Name_____

Wind Energy Worksheet

Data Table 1

Mass of string + hex nut = _____

Type of Windmill	Time to Lift Weight (seconds)					
	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5	Average
Three-Blade Windmill						
Four-Blade Windmill						

Data Table 2

	Force (N)	Distance (m)	Work (J)	Power (W)
Three-Blade Windmill				
Four-Blade Windmill				

Post-Lab Questions

1. Calculate the average times required to lift the weight for the three-blade windmill and the four-blade windmill. Record in Data Table 1.

2. On average, which windmill was able to lift the weight faster? Explain.

3. Using Equation 3 from the *Background* section, calculate the force in Newtons required to lift the hex nut and string. *Hint:* Remember to convert grams to kilograms. Record in Data Table 2.

4. Calculate the work done in Joules by each windmill to lift the hex nut and record the results in Data Table 2. How does the amount of work compare for each windmill? Explain.

5. Using Equation 1 from the *Background* section, calculate the power in watts of each windmill.

6. Why are wind farms usually found in the country as opposed to more urban areas?

7. Explain the energy transfer that occurs between the fan, the windmill, and the weight beginning when the fan is turned on to after it is turned off.