

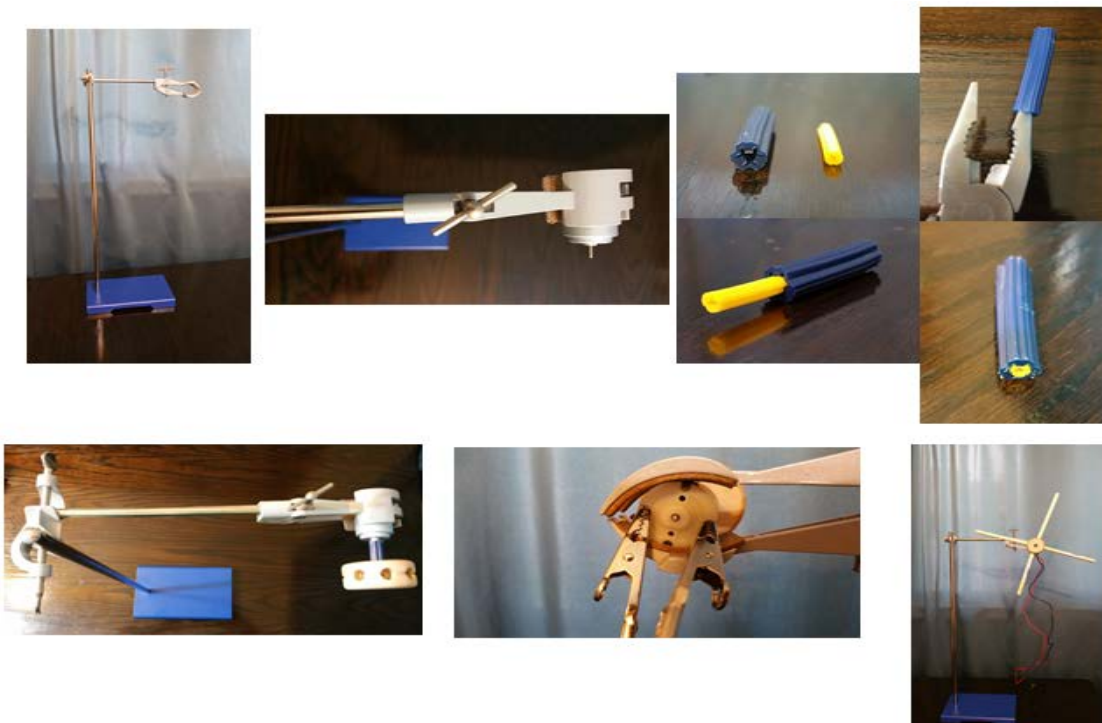
Ring Stand Turbine Base Construction Guide

Materials

- Ring stand
- Ring stand clamp
- 3V DC hobby motor
- Tinker Toy wheels and sticks
- #14 x 1-½" vinyl plug anchors
- #1-3 x 1" vinyl plug anchors
- 36" long ⅜" diameter dowel rod

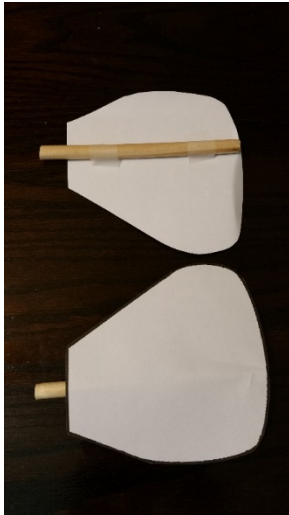
Construction

1. Attach the clamp to the ring stand
2. Clamp the hobby motor onto the ring stand
3. Insert #1-3 x 1" vinyl plug anchors in #14 x 1-½" vinyl plug anchors. You will need to enlarge the opening with a pair of pliers and force the #1-3 x 1" vinyl plug anchors in. It is a very tight fit.
4. Place the Tinker Toy wheel on the vinyl plug anchor and place it on the hobby motor
5. Attach the alligator clips to the back of the hobby motor
6. Cut the dowel rods into 6 6" long rods to use for blades. Every group will need at least 4 rods
7. If the dowel rods are too tight in the Tinker Toy wheels you may need to sandpaper one end of the 6" dowel rods for a better fit.

