

Brunswick School Department

Science

Grade 7: Forces

Adopted:

Unit Overview

This unit is about how forces affect the motion of objects. The interaction between force, mass and acceleration is investigated. Net force is addressed in one dimension. Specific forces, such as gravity and magnetism, and their role in the motion of objects, are highlighted. Students investigate evidence for the existence of fields around objects involving non-contact forces.

Essential Understandings

- The motion of an object is determined by the sum of the forces acting on it.
- The greater the mass of the object, the greater the force needed to achieve the same change in motion.
- For any given object, a larger force causes a larger change in motion.
- Forces and their directions are relative.
- Gravitational forces are always attractive.
- There is a gravitational force between any two masses.
- For every force there is an equal and opposite force.
- Forces may transfer energy between objects.

Priority Standards and Performance Indicators

MISSING THIS LINE from other curricula?????

Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.

Next Generation Science Standards Addressed in this Unit

- MS-PS2-1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.
- MS-PS 2-2 Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.
- MS-PS2-3 Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.

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- MS-PS2-4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.
- MS-P2-5 Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.

Examples of Formative / Summative Assessments

- Forces Pre-assessment
- Labs
- Activities
- Quizzes
- Discussions
- Handouts
- Home work

Sample Texts and Materials/Resources

University of Colorado PhET simulations
PBS Learning Media
Veritasium video clips