

a WOW Lab

BLUEPRINT

Wind Power - Classroom Wind Farm

Shopping List - Classroom Wind Farm

Part I: Classroom Windmill

The list is divided up into consumable and reusable items. Quantities listed assume a class size of 15 students. The listed initial cost assumes that the activity has never been performed before and that all of the materials must be purchased. Photos of some of the items are shown on page 4. The legend below provides details of where the materials can be found:

A = Arts and Crafts Store
D = Dollar Store
E = Educational Supplier

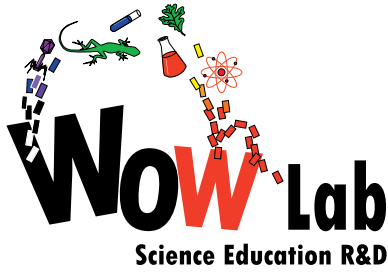
G = Grocery Store
H = Hardware Store
O = Online

P = Pharmacy
S = Specialty Store
U = University

CONSUMABLE ITEMS			
Item	Amount Required	Purchase Code	Total Cost
6 in. x 6 in. piece of card stock	15	D	\$1.00 (for 25)
1 in. x 1 in. x 1/4 in. piece of balsa wood	30	H	\$5.00 (for 4 in. x 36 in. x 1/4 in.)
2 L pop bottle	15	—	free
scrap CD	15	—	free
metal bottle cap	1	—	free
paper towel tube	15	—	free
COST OF CONSUMABLE ITEMS:			\$6.00

REUSABLE ITEMS			
Item	Amount Required	Purchase Code	Total Cost
electric motor	15	E	\$12.50
alligator clip wires	30	E	\$42.00 (for 30)
1 in. nail with a large head	15	H	\$2.00 (for 20)
COST OF REUSABLE ITEMS:			\$56.50

INITIAL COST: \$62.50



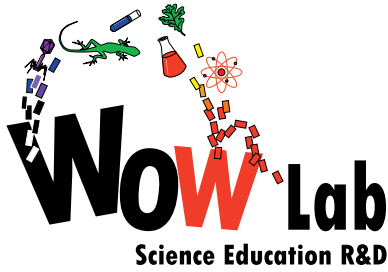
Part II: Demonstrations: Electromagnetism and Parallel and Series Circuits

Quantities assume that each demonstration will be performed once. A prototyping board (**Figure 1**) can be used for this part, but it is not needed.

CONSUMABLE ITEMS			
Item	Amount Required	Purchase Code	Total Cost
D cell alkaline battery	2	G	\$8.00 (for 4)
thin copper wire	20 in.	H	\$5.50 (for 75 ft.)
COST OF CONSUMABLE ITEMS:			\$13.50

REUSABLE ITEMS			
Item	Amount Required	Purchase Code	Total Cost
alligator clip wires	6	E	re-use from Part I
flashlight bulb and holder	1	E	\$10.00
bar magnet	1	E	\$6.00
nail	1	H	\$2.00 (for 200)
string	2 ft.	—	free
COST OF REUSABLE ITEMS:			\$18.00

INITIAL COST: \$31.50



Part III: MP3 Charger

Quantities assume that one MP3 Charger will be made for the class. Items required to build the MP3 charger can be found at an electronic components store or online. Depending on the store, items may have to be purchased in bulk.

REUSABLE ITEMS			
Item	Amount Required	Purchase Code	Total Cost
LM317 three terminal adjustable regulator (figure 2)	1	O/S	\$2.00
0 - 1000 ohm variable resistor	1	O/S	\$1.00
USB A female terminal	1	O/S	\$1.00
240 ohm resistor	1	O/S	\$0.50
alligator clips	2	—	re-use from Part I
COST OF REUSABLE ITEMS:			\$4.50

INITIAL COST: \$4.50

TOTAL INITIAL COST (all three parts): \$98.50

Tools - all three parts

- hot glue gun
- scissors
- ruler
- pencil
- hammer
- drill and drill bit set
- several box fans
- multimeter
- tape

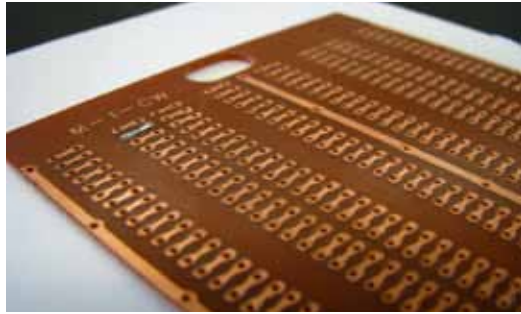


Figure 1 - **Prototyping Board**



Figure 2 - **LM317 three terminal adjustable regulator**