

WIND-MILL TECHNICAL PRESS.

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Brainstorming & Research

LTW TITLE
Windmill Notes/Research/ 37
Kids Building a Windmill Brainstorm

Materials: Pencils, tape, paper

- taped pencil to table and attached wings to pencil
- used blow dryer to spin the windmill.

• most likely use light materials such pvc pipe cardboard tape pencils paper.

- for rotors the material needs to be light but durable so we are thinking paper or cardboard

• Along with being light and durable the rotors need to be able to catch wind

- use a nail and spool for the part that attaches the rotors to the base and shaft of the windmill

38 TITLE
Windmill Brainstorm PLTW

Materials

- PVC pipe, paper, pencil, tape, hot glue, glue, cardboard

• Motor

- rotors

Pvc base about 1.5 feet tall



Blade Shape Research

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Blade Shape Research

The blade shape of a windmill is the most important part of a windmill.

Materials

For our windmill we have chosen to use Stirophane blades. We chose this because of how light but durable it is.

The rotor in the comparison which with help of the rotor blades converts energy in the wind into rotary mechanical movements.

Real windmill blades are made of carbon fiber and glass fiber.

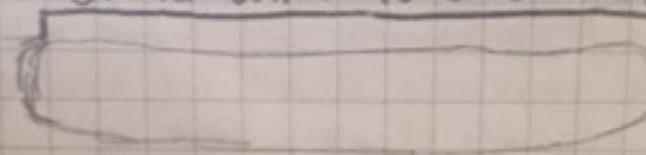
(GRP) (CFRP)

Possible Materials for Windmill

- Card board
- Stirophane
- paper (thick)

After my research I concluded that for our windmill we need something light durable and that catches the wind.

Blade length: Blade design and engineering is one of the most complicated important aspect of the wind turbine length



Blade Number: Advanced blade design pack

Blade Shape: The blade shape is one of the most important. It is very important to capture the wind to maximize efficiency

Blade materials: For our windmill we use styrofoam boards for maximum area and minimum weight

Blade weight: The blade weight is very important. Styrofoam to maximize area and use as much weight as possible.

Definition of Mass distribution: A mass of things is a large number of them grouped together.

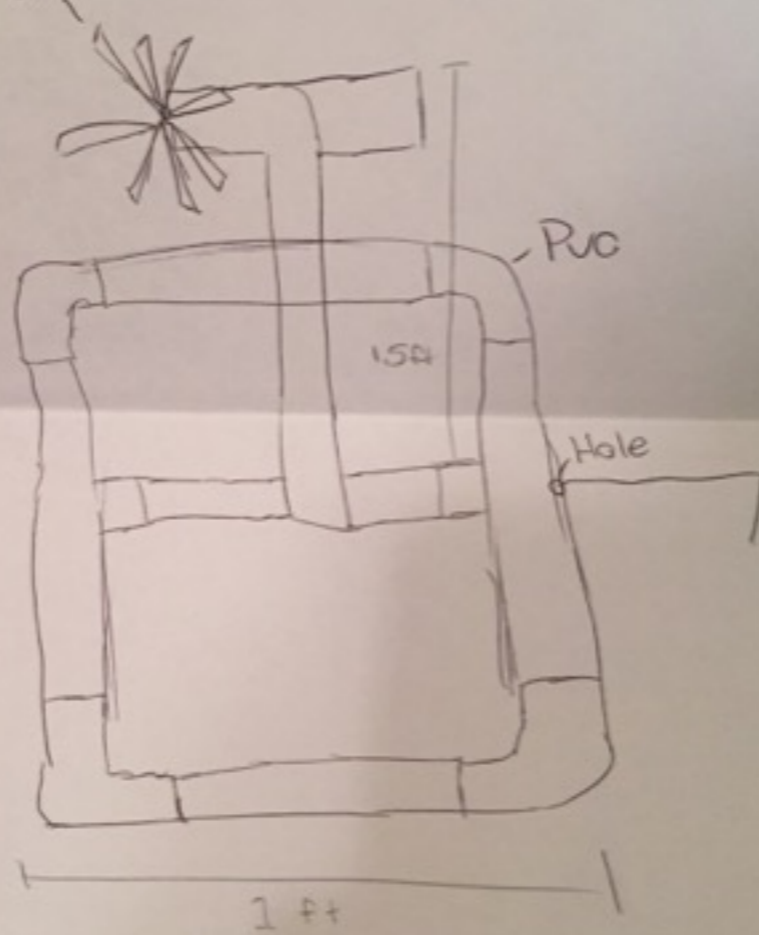
Wind-Mill Blade Research

David's Technical Sketch

Warm: I like how you labeled and put dimensions
cool: I think you should maybe make your blade
larger

Warm: a lot of details

cool: Needs ^{more} dimensions
Cardboard



David

Jonathan's Technical Sketch

xJonathan

warm: blades are unique?

