

Team Members:

- 1. _____
- 2. _____
- 3. _____
- 4. _____

Total Points

Workbook: /11 pts

Design
Challenge: /30 pts

Key Terms

Write the definitions of each key term in the space provided.

1. Design & Engineering Process: _____

2. Design Brief: _____

3. Brainstorm: _____

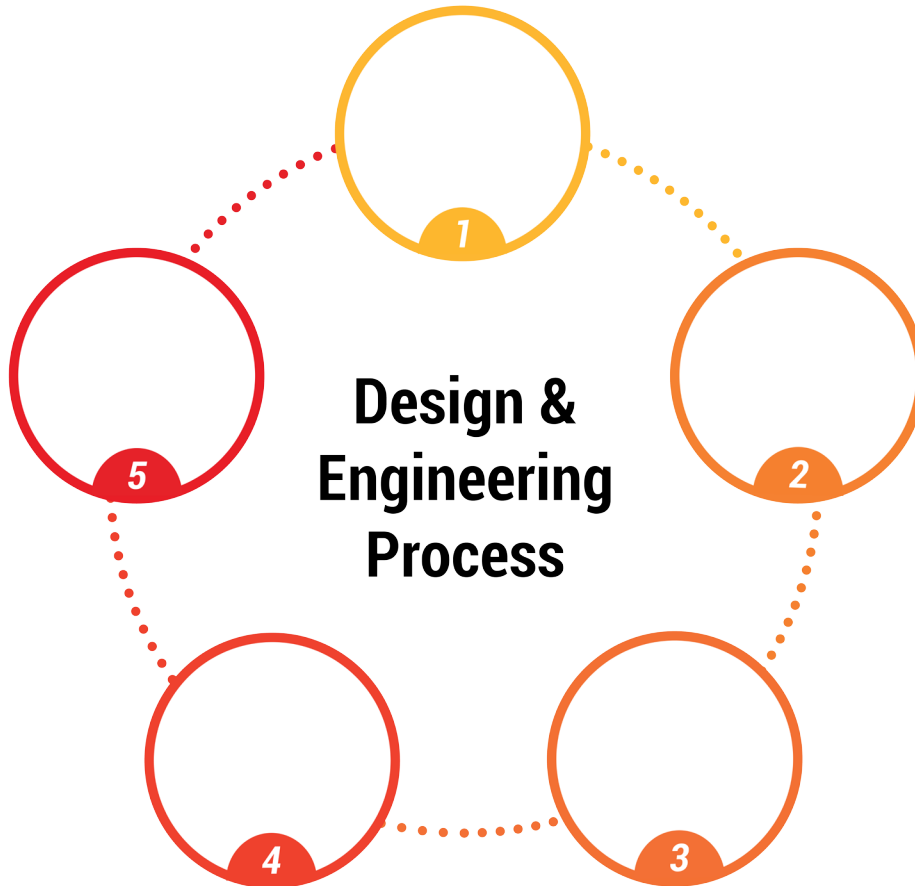
4. Prototype: _____

5. Empathy: _____

6. Grading Rubric: _____

The Design & Engineering Process

- Fill in each step of the Rokenbok Design & Engineering process in the image below.
- Discuss the purpose of each step with members in the team.



Build a ROK Blocks Tree

- Complete all four steps to assemble a ROK Blocks Tree. **See Curriculum Packet - Page 4**

Understanding a Design Brief

Fill in the correct answer in the spaces provided below.

- A _____ serves as the guiding document for a project.
- What is the specific design challenge on page 5? _____

Design & Engineering Challenge

Follow each step in the design & engineering process to develop a solution to the problem. Place a check in the box as each step is completed. Fill in the blanks when necessary.

1. Identify The Challenge

- Challenge: _____
- Sub-Challenge: _____
- Sub-Challenge: _____
- Sub-Challenge: _____
- Sub-Challenge: _____
- Review specifications

2. Brainstorm Ideas & Solutions

- Discuss design ideas.
- Consider building components and cost.

