

BACKPACK CHALLENGE (PART I)

Activity Objective: Girls use basic design and engineering skills to design a backpack.

Toward Leadership Outcomes:

Through this activity, girls will:

- ✓ Gain practical life skills—Girls Will have increased confidence in their ability to succeed in math and science. **(Discover)**
- ✓ Seek challenges—Girls develop positive attitudes toward learning, seek opportunities for expanding their knowledge and skills, set challenging goals for themselves, and take appropriate risks. **(Discover)**
- ✓ Become resourceful problem solvers—Girls can use their knowledge and skills to set up and implement creative and effective “action plans,” locate tools and resources they need, and know when, where, and how to enlist help from others. **(Take Action)**

SCIENCE & TECH ACTIVITY 5A

DISCOVER/ TAKE ACTION:

- » Gain practical life skills
- » Seek challenges
- » Become resourceful problem solver

Experience Overview:

2 minutes	<i>Introduction (Talking Points)</i>
45 minutes	<i>Backpack Challenge</i>
5-10 minutes	<i>Reflection/Discussion</i>

Supplies Needed:

- ✓ Paper and pens or pencils (enough for each girl)
- ✓ Rulers

Prepare Ahead:

- ✓ Make copies of the “Designing Your Backpack” handout
- ✓ Read over the entire activity before meeting with girls.

Step-by-Step Instructions:

» Introduction (Talking Points) (2 minutes)

- ✓ Say something like: “If you are going to sell a product, it is important to know how it is made and to understand the design process. Today you are given a challenge—to design a new backpack for a backpack company.”

» Backpack Challenge (45 minutes)

- ✓ Separate the girls into small groups.
- ✓ Distribute a copy of the “Designing Your Backpack” handout and paper, pens or pencils, and rulers to each group.
- ✓ As an entire group, determine the design requirements for your backpack: space for two textbooks, one notebook, and pens and pencils. Ask girls to specify three additional objects they would like the backpack to accommodate—these should be objects that they have with them such as sneakers, a three-ring binder, a water bottle, a jacket or sweatshirt, a cell phone, keys, or an iPod. Girls might also decide to specify design elements such as comfortable shoulder straps, water-resistant material, or a reflective strip.
- ✓ Have girls first look at the design of their own backpacks to understand some of the limitations and construction issues. Then have each group design a backpack—make a sketch—to meet the needs outlined in the “Designing Your Backpack” handout.
- ✓ Have each small group present their design drawings to the other groups.

» Reflection/Discussion (5-10 minutes)

Ask girls:

- ✓ “What did you learn about design or engineering from this activity?”
- ✓ “What role did you play in your small design team? How would you describe it? What quality or skill did you contribute to the process?”