

Name: _____ Date: _____ Class: _____

Design Process Packet

Learn about the Problem: Vocabulary

- Engineering design process

- Collision

- Momentum

- Speed

- Mass

Name: _____ Date: _____ Class: _____

Generate Ideas: What a Safe Vehicle Looks Like—Prototype Ideas

Name: _____ Date: _____ Class: _____

Design Solution for Your Best Plan to Prototype and Test

Explain the design approach that you will prototype and test... (Example: We think cushion-type safety features are the best during a head on collisions. And we think that heavier cars better survive head-on collisions.)

Initial Design Materials Used

Model Material	How many/How much	What it's being used for
Cotton fill		
Cardboard		
Tag board		
Felt		
Foam paper		
Craft sticks		
Chenille stems/pipe cleaners		
Balloons		
Rubber bands		
Plastic straws		

Sketch your final design with materials identified.

Name: _____ Date: _____ Class: _____

Initial Testing & Analysis

Car/Group #	Car Mass (grams)	Run Length (meters)	Run Time (seconds)	Testing Success (Y/N)	Car speed	Momentum ($m \cdot v = p$)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Initial Results Summary

Initial results: (List details of what happened to your vehicle during/after crash.)

Initial conclusions:

Name: _____ Date: _____ Class: _____

Redesign/Rebuild Materials Used

Model Material	How many/How much	What it's being used for / Problem that is being fixed
Cotton fill		
Cardboard		
Tag board		
Felt		
Foam paper		
Craft sticks		
Chenille stems/pipe cleaners		
Balloons		
Rubber bands		
Plastic straws		

Redesign Approach

To improve on our first design, we decided to...

Because...

Name: _____ Date: _____ Class: _____

Redesign Testing & Analysis

Car/Group #	Car Mass (grams)	Run Length (meters)	Run Time (seconds)	Testing Success (Y/N)	Car Speed	Momentum ($m \cdot v = p$)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Redesign Results Summary

Final results: (List details of what happened to your vehicle during/after crash.)

What worked? What didn't work?

Final conclusions: