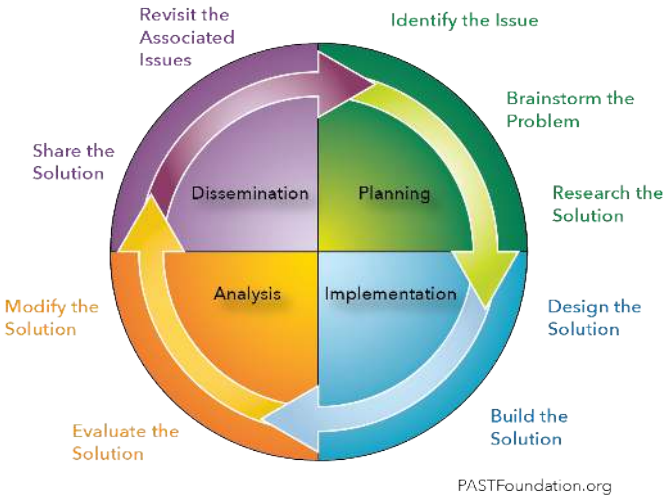
Sail Cars
Mini Challenge

Name:_____

Date:_____



Problem Scenario: Can you make a car move using a deck, an axle, wheels, a sail, a mast, and a fan?

Challenge: How do we understand the relationship between:

1. mass, friction, and drag
2. mass and force
3. surface area and force

Criteria/Supplies:

- Saran wrap, cardboard/ dowels, toothpicks, straws, various tapes
- pencils, paper, electric variable speed fan/ lightweight rolling car or hot wheels car
- Be able to identify how you are measuring the distance traveled and speed at which the sail car is moving.
- Identify the different types of friction and the outcome on drag

1. Brainstorm: Use the space below to brainstorm the design and approach to building a sail car.

- What role does friction play in this project?
- How should the wheels be attached to your car to maximize force?
- Do you understand the axle to the body?
- Is it harder to make your own car or reuse an existing car?
- Does sail material matter?
- Does sail surface area matter?
- Does fan speed matter?

2. Design:

Create a car or modify a car that rolls easily.

Attach the mast vertically to your wheeled platform.

Design a sail and attach it to your mast.

Find a smooth flat surface to test your car.

Please sail car in front of fan.

Turn on fan and test.

4. Evaluate:

How far did the car travel?

5. Modify:

What happens if the sail is larger or smaller?

What if the car needed to go uphill or downhill?

What if the wheels were larger or smaller?

What if the car traveled on carpet? or dirt?

3. Build:

Build the car using a variety of materials.

6. Share:

Share your creation on Social Media!

Tag us on Facebook, Twitter or Instagram @pastfoundation

Use the hashtag #ThisIsPAST or #DesignThinking