

Project 2 Abstract:

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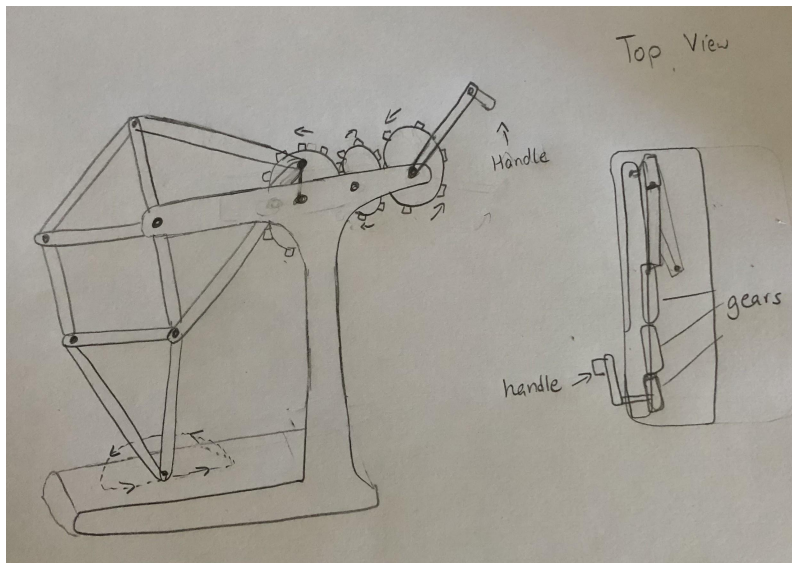
Problem Statement:

To fulfill the task of designing a 3D printed, gear controlled contraction that must also fulfill certain requirements/constraints, such as fitting a lego piece on it, our team has decided upon creating a strandbeest skeleton that will be controlled by a set of gears.

Project Description:

By following the idea of a strandbeest skeleton, we will be able to link several elongated rods to joints in order to allow certain degrees of freedom when being controlled by the gears. These rods and joints would create a repeated walking motion, which could provide the ability to maneuver a flat surface.

Design Sketches:



Gear Information:

We will be using three spur gears with a gear reduction from 1:10 so the leg moves with grace and torque despite low input. This gear reduction will be divided between 3 gears.

Parts:

Handle	Gears with Joint	Moveable Rod with joints	Base (lego incorporated)	Total Parts
x1	x3	x11	x1	16

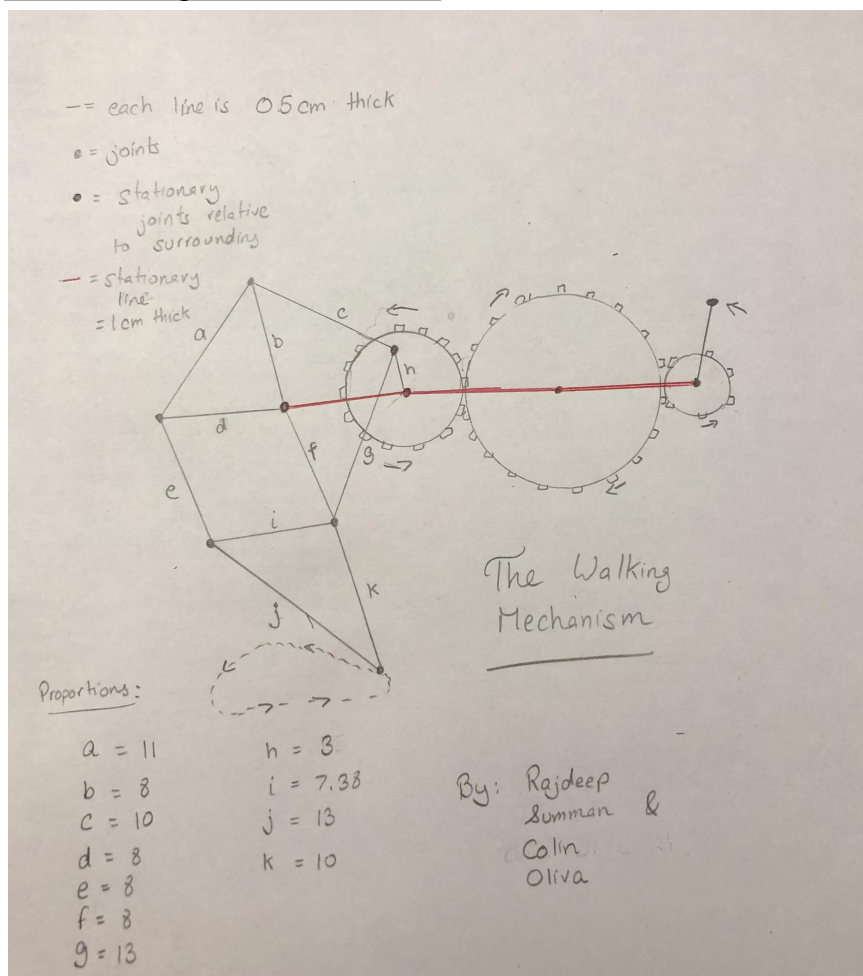
Mate Connections Between Component Parts:

The gears are free to spin 360 and will determine the direction of the movement of the leg. The last gear to transfer energy to the strandbeest leg will be attached to a rod which will help spin the legs.

Material:

We have the option to use the long lego pieces to save PLA and weight as the pieces have holes in them, although we will be choosing to print the legs. We will have more freedom to tinker with our designs as well as consider using flexible filament like TPU for grip. Additionally, our base will be a flat lego piece to save filament.

Hand Drawings with Dimensions:



Plan to 3D Print:

We have written our units proportionally to the references found online. As the strandbeest is being printed in sections, it is possible to have a final assembly dimension larger than the 200mm x 200mm limitation of the build plate.