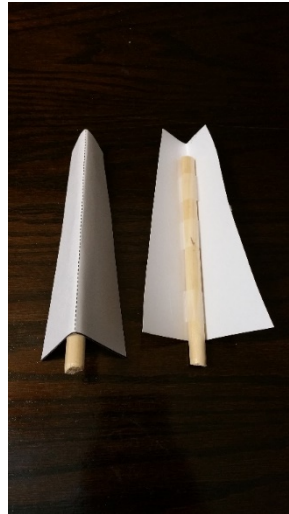


Wind Turbine Blade Templates and Worksheet

1. Print and cut out each template
2. Fold along the dotted line of the Tent Blade Design
3. Cut out the circles or use a hole punch and feed dowel rod through on the Cupped Hand Blade Design
4. Tape the dowel rods to the backs of each blade design



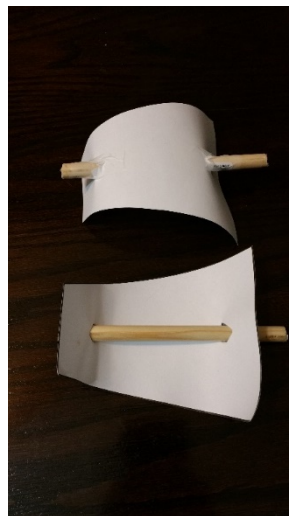
Traditional Fan
