


## Physics Curriculum Bundle # 6

<b>Title</b>		<b>Suggested Dates</b>
Momentum		12/7 – 12/18 (8 days)

<b>Big Idea/Enduring Understanding</b>	<b>Guiding Questions</b>
Momentum is conserved in interactions between objects.	How can we predict the results when moving bodies interact?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	Specificity & Examples	Suggested Resources (Read the note above)
<p><b>5 The student knows that changes occur within a physical system and recognizes that energy and momentum are conserved.</b></p> <p>5C Calculate the mechanical energy and momentum in a physical system.</p>	<p><b>Including</b></p> <ul style="list-style-type: none"> <li>• Calculate velocities in elastic and inelastic collisions</li> <li>Such as                             <ul style="list-style-type: none"> <li>○ Billiards</li> <li>○ Cars</li> <li>○ Trains</li> </ul> </li> </ul>	
<p><b>5 The student knows that changes occur within a physical system and recognizes that energy and momentum are conserved.</b></p> <p>5D Demonstrate the conservation of energy and momentum.</p>	<p><b>Including</b></p> <ul style="list-style-type: none"> <li>• Equate impulse to the change in momentum</li> <li>• Appreciate the importance of impulse and momentum in daily situations                             <ul style="list-style-type: none"> <li>○ Protection in car accidents                                     <ul style="list-style-type: none"> <li>▪ Seat belts</li> <li>▪ Air bags</li> <li>▪ Crumple zones</li> <li>▪ Collapsible barriers</li> </ul> </li> <li>○ Sports                                     <ul style="list-style-type: none"> <li>▪ Collisions in football</li> <li>▪ Collisions in auto racing</li> <li>▪ Baseball</li> <li>▪ Tennis</li> </ul> </li> </ul> </li> <li>• Solve problems involving impulse and change of momentum.</li> <li>• Explain the law of conservation of momentum.</li> <li>• Solve problems involving the law of conservation of momentum.</li> <li>• Observe the law of conservation of momentum</li> </ul>	<p>Impulse-momentum Theory Lab – compare change in momentum from motion detector with impulse from force sensor. (phys_5_ImpMom)</p> <p>Collisions Lab – cart collision with photogates for elastic &amp; inelastic collisions. (phys_5_Collisions)</p> <p>Momentum simulations –  <a href="http://www.glenbrook.k12.il.us/gbssci/Phys/mmedia/index.html#momentum">http://www.glenbrook.k12.il.us/gbssci/Phys/mmedia/index.html#momentum</a></p> <p>Suggested Equipment – cart &amp; ramp, photogates, motion detector, “exploding” carts.</p>

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	<p>in elastic and inelastic collisions Such as: o Explosions o Collisions between carts</p>	
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