3D STEAM Challenge

Problem: Mrs. Gray's turtle, Bamboo, needs a water bowl. The other turtles' water bowls are too big for him.

Challenge: Create a possible solution of a model water bowl for Bamboo.

Criteria:
- Water bowls must hold 1/4 cup of water. Test this out at home before you submit your designs.
- Your design should have an index card with it that has your name, grade and teacher, **and explains your design.**
- One model from each grade will be digitally recreated and printed on our 3D printers as the models to test with Bamboo so we can see which ones he likes.
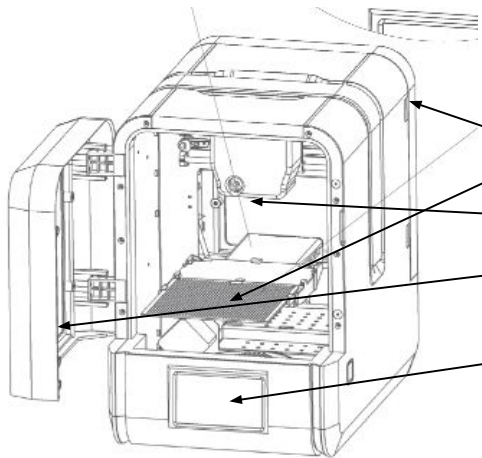
Constraints:
- Please create your model out of clay, play doh, or styrofoam.
- Your model can be no wider than the square on the back of this sheet, and no taller than 4 inches.
- Decorations, including various colors can not be printed by our 3D printers.
- Please include your name on both your model, and the index card you will hand in to Mrs. Lindsey (in the main office).
- This challenge ends Friday, March 9th.

Research:
Look up turtle water bowls at home, or the library, with your parent. Observe the properties of the bowls you see and whether or not they would be a good fit for Bamboo. You are allowed to use some of the design elements of existing bowls in your own model.

What is a 3D printer?

A 3D printer uses plastic filament (ABS) from a spool to print flat slices of of an object on top of one another in layers. These slices stick together as the plastic dries to create a 3-Dimensional model. This means that you can take an idea you have and actually create it so it has strength and durability.

Parts of a 3D printer:

3D printer - the entire device
Print bed - the flat surface that the 3D model gets printed on
Extruder - the metal tip of the print cartridge that melts and pushes out the plastic
Door - the door to the printing area that remains closed while printing takes place so the temperature inside stays the same
Screen - a smart, touch screen that gives options for printing
Spool - the giant roll of ABS plastic filament
ABS Plastic - a thin, white, hard, smooth, round line of plastic wound up in a circle to make a spool.

This is how wide and long the print bed is. Objects must fit on this bed without going over the sides, or coming too close. Objects can be no taller than 4 inches high.