

Monument to the Discoverers Project



Description

The “Monument to the Discoverers” is located in Belém, a historical place on the shores of the Tajo River in Lisbon, capital of Portugal.

This caravel shape monument was built as a temporal construction created for the Portuguese World Exhibition of 1940, which later, in 1960 would be reconstructed permanently to commemorate the 500 anniversary of one of the biggest discoverers of Portugal, Henrique “The Navigator”.

Inside this building we can find the Discoveries Cultural Center, an exposition place about the monument and its historical period. Also, we can access to the viewpoint situated at the top and enjoy the amazing views of the Tajo River and Belém, where we can also find other spectacular monuments such as the Belem Tower or the Jeronimo's Monastery.

To entry this place we must go through a square where we find fifty meters in diameter compass rose painted on the ground.

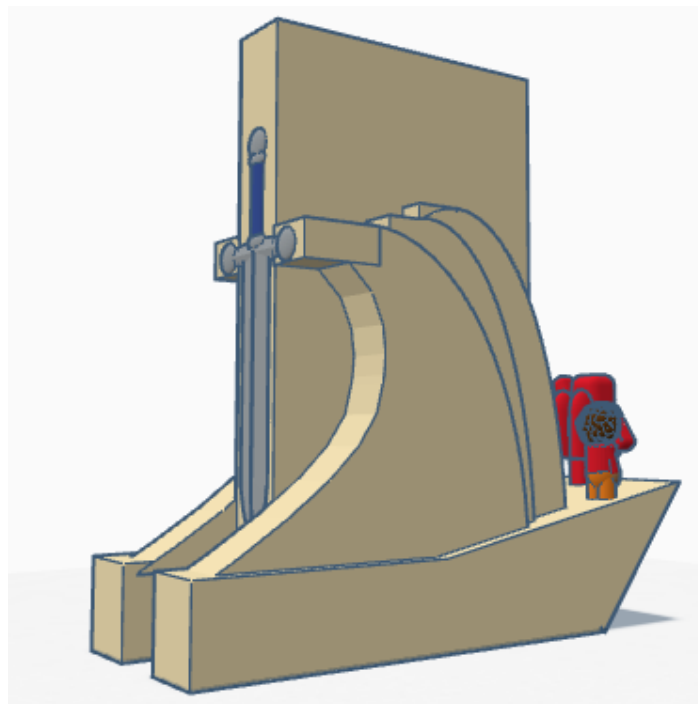
In this project we are going to replicate a scale design of this emblematic monument. To help us with the “Discoverers Monument” shaping, we must consider a few details:

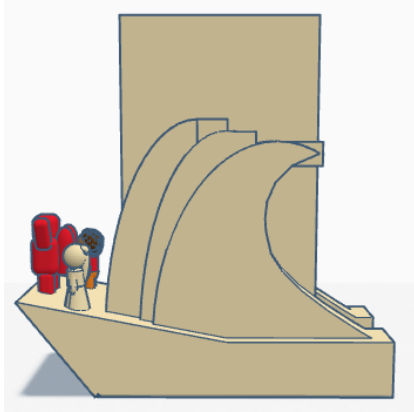
- It is 52 meters high
- It has caravel shape, with 3 big sails extended over a vertical central pillar.
- On the top of the entrance there is a huge vertically sword.
- By each side of the monument, we find a long row of statues.
- In front of the entrance, there is a huge 50 meters in diameter compass rose on the ground.

