Wonder Windmill

heading

Team Name: _____

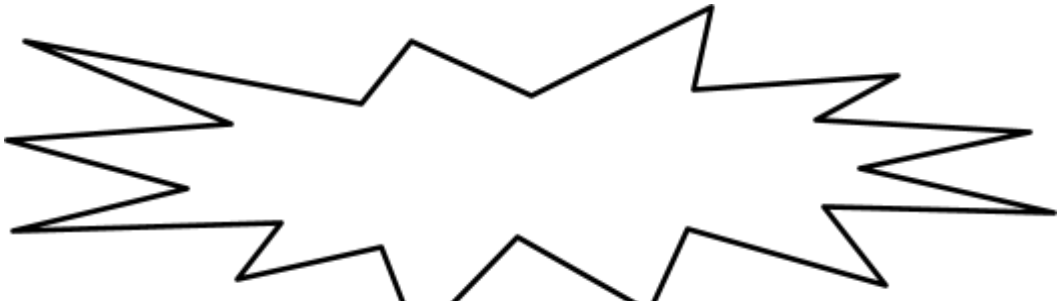
	Item	Description	Points Earned (✔ = full)	Points Possible
Workbook	Checkpoints	The five checkpoints are completed on time.		15
	Content	Sketches and progress entries are clear, detailed, and informative.		10
Other	Design Success (team points)	Final design is able to lift 5 marbles to a height of 1 meter.		5
	Design Quality (team points)	Model is clean, stable, and demonstrates originality.		10
	Peer Review	Teammates' evaluation of individual contribution to the project		10
	TOTAL			**50**

50 to 45 = A 44 to 40 = B 39 to 35 = C 34 to 30 = D

Project Design Rules

1. Your windmill must be built on the wooden dowel provided to you.
2. Your windmill must lift a minimum mass of five marbles to a height of 1 meter in 60 seconds or less.
3. The only power source for your windmill is the fan or air blower provided to you.
4. Your windmill must be made from scratch and may not contain any premade parts such as propellers, fan blades, pinwheels, sails, wings, etc.

COMPETITION DAY is scheduled for



WEEK1: Build

Begin your project by choosing a partner from your class period. Each team may consist of 2-3 members. **Mr. Trace has the final say in team selection. He can add or remove members if needed.**

Write the first and last names of your team members here:

1) _____

2) _____

3) _____

Agree on a clever name for your team. Your name must be appropriate. (If you have to ask whether or not a name is appropriate…it probably isn't.)

Write your team name here: _____

Mr. Trace will assign you a team number. Record it here:

This is the table number where you will work.



checkpoint!

In Day 1, you will begin designing your windmill. Each member must come up with one possible design. Then, the team will discuss all of the designs and choose what they think will work best. This may involve combining parts from different people's designs. The design that the team chooses to build is called your **prototype**. A prototype is a first attempt of something, and often needs many changes before it can work properly.

Sketch your **individual prototype** design here. Include **labels** to indicate materials, important features, etc.

Sketch the **team's prototype** here. Include **labels** to indicate materials, important features, etc.

checkpoint!

Now that you have a prototype design, what materials will you need? The teacher will supply only these materials: index cards, tape, toothpicks, cardboard, a wooden dowel, scissors, and hot glue guns. Anything else that you use must be supplied by members of your team. Remember the **Project Design Rules** as you plan! You should collect all your materials now. You will start building next week.

List your materials here, and the name of who will supply each item.

Materials Needed	Team Member Responsible
storage bag	

checkpoint!

WEEK 2: May 06 – May 10

Now you will build and test your prototype. Every day, take a few minutes to record your progress. What's going well? Did you make any changes today? Were there unexpected issues that needed attention – and if so, how did you deal with them? Record the results of your trial runs. Remember: You are trying to make a windmill that will lift more mass than anyone else's windmill. You should record a **minimum of three details per day.**

Here's a tip: It might help to t**ake a photograph** of your prototype every day before you clean up.

Monday/Tuesday Progress: maximum marbles lifted today: _____ Notes:	Tuesday/Wednesday Progress: maximum marbles lifted today: ____ Notes:

checkpoint!

checkpoint!

Wednesday/Thursday Progress: maximum marbles lifted today: ___
Notes:

checkpoint!

It's here! Competition Day is this week. You will make the final adjustments to your windmill, and then it's off to the races. By now, you've built and tested a prototype that has probably gone through several changes. You should have arrived at a final design that is ready for competition day. Record your final design here.

checkpoint!

Sketch the **team's final design** here. Include **labels** to indicate materials, important features, etc.

Wonder Windmill Competition Results		
	Did it qualify?	Maximum Mass Lifted (# of marbles)
Attempt 1		
Attempt 2		
Attempt 3		