Names:

**Design Log**

**Brainstorming**

What is aquaponics? Make a clear representation that include drawings, sketches, etc.

Make a clear representation of the nitrogen cycle. Include drawings, arrows, and materials.

**Debate**

Conventional Farming or Alternative Farming?

Pros & Cons of your side:

Debate Points:

Questions for others:

**Design**

Aquaponics system

Looking through the materials, make a list of materials you think we will need to make our aquaponics system.

Using the materials you listed above, how would you create an aquaponics system? Draw a representation of your aquaponics system. Be neat so others can see your drawings.

Please draw the aquaponics system you will build.

Fish & Plants

What type of fish would be the best for our aquaponics system? Why do you think that? Support your answer with evidence. Think about how much food this fish needs, its temperament with other fish, general care, cost, etc.

What type of plants will be best for our aquaponics system? Explain your reasoning. Take amount of food and general needs into consideration.

**Redesign**

How would you build your aquaponics system differently? Would you add something to your redesign or take something away? Would you use different materials? Would you change the size of it? Please write a paragraph about your redesign and use full sentences. You may add a drawing after your paragraph.

**Evaluation**

Efficiency

How is this system effective in the real world? Why would it be so different than conventional farming or even other farming methods? List pros and cons of an aquaponics system.

Mathematical Modeling

Which approach would be the most effective for your aquaponics system? Explain your thinking by taking me through each step. Create an equation that would justify your approach.

Connecting to Content

Now that you have constructed your aquaponics system, draw the nitrogen cycle going in your own system. Include a drawing, arrows, and correct labels.

Will this nitrogen cycle continue to cycle? Explain your answer.