Objectives

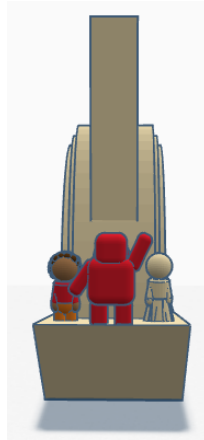
- Replicate this monument in Tinkercad.
- Combine simple shapes to get complex shapes
- Solve the possible embedding problems of objects and gaps.
- Customize the monument surroundings

Reference model designed in Tinkercad

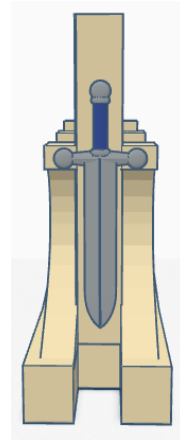




Left lateral view



Frontal view



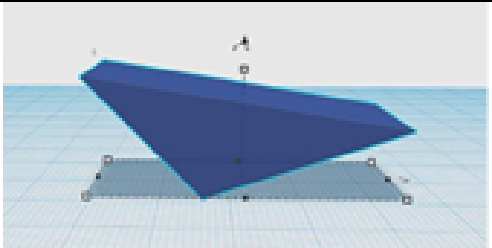
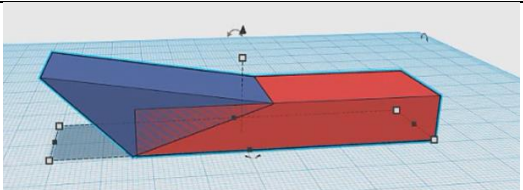
Rear view

Model features

This model has been designed by only using basic shapes, specifically 4 different shape types:

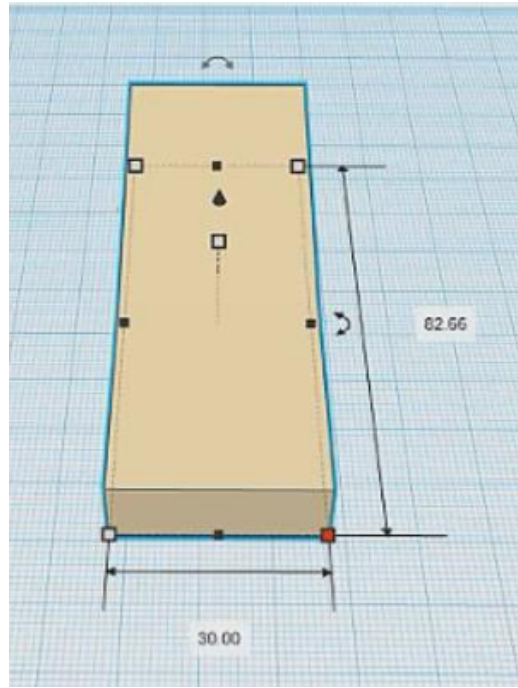
- Heart
- Curve roof
- Wedge
- Cube

1. Base

3D Object	Size	Image
Wedge	20mm wide x 46mm long x 28mm high We tilt the wedge 30 degrees	
Cube	20mm wide x 65mm long x 10mm high	

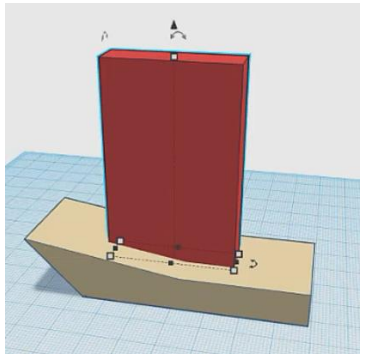
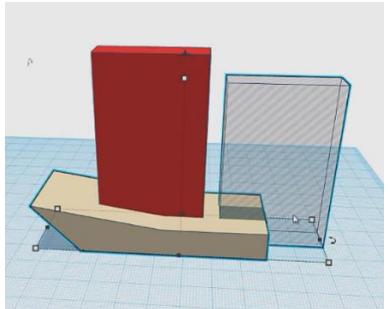


We group the two objects and increase their width to 30mm. ¡Ready! We finally got our base.

