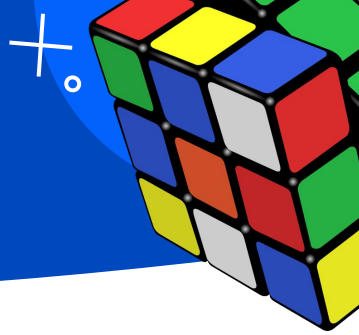
BrainPOP Science

The Engineering Design Process



1. Brainstorm | Goal: Select your best idea.

- **Brainstorm at least 3 ideas.** All ideas are welcome at this stage.
  - What is the problem you're trying to solve?
- **Bring your big ideas into focus.** Consider criteria and constraints.
  - Can you build it with the materials you have available?
  - Did you consider the constraints provided?

☐ **Write down everything.** Even silly ideas can spark amazing solutions! Remember words and phrases count too.

2. Research | Goal: Explore science concepts that can guide your design.

- **Ask questions!** Curiosity is key to finding information about your problem.
  - What have other people done?
  - What materials and tools are available?

☐ **Look everywhere!** Use all resources available—books, websites, experts, etc. Knowledge is power!

☐ **Keep track of your sources!** Write down any science principle that will inform your design (and their source.)

3. Design | Goal: Create a sketch of your best idea.

- **Get creative!** Sketch out your best idea. Label all the important parts.

☐ **Summarize 2 science concepts** you learned about in your research. How can you combine these concepts with your original design to improve it?

4. Build and Test | Goal: Build a prototype and test it to see if it works.

- **Does it work?** Test your prototype to see how well it solves the problem.

☐ **Don't be afraid to make mistakes!** Make a note of what doesn't work to help you improve your design. It's all part of the process!

Design (Again!) | Goal: Use what you've learned from your tests to adjust your design.

- **What worked well?** What could be improved?

5. Evaluate | Goal: Review each version of your design and reflect on the decisions you made.

- **Reflect on the process.** Be honest and specific in your evaluation.
  - How did your design change from the beginning of this project to the end?
  - What information did you use to make these changes?

☐ **Ask yourself:** What did you learn? What would you do differently next time?

Remember: The engineering design process is iterative! You might need to repeat some steps or even start over. That's okay! Keep trying, keep learning, and keep improving!