



## SfS Away from the Classroom!

### C11: States of Matter (Recommended for Grades 3-5)

Please use the following resources to learn about the 3 main states of matter!

Watch this Video: <https://www.youtube.com/watch?v=ELchwUIIWa8>

#### Answer these questions:

- What are the two main properties of all matter?
- Identify 3 solids you can see.
- Identify 3 liquids you can see.

**Activities:** Perform an experiment to test which liquids convert most quickly into solids!

You will need:

<ul style="list-style-type: none"><li>• 1 ice cube tray (and/or several small cups/containers)</li><li>• 1 measuring spoon</li><li>• 1 timer - a phone will work!</li></ul>	<ul style="list-style-type: none"><li>• 3-4 different household liquids. Possible options:<ul style="list-style-type: none"><li>○ Water, milk, juice, dish soap, vegetable oil, soda, syrup, salad dressing, or ketchup</li></ul></li></ul>
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1. Select your liquids. We recommend using water and then 2-3 additional liquids. Try using at least one “thick” liquid (such as dish soap, honey, or syrup).
2. Measure 1 tablespoon of each liquid into its own section of the ice cube tray (or its own small container).
3. Put the ice cube tray (or containers) in the freezer. Set a timer for 30 minutes.
4. While the liquids are in the freezer, make a prediction: will all of them turn into solids? Will they all freeze at the same rate? If not, which will be fastest or slowest to freeze?
5. Check on your liquids after 30 minutes and make observations. Are they frozen yet? Do they look or feel any different? Set another time for 30 minutes and put them back in the freezer.
6. Keep checking on your liquids and making observations every 30 minutes for 3-4 hours. What happens? Did any of your liquids not freeze? Did they all freeze at the same speed? What do you think would happen if you left the liquids in the freezer for longer, or froze them at a lower temperature?
7. When your experiment is done: remove your ice cubes from the tray, allow them to defrost in a small cup or bowl, and carefully pour them back into their original containers.

#### Make observations & use Claims, Evidence, and Reasoning!

1. **Claim:** Liquids change into solids (freeze) when the temperature is lowered.
  - **Evidence:**
  - **Reasoning:**
2. **Claim:** Solids change into liquids (melt) and then into gases (evaporate) when the temperature is raised.
  - **Evidence:**
  - **Reasoning:**

