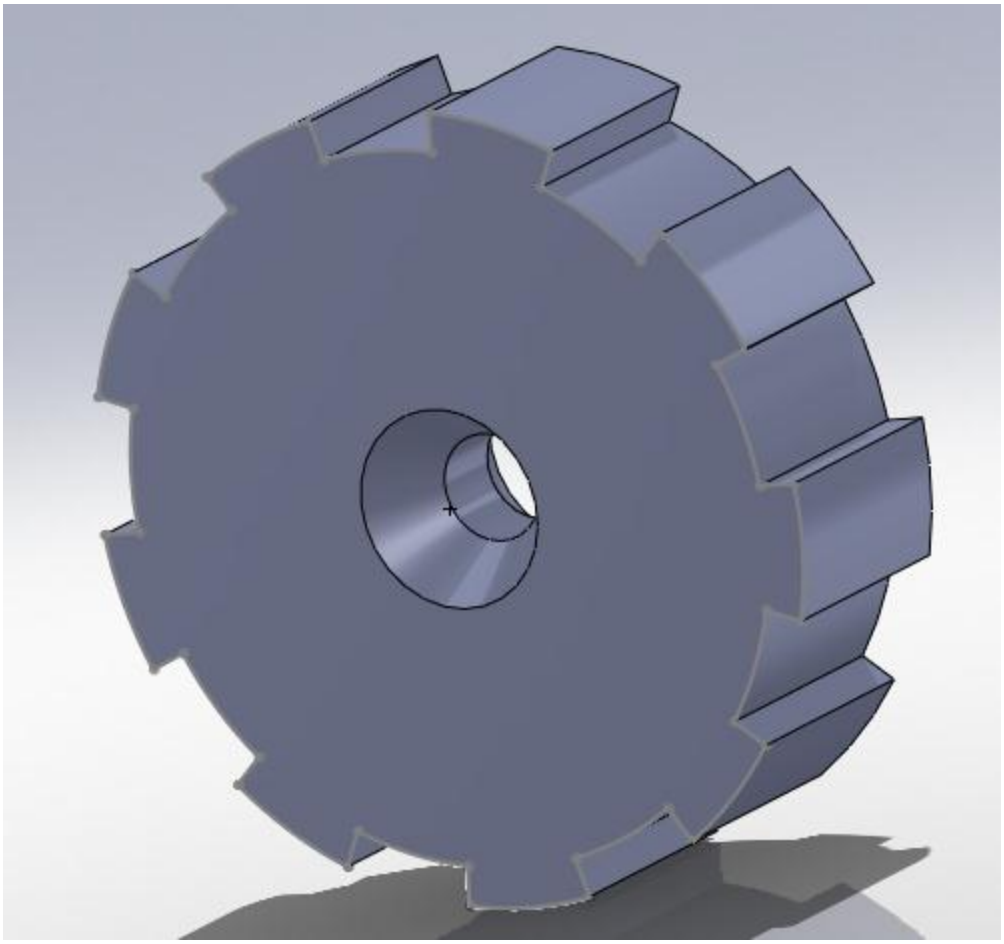
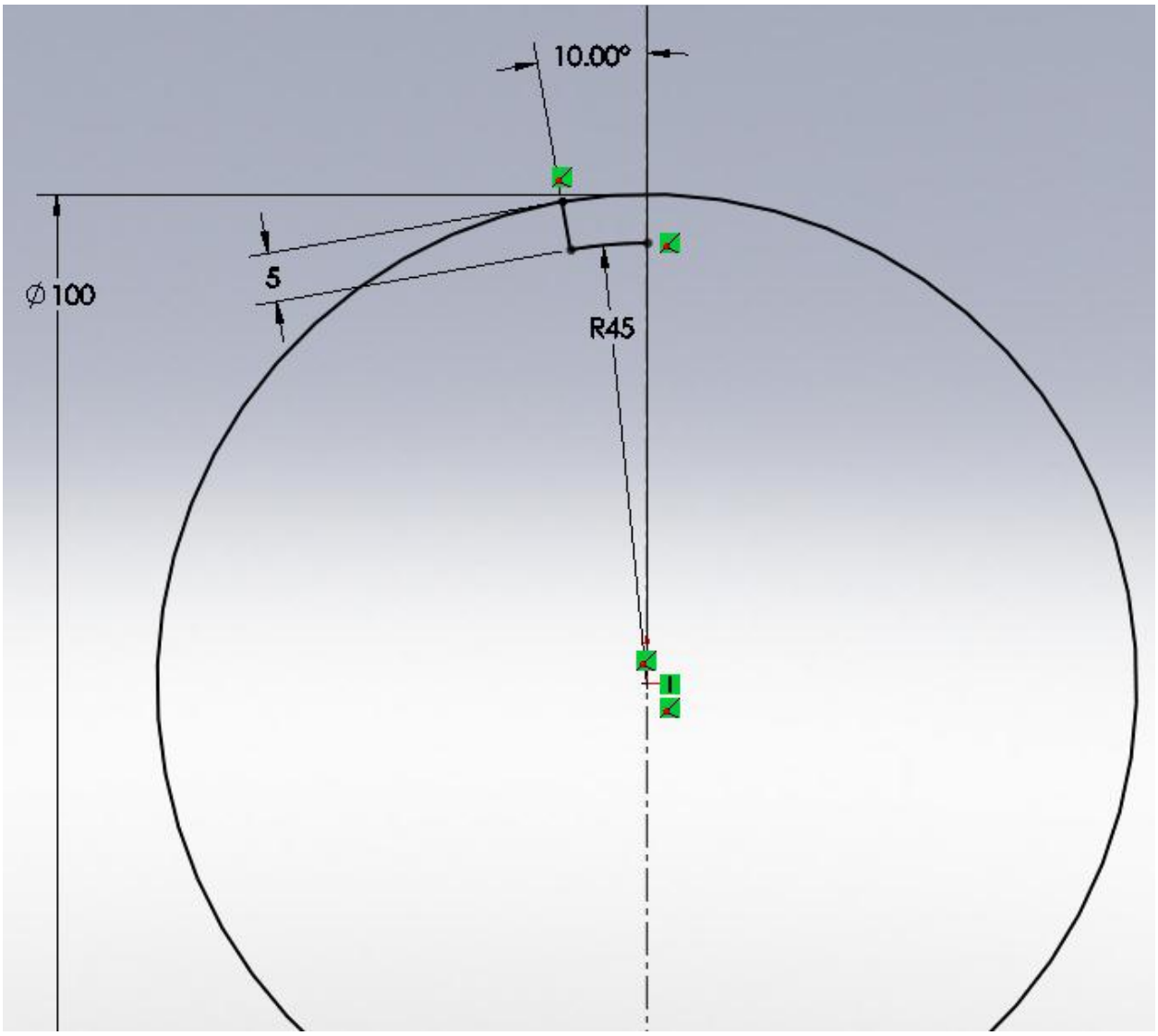
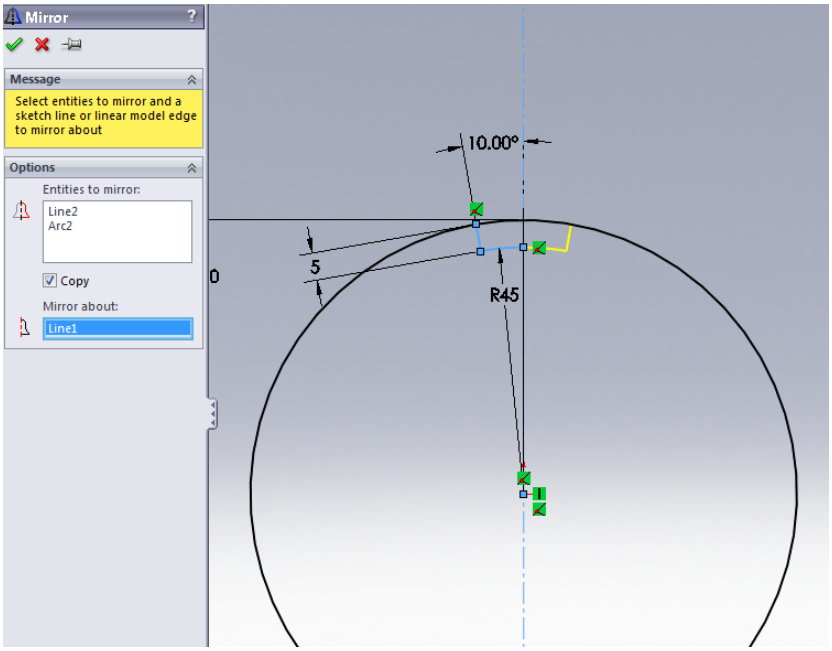
Workshop 4 – Simple Gear



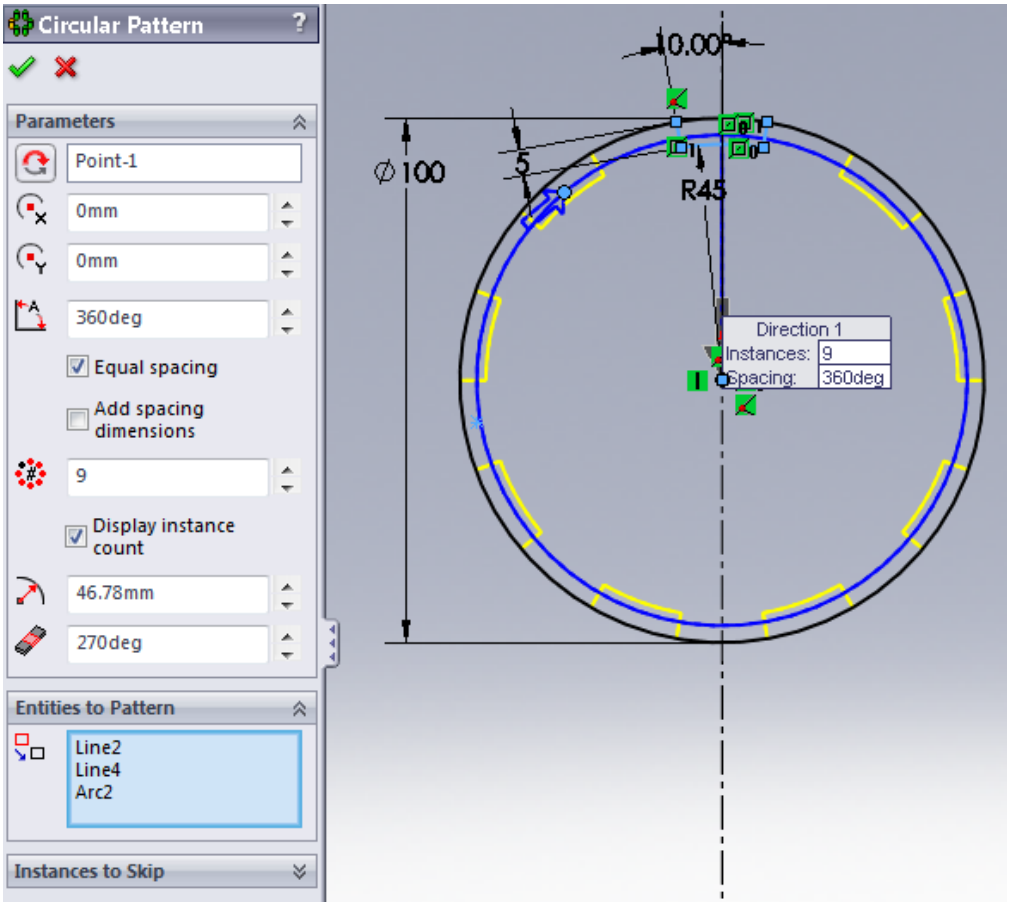
1. Make sure units are in **millimeters**.
2. Make your first sketch on the **Front Plane**.
3. The procedure for the first sketch is as follows:
    a. Create the outside circle of diameter = **100 mm**.
    b. Draw an infinite centerline as a vertical axis.
    c. Sketch an arc of radius **45 mm** with centerpoint at the origin extending from the centerline out an arbitrary distance.
    d. Create a line of **5 mm** length extending from the arc endpoint to the outer circle.
    e. Make a **10^{o}** angle between the line previously drawn and the center line.