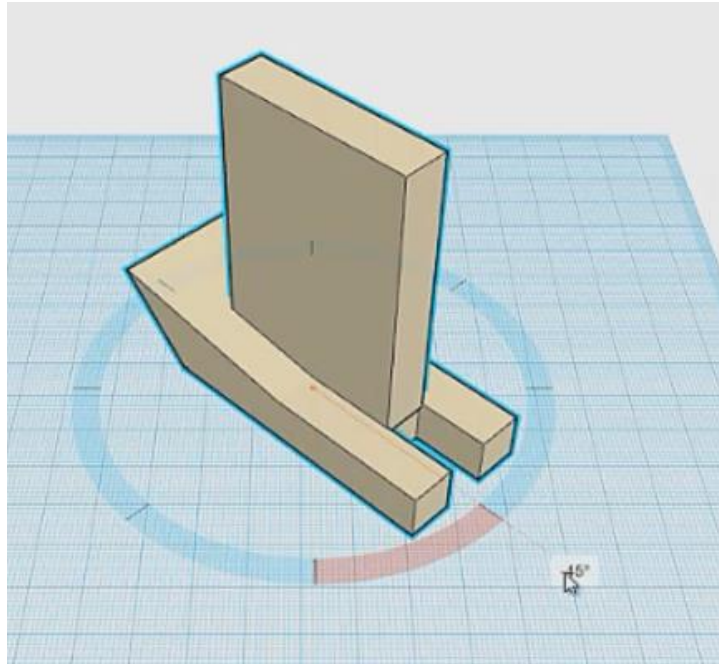


2. Central structure

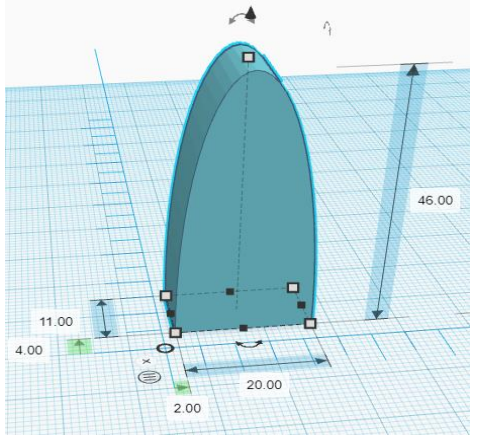
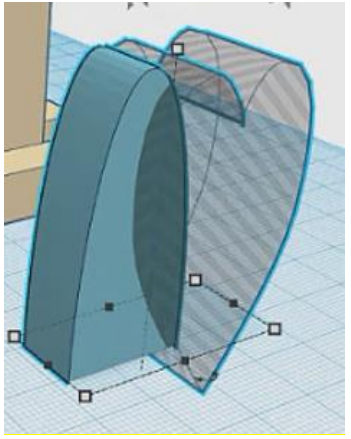
Now, let's start shaping the central structure of the monument. To do this we are going to use:

3D object	Size	Image
Cube	10mm wide x 44mm long x 60mm high We place the cube centred on the base	
"Hole" Cube	10mm wide x 44mm long x 60mm high	

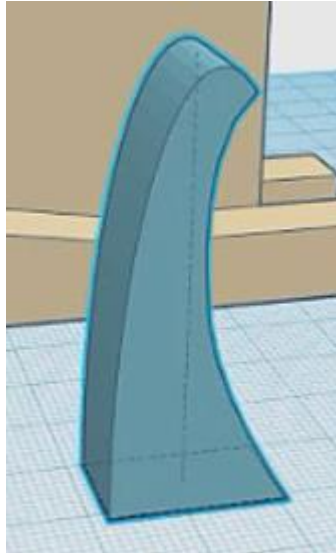
Group the “Hole” cube with the caravel base to create the hole we need. The result should be similar to the image shown below.



