular (or atomic) name	Hydrogen Fluoride
Molecular shape*	Linear
Symmetrical or asymmetrical molecule*	Asymmetrical
Bond types found in the molecule*	<input type="checkbox"/> Nonpolar Bond(s) <input type="checkbox"/> Polar Bond(s) <input checked="" type="checkbox"/> Very Polar Bond(s)
Polar or nonpolar molecule*	Polar Molecule
Central atom of molecule*	N/A
Number of lone pairs in central atom*	None (no central atom)
Type of IMF	Hydrogen Bond
Permanent or induced dipole	Permanent Dipole
Boiling point	61.7 ° F (19.5°C)

*\*If Applicable*

# Intermolecular Forces - Challenge Level 1

## MISSION 1. EXPOSE THE DETAILS

Target 1



## MISSION 2. EXPOSE THE DETAILS

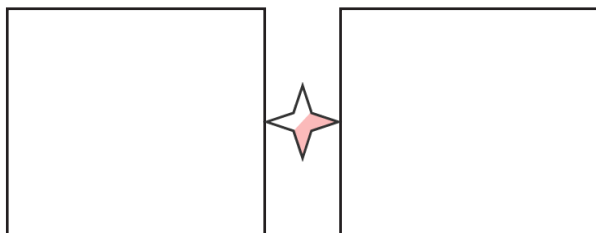
Target 1	
Molecular (or atomic) name	
Molecular shape*	
Symmetrical or asymmetrical molecule*	
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*	
Central atom of molecule*	
Number of lone pairs in central atom*	
Type of IMF	
Permanent or induced dipole	
Boiling point	

*\*If Applicable*

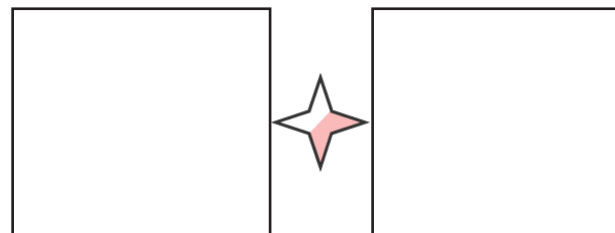
# Intermolecular Forces - Challenge Level 2

## MISSION 1. EXPOSE THE DETAILS

Target 1



Target 2



## MISSION 2. EXPOSE THE DETAILS

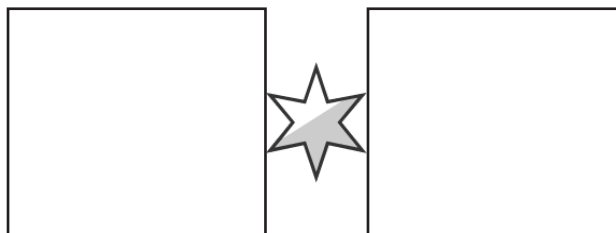
	Target 1	Target 2
Molecular (or atomic) name		
Molecular shape*		
Symmetrical or asymmetrical molecule*		
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*		
Central atom of molecule*		
Number of lone pairs in central atom*		
Type of IMF		
Permanent or induced dipole		
Boiling point		

*\*If Applicable*

# Intermolecular Forces - Challenge Level 3

## MISSION 1. EXPOSE THE DETAILS

Target 1



## MISSION 2. EXPOSE THE DETAILS

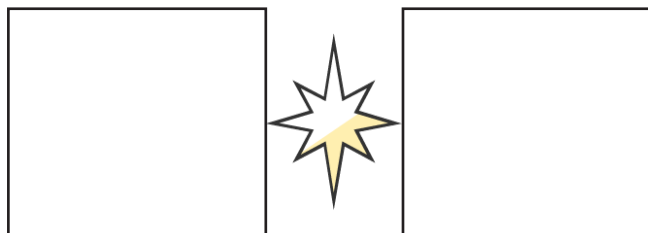
Target 1	
Molecular (or atomic) name	
Molecular shape*	
Symmetrical or asymmetrical molecule*	
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*	
Central atom of molecule*	
Number of lone pairs in central atom*	
Type of IMF	
Permanent or induced dipole	
Boiling point	

