

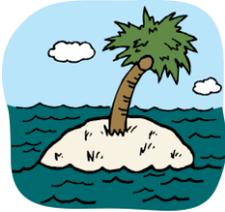
Name:

Date:

Class:

Design Your Own Prosthesis Worksheet

Extended Version



Scenario: You are sailing around the Caribbean with a group of other tourists. Unfortunately, a summer storm pops up and your sailboat nearly sinks. The captain manages to maneuver the sinking vessel to a nearby uninhabited island where the severely damaged boat washes ashore. Sadly, multiple people had limbs amputated as debris fell from the sinking boat. The injuries are severe, but you have plenty of first-aid supplies and everyone survives. After several months on the island, the injuries have

healed and the amputees are ready to regain some of their mobility through the use of prosthetic limbs. Given the supplies available to you on the island, design an effective prosthetic for ONE of the following people:

- **David** lost his left leg below the knee and plans to swim to get help.
 - **Maria** lost her right arm above the elbow.
 - **Anne** lost both legs below the knee.
 - **Randy** lost his right leg above the knee and is constantly being chased by vicious island monkeys as he forages for food. He needs to be able to run!
 - **Jed** lost his left hand. He needs to grip well since he enjoys climbing coconut trees for snacks.
1. Begin by assessing the materials. You will have the chance to scavenge for other supplies before you start building from the supply table. Brainstorm ideas for a functional prosthesis. Below and on the back of this sheet make notes of all possible design ideas.

2. Choose one design that your group will attempt to construct. Sketch it on the back of this paper.

At this stage, get the teacher to look at your design and offer suggestions.

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3. What additional materials do you need to build your design? Make a shopping list from the materials available. Then look at the supply table.

On Day 3, one team member must be able to demonstrate how well your prosthesis functions!

4. Did your prosthesis work? What are the pros and cons of your design? What modifications would you make to the replacement limb design?

5. Engineers follow the steps of the engineering design process to design products and systems.

List the steps in the process.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.