

# Matter Cycling Advanced Preparation Needed

This document identifies which lessons in this unit require more significant advanced preparation.

Lesson	Time	Advanced Preparation Needed
2	30 days before the lesson	<ul style="list-style-type: none"> <li>For Lesson 2, you will want some mature plants growing in the hydroponic kit you received with your materials, so students can make some observations. These plants take about 30 days to grow so you will want to set this up prior to starting the unit. There is a teacher reference page <i>Details of the Hydroponic Plant System</i> for the step by step set up and there are videos available to watch.</li> <li>Prior to setting up the kit, you will need to germinate seeds so they are large enough to put in the hydroponic kit. These seeds take about 5 days to germinate. Once they have begun to grow roots, stems and tiny leaves, they are ready to put in the hydroponic system.</li> <li>The setup of the kit takes about 30 minutes. You will need at least 2 gallons of distilled water for the setup, or if you have access to filtered water that will work as well.</li> <li>The kit comes with a small bag of plant nutrients. This is more than enough for growing the plants in your kit. Seal and store the rest of the plant nutrients for use within the lesson when students test it for food molecules (fats, proteins, and carbohydrates).</li> </ul>
4	2 days before the lesson	<ul style="list-style-type: none"> <li>You will need 40+ square inches of leaf area (~10-12 leaves) - Fresh spinach works best.</li> <li>Buy no sooner than 1-2 days ahead of time.</li> <li>Save leftover spinach leaves from this lesson to use in Lesson 5.</li> <li>Conduct a trial run to see whether you can get a reliable increase in carbon dioxide levels. If not, consult <i>Tips for teachers on the CO<sub>2</sub>/RH detector experiment</i> for troubleshooting.</li> </ul>
5		<ul style="list-style-type: none"> <li>Reuse the spinach leaves from Lesson 4.</li> </ul>
10	2 days before the lesson	<ul style="list-style-type: none"> <li>You will need 40+ square inches of leaf area (~10-12 leaves) - Fresh spinach works best.</li> <li>Buy no sooner than 1-2 days ahead of time.</li> <li>Conduct a trial run to see whether you can get a reliable increase in carbon dioxide levels. If not, consult <i>Tips for teachers on the CO<sub>2</sub>/RH detector experiment</i> for troubleshooting.</li> </ul>
11	2-3 days before lesson	<ul style="list-style-type: none"> <li>Watch the Lesson 11 lab setup demonstration video (sprouting seeds and BTB) <i>Introduction video of how to set up bean sprouts</i>.</li> <li>Make sure to soak the bean seeds needed for the lab at least 1 day prior to the lab. It is recommended that after soaking the seeds, you place them in the wet paper towel for at least 24 hours, 36 hours is even better. It is recommended to start soaking the bean seeds 3 days before you will use them with the class.</li> <li>Soak enough bean seeds so that each group will have 10.</li> <li>About 20 hours after soaking the bean seeds, prepare enough paper towels for each student group.</li> </ul>
12		<ul style="list-style-type: none"> <li>You will need enough food labels with ingredient lists for the foods on the “not sure” category of the breakfast food poster for one per pair. You might want to start collecting these early in the unit after lesson 1 so you will have plenty by this lesson.</li> </ul>