*\*If Applicable*

# Intermolecular Forces - Challenge Level 4

## MISSION 1. EXPOSE THE DETAILS

Target 1



## MISSION 2. EXPOSE THE DETAILS

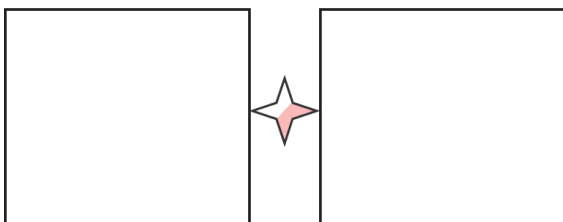
Target 1	
Molecular (or atomic) name	
Molecular shape*	
Symmetrical or asymmetrical molecule*	
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*	
Central atom of molecule*	
Number of lone pairs in central atom*	
Type of IMF	
Permanent or induced dipole	
Boiling point	

*\*If Applicable*

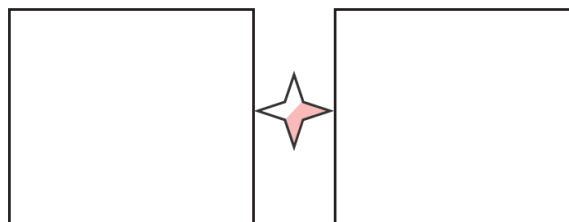
# Intermolecular Forces - Challenge Level 5

## MISSION 1. EXPOSE THE DETAILS

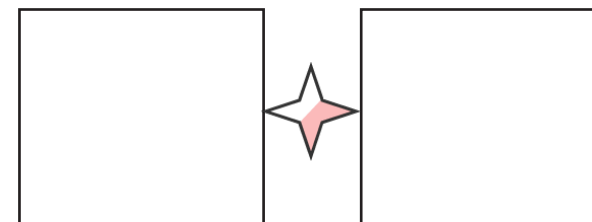
Target 1



Target 2



Target 3



## MISSION 2. EXPOSE THE DETAILS

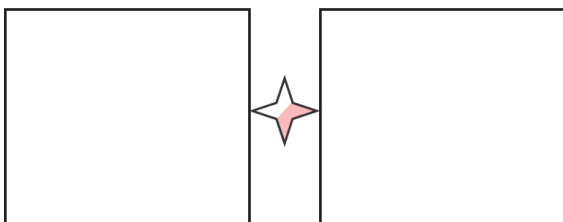
	Target 1	Target 2	Target 3
Molecular (or atomic) name			
Molecular shape*			
Symmetrical or asymmetrical molecule*			
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*			
Central atom of molecule*			
Number of lone pairs in central atom*			
Type of IMF			
Permanent or induced dipole			
Boiling point			

*\*If Applicable*

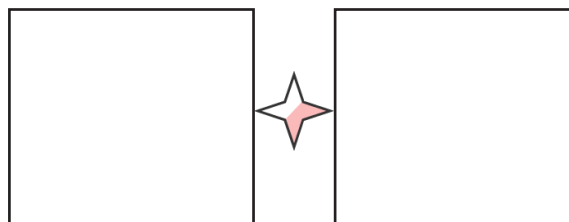
# Intermolecular Forces - Challenge Level 6

## MISSION 1. EXPOSE THE DETAILS

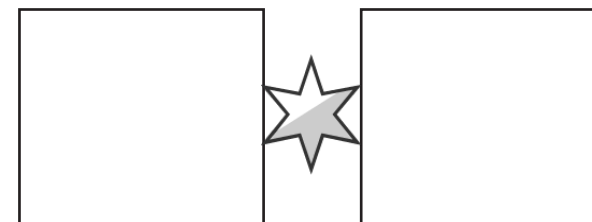
Target 1



Target 2



Target 3



## MISSION 2. EXPOSE THE DETAILS

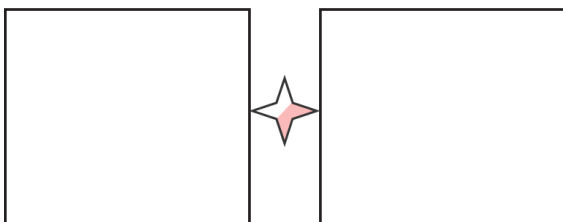
	Target 1	Target 2	Target 3
Molecular (or atomic) name			
Molecular shape*			
Symmetrical or asymmetrical molecule*			
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*			
Central atom of molecule*			
Number of lone pairs in central atom*			
Type of IMF			
Permanent or induced dipole			
Boiling point			

