

# ENGINEERING DESIGN PROCESS



The Engineering Design Process is a tool used by engineers to define a problem. Art, Science, and Math are often the vehicles used to come up with creative solutions. Throughout various projects, students will be asked to use the engineering design process to synthesize their thinking through a lens of the arts, maths, and sciences to identify and solve novel problems.

**ASK:**

1. What is the problem?
2. What are the criteria and constraints?
3. What solutions have been attempted?

**IMAGINE:**

1. Generate possible solutions to the problem
2. Be open-minded/creative
3. Don't think about constraints

**PLAN:**

1. Select the best solution based on criteria and constraints
2. Sketch
3. Identify needs (resources, money, time)

**CREATE:**

1. Prototype
2. Run tests/experiments

**IMPROVE:**

1. Identify additional needs, modifications
2. Re-evaluate criteria and constraints

The process is cyclical in nature and doesn't have a perceived "start point." For example, an engineer may be playing with a premade product and imagine ways to improve it. Or they may be planning one project and identify a new problem that may be solved with their design.

Always treat the engineering cycle as open-ended and validate divergent and convergent thinking.