Chem4Kids General Matter Learning Lab Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Directions:**

* Type the following link in the address bar: <http://www.chem4kids.com/files/matter_intro.html>
* Make sure you are in the Matter section and read the information.
* As you get to the bottom of a page, click next page in Matter to go on to the next.
* Answer the following questions as you read- they are in order:

**1) What is the name of the 5th state of matter that we did not study?**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2) Describe or define this 5th state of matter as best as you can. It gets easier towards the end of the description.** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3) What needs to happen for matter to change states?** (Use the Topics Column: Phase Change I)
- *All matter can move from one****state****to another. It may require extreme temperatures or extreme
 pressures.*
- The text says, “***Phase changes****happen when you reach certain special points.”
- What did the text mean by certain special points?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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**4) What are the chemistry terms for the following:**
Solid to a Liquid = Fusion/Melting
Liquid to a Solid = Freezing
Liquid to a Gas = Vaporization/Boiling
Gas to a Liquid = Condensation
Solid to a Gas = Sublimation
Gas to a Solid = Deposition

**5) Play the video on the Aurora Borealis.** [https://youtu.be/PaSFAbATPvk](https://youtu.be/PaSFAbATPvk%22%20%5Ct%20%22_blank)\

 What state of matter is the aurora? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6) What is the difference between a physical and a chemical change of matter?** (Use the Topics Column: Chem-Phys)
*- Physical changes are usually about physical states of matter or phase changes.
- Write one example of a physical change. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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*-Chemical changes happen on a* ***molecular*** *level when you have two or more molecules that interact.
 Chemical changes happen when* [*atomic bonds*](http://www.chem4kids.com/files/atom_bonds.html)*are broken or created during chemical*[*reactions*](http://www.chem4kids.com/files/react_intro.html)*.
- Write one example of a chemical change. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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*- Chemical Reactions (changes) occur when two or more molecules interact and the molecules
 change.*[*Bonds*](http://www.chem4kids.com/files/atom_bonds.html) *between atoms are broken and created to form new* [*molecules*](http://www.chem4kids.com/files/atom_compounds.html)*.*

**If you are lost, click on the following link**. <http://www.chem4kids.com/files/matter_solid.html> Page 2

**7) What is a heterogeneous mixture?** (Use the Topics Column: Solids)
*-* ***According to the text, heterogeneous mixture*** *mixtures have different****concentrations****of compounds
 in different areas of the mixture. Please rewrite this so it is easier to understand.*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**8) What is a crystal?** (Use the Topics Column: Solids)
- *A crystal is a form of solid where the atoms are arranged is a very specific order. The atoms
 are arranged in a regular repeating pattern called a* ***crystal lattice****.*

**9) What is a solution?** (Use the Topics Column: Liquids)*- Different types of molecules dissolved in a liquid, it is called a****solution****.*

 **9) What is happening when something is compressed?** (Use the Topics Column: Liquids)*- When you compress something, you take a certain amount of material and force it
 into a smaller space or volume . You force the atoms closer together.*

**10) Where would we find compressed air?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**13) What is the difference between a vapor and a gas?** (Use the Topics Column: Gases)
-*Vapor and gas mean the same thing. The word vapor is used to describe gases that are usually liquids at room temperature.*

**15) What state of matter was created in 1995?** (Use the Topics Column: BE Condensate)

Bose-Einstein Condensate

**16) Why do we say this new state of matter can form a “super atom”?** (Use the Topics Column: BE Condensate)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**17) What is the difference between a mixture and solution?** (Use the Topics Column: Mixtures I)
**Mixtures**  are absolutely everywhere you look. Most things in nature are mixtures . Mixtures are about  **physical properties**, not chemical ones. [Solutions](http://www.chem4kids.com/files/matter_solution.html)  are also mixtures, but all of the molecules are evenly spread out through the system.

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**19) Fill in the chart with the missing information:** (Use the Topics Column: Solutions I)

**SOLUTION EXAMPLE**

Gas-Gas Air
Gas-Liquid Carbon Dioxide (CO2) in Soda
Gas-Solid Hydrogen (H2) in Palladium (Pd) Metal
Liquid-Liquid Gasoline
Liquid-Solid Dental Fillings
Solid-Solid Metal Alloys Such as Sterling Silver

**20) What is a colloid?** (Use the Topics Column: Solutions I)

**Colloids** are solutions with bigger particles. Colloids are usually foggy or milky when you look at them. In fact, milk is an  **emulsified colloid**.



**Now take some quizzes:**

1. Type the following into the address bar: <http://www.chem4kids.com/extras/quiz_matterintro/>

(General Matter Quiz) Score: \_\_\_\_\_\_\_\_/10

1. Type the following into the address bar: <http://www.chem4kids.com/extras/quiz_mattermix/index.html> (Mixtures Quiz) Score: \_\_\_/10
2. Type the following into the address bar: <http://www.chem4kids.com/extras/quiz_mattersolution/index.html> (Solutions Quiz) Score:\_\_/10