MAKERA
Lesson Plans

Evolutionary Ellipsographs

Planning Document

NAME:_____

CLASS:_____

Problem Statement:

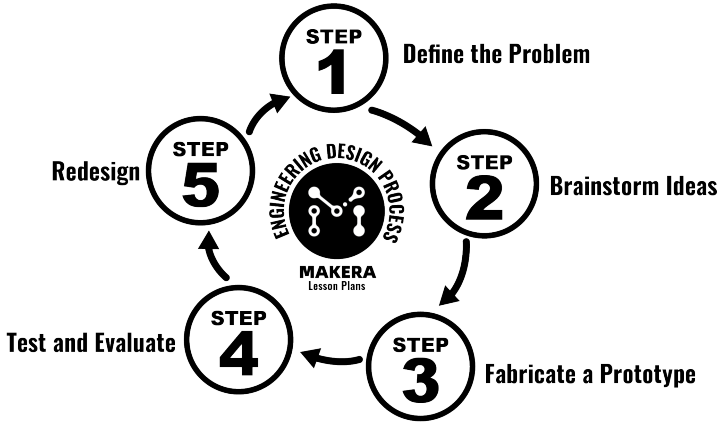
While we have many computer-driven tools that allow for us to create precise designs and technical drawings today, early engineers like Archimedes needed to find their own ways to do the same. One such method was the Trammel of Archimedes, which is a tool that converts rotational motion to linear motion allowing for mathematically perfect ellipses to be drawn...something that could never be achieved freehand! Centuries later, you are now challenged to solve this problem around the specifications and the constraints of a real-world design challenge. In the space below, list the constraints for this challenge:

_____ _____

_____ _____

_____ _____

_____ _____



We will be working to solve this real-world problem through the steps of an engineering design process!

Brainstorm Ideas:

Before constructing a prototype to attemp to solve this problem, we must research and brainstorm possible ideas. Start by researching existing solutions that already work to solve this problem, and work to identify new ways you could improve or change these solutions under the constraints of the challenge. Collect your possible ideas using the thumbnail sketches planning table listed below.

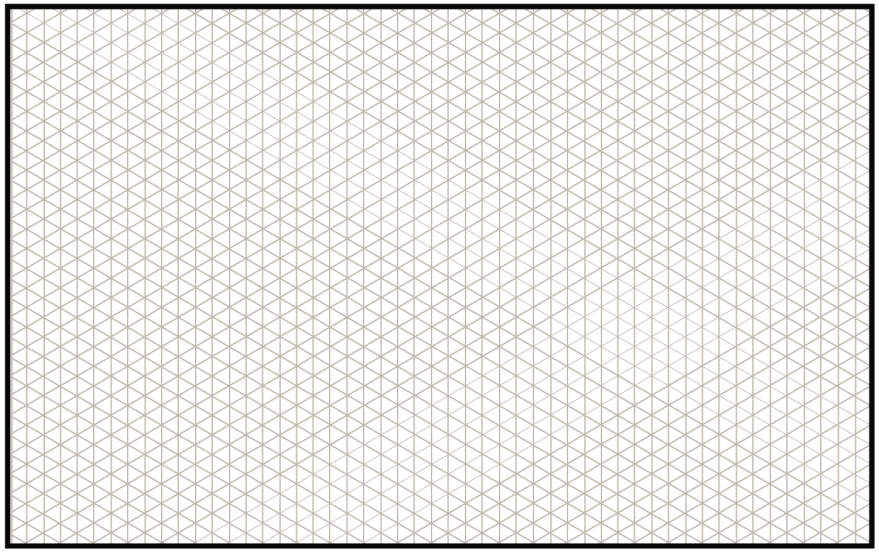
1	2	3	4	5
6	7	8	9	10

Thumbnail sketches do not need to be neat or detailed, they serve as a quick way to collect possible ideas for solving this problem!

Final Design:

After brainstorming different ways to solve this problem, narrow your ideas down into a final design and compile them into a neat and labeled sketch to work from. This technical drawing should show your design from multiple views, such as the Top, Front, and Right Side, as a well as a 3D Isometric view. Your drawing should also label what materials you plan to use to construct your prototype, and also include key dimensions.

TOP VIEW



ISOMETRIC VIEW

FRONT VIEW

RIGHT SIDE VIEW