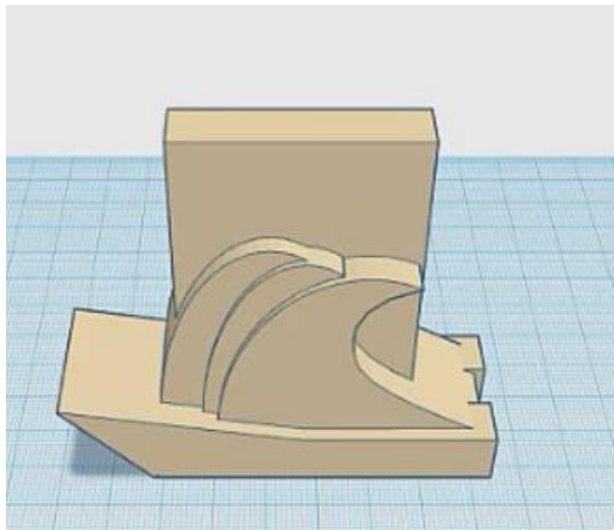
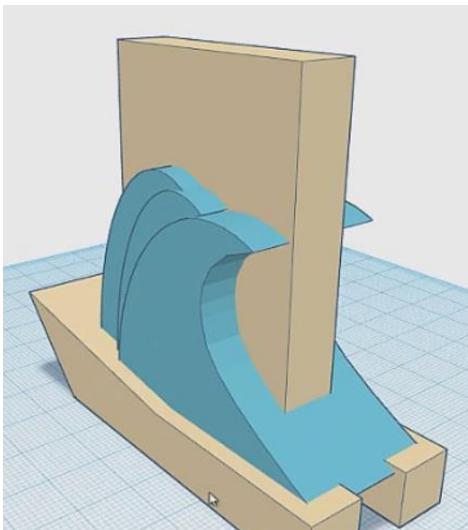
Now let's shape the central structure details. To get it we are going to use these shapes:

3D object	Size	Image
Curve roof	11mm wide x 20mm long x 46mm high	
"Hole" Heart	18mm wide x 28mm long x 52mm high	

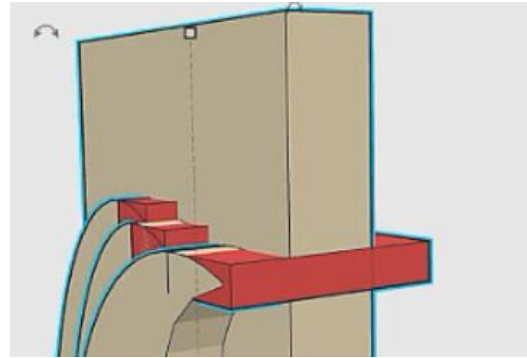
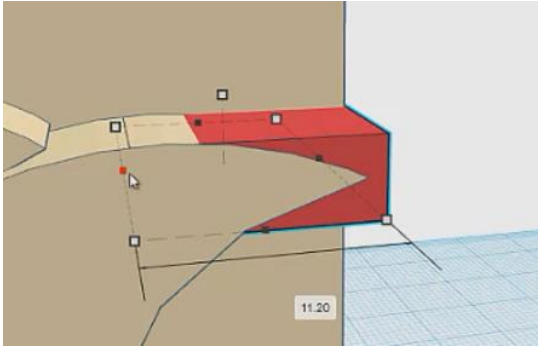
We group these two objects to get the result below:



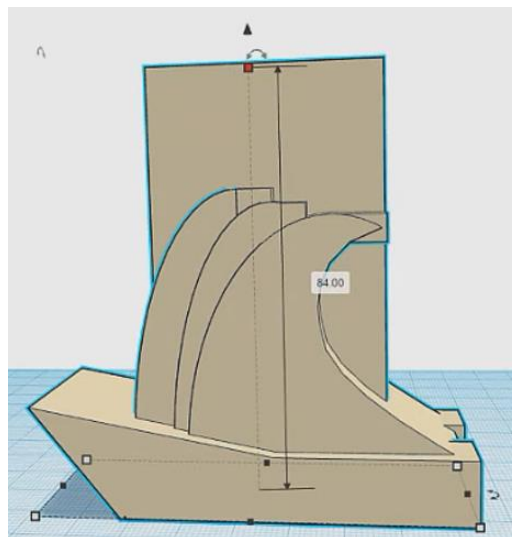
Then, we put this shape in our design to create the caravel sails.
To get this, we would have to duplicate this object thrice and adjust their measures like we did in the image below.



