

Physical Science (Forces)

Grade 8 Science Grade 8 Science

Start Date: February 10, 2014

End Date : February 28, 2014

Unit Overview	Content Elaborations	Unit Resources
<p>This topic focuses on forces and motion within, on and around the Earth and within the universe.</p>	<p>A field model can be used to explain how two objects interact without touching. An object is thought to have a region of influence around it. When a second object with an appropriate property enters this region, a force is exerted on it and can cause changes in the motion of the object.</p> <p>Electric fields exist around objects with charge. In an electric field, the two objects experience electric forces that depend on the charges involved. Electric force weakens rapidly with increasing distance.</p> <p>Magnetic fields exist around magnetic objects. In a magnetic field, the two objects experience magnetic forces that depend on the objects involved. Magnetic force weakens rapidly with increasing distance. Field lines can be seen when iron filings are sprinkled around a magnet.</p> <p>Gravitational fields exist around objects with mass. In a gravitational field, the two objects experience attractive gravitational forces that depend on the masses involved. Gravitational force weakens rapidly with increasing distance.</p> <p>Every object exerts a gravitational force on every other object with mass. These forces are hard to detect unless at least one of the objects is very massive (e.g., sun, planets). The gravitational force increases with the mass of the objects, decreases rapidly with increasing distance and points toward the center of objects. Weight is gravitational force and is often confused with mass. Weight is proportional to mass, but weight also depends upon the gravitational field at a particular location. An object will have the same mass when it is on Earth or on the moon.</p>	<p>Textbook: Chapter 5 Study Island Enrichment Gizmo Lab</p>

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	is on the moon as it does on Earth. However, the weight (force of gravity) will be different at these two locations.	
Unit Vocabulary Force Newton Net force Unbalanced forces Balanced forces Friction Gravity Weight Mass	Enduring Understandings (Big Ideas)	Connections

Standards

OH Academic Content Standards - Science (2011) - Grade 8

Strand PS Physical Science

Topic PS.1 This topic focuses on forces and motion within, on and around the Earth and within the universe.

Content Statement PS.1.1 Forces between objects act when the objects are in direct contact or when they are not touching.

PS.1.1.a Magnetic, electrical and gravitational forces can act at a distance.

Content Statement PS.1.2 Forces have magnitude and direction.

PS.1.2.a The motion of an object is always measured with respect to a reference point.

PS.1.2.b Forces can be added. The net force on an object is the sum of all of the forces acting on the object. The net force acting on an object can change the object's direction and/or speed.

PS.1.2.c When the net force is greater than zero, the object's speed and/or direction will change.

PS.1.2.d When the net force is zero, the object remains at rest or continues to move at a constant speed in a straight line.

Student Assessment Chapter Test Study Island Assessment	Unit Reflection
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Gizmo Assessment	
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Forces Between Objects

Content	Skills	Assessment
A. Forces Between Objects	A. Forces Between Objects <ol style="list-style-type: none">1. Describe the motion of an object by the position of the object in relation to a reference point2. Identify the two factors that determine speed and velocity3. Explain the difference between speed and velocity4. Analyze the relationship between velocity and acceleration5. Demonstrate that changes in motion can be measured and represented on a graph6. Describe forces, and explain how forces act on objects7. Determine the net force when more than one force is acting on an object8. Compare balanced and unbalanced forces9. Describe ways that unbalanced forces cause changes in motion10. Explain why friction occurs11. List the two types of friction, and give examples of each type12. Explain how friction can be both harmful and helpful13. Describe gravity and its effect on matter14. Explain the law of universal gravitation15. Describe the difference between mass and weight	