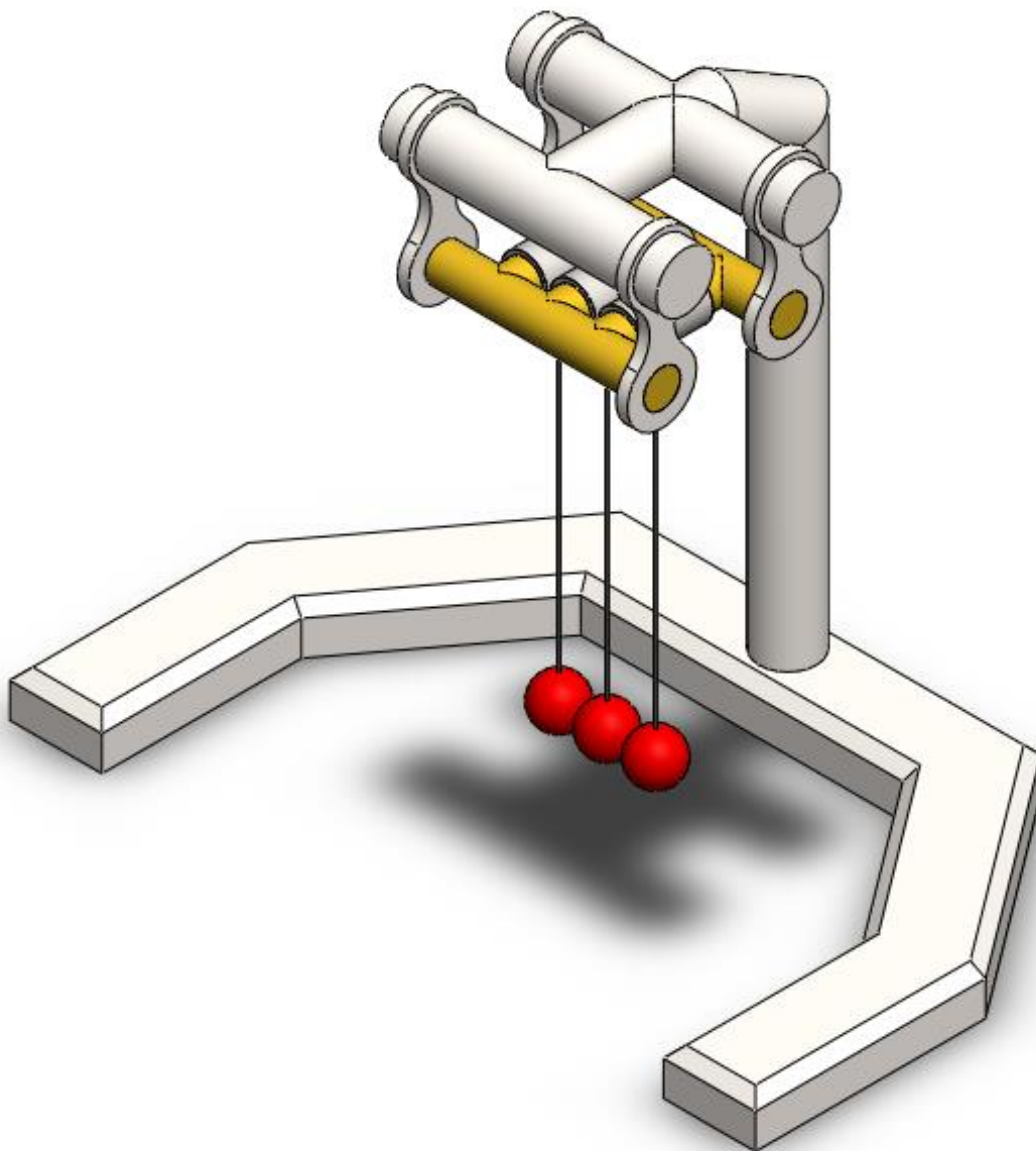
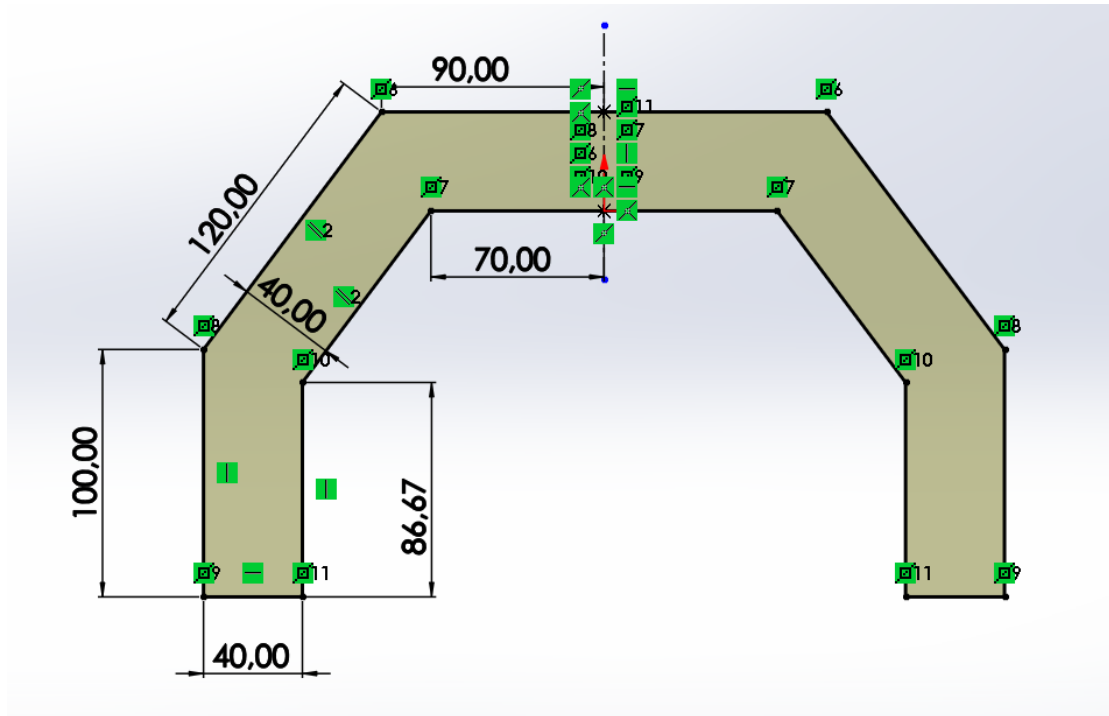


