Wind Car Challenge

Please answer each question in complete sentences with as much detail as possible.

1. Define the Problem (What is it you are trying to accomplish)

2. What are the design specifications?

Mass (g)	**45g or less**
Length	**8” or less**
Width	**12” or less**
Height (Ground to top)	**10” or less**
Budget	**$100**

3. Brainstorm Ideas

Each member of the team-design a wind sail car using Google Drawings. You must label all parts and dimensions**.**

4. Research-what are some designs you can find on the internet? Paste 4 pictures below of existing sail cars. (Be sure to use the snipping tool)

5. Design Selection-Select the best idea from step 3. Based on your research in step 4, make any necessary modifications to the design and paste your final design below.

6. Buy and Build-As you buy supplies, complete the budget form below. Check the end of this document for pricing. (Hint: Keep track of the mass of all your pieces as you purchase them to ensure you don't go over the 45g limit)

Item	**Cost**	**Balance (Money Remaining) $100**
Track Rental	**$10**	**$90**

7. Test and Evaluate-Record the distance of 3 trials, then find the average distance your car traveled. Below the table, record observations from trials.

Trial	**Distance**	**Average**
Trial 1		**xxxxxxxxxxxxxxxxxxx**
Trial 2		**xxxxxxxxxxxxxxxxxxx**
Trial 3		**xxxxxxxxxxxxxxxxxxx**
xxxxxxxxxxxxxxxxxxx	**xxxxxxxxxxxxxxxxxxx**	

8. **Research-**Based on your observation, go online and research ways to improve your car's design.

Observation	**Idea for improvement**
Ex. Car drifted to the left	**Check wheels for alignment** **Adjust sail on car so wind is not hitting it at an angle**

9. Redesign-Create a google drawing below based on researched improvements. Be sure to label all parts and dimensions.

10. Buy and Build-You have an extra $10 to add to your balance! As you buy supplies, complete the budget form below. Check the end of this document for pricing. (Hint: Keep track of the mass of all your pieces as you purchase them to

ensure you don’t go over the 45g limit)

Item	**Cost**	**Balance Left after round 1: _____**

11. Test and Evaluate-Record the distance of 3 trials, then find the average distance your car traveled. Below the table, record observations from trials.

Trial	**Distance**	**Average**
Trial 1		**xxxxxxxxxxxxxxxxxxx**
Trial 2		**xxxxxxxxxxxxxxxxxxx**
Trial 3		**xxxxxxxxxxxxxxxxxxx**
xxxxxxxxxxxxxxxxxxx	**xxxxxxxxxxxxxxxxxxx**	

12. Share solution-Answer the following questions and be prepared to share with the class.

Average distance first car traveled	
Average distance second car traveled	
Total money spent	
What did you change from first to second car?	
How would you approach this challenge differently next time?	

Supply List

Item	**Price**
Standard Paper	**$5**
Legal Paper	**$7**
Card Stock	**$10**
Index Card	**$5**
Popsicle Stick-Small	**$3 each**
Popsicle Stick-Large	**$4 each**
Duct Tape - 12”	**$5**
Electrical Tape - 24”	**$5**

Hot Glue	**$1/inch**
Straw	**$5**
Axle	**$10**
Wheel	**$5/each**
String - 12”	**$3**
Plastic Bag	**$5**
Consultation (question)	**$1**
Track Time (one time fee for all trials)	**$10**