

7th Grade Integrated Science Study Guide

Weeks 1 & 2



And thus Nature will be very conformable to her self and very simple, performing all the great Motions of the heavenly Bodies by the Attraction of Gravity which intercedes those Bodies, and almost all the small ones of their Particles by some other attractive and repelling Powers which intercede the Particles. The Vis inertiae is a passive Principle by which Bodies persist in their Motion or Rest, receive Motion in proportion to the Force impressing it, and resist as much as they are resisted. By this Principle alone there never could have been any Motion in the World. Some other Principle was necessary for putting Bodies into Motion; and now they are in Motion, some other Principle is necessary for conserving the Motion.

---Sir Isaac Newton "Optiks", 1704

So many fail because they don't get started - they don't go. They don't overcome inertia. They don't begin.

--Ben Stein

Overview

In this unit we will focus on Sir Isaac Newton's contributions to science. We will understand and observe Newton's laws in action; there are three of them. All of the laws deal with forces and the interactive forces between massive objects or simply, matter. Forces are push or pull interactions between two objects. Changes in motion, balance, and stability, and transfers of energy are all facilitated by forces on matter. Forces, including electric, magnetic, and gravitational forces, can act on objects that are not in contact with one another. Scientists use data from many sources to examine the cause and effect relationships determined by different forces.

Essential questions:

- How do the physical structures of living and nonliving things use forces for support and/or movement?
- How do the forces around you affect who you are?

Week 1: DUE Friday, December 2

_____ 1. Read and mark up the overview.

Name _____ Period: _____

Cycle 2: Nov 28 – Jan 20

_____ 2. Complete part B & C of the Activity: Yellowstone's "Breathing" Volcano.

_____ 3. Complete part D of the Activity: Yellowstone's "Breathing" Volcano.

Week 2: DUE Thursday, December 8

_____ 4. Complete part E of the Activity: Yellowstone's "Breathing" Volcano.

_____ 5. Participate in and take notes on the lesson: Sir Isaac Newton – 1st and 2nd laws.

_____ 6. Create a Newton's Laws Foldable

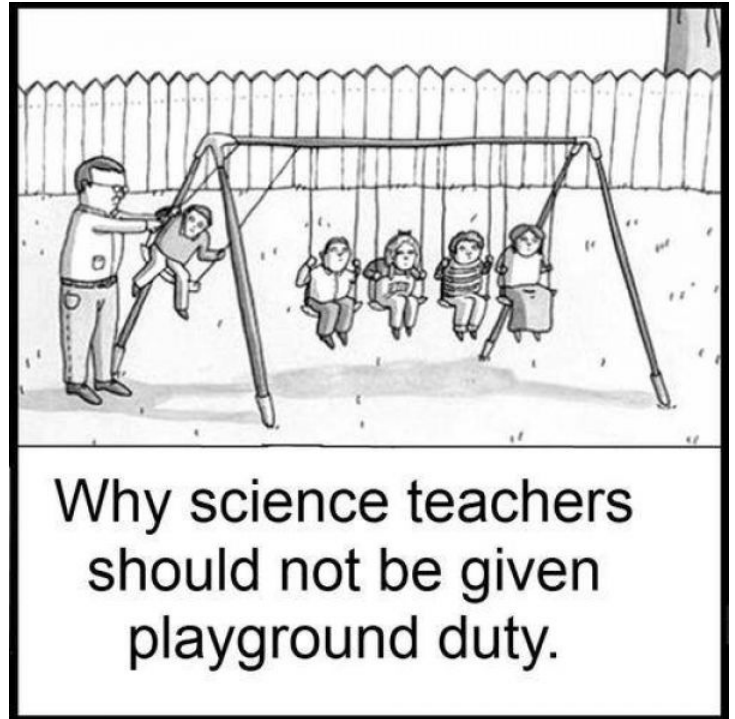
_____ 7. Participate in and take notes on the lesson: Sir Isaac Newton – 3rd law.

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Cycle 2: Identity (Weeks 3 & 4)

Week 3: DUE Friday, December 16

- _____ 8. Complete all 9 of the Lab Activities:
Newton's Laws Exposition
- _____ 9. Participate in and take notes on
the Follow-up to the Lab Activities.
- _____ 10. Participate in the Lesson: Free
body diagrams
- _____ 11. Complete the Graphic Organizer on
the Free Body Diagrams lesson.
- _____ 12. Complete the practice problems:
Free body diagrams.



Week 4: DUE Tuesday, December 20

- _____ 13. Listen to the story: Mabel the Marble.
- _____ 14. Work together in groups on the Activity: Mabel the Marble.
- _____ 15. Compile, discuss, and share your data on the Activity: Mabel the Marble.