*\*If Applicable*

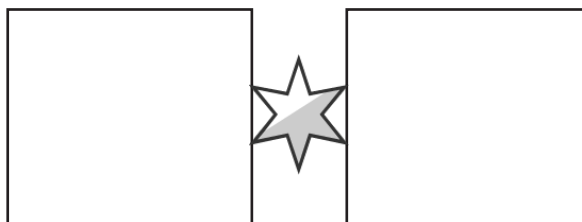
# Intermolecular Forces - Challenge Level 7

## MISSION 1. EXPOSE THE DETAILS

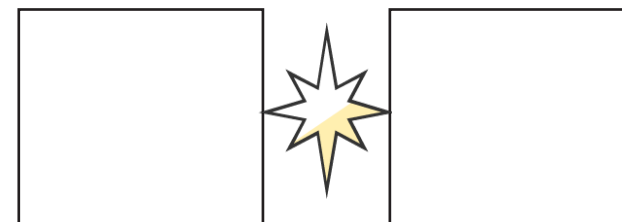
Target 1



Target 2



Target 3



## MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3
Molecular (or atomic) name			
Molecular shape*			
Symmetrical or asymmetrical molecule*			
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*			
Central atom of molecule*			
Number of lone pairs in central atom*			
Type of IMF			
Permanent or induced dipole			
Boiling point			

*\*If Applicable*



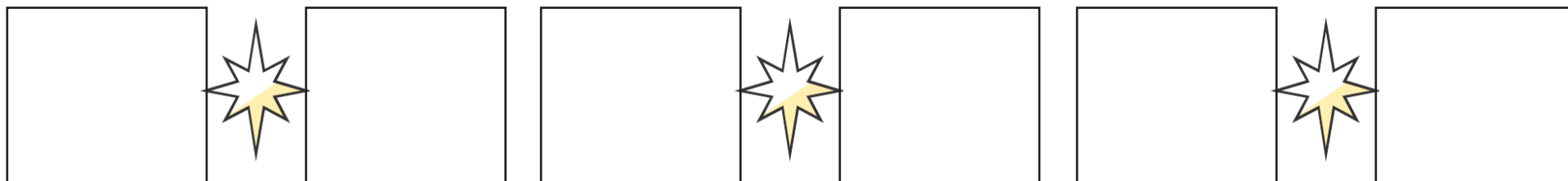
# Intermolecular Forces - Challenge Level 8

## MISSION 1. EXPOSE THE DETAILS

Target 1

Target 2

Target 3



## MISSION 2. EXPOSE THE DETAILS

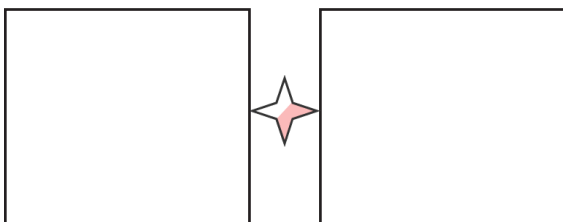
	Target 1	Target 2	Target 3
Molecular (or atomic) name			
Molecular shape*			
Symmetrical or asymmetrical molecule*			
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*			
Central atom of molecule*			
Number of lone pairs in central atom*			
Type of IMF			
Permanent or induced dipole			
Boiling point			

*\*If Applicable*

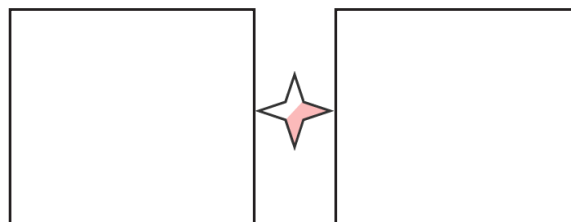
# Intermolecular Forces - Challenge Level 9

## MISSION 1. EXPOSE THE DETAILS

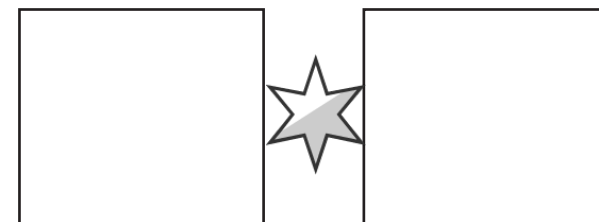
Target 1



Target 2



Target 3



## MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3
Molecular (or atomic) name			
Molecular shape*			
Symmetrical or asymmetrical molecule*			
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*			
Central atom of molecule*			
Number of lone pairs in central atom*			
Type of IMF			
Permanent or induced dipole			
Boiling point			

