**Exploring Density Solutions** **Worksheet**

**How Does Engineering Happen?**

**Step 1: Ask**

1. Record your observations and reflections about what makes objects sink or float. (Use complete sentences.)

**Step 2: Research**

**Instruction:** Using online research resources and/or science textbooks, define the following terms using complete sentences.

1. What is mass?
2. What is weight?
3. What is density?
4. What is relative density?

**Step 3: Imagine**

1. Individually brainstorm 5-6 ideas of how you can make and test solutions with different relative densities. Think about what ingredients you would use, and how you would make those solutions.

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**Step 4: Plan**

**Constraints**

* Each mixture must be a solution.
* Each mixture must contain three ingredients.
* Each mixture must be 300 mL.
* Each mixture must have a different density.

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| **Mixture #1** |
| **Ingredients** |
| **Procedure** |
| **Mixture Color** |

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| **Mixture #2** |
| **Ingredients** |
| **Procedure** |
| **Mixture Color** |
| **Mixture #3** |
| **Ingredients** |
| **Procedure** |
| **Mixture Color** |

**Step 5: Create**

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| **Create Mixture #1** |
| **Observations of the Process:*** **I observed…**

**Did the mixture become a solution?** |
| **Create Mixture #2** |
| **Observations of the Process:*** **I observed…**

**Did the mixture become a solution?** |
| **Create Mixture #3** |
| **Observations of the Process:*** **I observed…**

**Did the mixture become a solution?** |

**Step 6: Test**

1. **How will you test the relative densities of your mixtures? Describe your testing method below.**
2. **Using your above testing procedure, test each of your mixtures.**

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| **Test Mixture #1** |
| **Observations of the test:** |
| **Test Mixture #2** |
| **Observations of the test:** |
| **Test Mixture #3** |
| **Observations of the test:** |

**Step 7: Improve**

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| **Improve #1** |
| **If not every mixture was a solution, what can you change to fix that?** |
| **Improve #2** |
| **Does each mixture have a different relative density? If not, what can you change to fix that?** |