4. Mirror the arc and the 5 mm line about the vertical centerline.

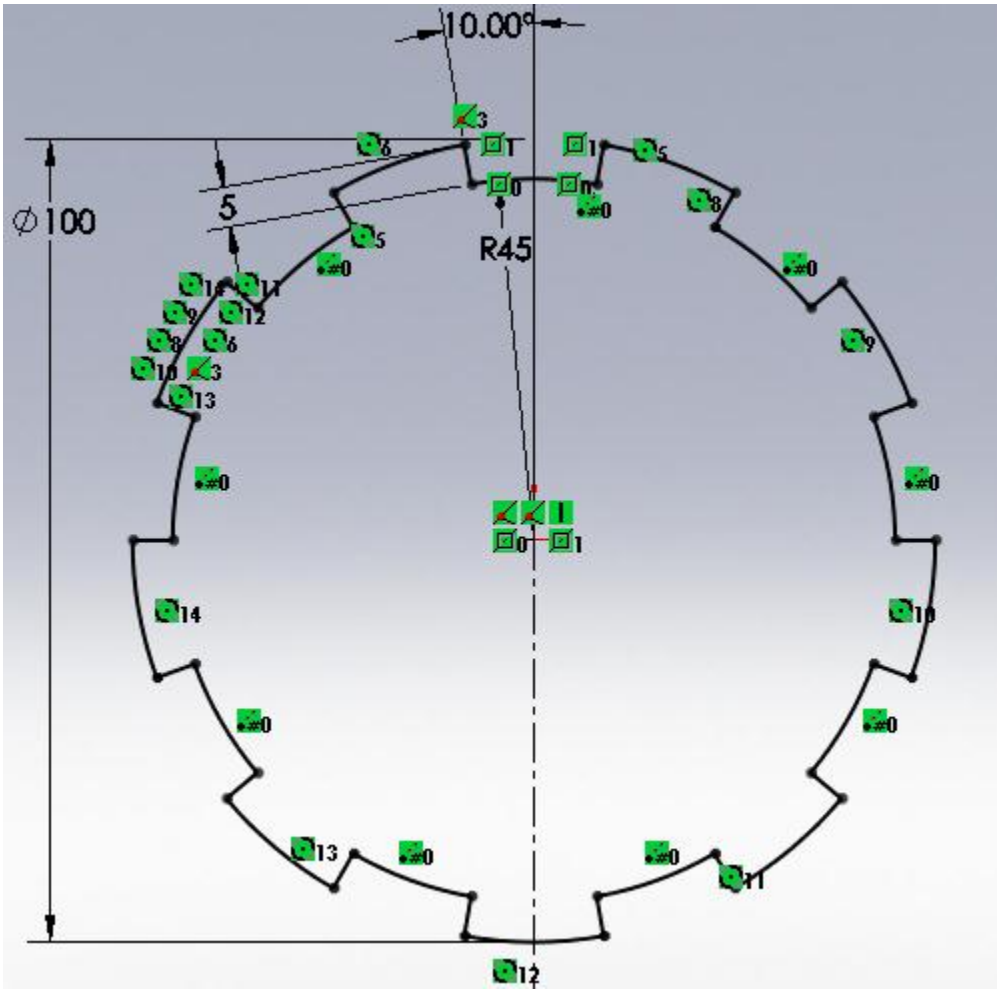


5. Create a circular sketch pattern about the origin. The circular sketch pattern must be **equally spaced**, include **9 instances**, and go through a full **360°**.



