Short Performance Assessment: **5-PS1-4**

Grade Level: **Fifth Grade**

Adapted from SNAP[1]

Title	**Self Inflating Balloons**		
Designed by	**Paul Andersen**	Course(s)	**NGSS Grade 5**

Performance Expectation	**5-PS1-4**: Conduct an investigation to determine whether the mixing of two or more substances results in new substances. **Clarification Statement**: none **Assessment Boundary**: none

Science and Engineering Practice	**Planning and Carrying Out Investigations** • Conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.
Disciplinary Core Ideas	**PS1.B: Chemical Reactions** • When two or more different substances are mixed, a new substance with different properties may be formed.
Crosscutting Concept	**Cause and Effect** • Cause and effect relationships are routinely identified and used to explain change.

Student Performance	1. Identifying the phenomenon under investigation 2. Identifying the evidence to address the purpose of the investigation 3. Planning the investigation 4. Collecting the data

[1] The Short Performance Assessment (SPA) and the Assessment Rubric adapted from the Stanford NGSS Assessment Project http://snapgse.stanford.edu/

Name_____

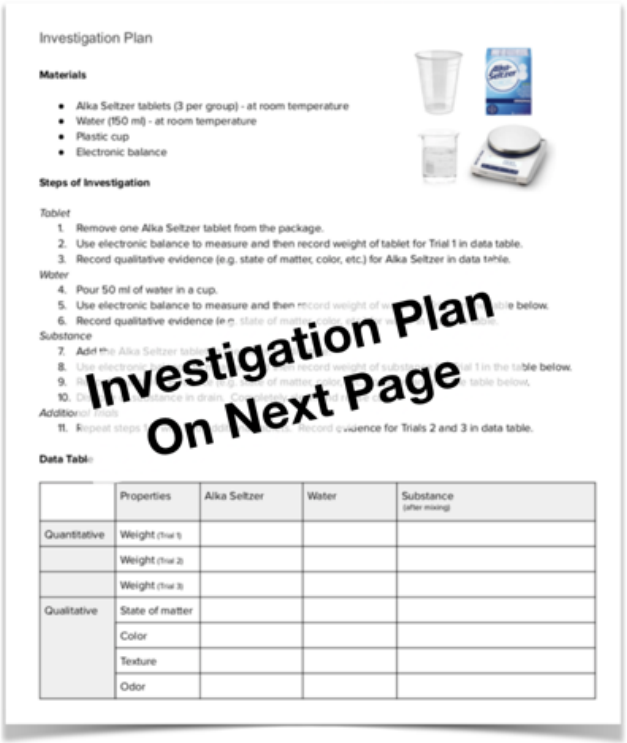
Self Inflating Balloons

Background

Gift stores are selling Self Inflating Balloons that are activated by hitting the balloon on a hard surface. These balloons magically inflate but since the balloon is not transparent you cannot see the magic happening. Unfortunately these self inflating balloons can only be used once.

In the following investigation you will be simulating the self inflating balloons using Alka Seltzer tablets and water. This will give you an opportunity to see what is going on inside. It will also allow you to see if you can potentially design a **reusable** self-inflating balloon.

Read through the investigation plan on the next page completely.



Investigation Plan

Materials

- Alka Seltzer tablets (3 per group) - at room temperature
- Water (150 ml) - at room temperature
- Plastic cup
- Electronic balance

Steps of Investigation

Tablet

1. Remove one Alka Seltzer tablet from the package.
2. Use electronic balance to measure and then record the weight of tablet for Trial 1 in the data table.
3. Record qualitative evidence (e.g. state of matter, color, etc.) for Alka Seltzer in a data table.

Water

4. Pour 50 ml of water in a cup.
5. Use electronic balance to measure and then record weight of water for Trial 1 in the table below.
6. Record qualitative evidence (e.g. state of matter, color, etc.) for water in the data table.

Substance

7. Add the Alka Seltzer tablet to the water and let it dissolve.
8. Use electronic balance to measure and then record weight of substance for Trial 1 in the table below.
9. Record qualitative evidence (e.g. state of matter, color, etc.) for substance in the table below.
10. Dispose of substance in drain. Completely clean and reuse the cup.

Additional Trials

11. Repeat steps 1-9 with two additional tablets. Record evidence for Trials 2 and 3 in data table.

Data Table

	Properties	Alka Seltzer	Water	Substance (after mixing)
Quantitative	Weight (Trial 1)			
	Weight (Trial 2)			
	Weight (Trial 3)			
Qualitative	State of matter			
	Color			
	Texture			
	Odor			

After reading through the investigation plan answer the following questions

Purpose

1. What is the purpose of the investigation?

Evidence

2. What evidence will be collected in the investigation?

Investigation Plan

3. How will the quantitative and qualitative properties be measured before and after mixing?

Quantitative	Qualitative

4. How many trials will there be in the investigation?

5. How will variables be controlled to ensure a fair test in the investigation?

NOTE: Bring completed questions 1-5 to your teacher to receive materials. **Complete the lab** and fill out the data table. After completing the lab, answer the following question.

Was a new substance created in the lab?
Claim:
Evidence: Identify evidence from the data table that supports your claim.
Reusable Self-Inflating Balloons: Assuming the balloons contain similar material is it possible to make reusable balloons? Explain your thinking.