Blade Design



Tent Blade
Design

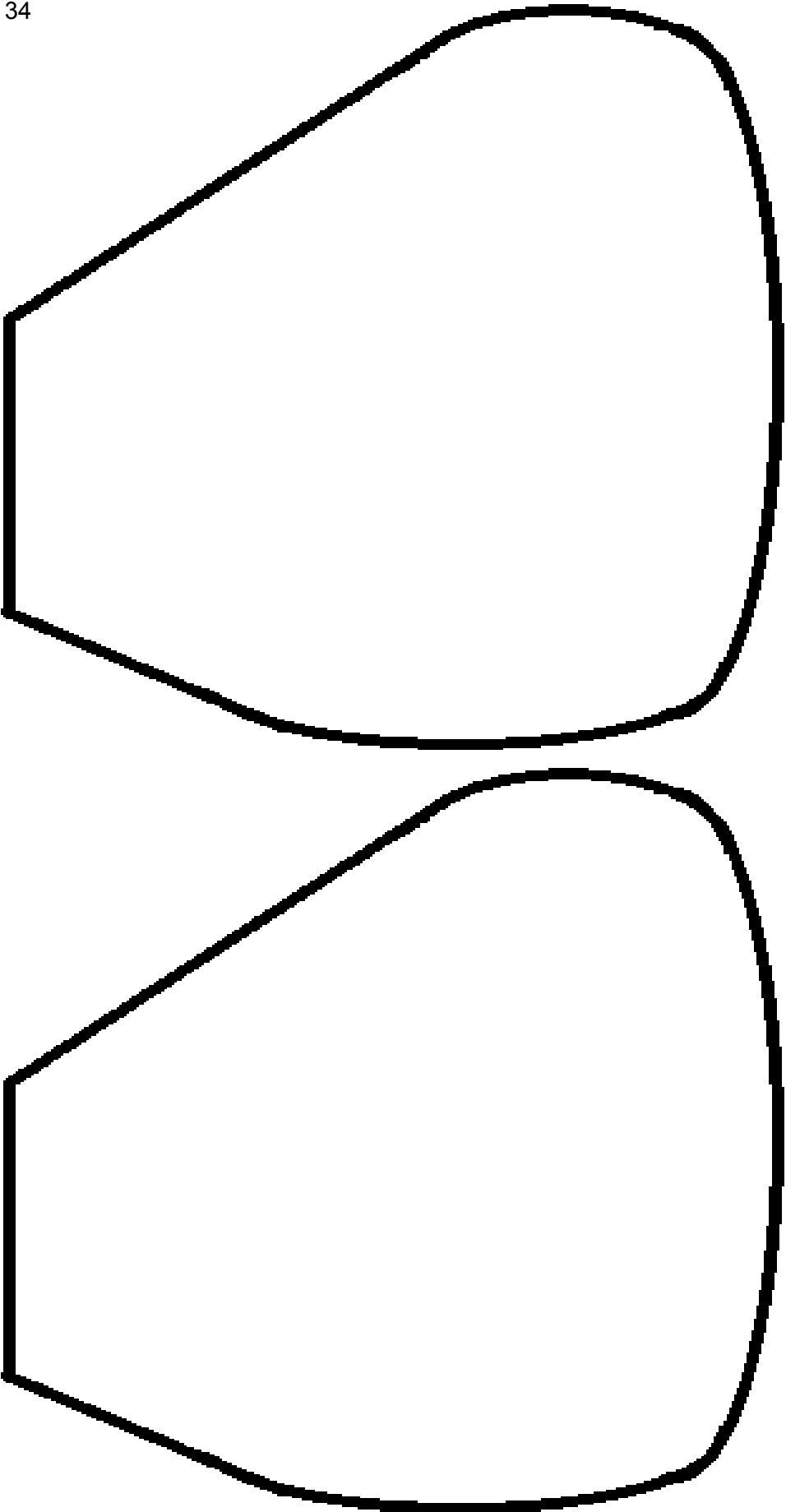


Simple Rectangle
Blade Design

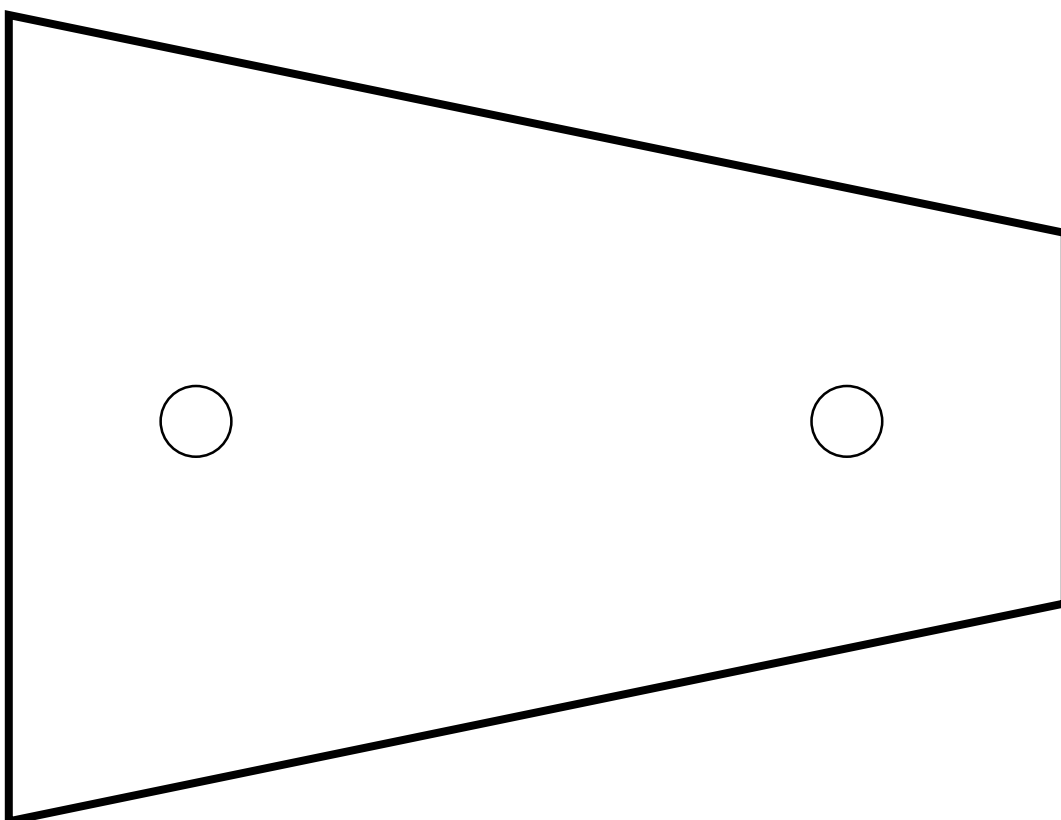
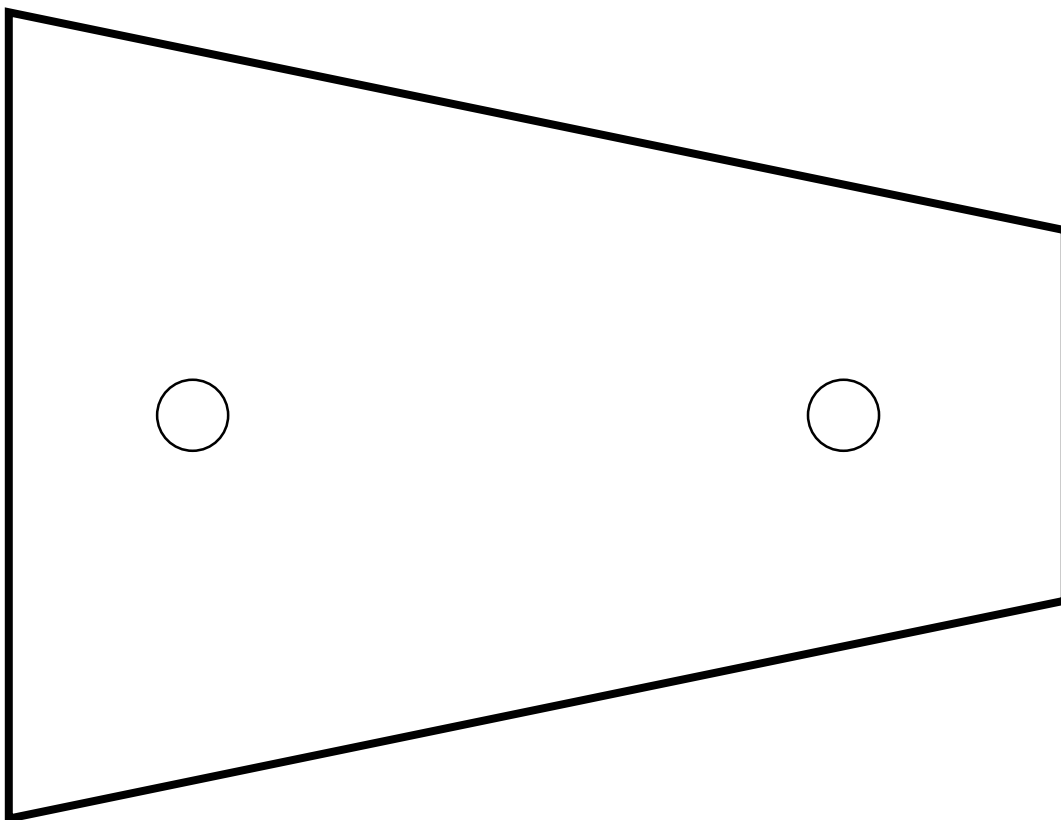


