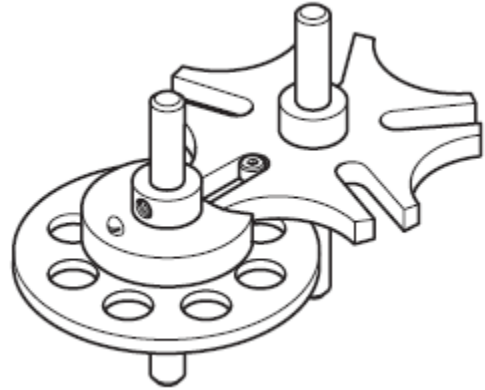


All parts to be modelled in this exam come from the Geneva Cam mechanism shown here:

ALL DIMENSIONS are in INCHES for this exam.

For the threaded component: $D_{min} = D_{maj} - (1.082532)P$;
Where D_{min} is the thread's minor diameter, D_{maj} is the thread's major diameter, and P is the thread's pitch.



Q1. [40 points] Create a 3D model in NX for the objects shown below and save each as a separate .prt file. (Naming Convention: *studentid_PartName.prt*) [20 points for **INDEX PLATE**, 30 points for **GENEVA**, 10 points for **SHAFT**]

Q2. [20 points] Create a 2-dimensional drawing for the **INDEX PLATE** using the drafting application in NX. Export **INDEX PLATE** as a .pdf file. (Naming Convention: *studentid_INDEX_PLATE.prt*) (Create necessary orthographic views (sufficient to show all dimensions), and isometric view) Show all dimensions which are shown in the diagram below on the 2-dimensional drawing.

Q3. [10 points] Export the **INDEX PLATE** model as an .stl file. (Naming Convention: *studentid_INDEX_PLATE.stl*)

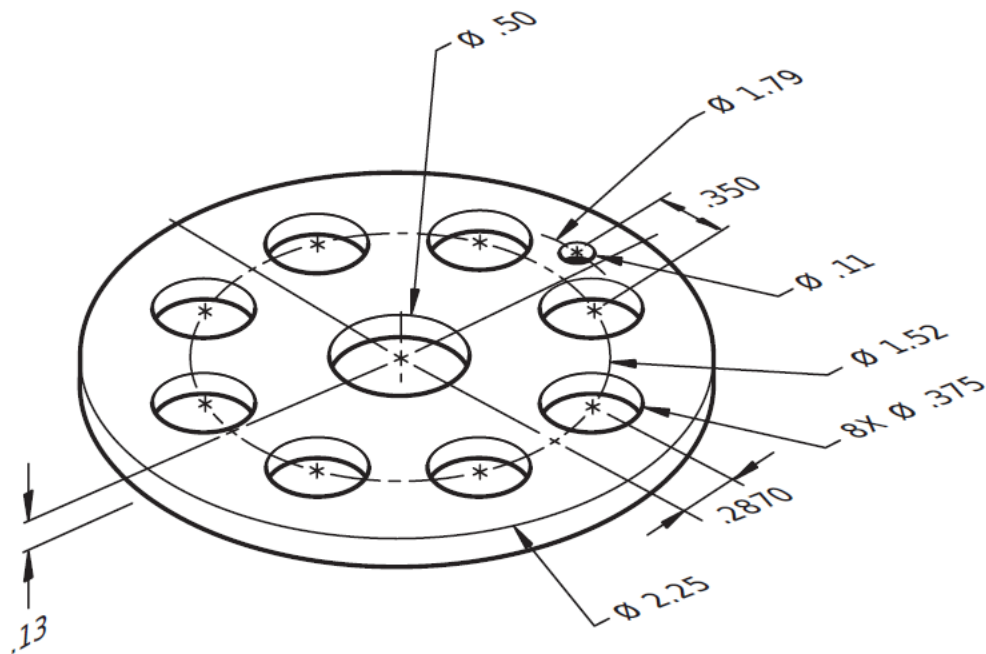
Q4. [10 points] What is the weight of the index plate, if it is made using 2014 Aluminum (Aluminum_2014)?

Q5. [20 points] Create an assembly matching that shown above for the **GENEVA**, the **INDEX PLATE**, and the **SHAFT**, and save as a .prt file. (Naming Convention: *studentid_GenevaAssembly.prt*)

Submission: All files are to be compressed into a zip file and submitted to canvas. The naming convention for the .zip file is: *studentid_EXAM*.

