**3D Printing Technology Design Challenge (100 points) Name:**

Review the Getting with Simple Mechanisms in the *Beyond the Basics* book (pgs. 45-52) and read the 3D Geometric Creatures Design Challenge in the *Beyond the Basics* book (pgs. 77- 82).

# In this unit, each student will individually design an imaginary geometric creature using both plane and solid geometric figures. Your geometric creature must stand by itself and have at least two moving parts.

# Additionally your creature must:

# Have at least 5 different plane shapes

# Have at least 3 different solid shapes (these must be 3D printed)

# The 3D printed creature components must fit within the constraints of 10 cm X 10 cm X 1.5 cm.

# See <https://www.mathsisfun.com/geometry/> for examples of plane vs. solid geometry.

# Have two moving parts (using levers, pneumatics, pulleys, etc.)

# The moving parts of your creature can be created with the addition of paper fasteners such as brads, string, pen springs, etc.

# Be freestanding

# Be neat and attractive

**Sketch two ideas for your geometric creature.**

**Sketch your best idea for your geometric creature in a perspective view.**

**Sketch the parts that you will need to create using TinkerCAD on the computer. Identify what these parts will look like on the build plate of the 3D printer. Make sure to include all dimensions.**

**Now it is time to begin your CAD drawing.**

* Complete your TinkerCAD drawing and begin 3D printing by exporting your .STL for printing.
* Save the following items into your Dropbox folder. Name this file your first and last name (example – Vinson Carter\_3DPrint).
  + Save .STL file
  + Picture of your completed geometric creature

**\*note – if class time does not allow for you to complete your print, you may need to arrange time to use the 3D printer during open lab hours.**

**Grading Criteria – 100 points – Due February 23.**

* Completed initial and final sketches
* Designed figure within the given parameters/constraints
* Saved files correctly to the Dropbox
* Completed assembly of the 3D printed creature and presentation to the class