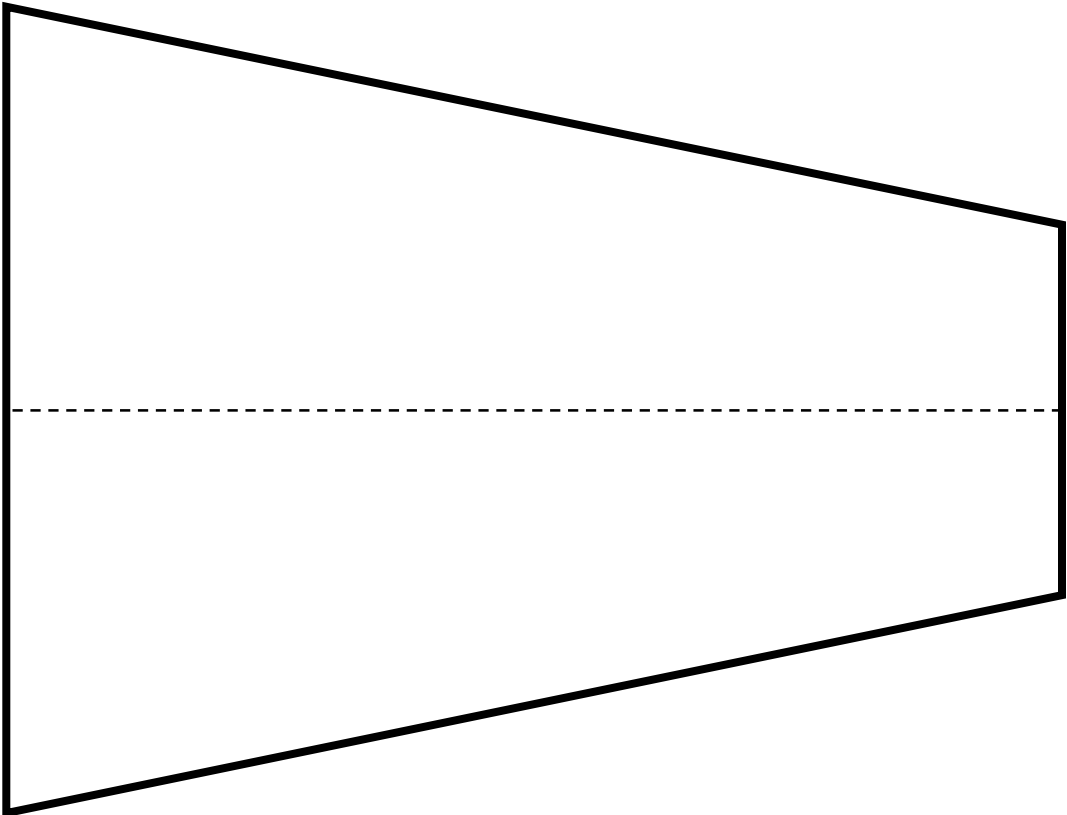
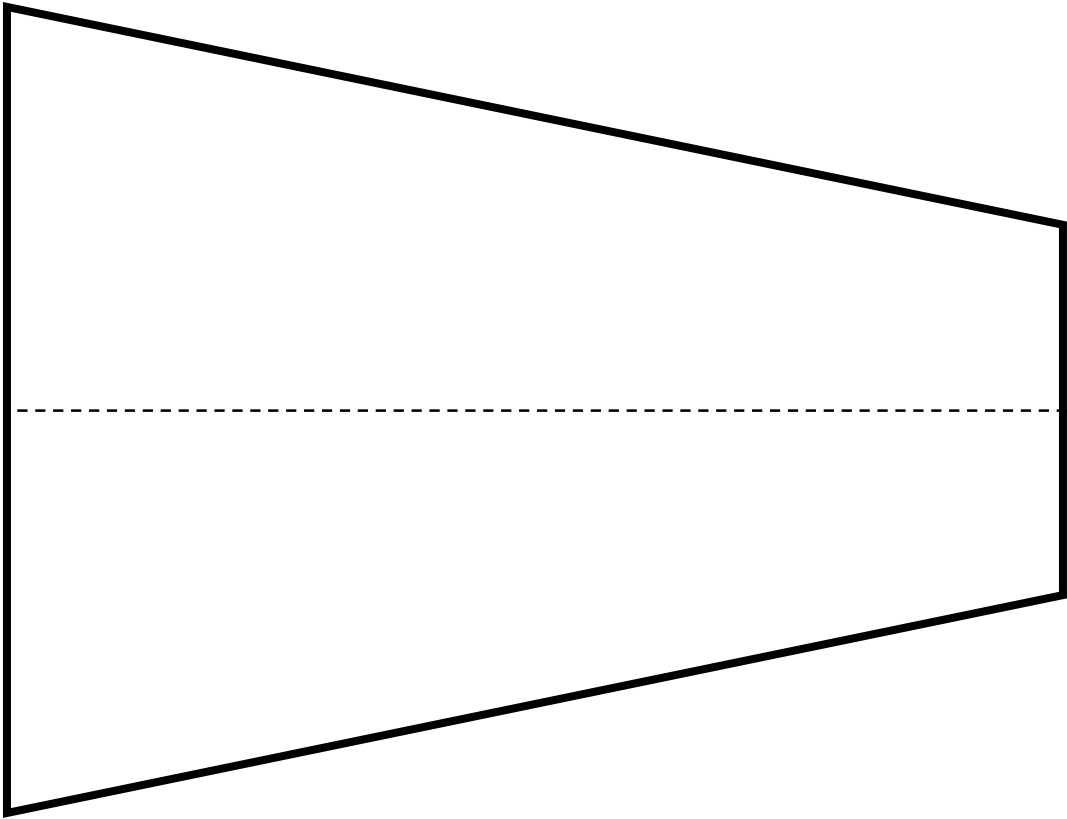
Cupped Hand
Blade Design

