



# SCOUT ELF SCHOOL™



## Lessons from Scout Elf School: Cooking Class



Combining ingredients into a recipe (in scientific terms, following or modifying a formula) is one way for students to practice following ordered instructions. In this easy activity, students will learn how math and basic chemistry are used when ingredients mix to form a chemical reaction to produce something that is greater (and yummiier!) than its parts.

## Activity Instructions

- Explain to students that matter is anything that takes up space and has weight. In the science of kitchen chemistry, there are states of matter called solids, liquids, and gases. Solid matter keeps its shape – like marshmallows or chunks of chocolate. Liquid matter can be poured and takes the shape of its container – like water or milk. Examples of gases might be steam from a boiling pot or bubbles from a fizzy soda pop.
- Explain that kitchens are stocked with liquid and solid chemicals, called ingredients, that react with other ingredients. For example, eggs can bind substances together. Flour can give cakes and breads structure. Sugars will sweeten. Water and other liquids, in the right amounts, can moisten.
- Demonstrate the differences between measuring spoons and measuring cups. Discuss the importance of careful measurement of ingredients to produce desired results.
- Brainstorm typical kitchen tools like mixers, stoves, ovens, refrigerators and freezers and their roles in aiding the processes of kitchen chemistry.
- Ask students to fill out the Cooking Class Activity Sheet to practice recognizing standard measurements and help the Scout Elf friends add them together in an order that results in a delicious recipe.

## Optional Recipe Activity

The Cooking Class Activity Sheet can be completed on its own to illustrate math and science concepts related to kitchen chemistry. If desired, you may further exhibit the concepts by preparing the recipe on the Cooking Class Activity Sheet for Mrs. Claus' Famous Warm Cocoa in your classroom. Whether you present a recipe demonstration for students or encourage a hands-on activity with students who will participate in measuring and mixing the ingredients themselves, students will gain further understanding about how these particular ingredients work together to make a mug of Mrs. Claus' Famous Warm Cocoa.



## Activity Instructions (cont'd.)

### Supplies Needed for Optional Recipe Activity:

- A disposable cup or mug for each student
- Spoon(s) for stirring
- At least one set of measuring cups and spoons
- Confectioners' sugar
- Cocoa powder
- Powdered milk or instant nonfat dry milk
- Warm water (~100 degrees)

### Optional Recipe Activity Instructions:

- When a solid substance dissolves in a liquid, a solution is made. Explain that in the recipe for Mrs. Claus' Famous Warm Cocoa, the first three ingredients are solids, that, when mixed with water—a liquid—become a solution, or a liquid mixture. We know this because once dissolved, the mixture takes the shape of its container.
- Students will follow this basic recipe using the four ingredients to cause a chemical reaction that makes a new, yummy solution!
- Ask students to identify other pantry solids and liquids that could be possible ingredients in recipes and brainstorm the ways various liquids and solids might combine to form their favorite recipes.

## Further Practice:

- Discuss scaling for size, and how recipes can be multiplied or divided to make bigger or smaller quantities. Work together to figure out how much of each ingredient the Scout Elf friends would need for Mrs. Claus' Famous Warm Cocoa if they wanted to make two mugs of cocoa so they could share one with Santa.
- Take a class field trip to the cafeteria, where students can see how various kitchen equipment is used to create recipes for large groups of people. Plan for plenty of time for Q & A with your school's food service professionals and then follow up with a thank you note from the class.
- Seek out other recipes to make together as a class and further the conversation. Students may taste individual ingredients recipes and discuss how following a formula/recipe using kitchen chemistry produces solutions and mixtures that are tastier than their individual ingredients.



# Cooking Class Activity

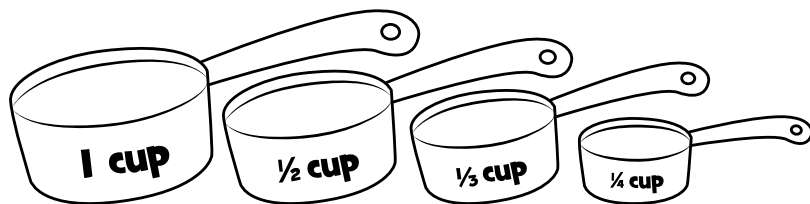
Scout Elf friends love making hot cocoa with Mrs. Claus in her Sweet Shop! Following a recipe (a set of instructions used to prepare a food or drink) is one way to mix individual ingredients together to create a delicious treat.

Color in the correct measurements so the Scout Elf friends know how much of each ingredient to add to their mugs to make a serving of Mrs. Claus' Famous Warm Cocoa!

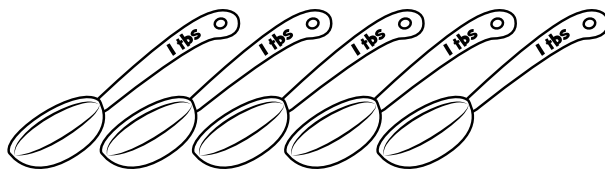
## Mrs. Claus' Famous Warm Cocoa

### Ingredients

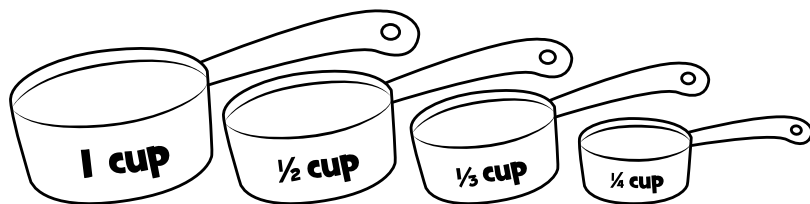
$\frac{1}{4}$  cup confectioners' sugar



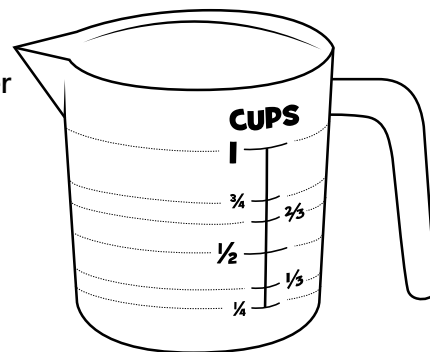
2 tablespoons unsweetened cocoa powder



$\frac{1}{4}$  cup powdered milk or instant nonfat dry milk



$\frac{1}{2}$  cup warmed water



Mini marshmallows, whipped topping, chocolate chips, sprinkles, or other toppings





Read all of the directions below and then decide which order makes the most sense. Number the steps from 1-6 so the Scout Elf friends add the ingredients and follow directions in the correct order.

### Directions:

- \_\_\_\_\_ Add the unsweetened cocoa to the sugar.
- \_\_\_\_\_ Whisk all solid ingredients until combined.
- \_\_\_\_\_ Measure the confectioners' sugar into an empty mug.
- \_\_\_\_\_ Add mini marshmallows, whipped topping, chocolate chips, sprinkles, or other toppings to the top of the warm cup of cocoa.
- \_\_\_\_\_ Stir the powdered milk into the sugar and cocoa mixture.
- \_\_\_\_\_ Add warm water to the solid ingredients and stir until combined.

