

Ask:

-How can I 3D print a spinning top that will spin for the longest time

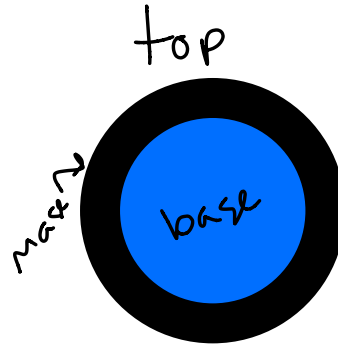
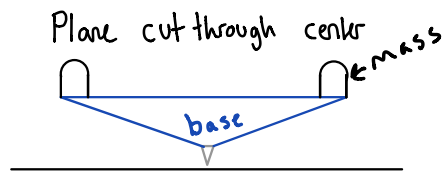
Research and Own knowledge:

-spinning tops work well when their rotational mass is high. This is because when you have a high rotational mass and it is far away from the center, the inertial mass is greater, which means the spinning top will resist rotational acceleration or deceleration. If the mass is not balanced though, it will wobble and fall over.

Possible solution:

-Solution 1:

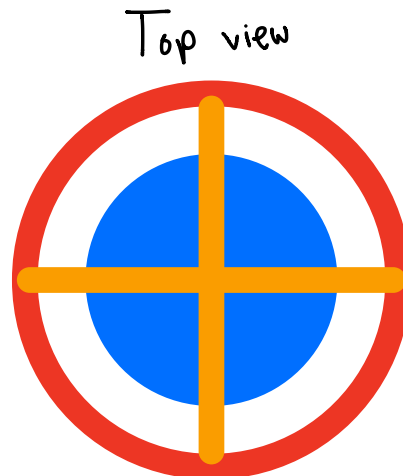
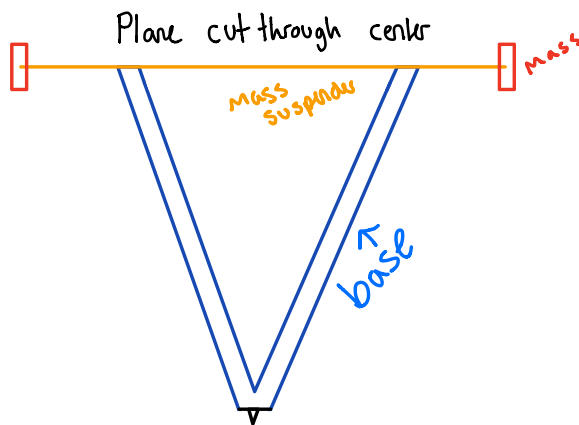
-designed off of BEYBLADE



-Solution 2

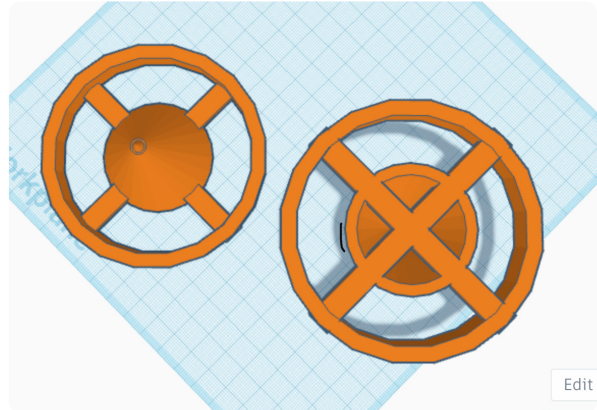
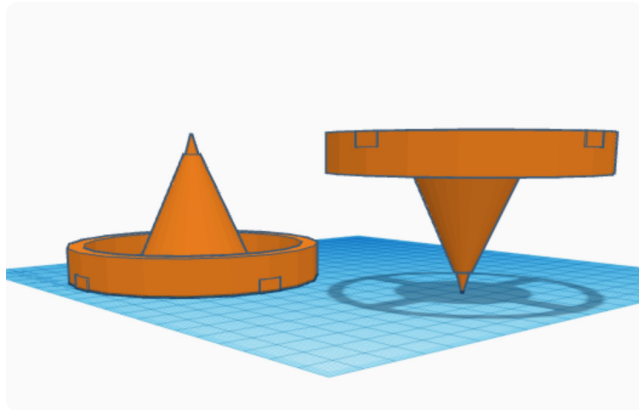
-Inverted Cone with tip on the bottom.

-At the very top of the Cone, a holed out circle will be suspended by 4 horizontal rods to increase inertial mass.

**Plan:**

-Despite the childhood nostalgia of Beyblade, My suspended mass design seems more promising to me due to its greater inertial mass.

Create:



Questions:

1. How does a top stay spinning? Why doesn't it fall over?

-The top is spinning quickly. You would assume that the top would fall over, but since it is spinning, the gravitational force increases the rotational velocity of the top as it falls, but since the top is spinning, the part that was closest to the ground will spin up to the top and cause the spinning top to correct the fall.

2. How is the motion of spinning tops related to bicycles and motorcycles?

-A spinning top is similar to a bicycle, except it is rotating around the y axis rather than the x axis.

3. Does the location of the top's mass matter? What is the center of mass of an object?

-The location of the top's mass does matter. The further away from the origin of the rotational axis, the more willing the object is to resist movement.

-The center of mass of an object is the average position for all of the object's matter.

Whistler:

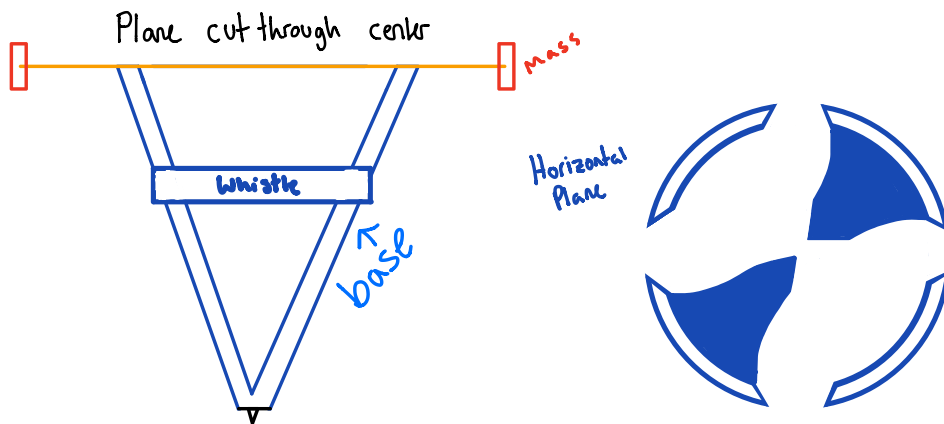
Ask:

-How can I create a whistle on my spinning top that will whistle for the longest time

Research:

-Any open whole and chamber will create some sort of sound. To create a whistle, the goal is to have air run across a hole, instead of rush into a hole.

Possible Solutions:



Plan:

-While researching about creating a whistle, I realized that I had made a mistake by creating a spinning top that doesn't have very much mass. To remedy that, I will fill in the hollowed section of the inverted cone, and lower the center of mass

New Vertical Plane



Create:

