Name: _____ Date: _____ Class: _____

Save the Penguins!

Identify the Problem: Design a dwelling to protect an ice penguin from melting in the hot 'sun'.

Criteria:

- Opening for penguin to get in & out easily
- Safest (least melty)
- Room for ice penguin

Constraints:

- Only use available materials
- Time
- Under $100.00

The group with the safest and most cost efficient dwelling...WINS!

Materials:

Once your group decides on a design, check the materials you plan to use.

✔	Material	Price	Labeled Diagram
	Ice Penguin	Free	
	Cotton Balls	$0.20/each	
	Straws	$0.10/each	
	Aluminum Foil	$2.00/sheet	
	Index Cards	$0.50/each	
	White Paper	$10.00/sheet	
	Construction Paper	$5.00/sheet	
	Cotton	$5.00/sheet	
	Tape (6 inches)	$25.00	
	Scissors	Free	

Written Explanation:

_____

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Price of Your Prototype: Design 1

Use the table below to calculate how cost efficient your dwelling will be.

Materials	Price	Quantity	Cost of Dwelling
Ice Penguin	Free		
Cotton Balls	$0.20/each		
Straws	$0.10/each		
Aluminum Foil	$2.00/sheet		
Index Cards	$0.50/each		
White Paper	$10.00/sheet		
Construction Paper	$5.00/sheet		
Cotton	$5.00/sheet		
Tape (6 inches)	$25.00		
Scissors	Free		
		Total Cost of Dwelling	

Results:

Before Heat		After Heat	
Mass of Penguin	Temperature of Dwelling	Mass of Penguin	Temperature of Dwelling

Conclusion: Summarize the outcome of your prototype. Include the materials used, total price, and results. What are some challenges? How can you overcome them?

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Redesign 2: Price of Your Prototype:
Use the table below to calculate how cost efficient your dwelling will be.

My group has already spent _____ dollars. We were awarded _____ dollars. Our budget is now _____ dollars.

Materials	Price	Quantity	Cost of Dwelling
Ice Penguin	Free		
Cotton Balls	$0.20/each		
Straws	$0.10/each		
Aluminum Foil	$2.00/sheet		
Index Cards	$0.50/each		
White Paper	$10.00/sheet		
Construction Paper	$5.00/sheet		
Cotton	$5.00/sheet		
Tape (6 inches)	$25.00		
Scissors	Free		
		Total Cost of Dwelling	

Test 2: After Redesign:

Results:

Before Heat		After Heat	
Mass of Penguin	Temperature of Dwelling	Mass of Penguin	Temperature of Dwelling

Conclusion: Summarize the outcome of your prototype. Include the materials used, total price, and results. What are some strengths and weaknesses of your redesign?

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Name: _____ Date: _____ Class: _____

Ticket to Leave: Save the Penguins!

1. What materials did you use that worked well? Why? *(Hint: explain their properties!)*

_____

_____

_____

2. If you could redesign, what would you change about your prototype? Be specific and explain why.

_____

_____

_____

3. What do engineers have to consider when choosing materials for building a prototype?

_____

_____

_____

4. Reflect on your performance as group member during this challenge. Circle one, then explain.

1--Off-task, not helpful **2**--A little off-task, a little helpful **3**--On-task, very helpful

Explain _____

_____

Name: _____ Date: _____ Class: _____

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_____

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Explain _____

_____