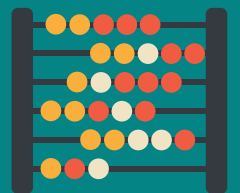
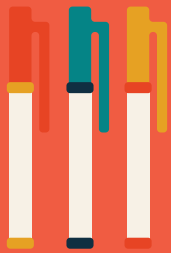




# KITCHEN FIELD TRIP LESSON PLAN

## Grade 5 Science Unit 4



# Grade 5 Science (Unit 4)

## UNIT ESSENTIAL QUESTIONS:

- How do we investigate and identify the solubility of different materials?
- What conditions will speed up or slow down the dissolving process?
- How can mixtures of solids be separated based on their properties?
- How does temperature affect physical change?

## BENCHMARK DESCRIPTIONS:

**SC.5.P.8.2** Investigate and identify materials that will dissolve in water and those that will not and identify the conditions that will speed up or slow down the dissolving process. (Assessed as SC.5.P.8.3) Level 3

**SC.5.P.8.3** Demonstrate and explain that mixtures of solids can be separated based on observable properties of their parts such as particle size, shape, color, and magnetic attraction. (Also assesses SC.5.P.8.2) Level 2 AA MC

**SC.5.P.9.1** Investigate and describe how many physical and chemical changes are affected by temperature. (Also assesses SC.3.P.9.1 and SC.4.P.9.1) Level 3 AA MC

## VOCABULARY DEVELOPMENT:

mass, weight, density,  
volume, mixture, state  
of matter, solubility,  
texture, properties,

magnification, atom,  
physical change,  
temperature, freezing,  
melting, concentration,

saturation, mixture,  
solution, burning,  
chemical change

## ASSESSMENT:

- Can students identify the meaning of the vocabulary words?
- Are students able to answer probing questions during discussion?
- Follow up worksheet and observation sheet

## INSTRUCTIONAL:

Read through the lesson plan. Take note of prep instructions in each exercise labeled “Before the students arrive.”

Introduce yourself and staff to students. Describe the lesson and what they will be doing. Review behavior expectations and safety rules. Stress NO TOUCHING of equipment because it may be HOT or SHARP.

Give students a tour of the kitchen.

## KITCHEN TOUR:

Give students hairnets. Take students on a tour of the kitchen taking time to introduce solids and liquids and how they are used in the kitchen. When tour is complete give each student an observation sheet and pencil.



## Exercise I – Mixtures of Solids

Mixtures of solids can be separated based on observable properties

### Before the students arrive:

- Pull allergy list for the class and check for allergens against different cereals
- Place a box of cheerios, lucky charms, frosted flakes at each table.
- Place a mixing bowl on each table along with a mixing spoon, 5.5 oz cups, small white plates and gloves.

### After the students arrive:

- Break students into 2-3 groups and assign them a table
- Ask the group to put on their gloves and open the cereals
- Ask them to record the properties of each cereal on their sheet like color, shape, size, texture
- Combine cereals in the bowl
- Have students gently stir the cereals together
- Then have students spoon the mixture into the small cups
- Each student should have a small cup
- Have them separate their mixture out into the different cereals on their white plate
- Discuss how and why the cereals could be separated after being mixed together. Let the students tell you how they were able to separate the cereals
- Tell the students to put the cereal back in their cup and that they may take it with them when they leave

## Exercise II – Dissolving Materials

Identify materials that will dissolve in water and the conditions that will speed up or slow down the dissolving process

### Before the students arrive:

- Gather sugar, salt, ice, pitcher of water, a small pot, enough bowls for each group of students

### After the students arrive:

- Break students into two groups (teacher will have to help with second group - experiment done with both groups)
- Boil 6 cups of water
- Put ice in 6 cups of water
- Place a small black paper bowl of sugar and one of salt in front of each group of students
- Have students write down observations about the sugar and salt crystals (what they look like, size) and draw them
- Measure 1/2 cup sugar and 1/2 cup salt

## Exercise II – Dissolving Materials continued

- Using a measuring cup, pour 2 cups of boiling water in a clear measuring cup or clear container while student observe.
- Using a measuring cup, pour 2 cups of ice water in a clearing measuring cup or clear container.
- Salt will be added to hot and cold water to see how long it takes to dissolve. Then sugar will be tested.
- Measure temperature with students from both containers. Have them record temps on observation sheet.
- Ask students if they think the sugar or salt will dissolve faster, why? Will it dissolve faster in hot or cold water, why?
- Take the hot and cold water containers. Add  $\frac{1}{2}$  cup salt to the hot water containers. Use the stop watch to record how long it takes to dissolve while gently stirring. Have students record the amount of time it took to dissolve. Repeat with salt in the cold water.
- Clean out hot and cold water containers and refill with hot and cold water. Take temperatures again to make sure the temps are close to the first test
- Then do the same procedure with  $\frac{1}{2}$  cup of sugar.
- Discuss results.
- Could you separate salt and the water mixture now? How about the sugar and water mixture?



## RESOURCES:

- Observation sheets
- Pencils
- Clear pitcher
- Stop watch
- Stirring spoon
- Mixing Bowls
- 5.5 oz clear cups
- Cooking Sauce Pot
- White plates
- Thermometer



## TAKE AWAYS:

- Worksheet
- Teacher aid
- Cup of cereal

## TOPICS:

- Talk about properties that can help you separate solid mixtures
- Talk about the difference in separating solid mixtures and liquid mixtures
- Talk about how long it takes different things to dissolve in water
- Talk about what helps things dissolve (temp, stirring)



# Observation Sheet

## Exercise I – Mixtures of Solids

A. Describe the different properties of the cereals - color, texture, shape, size

Cheerios: \_\_\_\_\_

Lucky Charms: \_\_\_\_\_

Frosted Flakes: \_\_\_\_\_

## Exercise II – Ordering Fractions

A. Describe and Draw the crystals

Sugar: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Salt: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

B. Temperature of Hot Water = \_\_\_\_\_

Temperature of Cold Water = \_\_\_\_\_

C. Times

Salt in Hot Water = \_\_\_\_\_

Salt in Cold water = \_\_\_\_\_

Sugar in Hot Water = \_\_\_\_\_

Sugar in Cold Water = \_\_\_\_\_

# Worksheet

1. What is the difference between separating a solid mixture then separating a liquid mixture? Which one is easier?
2. What physical properties can you look for to separate the parts of a solid mixture of popcorn, blueberries, and broccoli?
3. Does stirring quickly or slowly make salt dissolve faster in cold water? Explain why.
4. Do you think powdered sugar would dissolve faster or slower than the regular sugar if both were in hot water?

# Teacher's Aid

## Quiz Questions:

1. True or False: The cereal mixture could be separated into individual cereal types based on the shape, color, and texture of the different cereals?
2. True or False: The sugar is a larger crystal than the salt crystal?
3. True or False: Both salt and sugar dissolved slower in hot water than in cold water?
4. True or False: The salt dissolved faster in the hot water than the sugar because it is a smaller crystal?

## Writing Questions:

1. Describe a time when you had to dissolve a solid in a liquid.
2. Discuss conditions that help a solid dissolve faster in a liquid.

