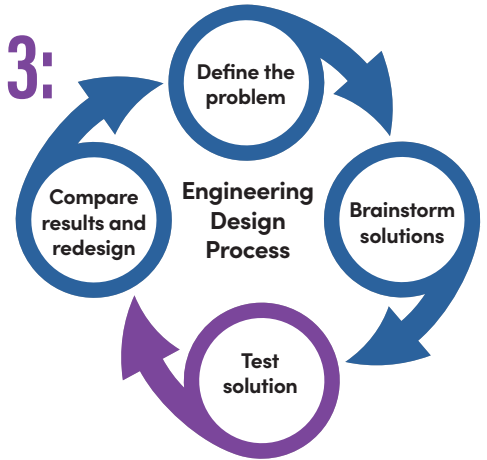# ENGINEERING DESIGN PROCESS PART 3:
TEST YOUR SOLUTION

Once the most promising solution to a problem is identified, an engineer begins the next step of the engineering design process: *test the solution*. In this step, an engineer builds, tests, and collects data on a prototype. After analyzing the data, the engineer will modify the prototype to better meet the constraints and criteria of the project.

Engineering Design Process
- Define the problem
- Brainstorm solutions
- Test solution
- Compare results and redesign

Answer the questions below.

1. Look back at the prototype that you sketched in question 4 of the Part 2 worksheet. Make sure you have the materials needed to build your prototype. Then, build it!

2. How challenging was it to build your prototype? Did you make any adjustments to the original design from your sketch? If so, describe the changes you made and why.

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3. How will you test the prototype you built? What will you observe or measure to evaluate how well the prototype meets the criteria of the project?

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_____

4. Test your prototype. Use the first row of the table below to record some notes on the design features as well as your results and observations. Later, you will test two additional prototypes and write your results and observations for those in rows 2 and 3.

Prototype	Notes on Design	Results and Observations
1		
2		
3		

ENGINEERING DESIGN PROCESS PART 3: TEST YOUR SOLUTION

Keep going! Answer the questions below.

5. How did your prototype perform? How do you think the prototype could be improved?

_____

_____

_____

6. Modify your prototype based on your ideas in question 5. Go back to the table in question 4, and in row 2, add notes on the changes you made to the design. Then, collect and record data for the new prototype.

7. Repeat questions 5 and 6 at least one more time to test a total of three different prototypes.

8. Look over the results from the testing of each prototype.

a. Were there any modifications that **did not** improve the design's performance? Explain.

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_____

b. Does anything about your results surprise you? Explain.

_____

_____

_____

c. Which prototype best meets the criteria of the project? Why do you think so? Explain your reasoning using results and observations from the testing you completed.

_____

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_____

9. If you had more time, how would you improve your final design? Explain.

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