



# Engineering Design Challenges

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Grade: Grade 4

## Part A: Multiple Choice

Circle the best answer for each question.

1. A boat sank because it was too heavy. What should the team change first?

- A) Use lighter materials
- B) Add more weight
- C) Make boat smaller
- D) Test in a smaller pool

2. A catapult only flings 1 meter. The constraint says any rubber bands. Best fix?

- A) Switch to string
- B) Add stronger rubber bands
- C) Remove the bands
- D) Make it heavier

3. Time limit drops from 30 to 15 minutes. Which step might the team skip?

- A) Brainstorming
- B) Building
- C) Detailed sketching
- D) Testing

4. After 3 trials, a marble run keeps stopping. What is most likely wrong?

- A) Marble is too heavy
- B) Track is too steep
- C) Marble has wings
- D) Track slope is too low

## Part B: Fill in the Blank

Write the correct answer on each line.

1. When the budget drops, engineers must use cheaper or \_\_\_\_\_ materials instead.
2. If a team runs out of time, they should focus first on the \_\_\_\_\_ steps only.
3. When a design fails, engineers ask why and use evidence to make a \_\_\_\_\_.
4. If wind keeps knocking a tower, adding a wider \_\_\_\_\_ makes it more stable.
5. Adding a new rule mid-project is called a constraint \_\_\_\_\_ that shifts the plan.

**Part A: Multiple Choice**

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**Part B: Fill in the Blank**

*Write the correct answer on each line.*

1. When the budget drops, engineers must use cheaper or recycled materials instead.
2. If a team runs out of time, they should focus first on the essential steps only.
3. When a design fails, engineers ask why and use evidence to make a claim .
4. If wind keeps knocking a tower, adding a wider base makes it more stable.
5. Adding a new rule mid-project is called a constraint change that shifts the plan.