**Goal: To think and solve problems the way scientists do.**

**Follow the directions and wait for prompts from your teacher. The goal is to document what you think is going on in the situation and record any changes to your explanation that are brought about by new evidence. The focus is not on writing. You will have limited space and time. Get your thoughts down on paper so that you can reflect upon them and share them with the class.**

**Procedure: Day 1**

1. Remove 4 checks from the envelope. Develop an initial hypothesis for what is going on with the family situation. Cite evidence for this hypothesis.

Explanation 1:

Evidence:

1. Remove 4 more checks from the envelope. Decide if your hypothesis changes. Write down how the hypothesis has changed and cite evidence for this change. If there is no change, write down the evidence from the last 4 checks that supports Hypothesis 1.

Explanation 2:

Evidence:

1. Remove the last 4 checks. Repeat step 2.

Explanation 3:

Evidence:

1. Now, rotate clockwise around the room to view the checks from other groups. DO NOT TOUCH! Decide if your hypothesis changes and support this decision with evidence.

Explanation 4:

Evidence:

**Group Evaluation**

Discuss the following “Scientific Practices” with your group. Check yes or no if the following actions took place during the activity. If you check yes, provide a short description of when or how.

|  |  |  |  |
| --- | --- | --- | --- |
| **Scientific Practices** | **Yes** | **No** | **When or How?** |
| Asking questions and Defining Problems |  |  |  |
| Developing and Using Models |  |  |  |
| Planning and Carrying Out an Investigation |  |  |  |
| Analyzing and Interpreting Data |  |  |  |
| Using Mathematics and Computational Thinking |  |  |  |
| Constructing Explanations and Designing Solutions |  |  |  |
| Engaging in Argument from Evidence |  |  |  |
| Obtaining, Evaluating, and Communicating Information |  |  |  |

1. Did all of your group members agree on one hypothesis? Elaborate.
2. Did some members offer up suggestions more than others? Did others shoot them down? Elaborate.
3. Did anyone commit to the original hypothesis and refuse to change their mind even with the addition of new evidence? Why might this be a problem in science?

**Discussion-Day 2**

**Homework for Day 2 Discussion**

**Prepare your answers to questions 1-13 on a separate piece of paper. Use this sheet to record points made during class discussion. It should be blank when class begins!**

1. What bits of information on the checks were valuable to your group in formulating a tentative explanation?
2. What information was useless?
3. List any misleading information that was presented.
4. Why do we say that an explanation in science is "tentative?
5. What is another word for a “tentative explanation?”
6. Did your explanation/hypothesis change? Why?
7. What’s the difference between a hypothesis and a theory?
8. Could your hypothesis become a theory? If so, how?
9. Is your final hypothesis "correct"? Explain.
10. What is your definition of a “model”?
11. Look up “model”. Do you think you developed a model or used a model based on new or different definitions of model?
12. What does “computational” mean? Look it up. Did you use computational thinking in this activity? Why or why not?
13. Which of the 8 practices do you think this activity illustrates the most? Explain.

Additional Notes or Comments: