Name Int

**Critiquing Scientific Explanations**

A student conducted a lab experiment to answer the question:

**Are soap and fat the same or different substances?**

The data collected in the lab is below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Student Data Collection for Fat and Soap** | | | | | |
|  | **Color** | **Hardness** | **Solubility** | **Melting Point** | **Density** |
| **Fat** | Off-white or slightly yellow | Soft, squishy | Water- no  Oil- yes | 37°C | 0.92 g/cm3 |
| **Soap** | Milky white | Hard | Water-yes  Oil- no | Hotter than 100°C | 0.84 g/cm3 |

Examine the following student explanation.

**Brandon’s First Explanation about Soap and Fat**

Fat and soap are both stuff but they are different substances. Fat is used for cooking and soap is used for washing. They are both things we use everyday. The data table is my evidence that they are different substances. It is clear that they are different substances because the data shows they are different stuff.

1. Highlight Brandon’s claim.
2. Evaluate Brandon’s explanation using the CER Writing Rubric. What score would you give him for each category?

Claim = \_\_\_\_\_\_\_ Evidence = \_\_\_\_\_\_\_ Reasoning = \_\_\_\_\_\_\_\_ Conclusion = \_\_\_\_\_\_\_\_ Organization = \_\_\_\_\_\_\_

1. What strengths do you see in this scientific explanation?

1. What feedback might you give to Brandon to help him improve his explanation?

Examine Brandon’s second draft of his explanation.

**Brandon’s Second Explanation about Soap and Fat**

Fat and soap are different substances. Fat is off-white and soap is milky white. Fat is soft and squishy and soap is hard. Fat is soluble in oil, but soap is not soluble in oil. Fat has a melting point of 37°C and soap has a melting point above 100°C. Fat has a density of 0.92 g/cm3 and soap has a density of 0.84 g/cm3. Color, hardness, melting point, and density are all physical properties, which are properties of a substance that can be observed without changing the substance. Because fat and soap have different physical properties, I know they are different substances.

1. Highlight Brandon’s EVIDENCE.
2. Underline Brandon’s REASONING.
3. Evaluate Brandon’s explanation using the CER Writing Rubric. What score would you give him for each category?

Claim = \_\_\_\_\_\_\_ Evidence = \_\_\_\_\_\_\_ Reasoning = \_\_\_\_\_\_\_\_ Conclusion = \_\_\_\_\_\_\_\_ Organization = \_\_\_\_\_\_\_

1. What changes did Brandon make to his explanation? In what ways did these changes make the explanation more clear?

1. Are there any suggestions you would make to help him improve?