Lesson #3
The Science Behind a Can of Spray Paint Part 3

Learning Targets: Students will make scientific inferences based on data to determine the effect of thermal energy on a can of spray paint	
Understandings/Prior Knowledge: How a can of spray paint works Thermal radiation States of matter and energy	Essential Question(s): What happens when you use a can of spray paint that's been left out in the sun?

Key Understanding	Standards Addressed:
	MS-PS1-4 Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
	HA Connection:
	Strengthened Sense of Responsibility

Set-up	Classroom Set-Up: Students can work individually at a desk
	Materials and Equipment Needed: Worksheet Writing tool

Product	RUBRIC:		
	Well Below	Approaches	Meets
	• Student does not use data in their explanation • Student does not attempt to explain their scientific reasoning	• Student references data but does not make accurate conclusion based on the data presented • Student is	• Student is able to use the data table to make scientific inferences and logical conclusions. • Student is able to explain their

	● Student uses no terms or definitions associated with the lesson or content	somewhat able to explain their scientific reasoning. ● Student is somewhat able to use terms and definitions	scientific reasoning in complete sentences ● Student is able to use correct terms and definitions

Lesson Flow	Mins	Procedure:
	10	Opening: Present students with the essential question for the lesson: What happens when you use a can of spray paint that's been left out in the sun? Have student discuss with their neighbors and then share out Tell students that today they will be working individually as student scientists reading data. Read the following problem to students: Several cans of spray paint were left out in the sun. Estria needs to know how solar radiation effects the cans and the paint, especially when he uses it on the mural.
	25	Give students the handout (below). For the first 20 minutes students can work independently, in the last 5 minutes students may work with neighbors.
	15	Closing: Have students share out their answers with the class.

Name:_____ Date:_____ Period:_____

Essential Question:
What happens when you use a can of spray paint that's been left out in the sun?

Several cans of spray paint were left out in the sun. Estria needs to know how solar radiation effects the cans and the paint, especially when he uses it on the mural.

In order to test the effects, Estria takes three cans of paint that were left out in the sun, and three cans that were in the shade. Estria sprays each can of paint into a beaker that measures fluid ounces. The table below shows the results of the experiment.

Cans left in the Sun	Fluid Ounces	Cans left in Shade	Fluid Ounces
Can 1	.03 fl. oz	Can 1	.021fl. oz
Can 2	.035fl. oz	Can 2	.023fl. oz
Can 3	.032fl. oz	Can 3	.02fl. oz

1. Based on the data above, explain how the sun's thermal radiation affected the amount of paint that comes out of the cans?

2. How might this change the way Estria uses the spray paint?

3. On average, what's the difference in the amount of fluid ounces measured between the two types of cans?

4. What other ways could Estria test the difference between the spray paint left in the sun and the ones left in the shade.

Reflection	How will you check for understanding during instruction and how will you know if learning targets are met? Component 1F → 3D
	Checking for understanding can be done by circulating around the room and groups. The teacher can also verbally check for understanding. The teacher can also check for understanding by observing student work.