

Gravity-powered Vehicles

Name _____

Design a vehicle with three or more wheels that will ...

1. fit behind the line on the ramp
2. go down the ramp and
3. go as far and
4. as straight as possible.

Engineering designs should be based on theories that help you to achieve the best possible result. Discuss with your group some factors that you should consider as you design your vehicle to go as far and straight as possible. What might hinder or help it? Record below the considerations (in this case, your understandings about physical objects and how they behave) that you will take into account as you try to come up with a good design.

As your group plans and builds your vehicle, be open to each other's ideas and do not worry about whether you choose an approach that may not be as good as another. You will have the chance to modify your vehicle and try again. Engineering problem solving involves experimentation, so feel free to test your vehicle on the ramp once your first version is complete. As you build, each member is to take turns finding and then putting on **five** pieces at a time. The group must all agree about the steps or the "piece-finder-putter-on-er" will not put the pieces on. This turn taking is required of all groups.

Let your vehicle go down the ramp a few times. What did you observe in the different trials? Record your observations in your binders.

In what ways might you redesign your vehicle based on these observations? Will you start from scratch (an all new design) or adjust your first attempt?

Please see the sheet “How far and how straight?” and fill in data for your first vehicle.

Design and build a second model. Test it and record your observations. What happened? Why? Was your hypothesis about what your changes would accomplish correct?

Once everyone has a second model, they will demonstrate it for the class. Watch carefully. Each group is free to borrow ideas from everyone else’s vehicles to produce a third and final version.

How Far and How Straight? Name _____

In order to determine how well your vehicle is performing, you need to measure how far and how straight it has gone. Discuss with your group members a method for measuring how far your vehicle went. Describe it here in full detail – exactly what will you do and what measurements will you record?. Your group may record and measure this in more than one way.

Now discuss how you will determine *straight*-ness. What measurements might you make? Describe one or more methods for measuring how straight your car went as well.

Measure how far and how straight your vehicle goes for three trials and record it in the table. Record your score for one or more methods. Note any observations here.

	Vehicle #1		Vehicle #2		Vehicle #3	
Trial	Far	Straight	Far	Straight	Far	Straight
1						
2						
3						