



## IPC Curriculum Bundle # 2

<b>Title</b>	 	<b>Suggested Dates</b>
<b>Motion and Forces</b>		9/13-10/1 (14 days)

<b>Big Idea/Enduring Understanding</b>	<b>Guiding Questions</b>
Forces cause changes in motion.	<p>How do people, animals, automobiles, &amp; rockets move?</p> <p>Why are forces essential to all living organisms &amp; applicable to non-living objects?</p>

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	District Specificity/Examples	Suggested Resources (See note above)
<b>Vocabulary:</b> Speed, Velocity, Acceleration, Time, Distance, Forces, Unbalanced, Balanced, Friction, Gravity, Momentum, Inertia		
<p><b>3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions.</b></p> <p><b>3F</b> research and describe the history of physics and chemistry and contributions of scientists</p>	<p>Such as</p> <ul style="list-style-type: none"> <li>• Isaac Newton</li> <li>• Galileo Galilei</li> <li>• Albert Einstein</li> </ul>	
<p><b>IPC.4 Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:</b></p> <p><b>4A</b> describe and calculate an object's motion in terms of position, displacement, speed, and acceleration;</p> <p><b>IPC.4 Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:</b></p> <p><b>4B</b> measure and graph distance and speed as a function of time using moving toys;</p>	<ul style="list-style-type: none"> <li>• Solve for different variables in problems of speed, work, force, and acceleration</li> <li>• Calculate the net force in a simple system</li> <li>• Define inertia and describe its effects in daily situations</li> <li>• Distinguish between speed and velocity</li> <li>• Explain why all motion is relative</li> <li>• Compare and contrast average speed, instantaneous speed, and terminal velocity</li> </ul>	<p>SST Lab (Bring your favorite toy and measure it's velocity)</p> <p>“Futball/Soccer Computer Lab” –www.sycd.co.uk/dtg/Acceleration and Average Speed Wksht</p> <p>Acceleration Lab - <u><a href="#">Investigations in Physics and Chemistry</a></u></p> <p>“Basics of Physics: Exploring the Laws of Motion” – video – <a href="http://streaming.discoveryeducation.com/search/assetDetail.cfm?guidAssetID=27DE45E9-9B3D-478E-A546-">http://streaming.discoveryeducation.com/search/assetDetail.cfm?guidAssetID=27DE45E9-9B3D-478E-A546-</a></p>

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<p><b>IPC.4 Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:</b></p> <p><b>4C</b> investigate how an object's motion changes only when a net force is applied, including activities and equipment such as toy cars, vehicle restraints, sports activities, and classroom objects;</p>	<ul style="list-style-type: none"> <li>• describe and calculate an object's motion in terms of position, displacement, speed, and acceleration</li> <li>• measure and graph distance and speed as a function of time using moving toys</li> <li>• Describe the effect on motion by friction</li> <li>• Define free fall and explain acceleration due to gravity</li> <li>• Explain Newton's three laws of motion</li> <li>• Compare balanced and unbalanced forces</li> <li>• Identify modern applications of Newton's laws in a variety of disciplines</li> <li>• Define inertia and describes its effects in daily situations</li> </ul>	<p><a href="#">D893FC4D2B92</a></p> <p>“Force, Mass, and Acceleration”, “Weight, Gravity, and Friction” – <u>Investigations in Physics and Chemistry</u></p> <p>Newton's Laws Demonstrations (inertia, weight in an elevator)</p>
<p><b>IPC.4 Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:</b></p> <p><b>4D</b> assess the relationship between force, mass, and acceleration, noting the relationship is independent of the nature of the force, using equipment such as dynamic carts, moving toys, vehicles, and falling objects;</p>	<ul style="list-style-type: none"> <li>• Define free fall and explain acceleration due to gravity</li> <li>• Explain Newton's three laws of motion</li> <li>• Compare balanced and unbalanced forces</li> <li>• Identify modern applications of Newton's laws in a variety of disciplines</li> <li>• Define inertia and describes its effects in daily situations</li> </ul>	<p>Bottle Rocket Lab (Pasco/foot pump/bicycle pump)</p> <p>Mu of a Shoe Lab</p> <p>Force Power Point</p> <p>Newton's Three Laws Wksht.</p> <p><a href="http://www.teachertube.com/viewVideo.php?video...Three_Laws...">www.teachertube.com/viewVideo.php?video...Three_Laws...</a></p>
<p><b>IPC.4 Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:</b></p> <p><b>4E</b> apply the concept of conservation of momentum using action and reaction forces such as students on skateboards;</p>		
<p><b>IPC.4 Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:</b></p> <p><b>4F</b> describe the gravitational attraction between objects of different masses at different distances, including satellites;</p>	<ul style="list-style-type: none"> <li>• Explain the relationship between gravity and the universe and how it applies to astronomy.</li> <li>• Define free fall and explain acceleration due to gravity</li> <li>• Explain free fall and the acceleration due to gravity</li> </ul>	