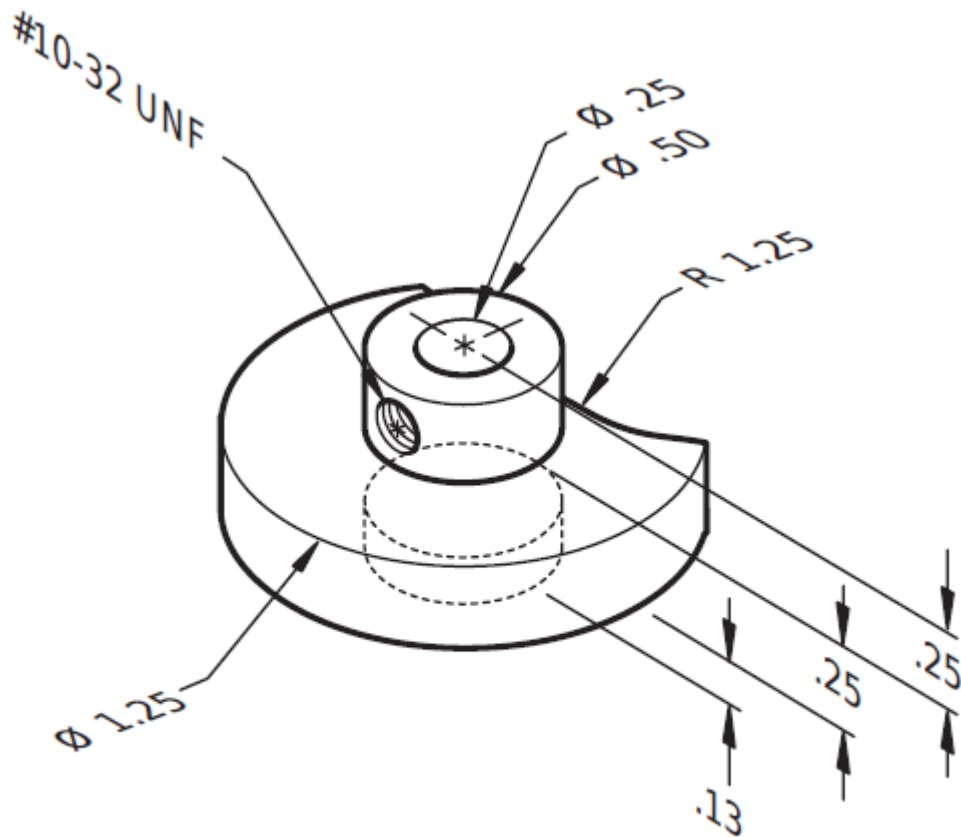
Time 3 hours

Part 1: INDEX PLATE



PART NAME: INDEX PLATE

 \angle

Part 2: GENEVA**PART NAME: GENEVA**

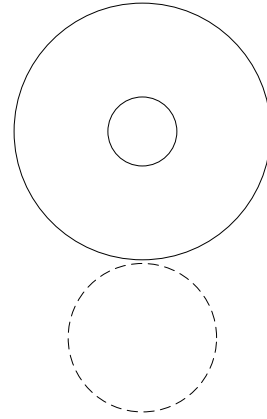
Note: the bottom of the Geneva's dashed cylinder extends below the part's body allowing it to fit into the Index Plate.

Hint: There is a "cut out" portion of the GENEVA's large cylinder. The "cut out" portion has a radius of 1.25 inches. This "cut out" is formed by a circle, which is extruded and subtracted from the large cylinder. The center of the "subtracted" circle must be determined.

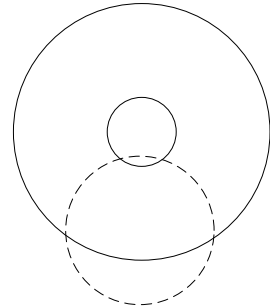
BE 1200 Exam (100 points)

Time 3 hours

Case 1: (Top View) The center is too far away:

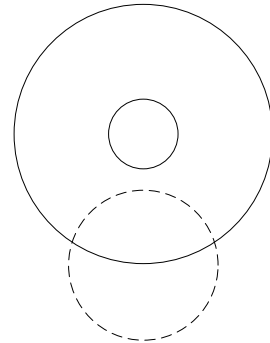


Case 2: (Top View). The center is too close:

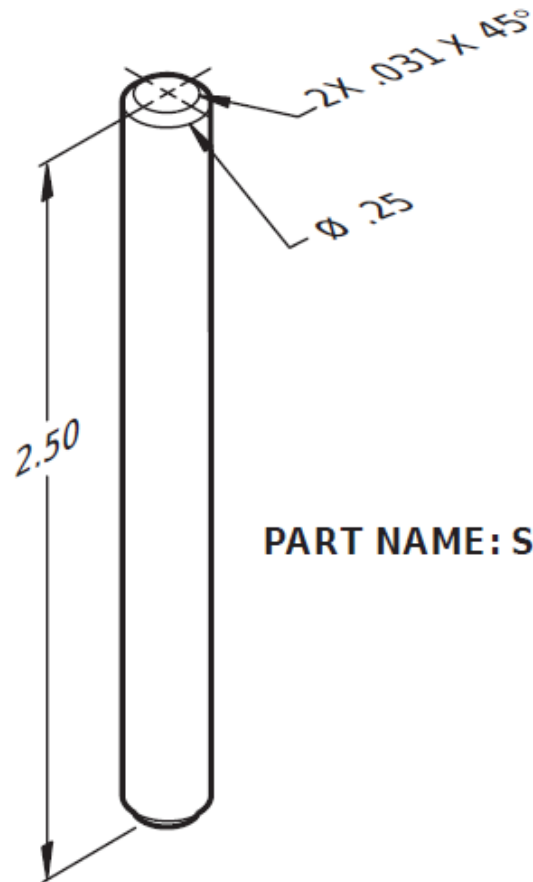


Case 3 (Top View). The center is correct:

(The cut out should not touch the small upper cylinder.
Anywhere short of that point will be considered to be correct)



Part 3. SHAFT



PART NAME: SHAFT

BE 1200 Exam (100 points)

Time 3 hours

Extra Credit: [20 points]. Create a 3 dimensional model of the following component using NX