Newton's cradle

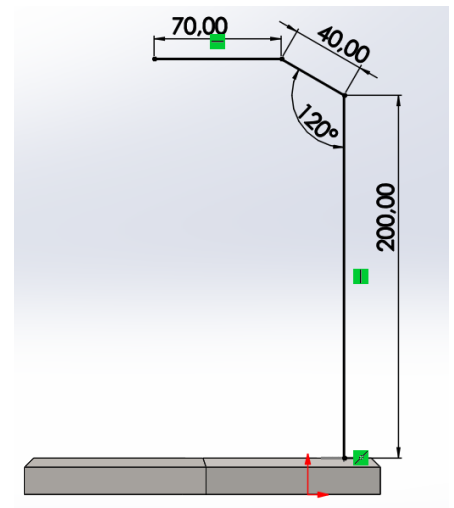
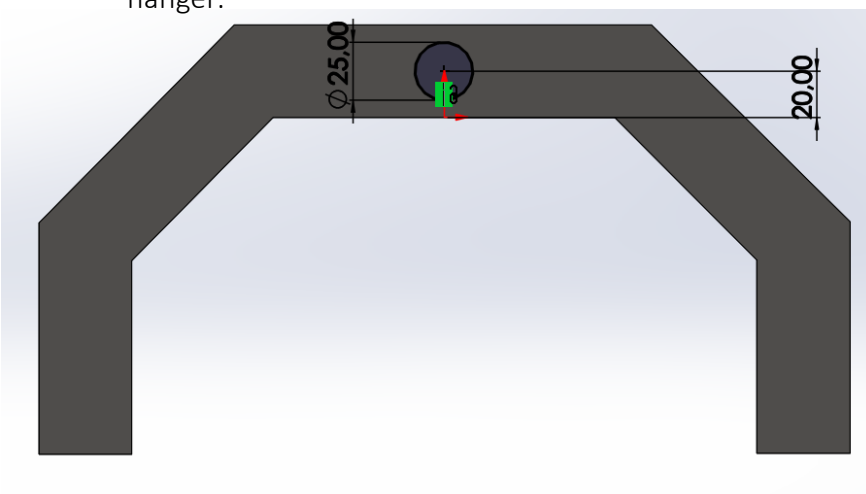


