

# CONTAIN YOUR EXCITEMENT



TEACHER GUIDE

ACCELERATE



## PLANNING

Here's a suggested schedule for this kit! The activities should be completed in order, but you can choose when the lessons take place over time.

ACTIVITY INFORMATION	SECTION (S)	TIME REQUIRED	DAY/ LESSON
<b>ACTIVITY 1: CHEMISTRY - IT'S IN THE BAG!</b> What happens when you mix calcium chloride and sodium bicarbonate in a bag?  <b>Time required: 45 min</b>	<input type="checkbox"/> So Many Changes, So Little Space	45 minutes	Day 1
<b>ACTIVITY 2: MATTER MATTERS</b> Learn what happens to matter during physical and chemical properties and changes.  <b>Time required: 2 h</b>	<input type="checkbox"/> Physical and Chemical  <input type="checkbox"/> Show What You Know	75 minutes	Day 2
<b>ACTIVITY 3: HERE'S YOUR CHANGE</b> Do several experiments and analyze the change in mass (or lack of change)			

SAMPLE

Full schedule available with purchase

# 1

activity

## CHEMISTRY – IT'S IN THE BAG!

Sometimes, big changes can happen in small spaces. Your student will find out what happens when you mix calcium chloride and sodium bicarbonate in a bag!

### SO MANY CHANGES, SO LITTLE SPACE

**WARNING:** DO NOT EAT OR DRINK anything in this kit.



**WARNING:** Calcium chloride is a minor skin and eye irritant. If you touch it, wash your hands. Wear eye protection.



### PREPARATION AND SUPERVISION

- Your student will make two solutions: calcium chloride in a vial of water and the sodium bicarbonate in a bag with water.
- Then, they will place the vial in the bag, weigh it using the spring scale, and tip the vial over inside the bag to start the reaction (and weigh it again).
- The student will make several observations throughout the experiment. Remind them to write these down in the observation table.
- The reaction is unlikely to produce enough gas to burst the bag, but it's still a good idea to hold the bag in the sink. Bromothymol blue will stain skin and fabrics.
- After opening the bag to let the gas out (after the reaction), they should notice a slight decrease in mass. Careful measurement before and after can help to make this a more noticeable change.
- You can calibrate the spring scale by sliding the metal tab to zero when nothing is hanging from the scale. However, do not do this in the middle of an experiment, since it will affect your results. If you forget to calibrate it, don't worry! The experiment's focus is on the change in mass, not the absolute measurement.
- One of the extension activities describes a way to use the leftover bromothymol blue (see "Breath and Blue").



### THINK ABOUT IT!

**? Question 1: What happened to the temperature of water when you:**  
a. dissolved calcium chloride? b. dissolved sodium bicarbonate? c. mixed the two liquids together in the bag?

**Answer:** The student is not using a thermometer, but they should have felt the outside of the bag or vial in each instance.

They should have noticed that:

- Dissolving calcium chloride in the water in the vial makes the vial quite warm.
- Dissolving the sodium bicarbonate in the water in the bag makes it cooler.
- There was no change or a slight warmth when mixing the two solutions in the bag.



- Your student will make a foldable to organize your ideas about physical and chemical properties and changes.
- If they make an error in the organization of the foldable, it's not a big deal. Just make sure they have all the same content.

## MULTIPLE AGES AND ABILITIES:

This performance assessment is a great opportunity for you to allow your student some choice. If they like the idea of making a foldable, that's great – encourage them to personalize it with their drawings and labeling. They might prefer to show their understanding with a different method, like a mini-poster or a set of digital slides. This is fine, too! Advanced students might even like to try a multi-media format or interactive diorama, with people experiencing it being able to perform physical and chemical changes or observe physical and chemical properties of hands-on materials.

If you have multiple students, you can have them produce the same type of organizer or different types. Help them focus their product using the requirements listed in the foldable instructions so they can organize their thoughts about physical and chemical properties and changes.

3

activity

## HERE'S YOUR CHANGE

Your student has now analyzed several parts of the experiment in Activity 1, but they haven't considered one important part: the weight. They recorded the weight using the spring scale several times during the experiment, and they probably noticed some changes.

## SAME MASS: IT'S THE LAW

### You've Got a System

- In this section, your student will begin to refer to the weight more accurately as mass.
- The types of systems are introduced so the student will have a strong foundation when describing changes in mass, especially when those changes involve a hands-on component (as they do later in this activity).
- The following vocabulary words are defined: system, surroundings, open system, closed system, and isolated system.

### Conservation of Mass

- In this sub-section, the student will build upon their understanding of systems to consider how mass, matter, and atoms are not created or destroyed during either physical or chemical changes.
- The vocabulary word law of conservation of mass is defined.
- Helpful tips are provided to the student for understanding changes at a particle level.



© Home Science Tools. All rights reserved.  
*Reproduction for personal or classroom use only.*

Contact us at: [www.homesciencetools.com/customer-service/](http://www.homesciencetools.com/customer-service/)

A Product of Homesciencetools.com

Kit	SU-CONTYR
Instructions	IN-CONTYRT
Revision Date	3/2021