Laboratory Worksheet 3

Facing and Center Drilling

Names: _____ Group No.: _____

_____ Date Started: _____

(Last Name, First Name MI.) Date Completed: _____ (yy/mm/dd)

Instructor: Engr. Nico O. Aspra, M.Eng., RMP, LPT

*Note: When printing the worksheet, use long bond paper (8.5 in × 13 in). Print the Data Collection up to the Analysis section **back-to-back** on a single sheet of paper. Print the Assessment Sheet on a separate sheet and staple it at the back of this worksheet.*

3.1 Data Collection

The data collected in this activity will be recorded and analyzed in this section. These measurements are used to examine the relationship between selected machining parameters and the resulting surface finish and dimensional accuracy of the workpiece. By systematically recording spindle speed, depth of cut, and feed rate, students will gain insights into how cutting conditions influence surface quality during turning operations. In addition, comparing the machined dimensions with the design specifications allows students to assess dimensional deviation, machining accuracy, and process consistency, and to identify factors that affect the quality of the final product.

Table 3.1: Operational Parameters and Surface Finish Results

Spindle Speed	Depth of Cut	Feed Rate	Finish

* The finish should be rated as rough, grooved, matte, glossy, or mirror-like depending on the observed surface quality.

Table 3.2: Comparison of Machined Dimensions with Design Specifications

Dimension	Specification	Actual	Deviation	Remarks
length				
center hole depth				

* The "Remarks" column will be filled in by your instructor based on inspection.

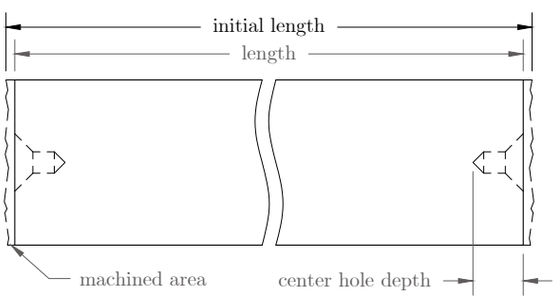

Figure 3.1: Final product plan used as a reference for dimensional measurements recorded in Table 3.2.

3.2 Analysis and Discussion

Reflect on the exercise and draw upon both your experience and the data gathered to respond to the following questions. Support your answers with specific examples from your observations.

Question 1

Why is it essential to manually rotate the chuck one full revolution before turning on the lathe? What issues might this step help prevent?

Question 2

Which combination of spindle speed, depth of cut, and feed rate gave the best surface finish during facing? Why do you think this setting worked well?

Question 3

In your experience, what factor had the most noticeable effect on surface finish–speed, feed, tool sharpness, or setup? How can this be optimized?

Question 4

What is the purpose of creating a pilot hole before center drilling? How does it improve drilling accuracy?

Question 5

How did you measure and mark the workpiece length before cutting? Were the results accurate? If not, what could have caused the deviation?

Assessment Sheet

Note: This page must be stapled at the back of your laboratory worksheet.

Individual Contribution Declaration

In this section, list and briefly describe each member's contributions to the activity. Itemize the specific tasks performed and assign a corresponding percentage to each member. The combined percentage must total 100%.

Name	Designation (Leader/Member)	Individual Accomplishments	%	Signature
			Total	**100%**

Academic Honesty Statement

I/We hereby certify that I/we have written and developed this report. I/We affirm that the report I/we am/are submitting as part of the requirements of this course is original and not plagiarized. My/Our signature/s below constitute/s my/our pledge that I/we have fully complied with Bicol University's policy on academic integrity. I/We understand that academic dishonesty will not be tolerated and that, if such instance/s are found and proven in this submitted work, a final grade of 5.0 will automatically be given to me/us, and I/we will be subjected to disciplinary action/s sanctioned by Bicol University.

Signature over printed name (Group Leader)

Do not write beyond this point. This section will be completed by the instructor.

Performance Assessment Rubric

(For instructor use only)

Criteria	4 – Exemplary	3 – Proficient	2 – Developing	1 – Beginning	Score
Understanding of Task	Demonstrates complete understanding of the objectives, theory, and relevance of the activity	Shows good grasp of the task with minor conceptual gaps	Basic understanding with some confusion about the purpose or process	Limited or incorrect understanding of the task's goal	
Execution Accuracy	All procedures and tools are correctly used with high precision and consistency	Most steps are followed correctly with minor errors or inefficiencies	Several key steps missed or tools used with noticeable inaccuracy	Process poorly executed; improper use of tools or procedures	
Measurements	Measurements are accurate, clearly recorded, and well-analyzed against design targets	Mostly accurate data with partial analysis or incomplete comparison	Data is somewhat inaccurate or poorly explained	Lacks measurements or data is irrelevant or incorrect	
Reflection and Analysis	Deep insights, thoughtful evaluation of outcomes, and strong suggestions for improvement	Reflection shows good understanding with reasonable suggestions	Limited self-assessment or vague comments	Little to no reflection; fails to engage with outcomes	
Presentation	Report is highly organized, clear, and free of major errors in structure or expression	Report is generally clear and well-organized with minor lapses	Report lacks clarity or organization; some confusion in formatting or writing	Disorganized or incomplete submission; difficult to follow	
				Total	