



## Building a Portable Hydroponic System Design Challenge

### DESIGN CHALLENGE Notes:

This design challenge explores how to grow plants and seeds using nutrients from animals

**Problem:** We need to grow seeds for transplanting and keep them healthy without soil.

**Challenge:** Using materials that are available create a planting system that serves the purposes stated.

### Materials:

We need a variety of take out containers, shallow and with a lid

We need a source of water

We need specific planting sponge cones

We need a source of fertilizer in liquid form

### Brainstorm:

1. What is hydroponics?
2. Why do seeds need water?
3. How do we understand ratios here
4. Do we understand volume?

### Design/Build:

1. How do we make this container work for us?
2. Create ratio of water to fertilizer

### Test:

- What happens when you try your design?
- Can you be sure you have a stable hydroponics system?
- Can we tell it is working? How?
- How do you know when the system is done?

### Evaluate:

- How will you record your results?
- How will you know how much of each component you have is doing what?
- What would you modify to test your results?
- Can you determine if there is a benefit of multiple materials?
- What would you do differently?

### Share:

- Record your tests on a chart.
- Which combination or type of seeds worked best?
- How did you know?