

# Learning Targets: Forces, Motion, and Interactions

			
1. I am able to use formulas to calculate speed, velocity, acceleration and force and include appropriate units for each quantity.			
2. I can read and understand distance-time graphs and velocity-time graphs.			
3. I am able to identify the energy conversions that occur within a given system, including during the car competition and investigation.			
<i>Activities/Notes/Resources</i>			
4. I am able to define Newton's Laws of Motion.			
<i>Activities/Notes/Resources</i>			
5. I am able to use force diagrams to predict the motion of objects.			
6. I am able to describe ways in which unbalanced forces cause changes in motion and I can explain how Newton's First Law applies to these situations.			
<i>Activities/Notes/Resources</i>			
7. I am able to design and construct a device (car) to be used for the following purposes: <ul style="list-style-type: none"> <li>• Compete in a speed and distance competition.</li> <li>• Be used in an investigation to determine the relationship between forces, mass and changes in motion.</li> <li>• Keep an egg from breaking when the car is forced into a collision with a wall.</li> </ul>			

8. I am able to conduct an investigation to show how changing the force affects the motion of an object. I can also explain how Newton's Second Law applies to this investigation.			
<i>Activities/Notes/Resources</i>			
9. I am able to conduct an investigation to show how changing the mass affects the motion of an object. I can also explain how Newton's Second Law applies to this investigation.			
10. I am able to explain what should be done to keep an egg from cracking during a collision between two objects (car and wall) <b>and explain why</b> . I can use Newton's Third Law and a description of action/reaction pairs in my explanation.			
<i>Activities/Notes/Resources</i>			
11. I am able to define and give examples of noncontact forces.			
<i>Activities/Notes/Resources</i>			
12. I am able to conduct an investigation (and present and defend the data) that shows that noncontact forces exist.			
<i>Activities/Notes/Resources</i>			
13. I am able to define electric forces and magnetic forces and describe the factors that affect the strength of electric and magnetic forces.			
<i>Activities/Notes/Resources</i>			
14. I am able to use evidence to support the claim that gravitational interactions are attractive and depend on the masses of objects.			

# Unit Vocabulary

You will need to be prepared to define the following words.

<b>Mass</b>	<b>Speed</b>	<b>Velocity</b>	<b>Acceleration</b>
<b>Potential Energy</b>	<b>Kinetic Energy</b>	<b>Elastic Potential Energy</b>	<b>Gravitational Potential Energy</b>
<b>Friction</b>	<b>Motion</b>	<b>Balanced Forces</b>	<b>Unbalanced Forces</b>
<b>Net Force</b>	<b>Force</b>	<b>Electric Force</b>	<b>Magnetic Force</b>
<b>Gravity</b>	<b>Noncontact Force</b>	<b>Electric Field</b>	<b>Magnetic Field</b>
<b>Energy Transformation</b>			