Díl 1 Hanger:

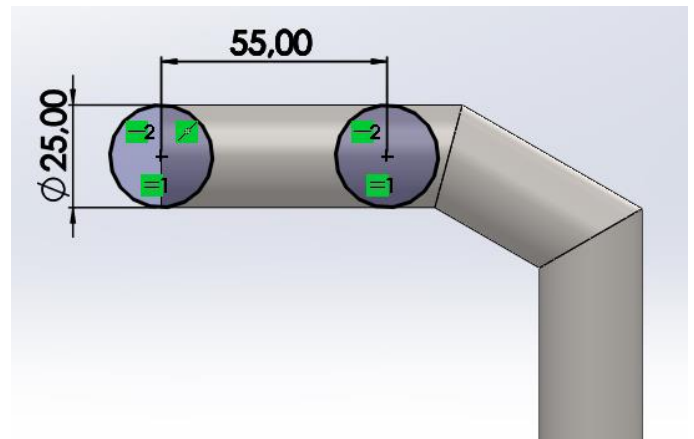
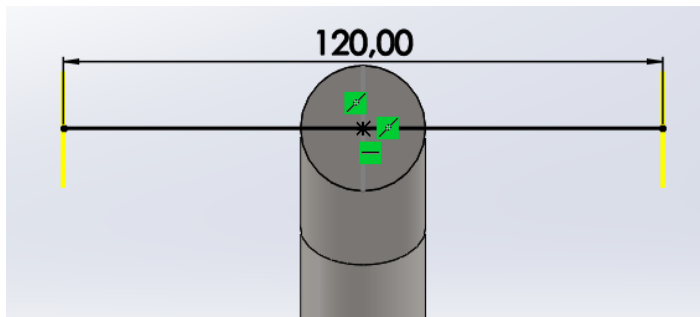
1. Sketch 1: First half of the stagnding part of hanger. Mirror the second half of the sketch by the construction centerline. Extrude sketch 1 by 20 mm. Apply fillet on upper plane with 5 mm diameter and 45°.



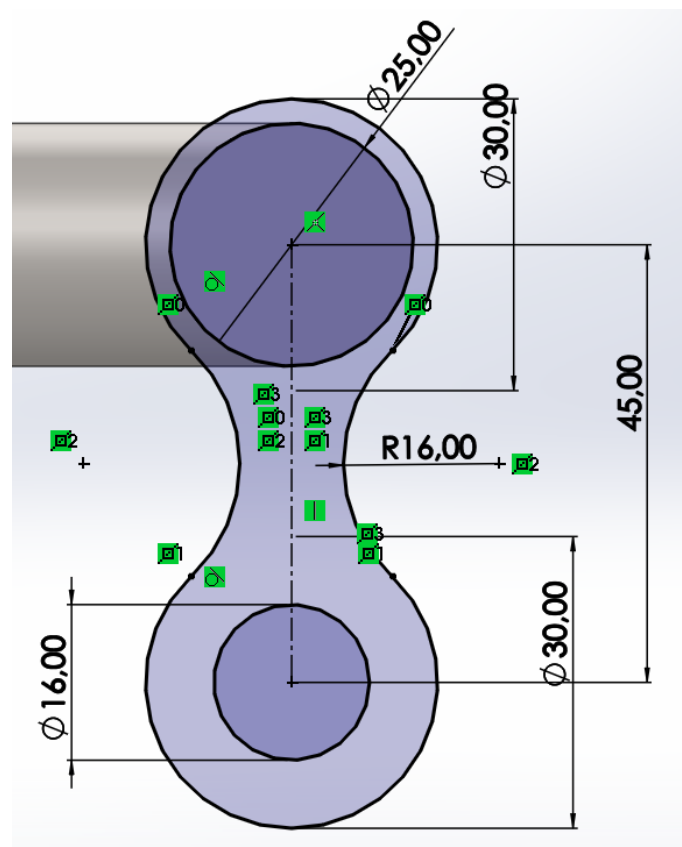
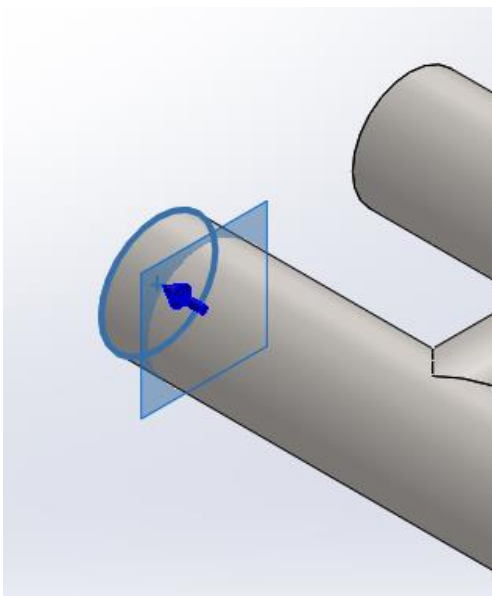
2. Create sketches 2 and 3 and use swept boss/base to create the vertical part of the hanger.



