

# Springdale Public Schools

## Physics Unit 5



Title of Unit	Momentum	Grade Level	Secondary
Subject	Physics	Time Frame	2 weeks
Developed By	SPS Science	Date Modified	06/17/2021

### Identify Desired Results

#### Standards Covered in this Unit

(Evidence statements are LINKED from the standard number. Evidence statements assist in clarifying outcomes)

**P-PS2-6AR Use mathematical representations to support the claim that the total impulse on a system of objects is equal to the change in momentum of the system.** [Clarification Statement: Emphasis is on quantitative conservation of momentum in interactions.] Arkansas designed, no evidence statement

#### Learning Outcomes for the Unit

What relevant goals will this unit address? These must come from the standards.

- Students will analyze graphs for evidence to support their claim predicting the change in linear momentum from the average force on an object and the interval of time during which the force is exerted.
- Students will create and analyze real-world models to make a claim concerning the relationship between mass and velocity by applying conservation laws.

#### Key Vocabulary for the Unit

Impulse	Momentum	Inelastic	Elastic	Collision
Moment of inertia	Inertia	Angular momentum	Explosion	
Conservation of Energy	Mass	Velocity	Conservation of Momentum	

<b>Enduring Understandings for the Unit (for discussion within science and across content areas)</b>
<ul style="list-style-type: none"> <li>• An object in motion has momentum.</li> <li>• During object interactions in a defined system, momentum is conserved.</li> <li>• Justification for phenomena in everyday experiences can be supported through graphical and data analysis.</li> </ul>
<b>Essential Questions for the Unit</b>
<ul style="list-style-type: none"> <li>• During object interactions, does all of the momentum transfer between objects?</li> <li>• How does pushing an object change its momentum?</li> <li>• How does the law of the conservation of momentum govern interactions between objects or systems?</li> <li>• How can force be reduced or increased during a collision?</li> </ul>
<b>Misunderstandings That Will Be Addressed</b>
<ul style="list-style-type: none"> <li>• Energy is not conserved in collisions</li> </ul>
<b>Content Literacy Skills for the Unit (Interpretation of data, experimental design, SEPs, CCs) [minimum list]</b>
<ul style="list-style-type: none"> <li>• Ask and/or evaluate questions that challenge the premise(s) of an argument, the interpretation of a data set, or the suitability of the design.</li> <li>• Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations.</li> <li>• predicts the results of an additional trial or measurement in a moderately complex experiment.</li> <li>•</li> </ul>

### Assessment Evidence

<b>What type(s) of Common Formative Assessment (CFA) will be given?</b>
Ticket out the door, quick write, graphic organizer, golden line, three question quiz, hot/cold sticky note,
<b>What type of District Formative Assessment will be given?</b>
TBD

## Overview of All Choices of Lessons for Unit

This is not a lesson plan!.

Standard(s) #	Formative Assessment(s) (Indicate which is the CFA)	Main Instructional Strategy	Activity/Activities
P-PS2-6AR	student discussion	video clip phenomenon	<ul style="list-style-type: none"> <li>• <a href="#">Conservation of Momentum 1 (clip)</a></li> <li>• <a href="#">Conservation of Momentum 2 (clip)</a></li> <li>• <a href="#">Ambulance clip</a></li> </ul>
	ticket-out-the-door	investigation	<ul style="list-style-type: none"> <li>• <a href="#">Discover Momentum</a> (guided inquiry lab)</li> </ul>

## Common Resources

Title and Description of Usage	Location
This is an option for a lab notebook that is virtual.	<a href="#">Blank Digital Lab Notebook</a>
This is a lesson plan template that pairs with the Unit plan. It allows for easy information transfer.	<a href="#">Lesson Plan Template</a>