

# Force and Motion

## Stage 1 - Desired Results

### Big Idea(s)

Forces influence motion and matter in the universe.

### PA Core Standards / Next Generation Science Standards

<a href="#">T &amp; E Education</a>	<a href="#">Science Education</a>	<a href="#">Mathematics Education</a>	<a href="#">Computer Science</a>	<a href="#">CEW</a>
	<p><b><u>S4.A.2.1: Apply skills necessary to conduct an experiment or design a solution to a problem</u></b></p> <p><b><u>S4.C.3.1: Identify and describe different types of force and motion, or the effect of the interaction between force and motion</u></b></p>			<p><b><u>13.2.5.E: Apply to daily activities, the essential workplace skills, such as, but not limited to: Commitment, Communication, and Team Building</u></b></p>

### Essential Questions

- **What is the relationship between force and motion?**

### Students Will Know

- Content specific vocab
  - Force
  - Motion
- Steps of scientific method

### Students Will Be Doing

- Students will be designing and performing an experiment using the scientific method to answer the following question: How can I make a toy car move? Each student will be given a car and a piece of twine. The teacher will explain that they must figure out how to move the car using only these materials.
- Students must first write the question, materials, hypothesis, procedure, results, and conclusion in a lab sheet.

- Give students 5 minutes to try and figure out multiple ways to get the car to move.
- When they have finished the experiment they must write their conclusion, students must follow the sequencing cue words.
- After the class has completed their experiment and lab sheet they will discuss the outcomes.
- Teacher will discuss whether the toy was able to move on its own or if it needed a “force” to help it move. The teacher will end the lesson asking the class to identify the two forces they used to move the car. **(push and pull)**

## Stage 2 - Evidence of Understanding

Assessments (Formative and Summative):	Performance Task(s)
<ul style="list-style-type: none"> <li>• Informal Formative Assessments throughout lesson: Questioning, Discussion, Teacher Feedback</li> <li>• Summative Assessment: Students turn in completed lab sheet.</li> </ul>	<ul style="list-style-type: none"> <li>• Students will be completing attached lab sheet.</li> </ul>

## Stage 3 - Lesson Learning Targets

<p><b>Learning Activities:</b></p> <p>Learning targets are written from the students perspective.</p> <p>I can...</p> <ul style="list-style-type: none"> <li>- Identify</li> <li>- List/Tell</li> <li>- Describe</li> <li>- Solve</li> <li>- Convert</li> </ul> <p>These should lead up to answering the Essential Question(s).</p>	<ul style="list-style-type: none"> <li>• I can develop a plan to solve a given problem.</li> <li>• I can demonstrate how force affects motion.</li> </ul>
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## RESOURCES / LINKS

Activities	Presentations	Assessments
<ul style="list-style-type: none"> <li>• Scholastic Study Jams Video: <a href="http://studyjams.scholastic.c">http://studyjams.scholastic.c</a></li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Scholastic Study Jams Pre and Post-Assessment: <a href="http://studyjams.scholastic">http://studyjams.scholastic</a></li> </ul>

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

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

## **The Scientific Method**

### **Question**

### **Materials**

### **Hypothesis**

### **Observations**

1.

2.

3.

### **Conclusion**

