

Student directions [*States of Matter Basics*](#):

Learning Goals: Students will be able to:

1. Describe differences and similarities between solids, liquids and gases on a molecular level.
2. Explain gas pressure using the Kinetic Theory.
3. Determine processes you could use to make solids, liquids and gases change phases.
4. Compare and contrast the behavior of the 4 substances in the simulation and use your understanding about molecules to explain your observations.

Directions:

1. Experiment with [*States of Matter Basics*](#) and then write a summary including illustrations that describes “differences and similarities between solids, liquids and gases on a molecular level”.
2. When you check up your tires, you read on the side that the tire needs something like “35psi”.
 - a. What does “35 psi” mean in words?
 - b. What tool do you use to measure the tire pressure and how do you think it works? include illustrations
 - c. Use the simulation to see if your ideas of “gas pressure” match the molecular representation in the simulation. List any changes you would make to your explanation of how a tire gauge works. (You may want to check your text or an online resource if you feel like you need more information).
3. Using the simulation, try to change the phase of one of the substances. For example, change liquid water to solid or gas.
 - a. Write a summary of your results.
 - b. See if you can use similar procedures on all the materials. Make a data table that shows the tests and results to demonstrate that you have enough evidence to support ideas you have about how to make a substance change phase. Edit #3a if your experiments support some changes to your ideas.
4. As you observed the 4 different substances, what specific similarities and differences did you see?
 - a. Make a table to show your observations
 - b. Think about explanations that might be possible using your understanding of chemistry and physics.
 - c. Write your ideas and be prepared to share in a class discussion.