

**3 D Assessment
Portland NSTA Conference
November 2016**

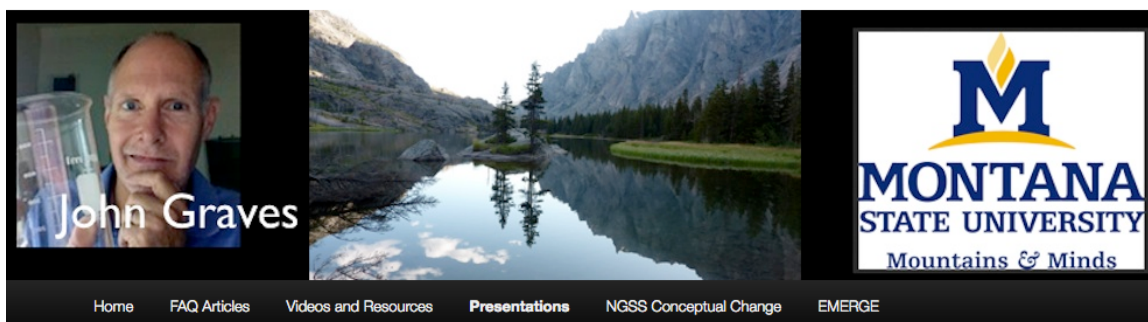
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3 D Assessment Planning and Carrying Out an Investigation

Ken, Mike, Susanna and Kathy observed their science teacher place calcium chloride, baking soda and a small vial of liquid universal indicator in a ziplock bag. The teacher sealed the bag and spilled the liquid. The students observed the changes that took place. Based on their observations, the students wanted to determine what materials caused the various reactions they observed and decided on a plan to follow. They also determined the chemical reaction and wrote the following equation:



Answer the following questions based on the scenario above.

1. Identify 2 Science & Engineering Practices that were primary in this investigation. Provide claim/evidence/reasoning.
2. Describe the phenomenon did you encountered. Provide claim/evidence/reasoning.
3. When you wrote out the chemical equation, what Crosscutting Concept was being emphasized? Provide claim/evidence/reasoning.
4. How did you use the SEP of Planning & Carrying Out an Investigation. Provide claim/evidence/reasoning.
5. How might this activity be changed into an engineering problem?

OLD FAITHFUL



Students in Dr. Graves' class were discussing the Old Faithful eruption data. They remembered that the data included the time of eruption, called the duration, and the time between eruptions called the interval. When the data was graphed, a scatterplot like the one below was created. They are remembered the model eruption of Old Faithful in the classroom. The eruption occurred several times, even though each time had less and less water in the funnel and flask.

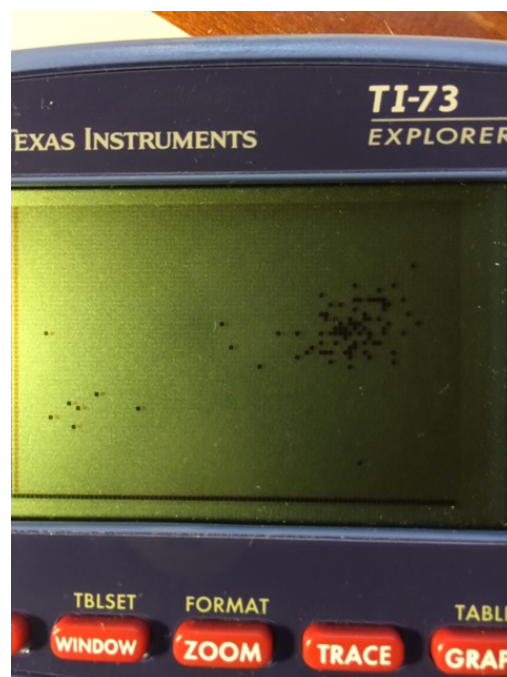
Answer the following in complete sentences, providing evidence for your responses.

1. When creating the scatterplot, what primary SEP(s) was/were being used?

2. What are the variables in the data set?

3. Explain HOW the data could be used to predict an eruption time for Old Faithful.

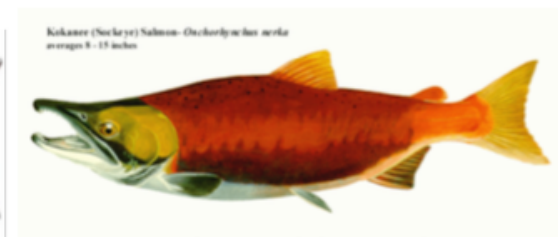
4. When Old Faithful erupted in class, what crosscutting concept(s) was/were evident?



Kokanee Salmon Rubric



Kokanee Adult, non spawning



Kokanee Adult, spawning

Based on the Kokanee Salmon Case Study, please respond to the following:

1. Provide evidence that you engaged in the Science & Engineering Practice of Asking Questions in science.
2. How was the case study an example of systems & system models?
3. Provide evidence that through the case study you were constructing explanations and designing solutions.
4. Provide evidence that through the case study you were analyzing and interpreting data.
5. Based on the case study, write a claim-evidence-reasoning example that summarizes the reason there are no longer Kokanee Salmon in Flathead Lake.

Scoring Rubric:

- 3: Student meets expectations and shows advanced thinking about the concept
- 2: Student provides evidence that is reasonable, clearly stated, addresses each point
- 1: The statement is somewhat unclear, not clearly described, simplistic or shows little thought
- 0: The statement is very unclear or incorrect, not related to the question, problem or concept