**Teachers Notes for 3D part and Research Poster**

**Prototyping Clay 🡪 Original 3D part:**

**1)** Navigate to Tinkercad (<https://www.tinkercad.com/>) and create an account with username and password. Work through on-line tutorials and become proficient with 3D virtual model.

**2)** Work with your art department to obtain semi-firm clay that is evenly (homogeneously) mixed throughout.

* We got a round log of clay that was 36” long and 3" in diameter. We took enough clay to measure out a 2"X2"X2" square (8 cubic inches) and put it on the balance for a definitive mass (202.5g). As long the density of our clay is consistent, we simply massed out the same amount each time and placed the clay in a plastic bag for groups of two-student teams to prototype their designs. (Density of our clay was 202.5g/125cm3 or 1.62g/cm3)

**3)** If student is not working with 2-inch cube of prototyping clay, keep it *sealed in a plastic bag* so that the moisture does not escape.

**4)** To have a positive outcome of a 3D printed part, here are some simple tips:

* Measure *all* dimensions of the clay model in centimeters for lengths, widths, heights, depths, diameters, radiuses of rounded edges.
* Sketch the clay model part onto a piece of paper.  This will help identify any measurements that may have been missed before modeling in Tinkercad.
* A 3D virtual model should be complete and clear enough so that every individual looking at it arrives at the same interpretation of the part.

**Research Posters:**

**1)** Students determine what is on the research poster, as well as spatial arrangement of components. Students should be encouraged to make data-driven decisions and therefore share some of their own data and observations on the poster.

**2)** Students start by using a big piece of paper and either notecards or sticky notes.

**3)** Students should transfer their hardcopy ideas into a PowerPoint slide, which will then be printed out in a large format printer with dimensions of 33" wide by 27" tall. (*Maximum font 72pt and minimum font 24pt.*)

**4)** Photos of student designs and students building are taken by the teacher and available upon request for use in classroom research poster.

**5)** Two posters will be printed for each classroom to ensure enough space during “Derby Day” in the gymnasium for student assessment and reflection.