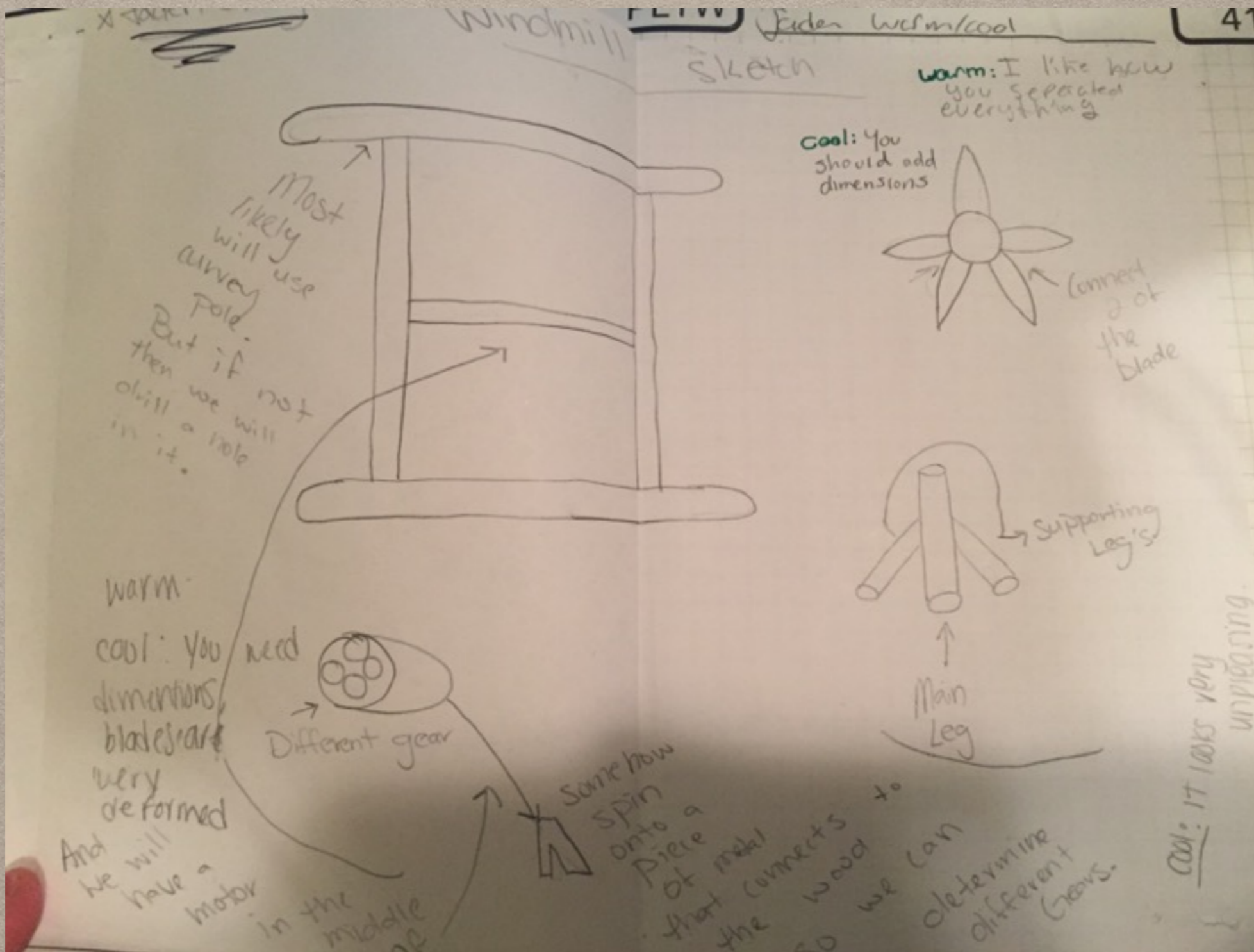
cool: need dimentions, colors



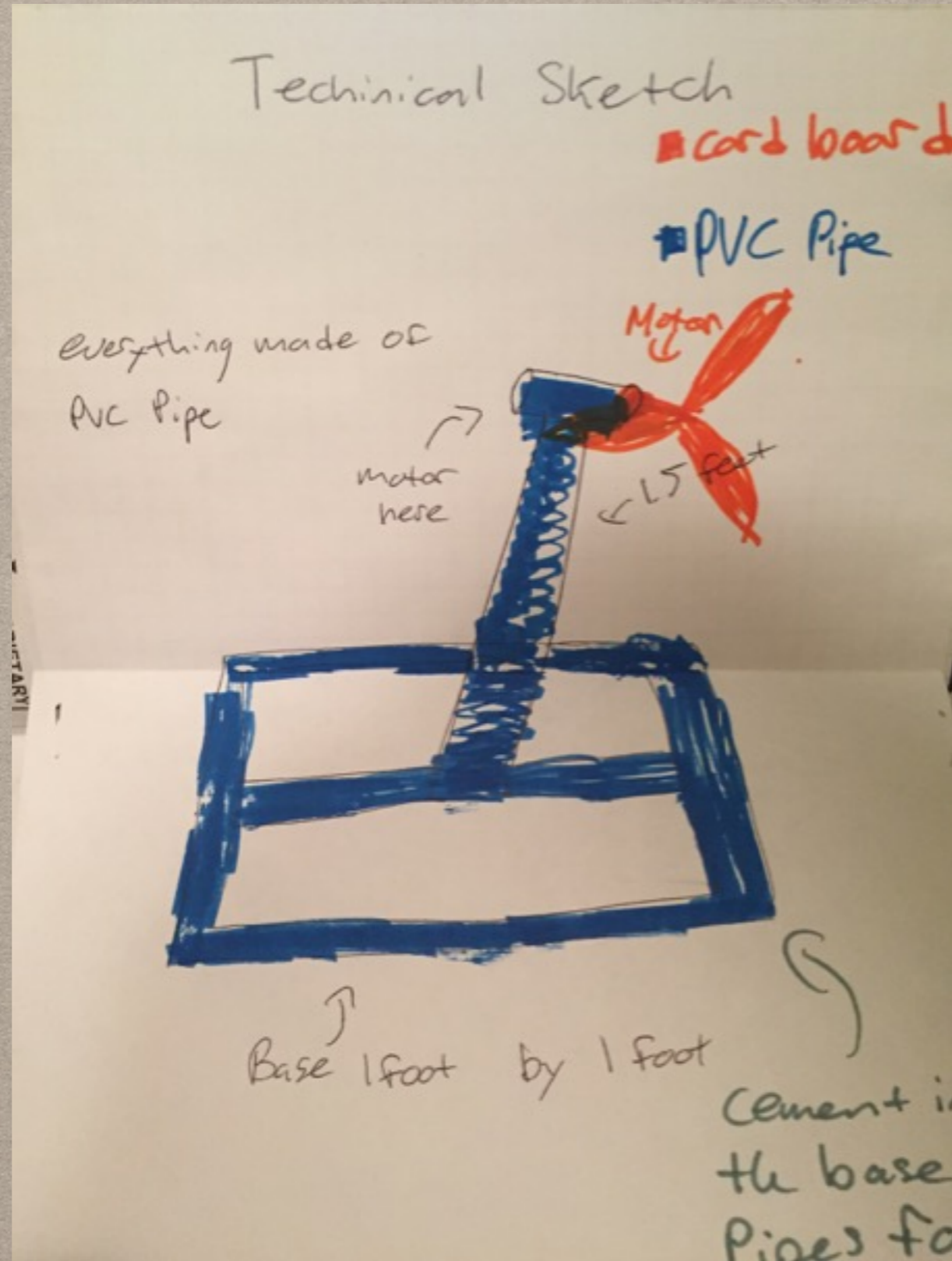
warm:

cool: what materials are you using?

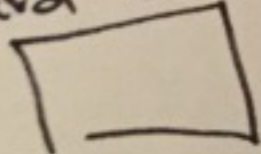
Jaden's Technical Sketch



Ronan's Technical Sketch



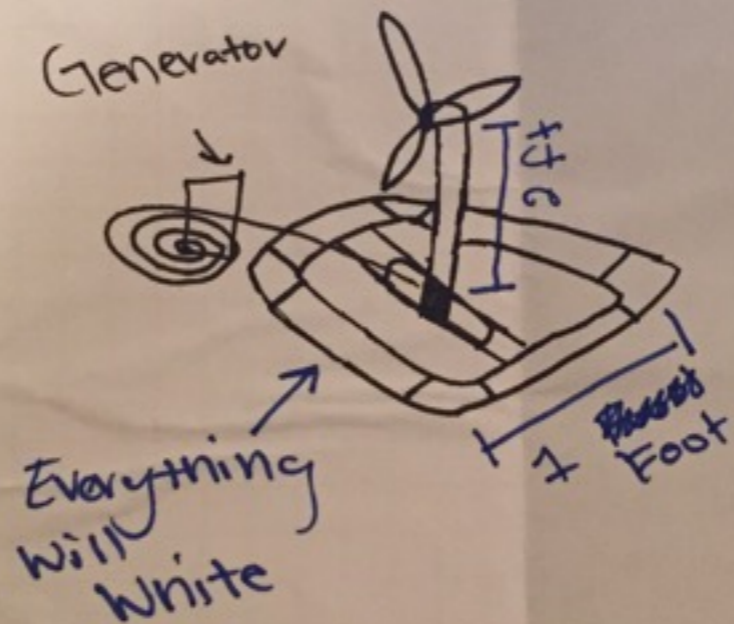
Decision Matrix

	Creativity	Sturdiness	Easy 2 Wire	Easy 2 Put together	
PVC	3	4	4	4	15
Foam	3	2	3	3	11
Card board 	3	3	3	3	12

Final Sketch / Final Idea

Materials List:

