



Tiny House Thermal Energy Project



Objective:

Using a specified budget, construct an energy efficient, tiny house. You will all build the same frame and then purchase additional supplies as your build team sees fit. Your house will be tested for heat loss by a “thermal camera”, and there will be an ice cube competition to test your insulation at the end!

You will be working with your build team, but each member will be graded separately, based on their job. Together, you will create one final project to present to the Building Inspector.

Jobs:

Head Architect -

Responsibilities include sketch of the basic design “blueprints” of the house. Be sure to provide the Imaging Specialist with sketches so that they can document thermal energy.

Financial Planner -

Responsibilities include maintaining a list of supplies, within budget. You are responsible for “balancing the checkbook”.

Energy Expert -

Responsibilities include making sure the house is as energy efficient as possible. Taking the lead on insulating as well as recommending the best product for your budget and needs.

Thermal Imaging Specialist -

Responsibilities include documentation of photography as well as sketches of thermal energy.

Final Project Portfolio will include:

Job List		Diagram of Insulation	
Thermal Images with Labels		Detailed Budget	
Design Drawings		Reflection Report	
CER Report			

**FINANCIAL PLANNER*****BUDGET & SUPPLY LIST***

STARTING BUDGET	\$180,000	
SUPPLIES	COST PER ITEM	TOTAL USED
Balsa Wood	\$15,000	\$60,000
Construction Nails (glue)	\$450	\$450
Nail Gun (glue gun)	\$99	\$99
Saw (scissors)	\$65	\$65
Siding/Roofing	\$15,000	
Clear Windows	\$120	
Frosted Windows	\$140	
Doors	\$230	
Cotton Insulation	\$800	
Polyfill Insulation	\$650	
Shutters	\$70	
Curtains		
Checks	\$10	

Create a Google Sheets Spreadsheet organizing your budget as well as your checks.
 Show proof of purchase by being sure all of your checks are attached.



Answer these questions in complete sentences. Use your scientific vocabulary to show us how smart you are. Use sentence starters (on back) to help write good responses.

CLAIM

Make a claim about heat transfer in your house

EVIDENCE

Cite evidence from this project that supports your claim

REASONING

Describe how your evidence supports your claim and describe what you have learned about thermal energy (heat) transfer.



Define the three types of heat transfer and give an example of where you notice this happening during the project (think outside the box).

CONDUCTION

CONVECTION

RADIATION



HEAD ARCHITECT

REFLECTION REPORT



Answer these questions in complete sentences. Use fancy science words to show how smart you are. Use the internet to find these answers if you need help.

1. Explain how thermal energy is connected to you and your home (how do you use & benefit from thermal energy?)

2. Give two reasons for why energy conservation is important.

3. What is thermal expansion? Describe two ways families could prepare for a cold winter and limit heat transfer.
