

WHAT'S IT COST?*

When you have determined the amount of each material needed for your backpack design, use the chart below to determine the total materials cost. Make sure your backpack meets all the materials guidelines listed below.

SCIENCE & TECH
ACTIVITY 5B

WORKSHEET

- Materials Guidelines:**
- ✓ Thread must be used along every seam.
 - ✓ There must be a one-inch allowance on all cut sides for seams.
 - ✓ Heavy-use areas, such as areas where shoulder straps attach to the main body of the backpack and the bottom, require double seams.

Material	Cost	Amount Needed	Total
Water-resistant heavy-duty fabric	2 cents per square inch		
Heavy-duty fabric	1 cent per square inch		
Water-resistant light-duty fabric	.5 cent per square inch		
Light-duty fabric	.3 cent per square inch		
Expandable fabric (every square inch can equal up to two cubic inches in volume)	4 cents per square inch		
Padding	2 cents per cubic inch		
Heavy-duty zippers	10 cents for first inch; 5 cents for every additional inch		
Light-duty zippers	5 cents for first inch; 2 cents for every additional inch		
Heavy-duty Velcro patch	10 cents per square inch		
Light-duty Velcro patch	5 cents per square inch		
One-inch wide nylon strap (to adjust length of shoulder straps)	5 cents per inch		
Plastic piece to tighten shoulder straps	10 cents per inch		
Reflective tape	15 cents per inch		
Buckle (for optional waist strap)	35 cents		
Heavy-duty thread	1 cent per sewn inch		
Light-duty thread	.5 cent per sewn inch		
TOTAL COST PER BAG			

* metric equivalents: 1.00 inch = 2.54 centimeters; 1.00 square inch = 6.45 square centimeters; 1.00 cubic inch = 16.38 cubic centimeters

Mix it Up!

Guiding Middle School Girls to Success



What about the labor? \$ _____

- ✓ How many employees do you need? (What skills, etc?)
- ✓ What does it cost to pay an employee by the hour?
- ✓ How much time will it take for each backpack to be complete?

** adapted from "Battle of the X-Planes," a NOVA Teachers' Activity*