**MATTER AND CHEMISTRY**

*BATH BOMBS LESSON 2*

**INVESTIGATION QUESTION** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**PLANNING AN INVESTIGATION #1**

***Are the gas bubbles coming from inside the bath bomb?***

Record your ideas below about the following:

* What do we know about gases?
* Should the system for our experiment be open or closed?
* What do we need to measure? How/when should we measure it?
* What other evidence/data do we need to look for and record?

**Develop a hypothesis to answer the question: Are the gas bubbles coming from inside the bath bomb?**

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| **Looking Closely at a Bath Bomb** |
| Observations | |
| *Before crushing:* | |
| *After crushing:* | |

**SUMMARY/CONCLUSION OF INVESTIGATION #1**

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| **Problem/Question** |
| *Are the gas bubbles coming from inside the bath bomb?* |
| **CLAIM:** |
| **EVIDENCE:** |
| **REASONING:** |

**PLANNING AN INVESTIGATION #2**

***Does the matter that makes up the gas come from something new or something we started with?***

Record your ideas below about the following:

* Should the system for our experiment be open or closed?
* What do we need to measure? How/when should we measure it?
* What other evidence/data do we need to look for and record?

**Materials:**

* Bath Bomb
* Resealable baggie
* Plastic cup
* Water from the sink
* Paper towels for cleaning up
* Thermometer
* Electronic balance
* Graduated cylinder
* Plastic bottle w/cap

**Procedure:**

Part 1

1. Pour 100 ml of water into a resealable bag.
2. Dry out the cup. Place thee bath bomb pieces inside the cup. Place the cup inside the resealable bag. \**Do not let the bath bomb pieces and water mix yet!*
3. Squeeze out as much air as possible and seal the bag.
4. Keeping the bag sealed, tip the cup to mix the water and bath bombs.

Part 2

1. Add 100 ml of water to the plastic bottle.
2. Fill the tube with bath bomb pieces.
3. Carefully place the tube in the bottle with water. \**Do not let the bath bomb and water mix yet!*
4. Cap the bottle.
5. Measure and record the mass of all of the beginning materials.
6. Shake the bottle to mix.
7. Record observations.
8. Measure and record the mass.
9. Remove the lid from the bottle.
10. Measure and record the mass.

**MAKING OBSERVATIONS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Investigating Gas From Bath Bombs In Closed and Open Systems** | | | | |
| **System** | **Starting**  **mass (g)** | **Ending**  **mass (g)** | **Change in**  **mass (g)** | **Observations** |
| **Closed** |  |  |  |  |
| **Open** |  |  |  |  |

**CONCLUSION/SUMMARY**

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| **Problem/Question** |
| *Where is the gas coming from?* |
| *Circle one of the following claims that you feel our evidence best supports.*   * Claim 1: The gas was already trapped in the solid bath bomb and was released when the solid bath bomb broke apart in water. * Claim 2: The gas comes from some combination of the matter in the water and/or the matter in the solid bath bomb. * Claim 3: The gas comes from some other matter (not the water or the bath bomb). |
| **EVIDENCE:** |
| **REASONING:** |
| **NEXT STEPS:** |