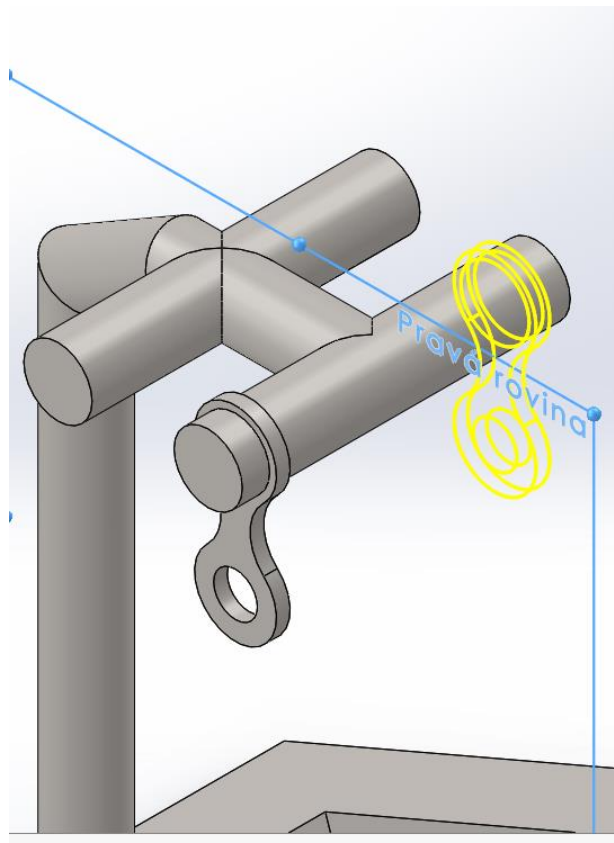
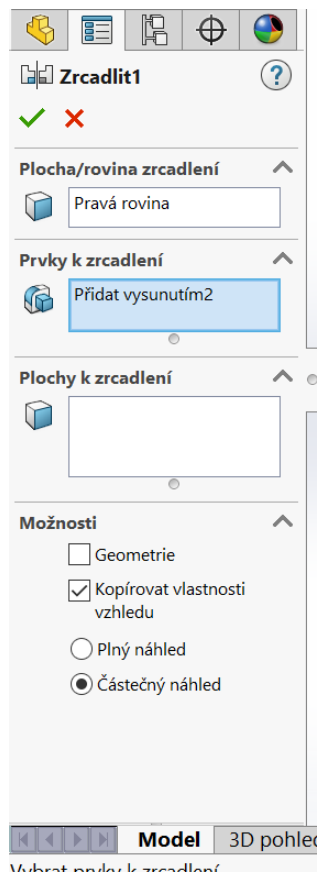
3. On the upper part create sketches 4 and 5. Use swept boss/base feature.