*\*If Applicable*

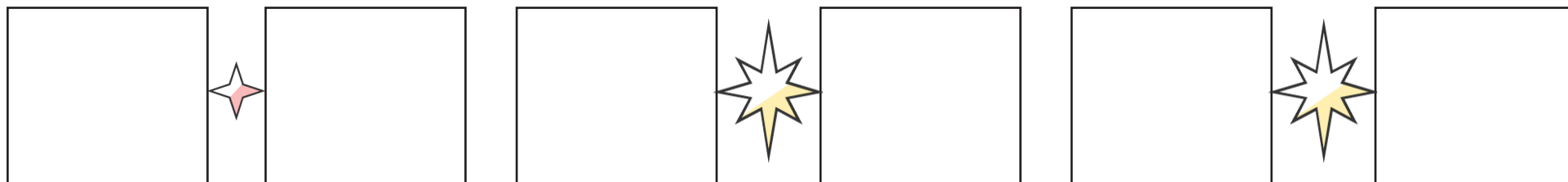
# Intermolecular Forces - Challenge Level 10

## MISSION 1. EXPOSE THE DETAILS

Target 1

Target 2

Target 3



## MISSION 2. EXPOSE THE DETAILS

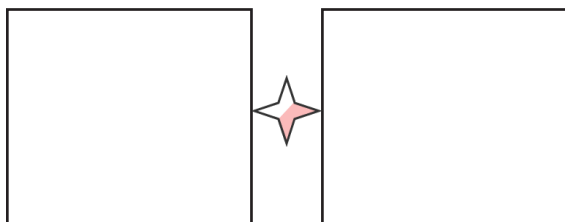
	Target 1	Target 2	Target 3
Molecular (or atomic) name			
Molecular shape*			
Symmetrical or asymmetrical molecule*			
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*			
Central atom of molecule*			
Number of lone pairs in central atom*			
Type of IMF			
Permanent or induced dipole			
Boiling point			

*\*If Applicable*

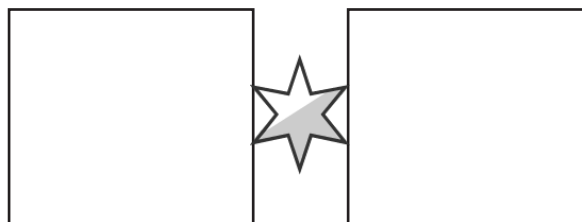
# Intermolecular Forces - Challenge Level 11

## MISSION 1. EXPOSE THE DETAILS

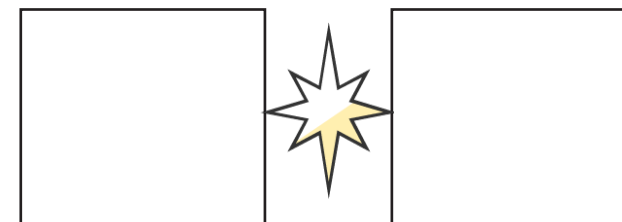
Target 1



Target 2



Target 3



## MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3
Molecular (or atomic) name			
Molecular shape*			
Symmetrical or asymmetrical molecule*			
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*			
Central atom of molecule*			
Number of lone pairs in central atom*			
Type of IMF			
Permanent or induced dipole			
Boiling point			

*\*If Applicable*

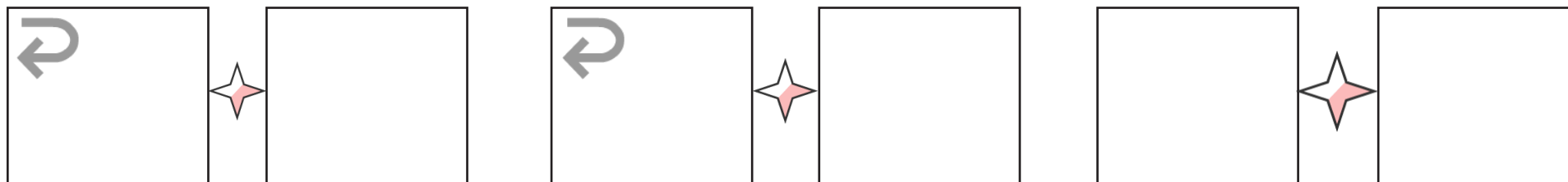
# Atoms to IMFs - Connected Level 1

## MISSION 1. EXPOSE THE DETAILS

Target 1

Target 2

Target 3



## MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3
Molecular (or atomic) name			
Molecular shape*			
Symmetrical or asymmetrical molecule*			
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*			
Central atom of molecule*			
Number of lone pairs in central atom*			
Type of IMF			
Permanent or induced dipole			
Boiling point			