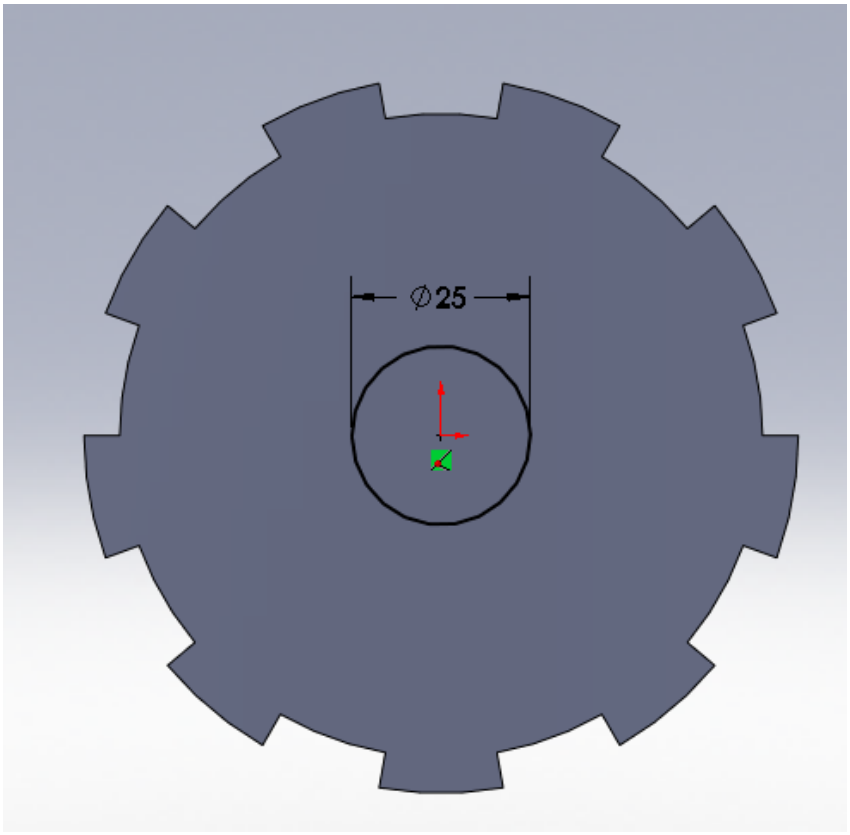
6. The circular sketch pattern just created will still be undefined, as indicated by blue lines. To define this sketch pattern, choose any of the newly created arcs, and make it **coradial** with the original arc. This will fully define the sketch (black lines).

7. Use the power trim tool to trim away the edges of the outer