We will use cubes to modify the sails tips making them flats.



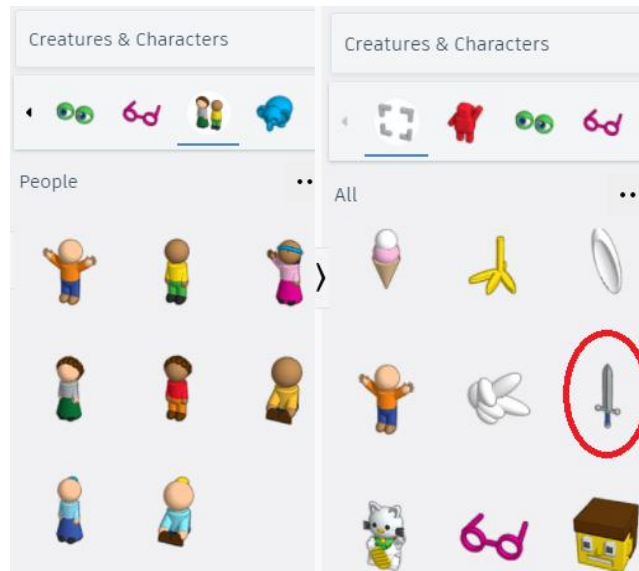
We group all the objects and increase the group height to 84mm.



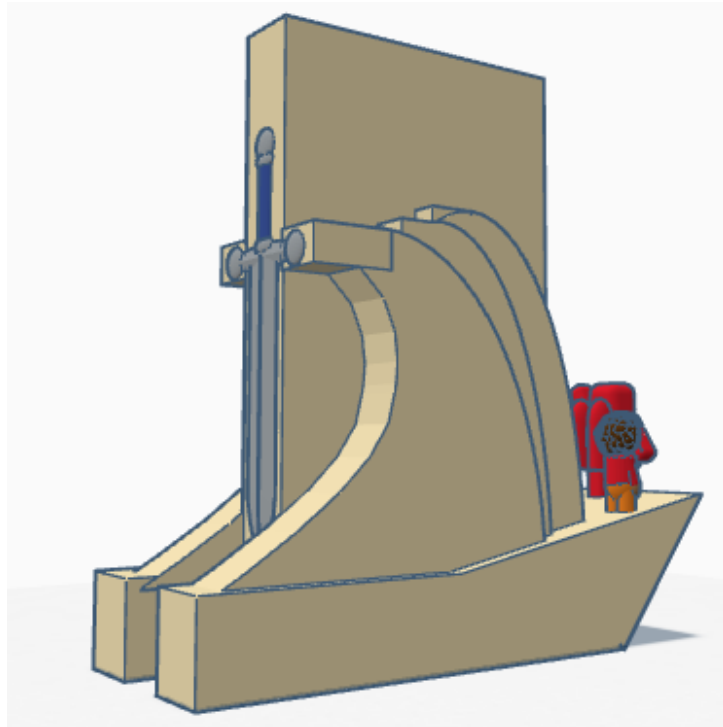
In the last step, we have shaped this amazing construction structure. Now, it is time to start the "Monument to the Discoverers" detailing process.

3. Details

When detailing our design, we are going to use figures of people and a sword. These objects could be found in the “Creatures & Characters” section in Tinkercad, just like in the photos below.



We remind you that in this monument we find 33 statues of relevant personalities of the Portuguese era of discovery. We choose not to include these 33 figures in our design.



Now it is time to customize it to our liking. We have added the compass rose located at the monument square. Also, we added our country to the centre of the rose.