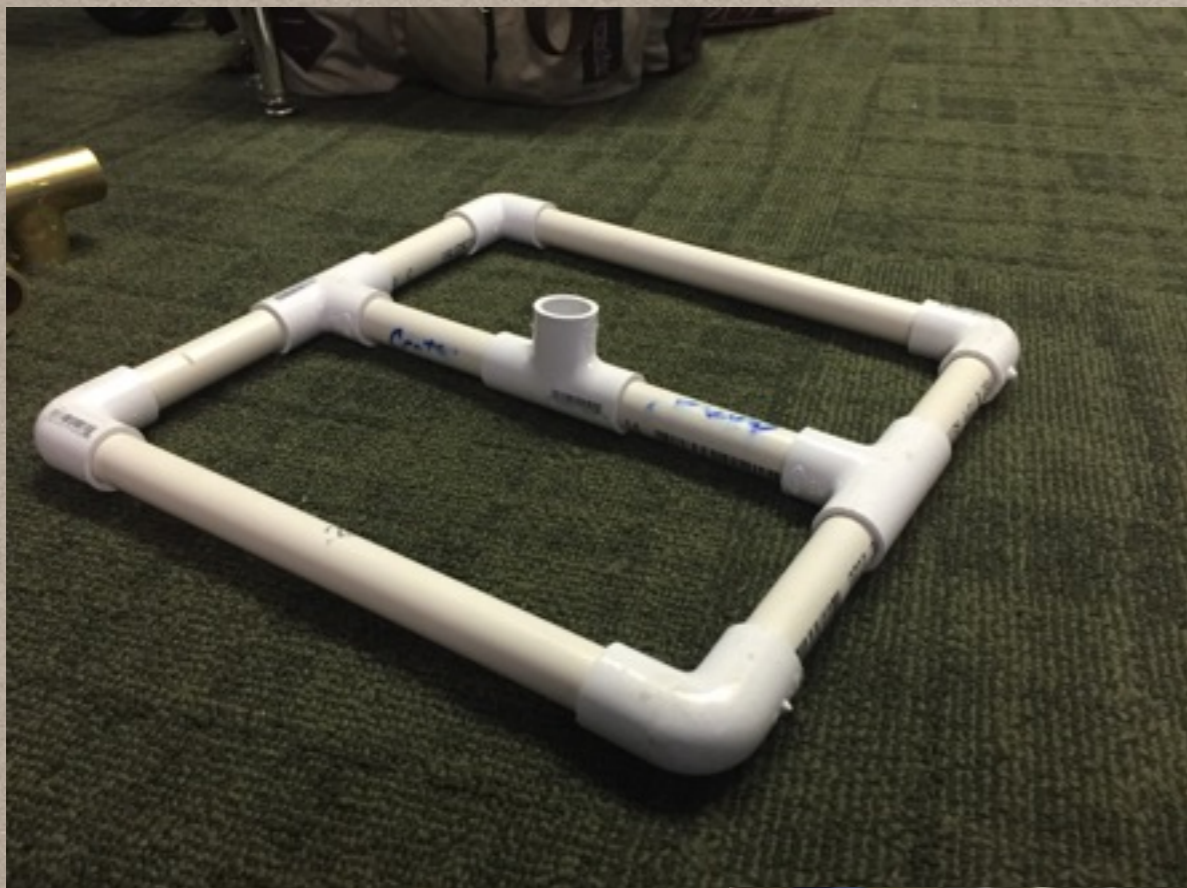
- PVC
- Cement
- PVC Glue
- Blades
- Everything Else Provided