*\*If Applicable*

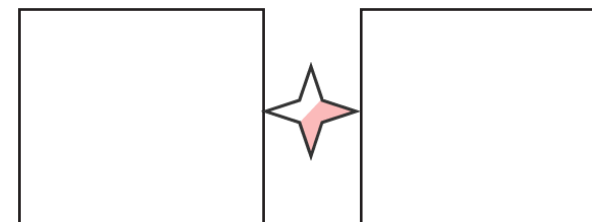
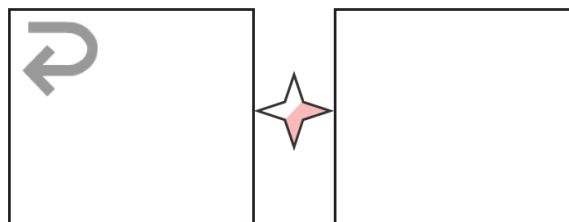
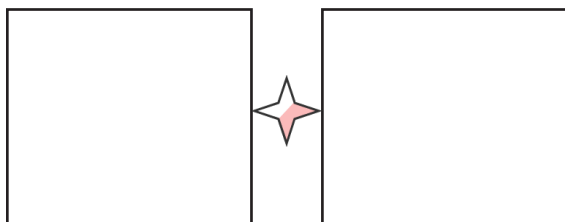
# Atoms to IMFs - Connected Level 2

## MISSION 1. EXPOSE THE DETAILS

Target 1

Target 2

Target 3



## MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3
Molecular (or atomic) name			
Molecular shape*			
Symmetrical or asymmetrical molecule*			
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*			
Central atom of molecule*			
Number of lone pairs in central atom*			
Type of IMF			
Permanent or induced dipole			
Boiling point			

*\*If Applicable*

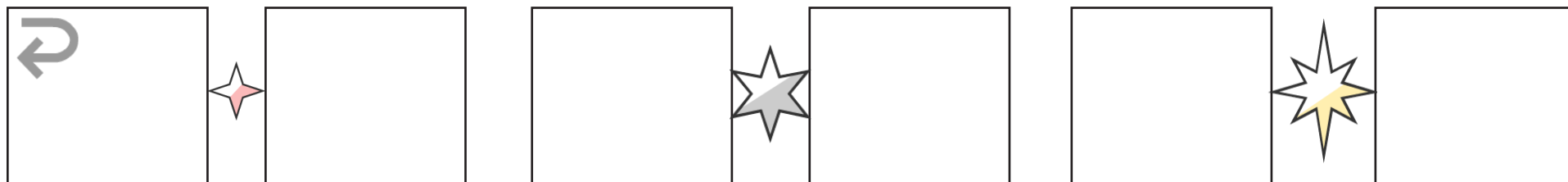
# Atoms to IMFs - Connected Level 3

## MISSION 1. EXPOSE THE DETAILS

Target 1

Target 2

Target 3



## MISSION 2. EXPOSE THE DETAILS

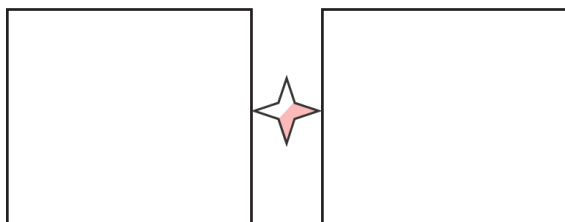
	Target 1	Target 2	Target 3
Molecular (or atomic) name			
Molecular shape*			
Symmetrical or asymmetrical molecule*			
Bond types found in the molecule*	<input type="checkbox"/> Nonpolar Bond(s) <input type="checkbox"/> Polar Bond(s) <input type="checkbox"/> Very Polar Bond(s)	<input type="checkbox"/> Nonpolar Bond(s) <input type="checkbox"/> Polar Bond(s) <input type="checkbox"/> Very Polar Bond(s)	<input type="checkbox"/> Nonpolar Bond(s) <input type="checkbox"/> Polar Bond(s) <input type="checkbox"/> Very Polar Bond(s)
Polar or nonpolar molecule*			
Central atom of molecule*			
Number of lone pairs in central atom*			
Type of IMF			
Permanent or induced dipole			
Boiling point			

