

# Soda Geyser Car Lesson Plan

**Context** (InTASC 1,2,3)**Lesson Plan Created By:** Benjamin L. Strand**Created:****Lesson Topic:** Distance/Speed (Math/Science)**Grade Level:** 3<sup>rd</sup> Grade**Duration:** 100 minutes**Kit Contents:** [http://odin-primo.hosted.exlibrisgroup.com/nmy:nmy\\_all:ODIN\\_ALEPH007828823](http://odin-primo.hosted.exlibrisgroup.com/nmy:nmy_all:ODIN_ALEPH007828823)**Desired Results** (InTASC 4)**Purpose:** The purpose of this lesson is for students do a hands-on activity to explore changes in speed based on different variables (wall behind the car, or no wall).**North Dakota Science Content Standards:**

- Speaking and Listening Standards: Presentation of Knowledge and Ideas
  - PS.2.1 (Grade 3) Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

**North Dakota Mathematics Content Standards:**

- Operations and Algebraic Thinking Standards: Multiply and divide within 100.
  - QA.7 (Grade 3) Fluently multiply and divide within 100.

**Objectives:**

Students will:

1. Build hypotheses about the different variables.
2. Calculate the speed of their geyser car.
3. Experiment with forces of motion.

**Assessment Evidence** (InTASC 6)**Evidence of meeting desired results:** Students will complete the parts of the research project including the name of the animal group, picture showing inside and outside characteristics, and an additional fact if possible. Students will also draw a picture showing the three functions that bones have for animals.**Learning Plan** (InTASC 4,5,7,8)**Instructional Strategy: (Check all that apply)** Direct  Indirect  Independent  Experiential  Interactive**Technology Use(s): (Check all that apply)** Student Interaction  Align Goals  Differentiate Instruction  Enhance Lesson Collect Data  N/A**Hook and Hold:**

Have your adult helper be outside as you are introducing your topic. When you knock on the window, have him drop 3 or 4 mentos into a

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couple bottles of diet cola while the kids are looking out the window!  
Let them know that is what they are going to get to do today!

**Materials:**

- Adult helper (parent/para)
- Computer with internet and a projector
- Soda Geyser Car kit
- Plenty of Mentos
- Plenty of Diet Cola
- Cinder block
- Tape (marked off every .5 meters)
- Stop watches
- Wall or No Wall? Hypotheses Sheet
- Entrance Slips
- Exit Slips

**Procedures:**

1. The first thing we need to do is the entrance slip.
2. Have a student help you hand out the entrance clips, and go through the first couple warm up problems together.
3. Let the students know that is it crucial for them to know how to do this for the activity to go well!
4. When they are all done with the entrance slips, get them into 6 groups.
5. Hand them their parts to their geyser car, and show them a picture of a car that is put together on your projector.
6. Each group should have:
  - Wheels
  - Axels
  - Pop bottle
  - 2 Velcro straps
  - One Mentos "holster"
  - And a car nose cone
7. Hand out Wall or No Wall? Hypotheses Sheets.
8. Have the students make their predictions with their group members.
9. Number off the 6 groups #1-6.
10. Let the students know the order when you go outside. "#1 is going to go first with no wall (cinder block) behind their car, then #2, and so on. Once everyone has gone throughout with no wall, we will all go through with a wall, starting with #1, then #2, and so on." "Don't forget to record your data so we can see if our predictions were correct or not!"
11. Go outside and have the adult helper either be in charge of pulling the plug (so the Mentos drop in) or if you want he/she to be in charge of timing it with the stop watch. Whatever you chose, the both of you should be in charge of these two things.
12. Have the student's measure how far their geyser car has

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traveled. Then report to them how many seconds it traveled.

13. While the other groups are going, they should be calculating their geyser car's speed! (For example, if their car traveled 6 meters and traveled for 2 seconds, they would divide 6 by 2 and discover their car traveled 3 meters per second).
14. After all of the groups have gone through without a wall, put the wall about 25 cm behind their car.
15. Let all of the groups go through repeating the same steps.
16. After all of the cars have been through both times, go back inside and meet with groups to make sure that they are doing the correct calculations with their data.
17. Hand out the exit slips, and let them finish those while you also hand out some Mentos for them to have!
18. Collect the exit slips.

**Summary:** In this lesson, the students will make predictions, test their theories, and learn about how fast their soda fueled car can travel. They will be able to do a hands-on experiment with a changing variable to learn about how an outside force can change the outcome of their creation. They will also use math facts (division) to calculate their speed using the speed formula (speed = distance/time).

### **Reflection** (InTASC 9)

#### **Reflect On:**

- *Preparation*
- *Planning*
- *Teaching*
- *Student Engagement and Participation*
- *Evidence of Student Learning*

### **Standards**

Council of Chief School Officers. (2011, April) *Interstate Teacher Assessment and Support Consortium (InTASC) model core teaching standards: a resource for state dialogue*. Washington DC. Retrieved from [http://www.ccsso.org/documents/2011/intasc\\_model\\_core\\_teaching\\_standards\\_2011.pdf](http://www.ccsso.org/documents/2011/intasc_model_core_teaching_standards_2011.pdf)

North Dakota Department of Public Instruction. (2011) *North Dakota Science content standards*. Bismarck, ND. Retrieved from [https://www.nd.gov/dpi/uploads/132/NDScienceStandardsDraftFormat2\\_ThirdGrade.pdf](https://www.nd.gov/dpi/uploads/132/NDScienceStandardsDraftFormat2_ThirdGrade.pdf)

North Dakota Department of Public Instruction. (2011) *North Dakota English mathematics content standards*. Bismarck, ND. Retrieved from <https://www.nd.gov/dpi/uploads/87/math.pdf>

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