Ground

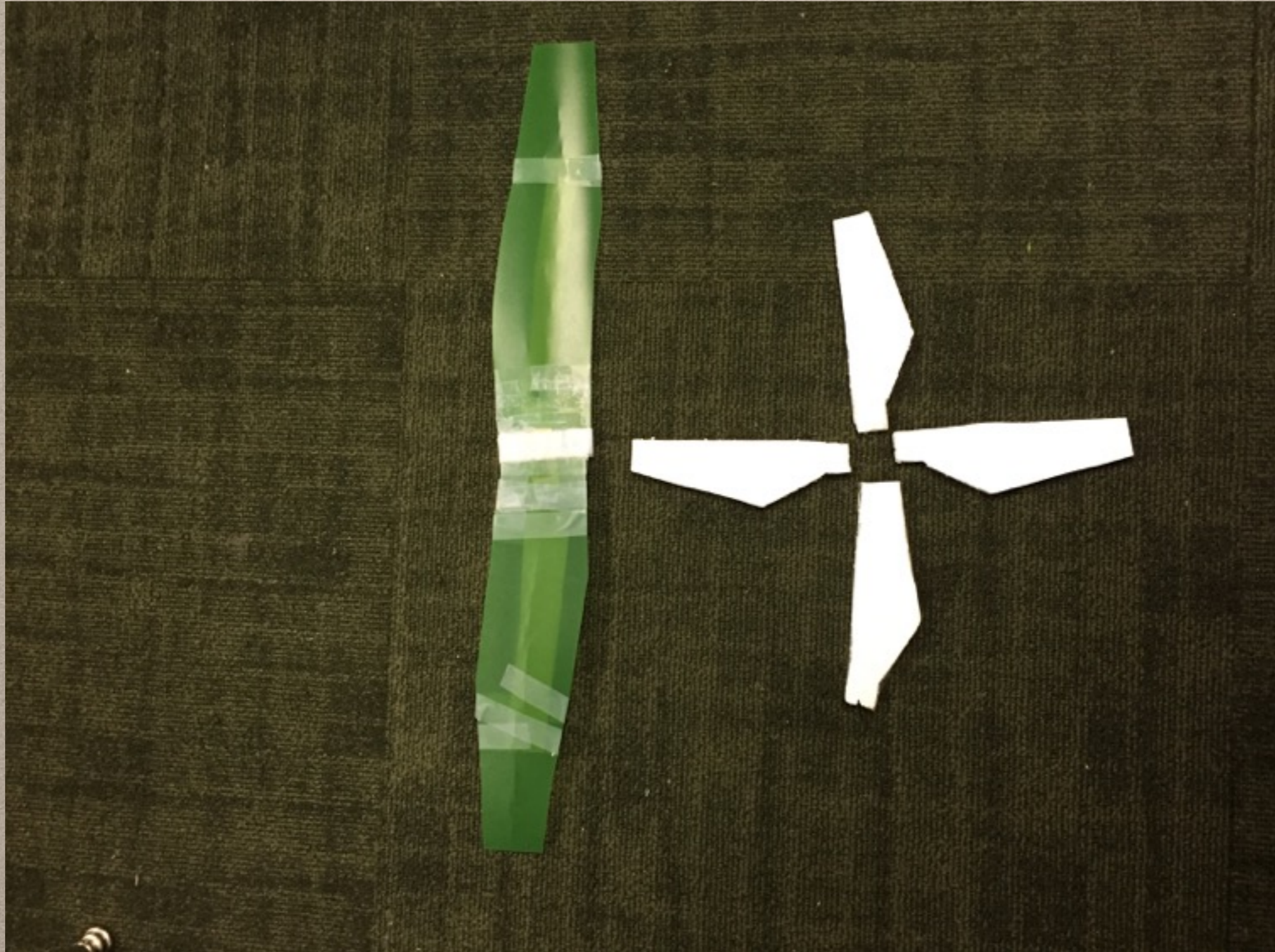
Jaden, David, Jonathan, Ronan

Building

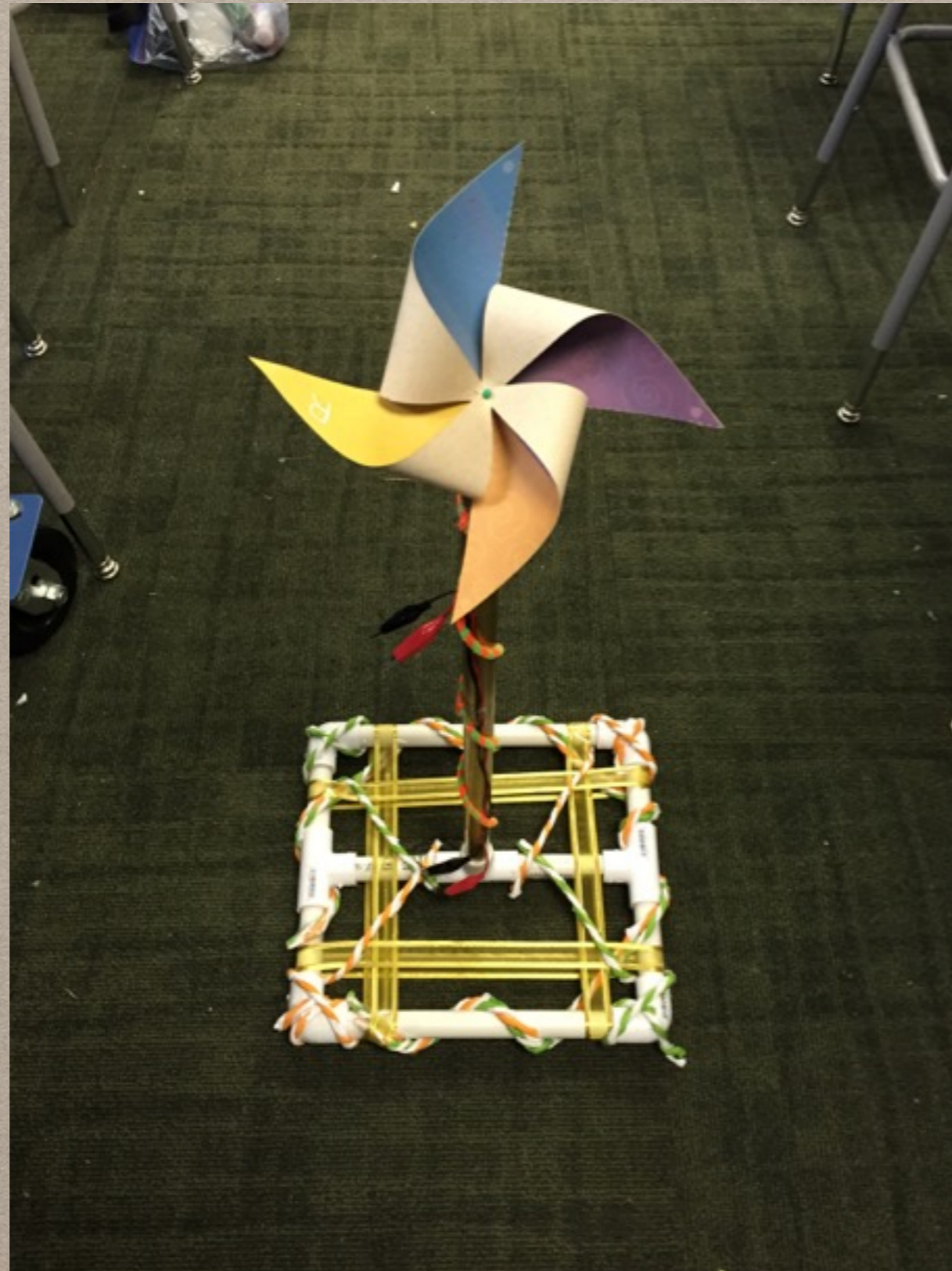


REVISIONS

Wings Revisions

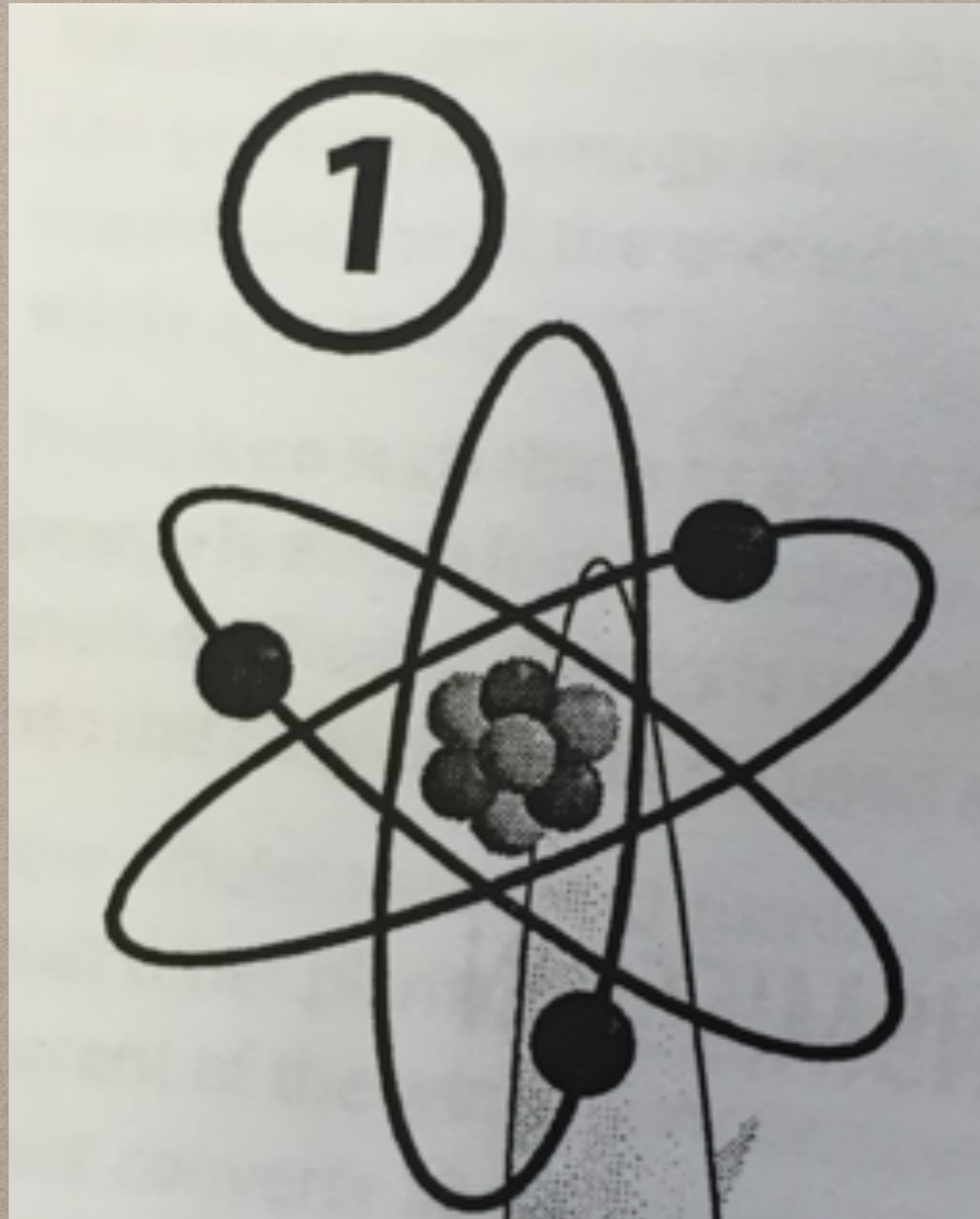


Final Product



Physics Section

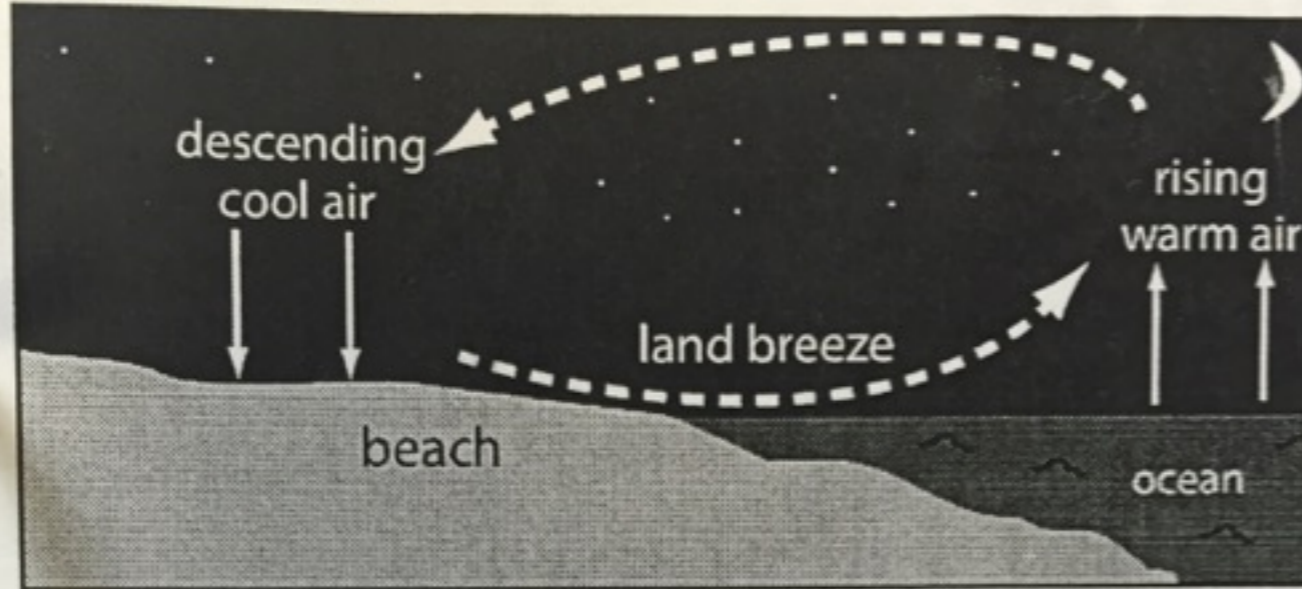
