

Name: \_\_\_\_\_

Date: \_\_\_\_\_

# TYWLS Derby 500

Auto companies, such as Ford, Mercedes-Benz and Chevrolet, have used car slogans and commercials to claim they have designed and developed the most energy-efficient and affordable car, SUV or truck. But, what does energy-efficient mean? And, what do car companies keep in mind when they are developing these new vehicles?

**Task:** You will research, design and build an energy-efficient car. The car will race against other cars to determine who has developed the most energy-efficient vehicle.

## Process:

### Days 1-4

1. Determine different *variables* to change in the test car.
2. Choose 1 *variable* to research, design and build 2-3 test cars.
3. Use the test track to determine the speed of the cars.

### Days 5-7

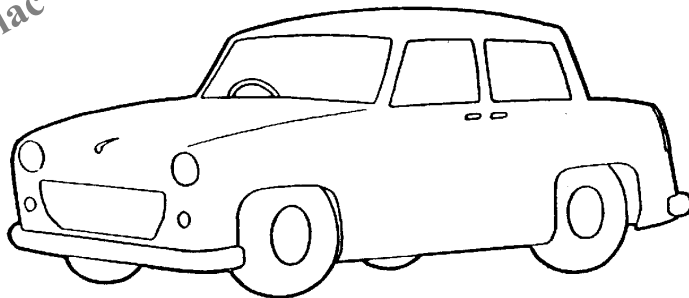
1. Using the class data, choose 3 variables.
2. Design and build a car using the 3 variables.
3. Use the test track to determine the speed of the cars.

### Day 8

1. **RACE DAY!!!!!!**

**Wider is Better!**  
-Pontiac

**The Ultimate Driving Machine**  
-BMW



**May the Best Car Win**  
-Chevrolet

**The World's Favorite Four Wheel Drive**  
-Pontiac

### Part 1 – Testing a Specific Variable

\_\_\_ IDD for Testable Car    \_\_\_ Hypothesis (*If...then...because...*)    \_\_\_ Procedure    \_\_\_ Data Table

#	OUTCOME	NY CRITERIA	MS CRITERIA	ES CRITERIA
2	<b>Plan</b> – I can make deliberate plans, reflect upon and revise my plans so that I am able to achieve my goals.	I am unable to develop an investigation that ___ Tests two variables  ___ Includes a procedure that can be followed  ___ Has a method to record data	I can develop an investigation that ___ Tests two variables  ___ Includes a procedure that can be followed, but the scientist may need to ask for clarification on a few steps  ___ Has a method to record data	<b>MS Criteria AND</b> the following:  ___ My procedure is VERY clear with directions that are easy to understand and follow.

### Part 2 – Sharing Results

\_\_\_ Chart Paper (*with Question, Hypothesis, Data Table, Graph, DSET*)

#	OUTCOME	NY CRITERIA	MS CRITERIA	ES CRITERIA
5	<b>Conclude</b> – I can make a thoughtful scientific conclusion by using scientific models, graphs and other evidence.	I am unable to provide: ___ <i>A claim</i> ___ <i>Scientific evidence</i> supporting my claim ___ <i>A Researched and Cited Science Knowledge</i> explanation supporting my claim	I am able to provide: ___ <i>A claim</i> ___ <i>Scientific evidence</i> supporting my claim ___ <i>A Researched and Cited Science Knowledge</i> explanation supporting my claim	<b>MS CRITERIA AND</b> I provide multiple researched and cited sources for my <i>Science Knowledge</i> explanation.

### Part 3 – Rationalizing the Prototype

\_\_\_ Design for Prototype    \_\_\_ Rationalization Writing

#	OUTCOME	NY CRITERIA	MS CRITERIA	ES CRITERIA
1	I am able to communicate ideas and information while being mindful of audience and purpose.	I am unable to rationalize my choices for variables to change on my prototype car  <b>OR</b> My word choice and explanation does not demonstrate an understanding of the scientific concepts I am studying	I can rationalize my choices for variables to change on my prototype car by using a scientific concept, such as ___ Friction ___ Law of Inertia ___ Law of Acceleration ___ Law of Action-Reaction ___ Center of Mass ___ Speed  <b>AND</b> By citing a credible source	<b>MS Criteria AND</b> the following  ___ My rationalization shows a deep understanding of the scientific concept by providing multiple examples and cited sources