*\*If Applicable*

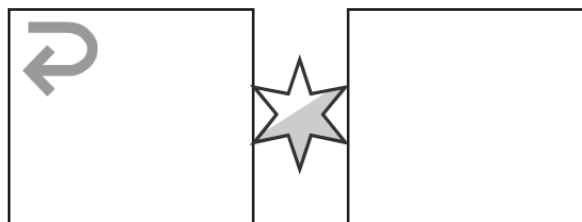
# Covalent Bonding to IMFs - Connected Level 1

## MISSION 1. EXPOSE THE DETAILS

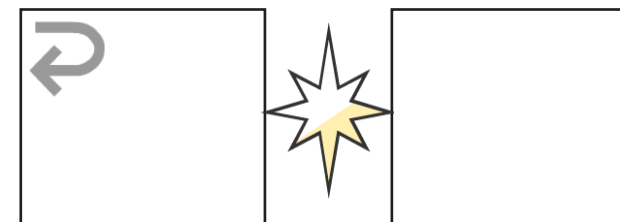
Target 1



Target 2



Target 3



## MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3
Molecular (or atomic) name			
Molecular shape*			
Symmetrical or asymmetrical molecule*			
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*			
Central atom of molecule*			
Number of lone pairs in central atom*			
Type of IMF			
Permanent or induced dipole			
Boiling point			

*\*If Applicable*



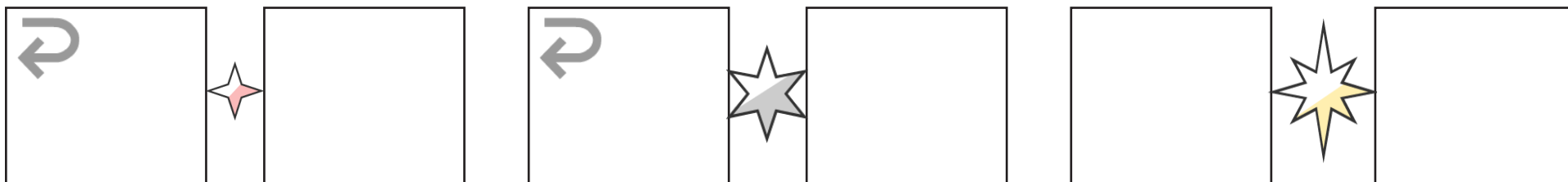
# Covalent Bonding to IMFs - Connected Level 2

## MISSION 1. EXPOSE THE DETAILS

Target 1

Target 2

Target 3



## MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3
Molecular (or atomic) name			
Molecular shape*			
Symmetrical or asymmetrical molecule*			
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*			
Central atom of molecule*			
Number of lone pairs in central atom*			
Type of IMF			
Permanent or induced dipole			
Boiling point			

*\*If Applicable*

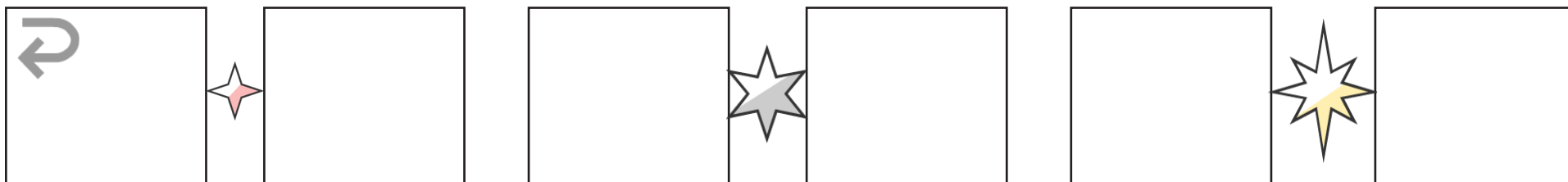
# Covalent bonding to IMFs - Connected Level 3

## MISSION 1. EXPOSE THE DETAILS

Target 1

Target 2

Target 3



## MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3
Molecular (or atomic) name			
Molecular shape*			
Symmetrical or asymmetrical molecule*			
Bond types found in the molecule*	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)	___ Nonpolar Bond(s) ___ Polar Bond(s) ___ Very Polar Bond(s)
Polar or nonpolar molecule*			
Central atom of molecule*			
Number of lone pairs in central atom*			
Type of IMF			
Permanent or induced dipole			
Boiling point			

*\*If Applicable*