3. Build A Prototype

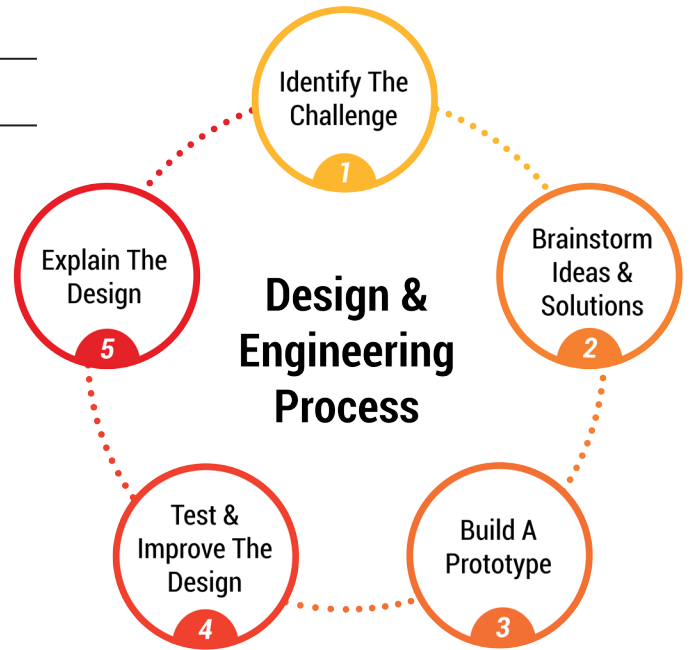
- Build a working prototype of the design.

4. Test & Improve The Design

- Test & improve the design for performance and consistency.
- New challenge discovered: _____
- Review grading rubric and design specifications.
- Consider ways to reduce cost.







5. Explain The Design

- Prepare to demonstrate and present the design to others.
- Review project grading rubric.
- Explain any unique design features that were included.
- Describe at least one new problem/challenge discovered during Step 4 (Test and Improve The Design) and how the team redesigned a new solution.
- Calculate and share overall dimensions of treehouse. Length: _____ cm Depth: _____ cm Height: _____ cm



Challenge Evaluation

When teams have completed the design & engineering challenge, it should be presented to the teacher and classmates for evaluation. Teams will be graded on the following criteria:

-  **Specifications:** Does the design meet all specifications as stated in the design brief?
-  **Performance:** How well does the design work? Is it reliable and consistent?
-  **Team Collaboration:** How well did the team work together? Can each student describe how they contributed?
-  **Design Quality/Aesthetics:** Is the design of high quality? Is it structurally strong, attractive, and well proportioned?
-  **Material Cost:** What was the total cost of the design? Was the team able to stay on or under budget?
-  **Presentation:** How well did the team communicate all aspects of the design to others?

| Grading Rubric | Advanced 5 Points | Proficient 4 Points | Partially Proficient 3 Points | Not Proficient 0 Points |
|----------------------------------|--|---|---|---|
| Specifications | <input type="checkbox"/> Meets all specifications | <input type="checkbox"/> Meets most specifications | <input type="checkbox"/> Meets some specifications | <input type="checkbox"/> Does not meet specifications |
| Performance | <input type="checkbox"/> Design performs consistently well | <input type="checkbox"/> Design performs well often | <input type="checkbox"/> Design is partially functional | <input type="checkbox"/> Design does not work |
| Team Collaboration | <input type="checkbox"/> Every member of team contributed | <input type="checkbox"/> Most members of team contributed | <input type="checkbox"/> Some members of team contributed | <input type="checkbox"/> Team did not work together |
| Design Quality/Aesthetics | <input type="checkbox"/> Great design/aesthetics | <input type="checkbox"/> Good design/aesthetics | <input type="checkbox"/> Average design/aesthetics | <input type="checkbox"/> Poor design/aesthetics |
| Material Cost | <input type="checkbox"/> On Budget (\$120 or Less) | <input type="checkbox"/> Slightly Over Budget (\$120-130) | <input type="checkbox"/> Over Budget (\$130-140) | <input type="checkbox"/> Significantly Over Budget (\$141+) |
| Presentation | <input type="checkbox"/> Great presentation/well explained | <input type="checkbox"/> Good presentation/well explained | <input type="checkbox"/> Poor presentation/explanation | <input type="checkbox"/> No presentation/explanation |
| Points | | | | |
| Total Points | | | | /30 |