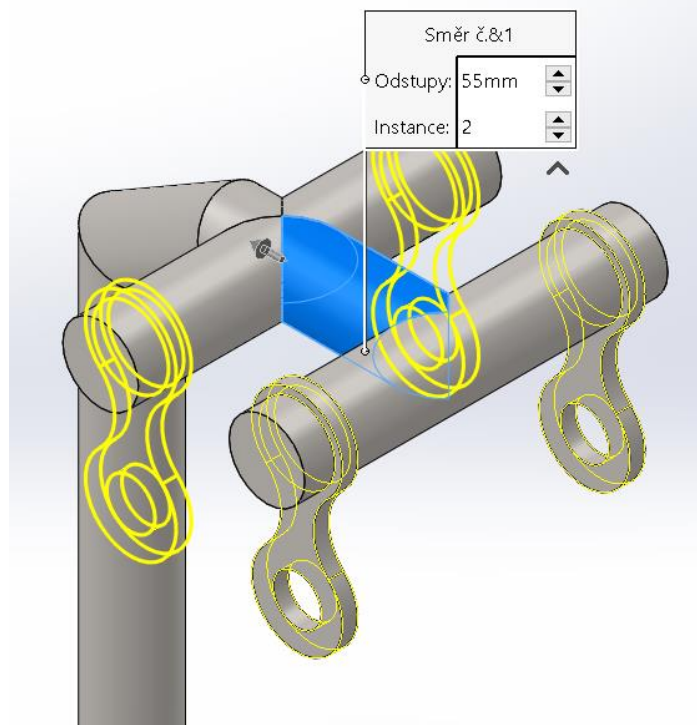
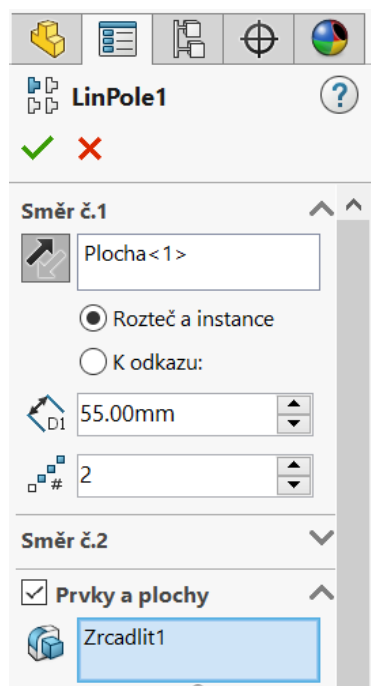
4. Create a reference plane 10 mm from the ned of the part. On thgis plane create sketch 6 by image. Extrude to 5 mm facing the center of the part.



