

Lesson 0.6 - Problem Definition, Criteria & Constraints

Graded classwork | Individual worksheet | Add to engineering notebook as the next numbered document

Name: _____ Period: _____ Date: _____

Essential Question

How do engineers define a problem clearly before designing a solution?

Problem Definition

A clear explanation of the engineering problem, who it affects, why it matters, and what a successful solution should accomplish.

Criteria

The goals or requirements used to judge whether a design is successful. Criteria describe what the design should do.

Constraints

The limits or restrictions the design must work within, such as materials, time, size, safety, tools, or cost.

Scenario: Drone Propeller Guard

A small classroom drone is being damaged when it bumps into walls, tables, and chairs. The propellers are exposed, and the drone cannot safely be used around students until the propellers are better protected. Your job is to define the problem clearly before jumping to a solution.

Question	Your Response
Who is affected by this problem?	
Why does this problem matter?	
What does a successful solution need to accomplish?	

Clear Problem Statement

Write one complete problem statement. Do not describe a specific solution yet.

Lesson 0.6 - Criteria & Constraints

Page 2 | Use requirements and limits to make the problem specific enough to design for.

Name: _____ Period: _____ Date: _____

#	Criteria - What should the design do?	How could success be measured?
1		
2		
3		

#	Constraints - What limits must the design follow?	Why does this limit matter?
1		
2		
3		

Success Measurement Plan

Choose one way the team could test or inspect whether the solution worked. What evidence would you collect?

Design Readiness Check

Why is it risky to start building before the problem, criteria, and constraints are clear?

Notebook direction: Number this worksheet as the next document in your engineering notebook, add it to the Table of Contents, and place it in chronological order.