

The background of the image is a dense, overlapping collage of colorful sticky notes in shades of pink, yellow, light blue, and light green. Each sticky note features a large, bold, black question mark. The notes are scattered across the entire frame, creating a vibrant and curious atmosphere.

ROBOTICS  
ALLIANCE  
PROJECT DESIGN  
GUIDE

Assigned Reading &  
Reflection Questions

# READING ASSIGNMENT #1

- ❑ Sections 2.1–2.38 (pages 10–30)
- ❑ Reflection Questions (listed on following slides)

# QUESTION 1: CNC ROUTER

- Sketch a sample part to create on a CNC router out of  $\frac{1}{4}$ " polycarbonate sheet.
  - Hand sketch
  - Onshape part studio
  - Onshape formal drawing

## QUESTION 2: CAD TO CAM TO CNC

- ❑ Define CAD and CAM
- ❑ Write out procedural steps for taking a part from CAD to CAM to manufacture

## QUESTION 3: LASER CUTTER

- Write out procedural steps for taking a part from CAD to the laser cutter.





## QUESTION 6: TOLERANCING

- How should you adjust your gear intake designs/dimensions based on tolerancing of the machines you are using to manufacture?



## QUESTION 7: HARDWARE PARTS LIST

- Create a list of hardware being used on your gear intake
- Use Excel spreadsheet template
- Include costs, quantities, part numbers and links

## QUESTION 8: BOLT SIZE NOTATION

- What do the numbers in 10-32, 8-32 and  $\frac{1}{4}$ -20 mean?

## QUESTION 9: TAPPING

- Practice tapping the end of a Thunderhex shaft for a  $\frac{1}{4}$ -20 bolt.
- Paste picture of tapped shaft below.

## QUESTION 10: LOCTITE

- Make a Loctite color usage SmartArt chart

## QUESTION 11: RIVETING

- Practice riveting a gusset onto a Versatube.
- Practice drilling out the rivets.
- Paste image of gusseted tube below.

## QUESTION 12: MISCELLANEOUS FASTENERS

- ❑ Are you using any shaft collars on your gear intake project? If so what sizes? Add the shaft collars to your hardware spreadsheet.