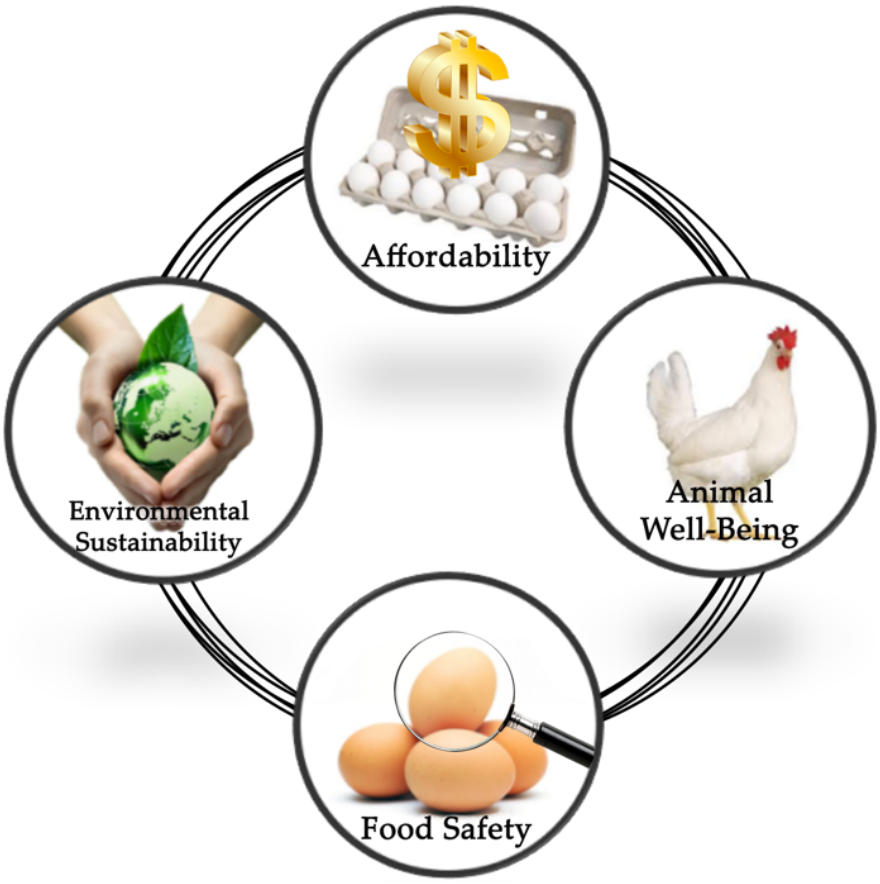
Name_____

Hen House Engineering Challenge

You are being given the task to design a hen housing system for an egg farm that provides what you feel are the best opportunities in each of four categories. A successful farm meets the needs of consumers by producing food that is safe and nutritious, affordable, and environmentally sustainable all while providing for the well-being of the animals.



Animal Well-Being

- Access to fresh feed and water.
- Indoor air quality maintained with a ventilation system.
- Temperatures controlled automatically to provide heat or cooling as needed for ambient temperatures.
- Nest boxes, perches, and scratch areas may be provided.

Affordability

- Following business principles, production costs for a dozen eggs should be kept as low as possible.
- Hens should be exposed to 16 hours of light per day to maintain optimum egg production.

Environmental Sustainability

- Overall energy costs should be kept as low as possible.
- Business plan should include use of manure as fertilizer.
- Aim for a low carbon footprint.

Food Safety

- Eggs that never come in contact with feces or litter are less likely to contain bacteria such as salmonella.
- Eggs laid in designated nest areas allow for the easiest collection and are most likely to stay clean and free of bacteria and pathogens.

Part I: Make a written plan.

Housing Style Describe the style of hen housing you will build.	**Heating, Cooling, Ventilation** How will you provide ventilation and heating/cooling?
Lighting How will you provide supplemental lighting to the flock?	**Egg Laying and Collecting** Where will the hens lay eggs and how will they be collected?
Waste Management How will you remove waste and what will you do with it?	**Natural Behaviors** What natural behaviors will your housing allow for hens? Describe how each will be provided.
Feed and Water Describe the feeding and watering system.	**Sustainability** Describe what measures you will take to use natural resources wisely and decrease the carbon footprint of your farm.
Food Safety Describe how the design of your hen housing facility meets sanitation standards to lower the chance of food-borne illness.	**Affordability** Describe the measures taken to maximize egg production and minimize production costs.