

Balloon Powered Vehicle Worksheet

Name _____

STEP code _____

Bell _____

Nickname for your design _____

Project Description

You are to design a vehicle that will be powered by an air-filled balloon. Your goal is to design your vehicle to travel the farthest distance at the lowest cost. The materials you can use are provided to you in a Ziploc bag and each has a fixed cost value (see list on page 2). Begin by sketching an initial design below and begin to think about the components you wish to use. You can then start building your design and doing some initial testing to determine whether you want to re-design, change components, or add new components. Once your design has been finalized, perform a cost analysis on page 2 to determine the total cost of your design. This worksheet must be completed before you can enter the competition. The judges will fill out the scoring section during the competition, including ranking your distance by percentile rank relative to your classmates, cost effectiveness, creativity, and your lab report.

Initial sketching & brainstorming

In the space provided below, draw a sketch of your vehicle and list the components you will use.

Material & Cost Analysis

Component	Unit cost	# used	Total cost
Balloons	100		
Straws	70		
Life savers	200		
Construction paper	50		
Tape	70		
Paper Clips	60		
Scissors	n/a		
Toothpicks	50		
Buttons	80		
Aluminum Foil	60		
String	50		
Totals			

Scoring Summary

This section will be completed by the judges during the competition

Component	0 Points	2 Points	3 Points	4 Points	5 Points	Point Value
Distance (percentile ranking)	Did not move	0-25%	25-50%	50-75%	>75%	
Cost Effectiveness	\$1500 +	\$1500 - \$1300	\$1300 - \$1100	\$1100 - \$900	\$900 - \$700	
Creativity	Determined by the judges					
Lab report	None	Very little information / not clear	Some information / not clear	Information adequate / not clear	Informative / clear	
TOTAL						

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Lab Report Questions

The final portion of this activity is your written lab report. Please answer the following questions in paragraph form.

Written description of your design

Describe your design and how it works. Your description should include how you came about your design and how it achieves the goals of distance traveled and cost effectiveness.

Physical principles used

Describe the physical principles that you used in your design, including Newton's Laws

Future work

Often in engineering work, a job is never fully complete because there is always more we can do to improve a design. What can you do to improve your design if you were given more time? What could you do if you were given a different set of materials?

Feedback

To determine the effectiveness of this activity, we are asking for your feedback on how it went. What did you think of the activity in general? Is there anything you think we should change for the next time we do it?

Project STEP
University of Cincinnati
Activity Feedback

Please complete the following. We appreciate your feedback about our program today.

1. What did you like **most** about this project?

2. What did you like the **least** about this project?

3. How would you rate your interest in the field of engineering?

Very interested _____

Not Sure _____

Somewhat interested _____

No interest at all _____

4. Did this program affect your interest in engineering in any way?

Increased my interest _____

Decreased my interest _____

Did not affect my interest _____

5. How would you rate your level of learning today?

a lot _____

a little _____

nothing new _____

6. Did this program make you feel more confident about your ability to learn science?

Definitely _____

Sort of _____

Not sure _____

No _____

7. What grade are you in? _____

Distance Recording Sheet

Bell 3

<u>Names</u>	<u>Distance Traveled</u>
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Bell 5

<u>Names</u>	<u>Distance Traveled</u>
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