

1.5: Design Challenge

Students should divide up into design teams and use their new knowledge of engineering and the engineering process to complete the following challenge:

Using nothing but ten letter size sheets of paper, students must create a freestanding tower as tall as possible in 30 minutes. Students are required to spend 5 minutes planning and designing their tower before they receive any materials. Students will then be given ten sheets of paper and allowed ten minutes for prototyping; at the end of the prototyping period ALL paper and prototypes will be collected. Teams will then be given 15 minutes to implement their final tower design. The tower must remain freestanding for at least 30 seconds for its height to count.

Not all the steps in the engineering design process are appropriate for this challenge, however each design team should follow the simplified process shown here:

Step 1 – UNDERSTAND – Define the Problem

Step 2 – DEFINE – Determine Solution Specifications

Step 3 – IDEATE – Generate Concept Solutions

Step 4 – PROTOTYPE – Learn How Your Concepts Work

Step 5 – CHOOSE – Determine a Final Concept

Step 6 – REFINE – Do Detailed Design

Step 7 – IMPLEMENT – Implement the Detailed Solution

Step 8 – TEST – Does the Solution Work?

Step 9 – ITERATE

All students must document the process their group followed in their engineering notebook while including as much detail as possible.