Traditional Fan Blade Design



Cupped Hand Blade Design





Tent Blade Design

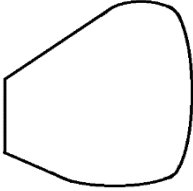

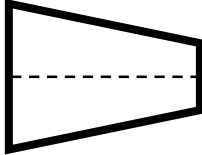
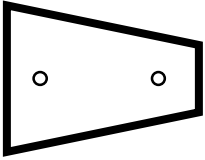
Simple Rectangle Blade Design



Name _____ Class Period _____

Predict which blade design will have the highest electrical output by placing a star in the bottom right corner of its box. Then test each design and record the highest electrical output observed in data table below.

Template Blade Data Sheet

				
2 Blades Front				
4 Blades Front				
2 Blades Back				
4 Blades Back				

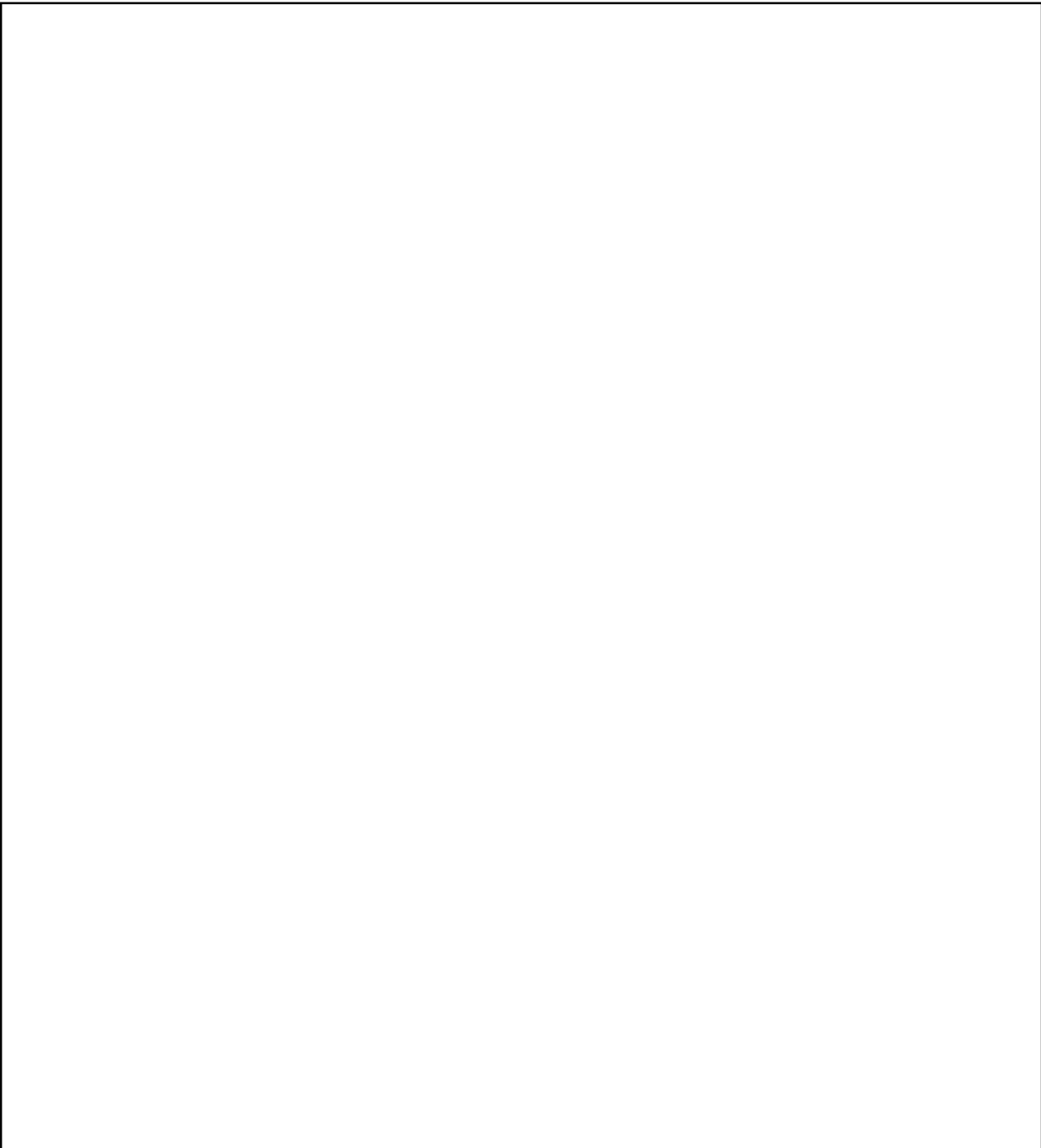
Answer the following questions.

What blade design had the highest voltage output?

Why did some blade designs have a higher output from the front than the back?

Explain why your prediction was either correct or incorrect.

Sketch a wind turbine blade design you will construct and test.

A large, empty rectangular box with a thin black border, intended for a student to draw a sketch of a wind turbine blade design. The box is currently blank.