circle. The sketch will now look like the following (The green relation indicating boxes may differ on your file):

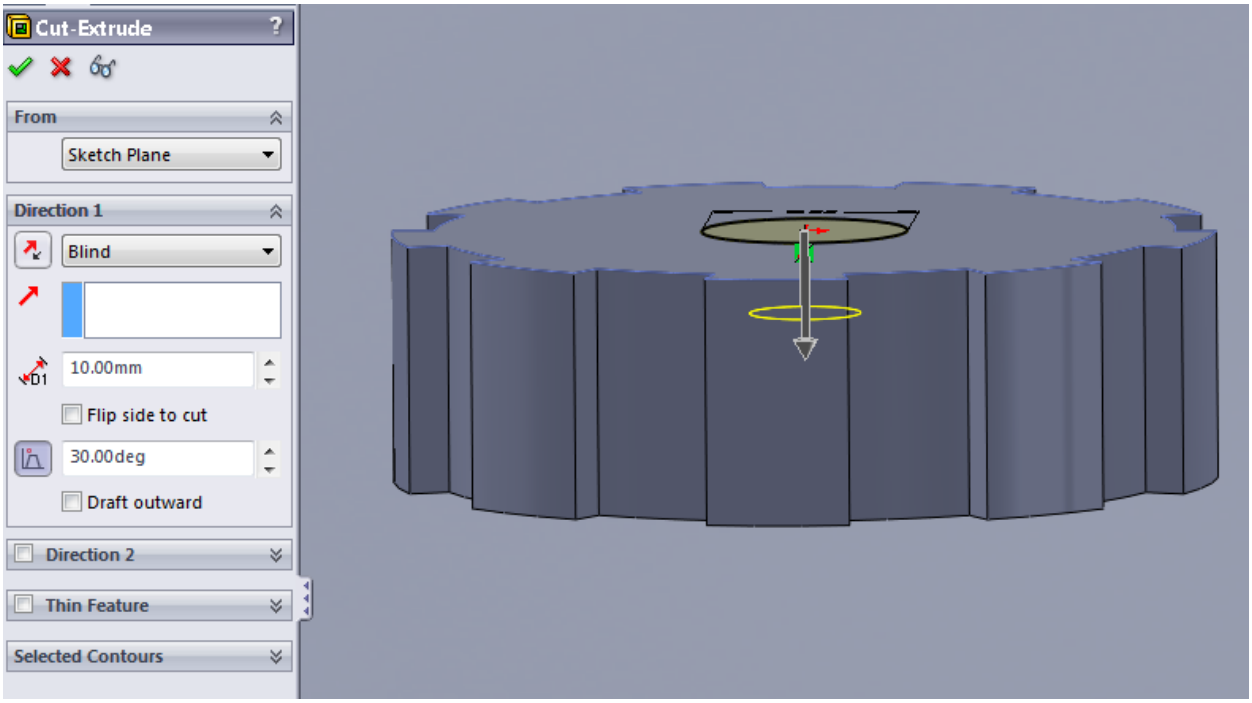


8. Extrude this sketch out a distance of **30 mm**.

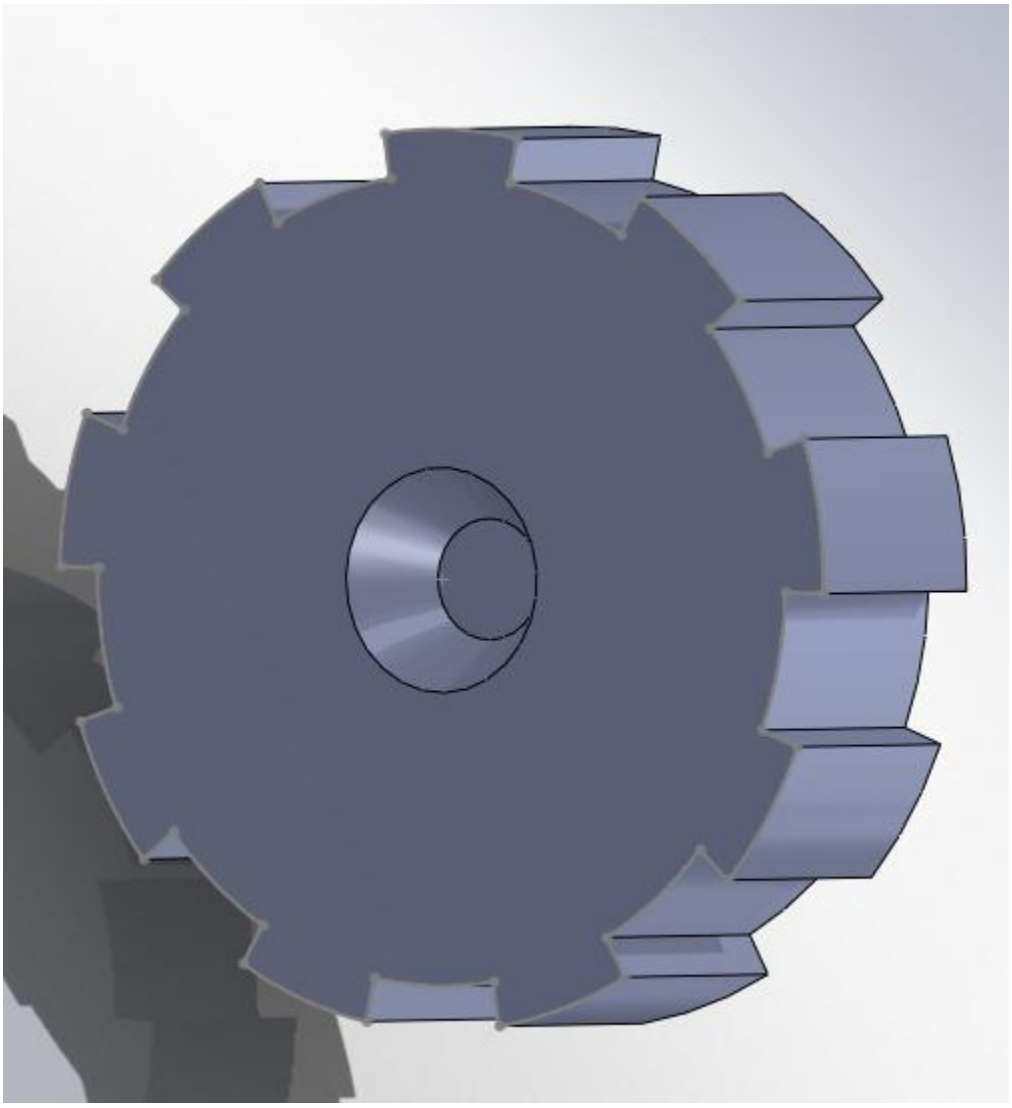
9. Create the following sketch on the extruded face (Circle with diameter = **25 mm**):



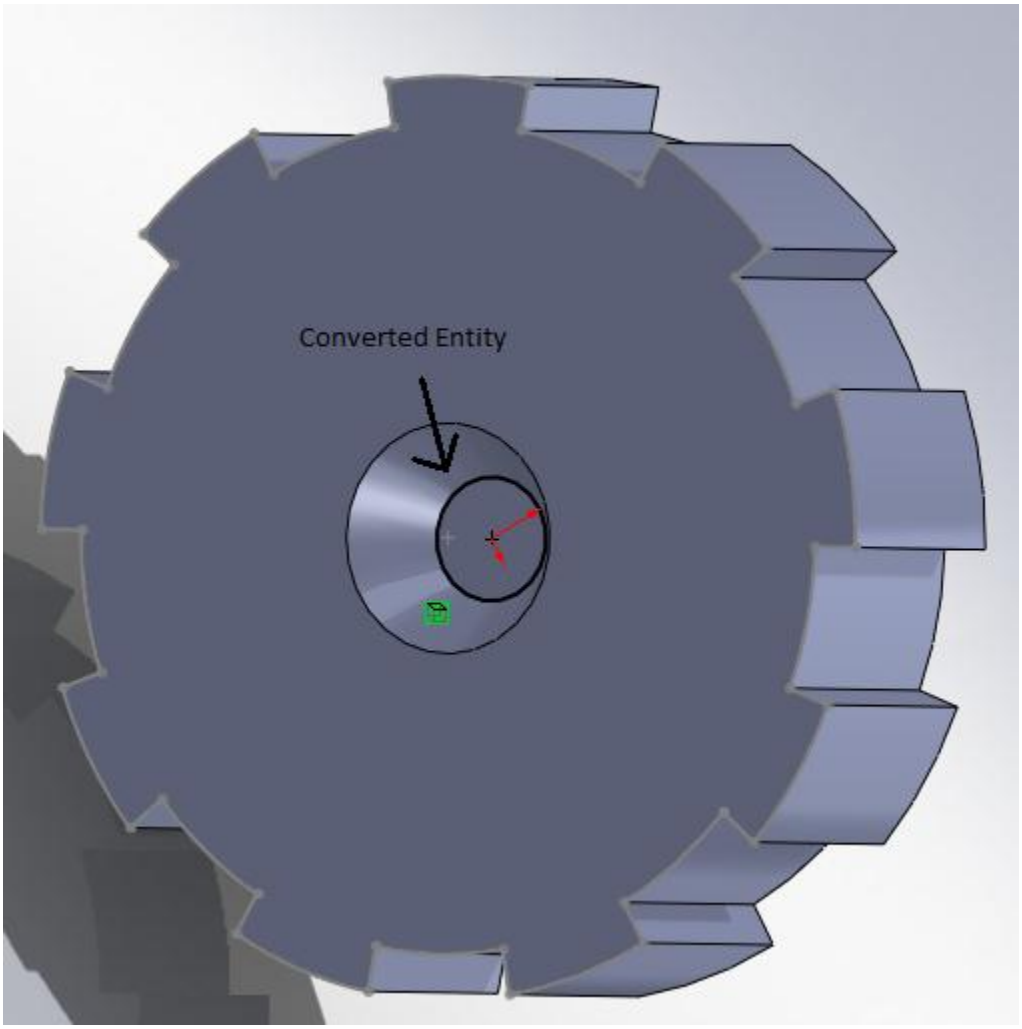