It all Starts Here



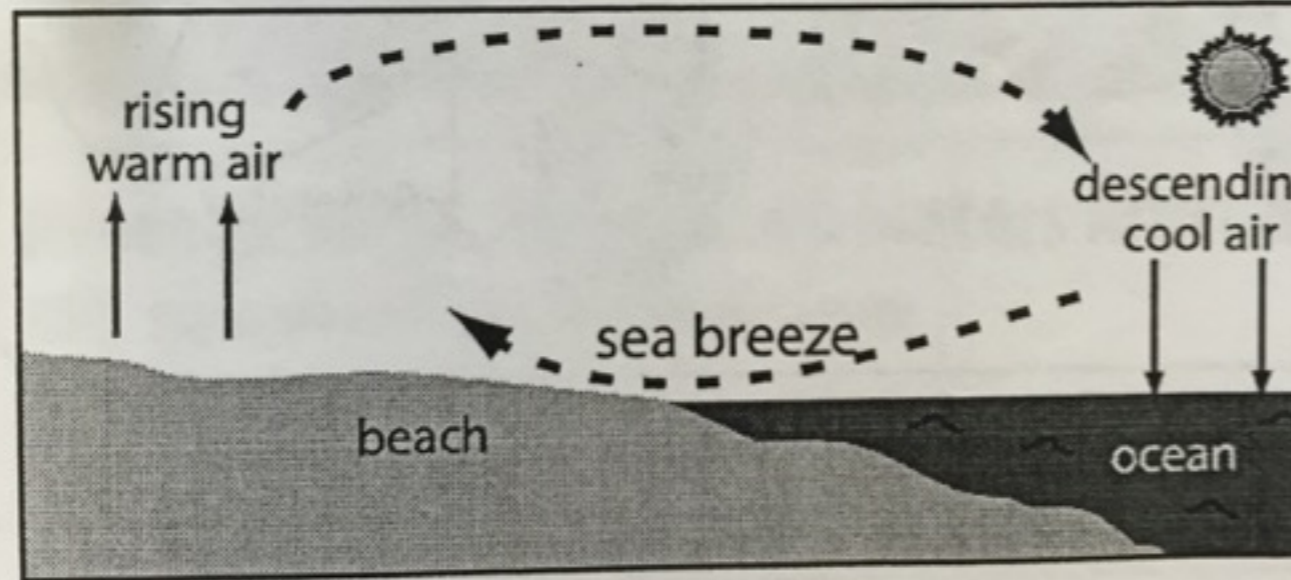


different time

Land Breeze



Sea Breeze



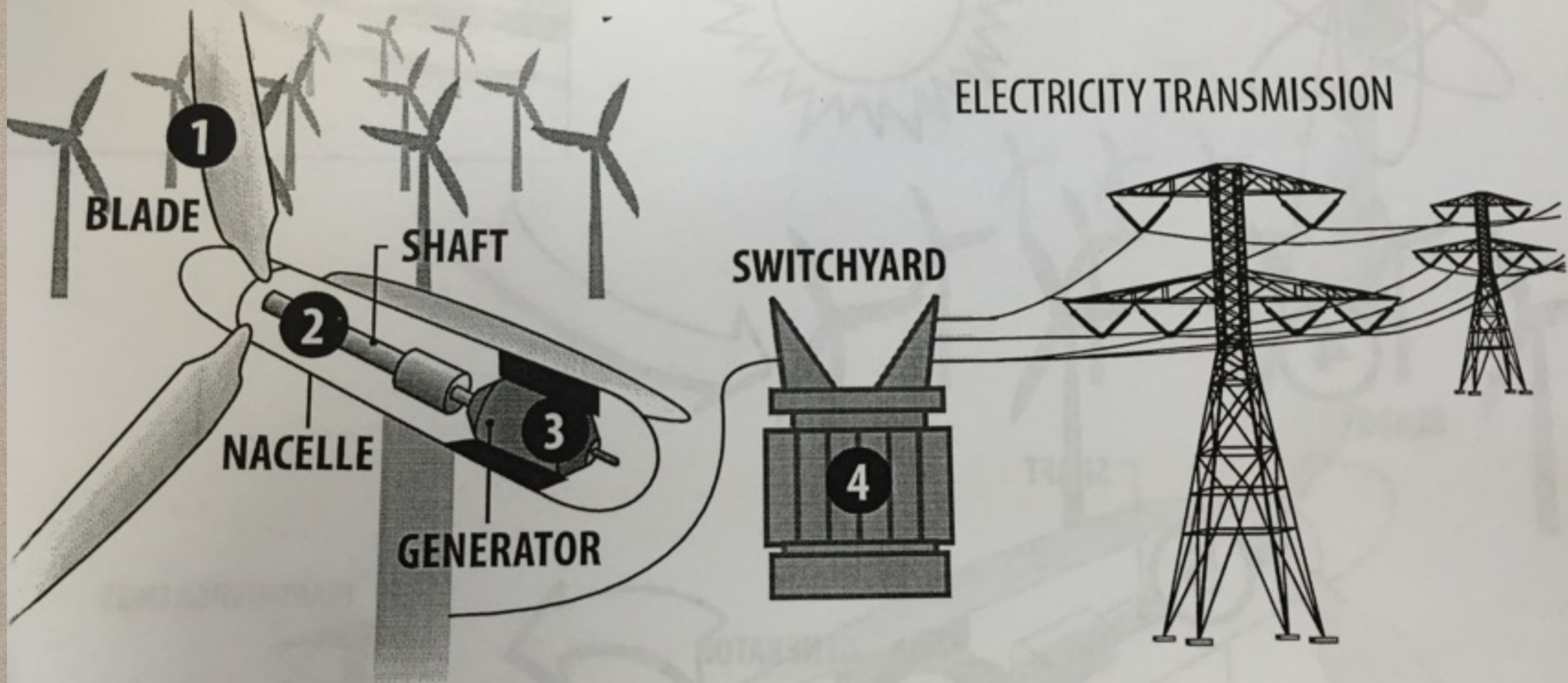
Windmill

Weather Vane

Anemomet

When Wind Hits The Fan





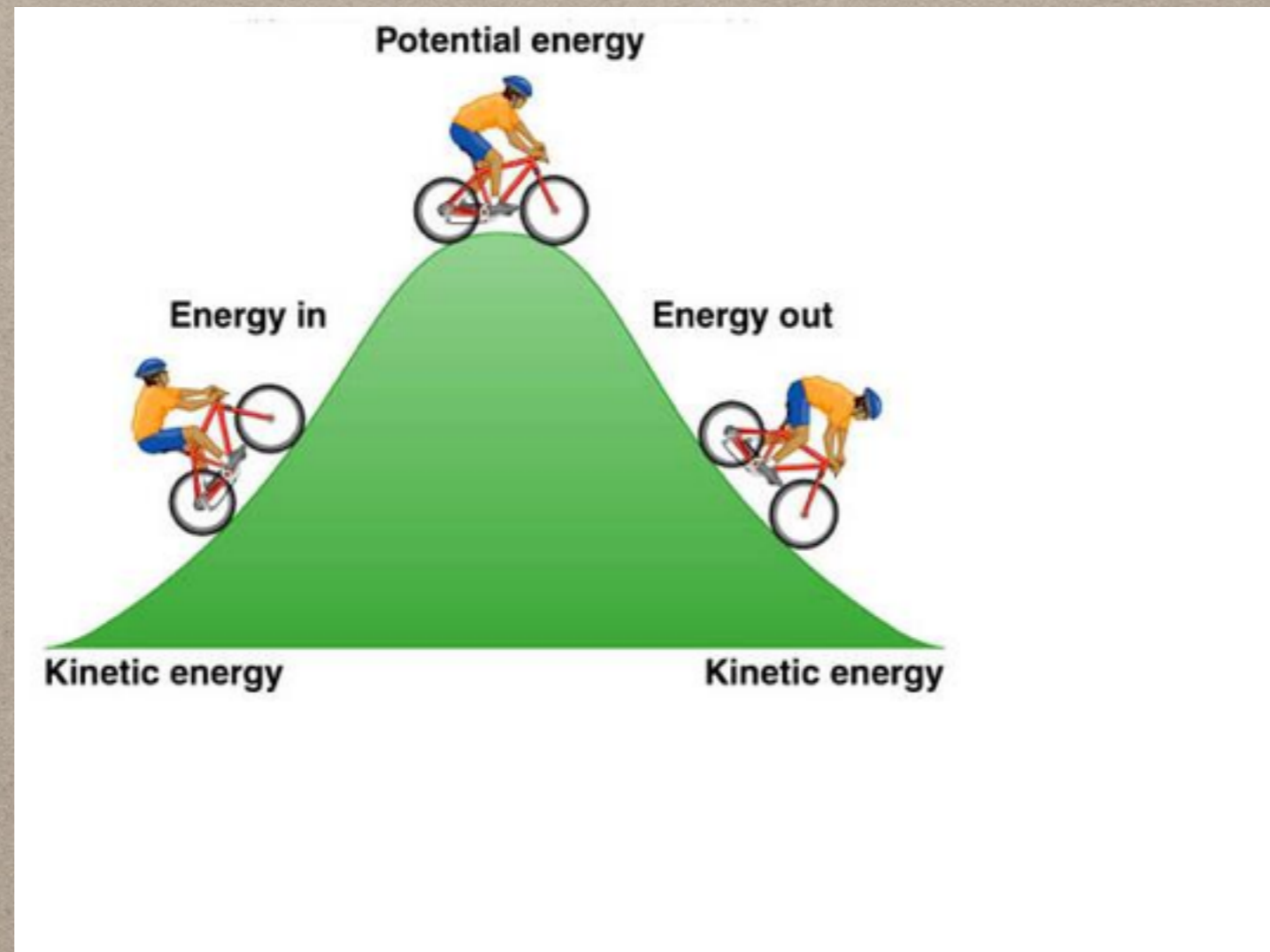
Wind turns the blades of the turbine.

The blades spin a shaft inside the nacelle.

Inside the generator, the shaft spins coils of copper wire inside a ring of magnets.

The Law of Conservation of Energy

In physics, **the law of conservation** of energy states that the total energy of an isolated system remains constant—it is said to be conserved over time. Energy can neither be created nor destroyed; rather, it transforms from one form to another.



Physics Wind Turbine Data

Fan Level 1 (lowest)		Fan Level 2 (middle)		Fan Level (heighest)	
0.10 V	0.03 A	0.14 V	0.04 A	0.17 V	0.05 A