5. Mirror the created segment by the center (in this case right) plane.

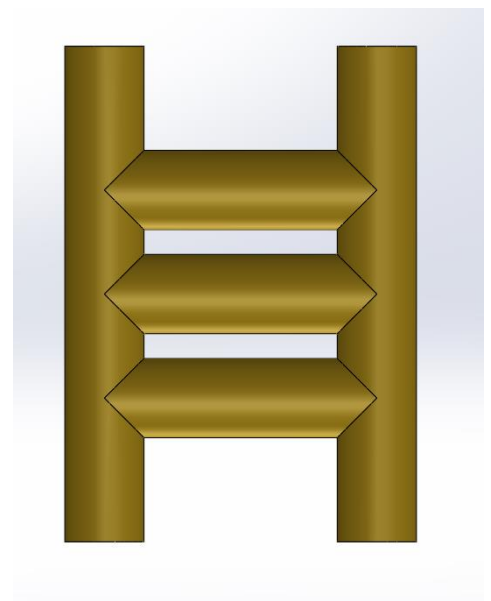
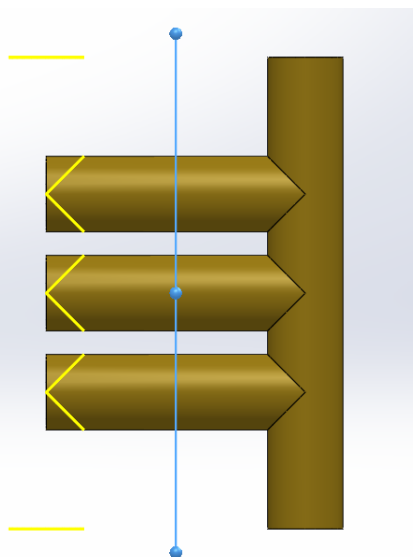
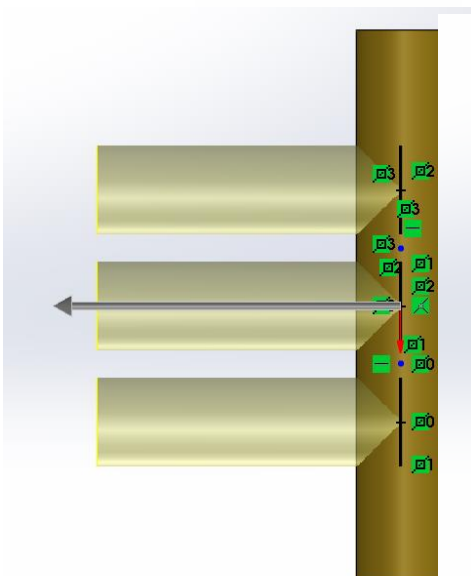
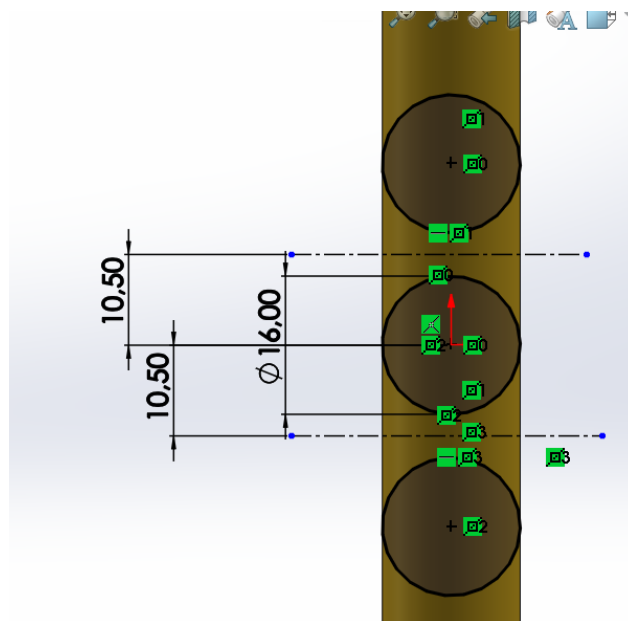
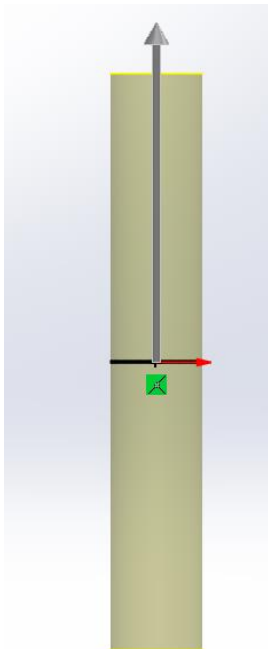


6. In the next step use linear pattern in the direction of center plane. The distance is 55 mm and insert 2 instances. The part is now completed.