10. Make an extruded cut of this sketch a distance of **5 mm** at an angle of **30°.**



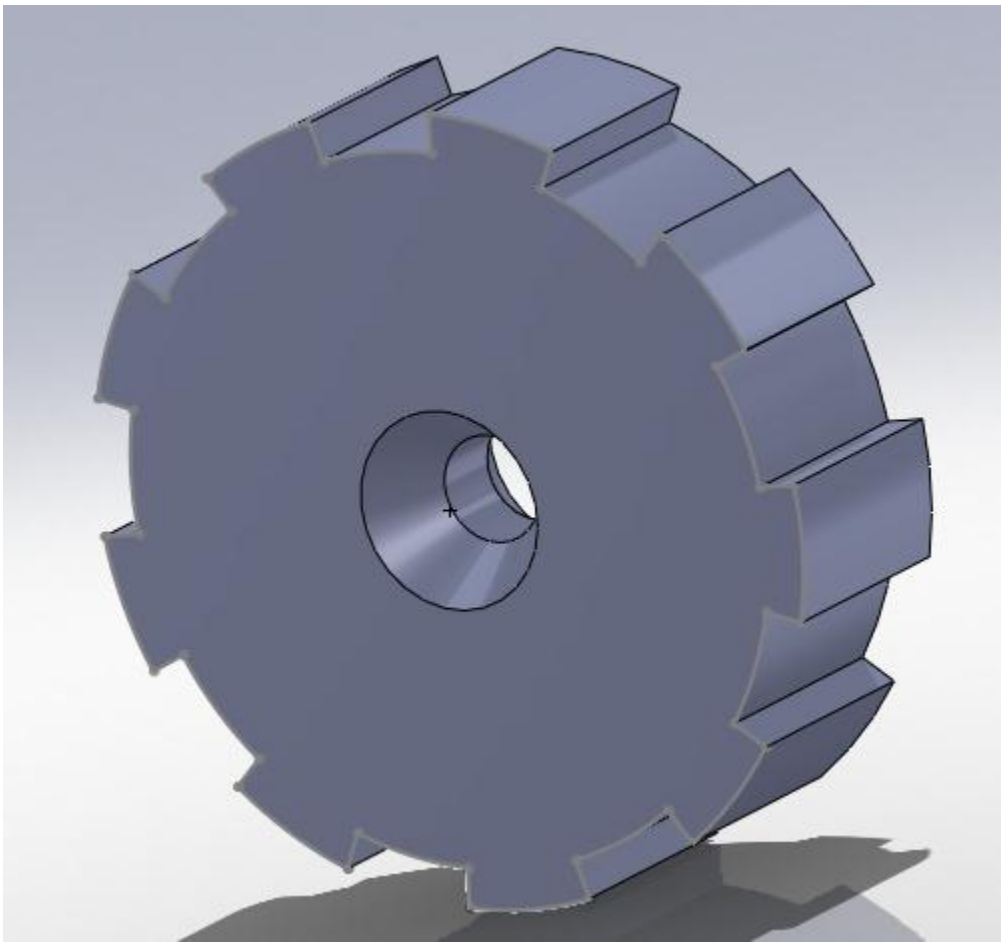
11. Make the exact same cut on the bottom face by utilizing the **Convert Entities** tool. The figure now has an indentation on both sides, but not a cut all the way through its thickness. It will look like the following, on both sides:



12. Complete the hole all the way through the gear. To do this, choose the indented plane as your sketching plane, and use the **Convert Entities** tool to convert the edge of that plane down to it.



13. Extrude the cut all the way through, and the finished object should look like the following:



Save file as “Firstname_lastname_WS4.sldprt”