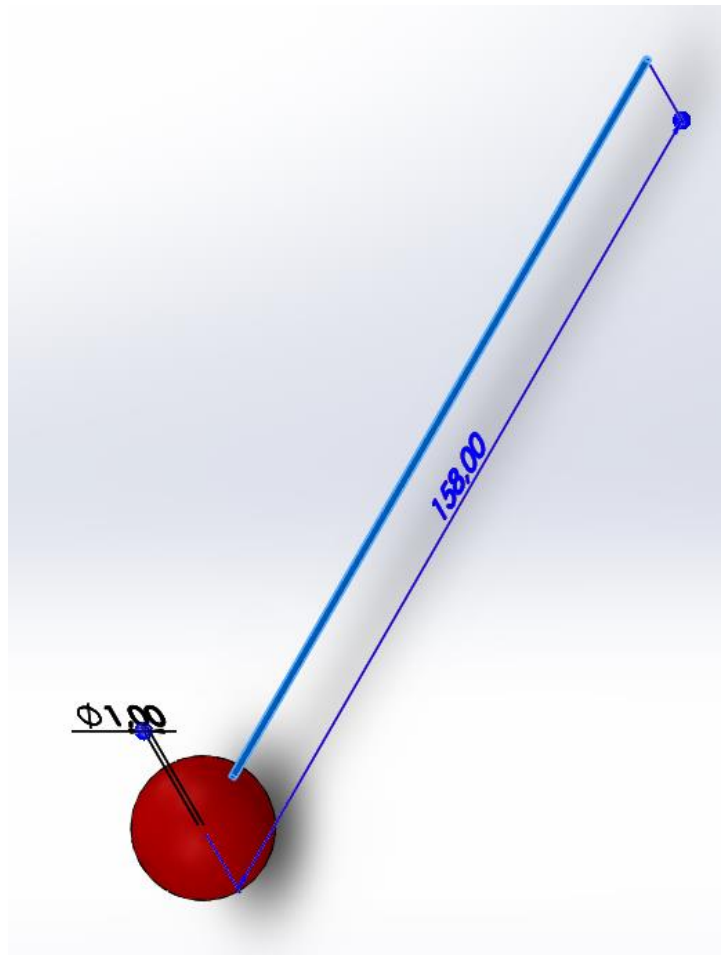
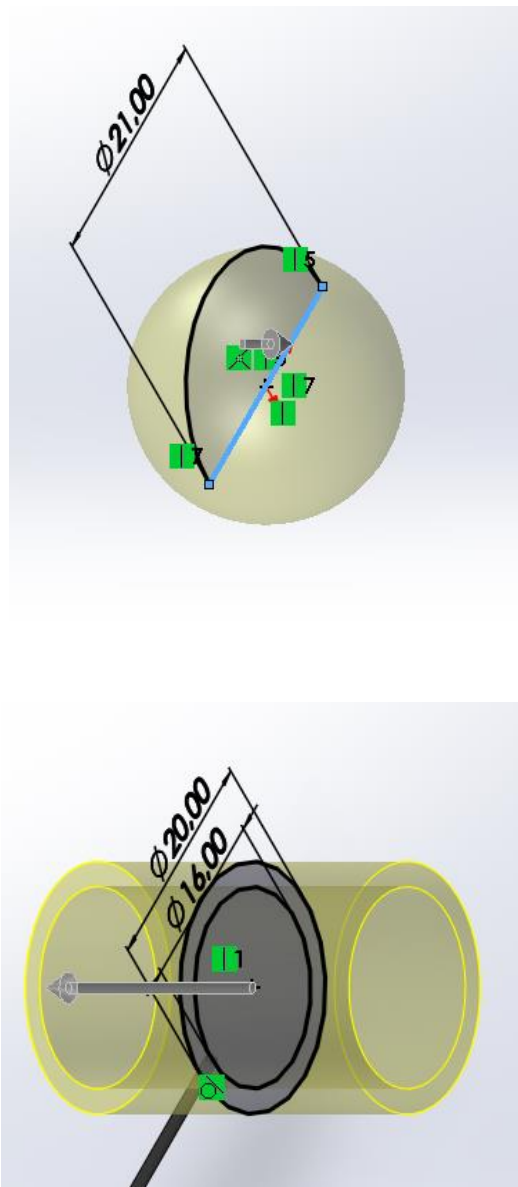
Part 2: Pendulum holder:

1. Sketch 1: Circle with center in origin point with diameter of 16 mm. Extrude by 100 mm.
2. Sketch 2 in plane longitudinal to the extrusion. 3 circles with 16 mm diameter and distance of centers of 21 mm. Utilising construction lines, we can mirror the center circle.
3. Extrude sketch 2 by 55 mm.
4. Create reference plane 27,5 mm from base plane and mirror the first extrusion by this plane.



Part 3: pendulum with a ball

1. Create a sketch with a half circle with a diameter of 21 mm. Rotate this half circle by the centerline. Keep origin point in the middle.
2. Select a base plane and in origin point create a circle with 1 mm diameter. Extrude by 158 mm. This will be our thread.
3. At the end add a sketch perpendicular to the thread. This sketch consists of 2 circles of 16 and 20 mm diameters. Add a tangent relation between the inner circle and the end of the thread. Extrude symmetrically by 30 mm.



Assembly:

1. Create a new assembly. Insert the hanger part and connect with the holder – create concentric bonds between holes in hanger and holder and coincident bond between the end planes of each part.
2. Insert one pendulum with a ball. Connect to one of hangers arms by concentric bond.
3. Add a distance bond to end plane of pendulum holder and holder. The distance will be $(55/2-30/2)$ - Try to say why.
4. Create a parallel bond between the thread and the main stick of the hanger (this bond will be deleted later, but it helps us to line the part).
5. Add another pendulum with the help of “insert with bonds” tool. Choose where will the bonds be for this new part. Repeat for one more pendulum.
6. After inserting all three pendulums delete the parallel bonds. The assembly is complete.

