

Honors Freshman Physics Newton's Laws - A study of how and why motion occurs.

Test: September 26th

Lingo Quiz- Sept. 19th

Homework Quiz – Sept. 24th

The goals of this unit will allow each student to:

- a. gain a better understanding of Newton's three laws of motion and forces in explaining motion
- b. continue making proper scientific measurements and calculations w/ significant digits
- c. define and properly use all vocabulary
- d. properly apply all terms in describing/explaining real world examples
- e. continue constructing and interpreting scientific graphs of motion
- f. teach someone else the concepts discussed
- g. practice proper laboratory safety & use of lab equipment and computers.

Performance Objectives: After completing this unit, when asked in class or on a written test or quiz, each student will:

1. **State** and **apply** Newton's first law of motion to actual situations. Give examples of what happens to an object when no external net force acts on it.
2. **Recognize** how force changes an object's motion.
3. **Describe** how inertia is related to mass.
4. **Explain** inertia using examples and **relate** uniform motion to inertia
5. **Recognize** a force, mass, and acceleration by the units only.
6. **State** Newton's second law of motion and **solve** problems involving this law
7. **Identify** & explain the relationships between force, mass, acceleration
8. **Construct & interpret** force v. mass and force v. acceleration graphs
9. **Explain** the fundamental cause of accelerated motion
10. **Distinguish** between mass and weight
11. **Recognize** and provide examples of forces
12. **Relate** gravitational force to object mass and distance between objects
13. **State** Newton's third law of motion and **identify** action-reaction force pairs.
14. **Differentiate** between balanced forces and force pairs
15. Perform scientific calculations using (KUES) determine acceleration, force, mass, net force
16. **Identify** the different forms of friction
17. **Define** and **differentiate** between static and dynamic equilibrium
18. **Distinguish** between freefall and non-freefall
19. **Relate** terminal velocity to the effect of air resistance and balanced forces

Textbook Reference – Physics A First Course – CPO Science

Chapter 2 [pg. 28 -37, 43-45] Newton's 1st & 2nd Laws

Chapter 3 [pg. 58-60] Newton's 3rd Law

Chapter 6 [pg. 151-152] Gravitational Force

Handouts- Teacher provided and available on Website

-Homework Guide – this sheet w/objective and textbook assignments

-Lingo – Key vocabulary

-Newton Law Notes

-Newton Worksheets- contains conceptual & calculation problems to be done on own paper & used on homework quiz

Honors Freshman Physics

Newton's Laws - A study of how and why motion occurs.

This sheet will be used to keep track of reading & homework assignments. Each homework assignment is worth 20pts and must be turned in on the DUE DATE. Late homework will not be accepted. 5 points will be added to the unit test for any student that has all the homework completed and turned in on time and reflecting quality work.

Quality Work is having the answer reflect the question. On **UV** assignments, the terms and definitions are written out. (Answering with the "term" only is not quality.) Each assignment turned in must be labeled with the following in the right-hand corner of the paper. →

Your Name
Date
Period

Homework # 1 – Unit Name (Newton's Law)

Each section must be clearly labeled with a heading UV, RC, SP or AYK and the problem numbers. Example: Section 2.1 UV: 1-5 (then number & do the problems). Repeat for RC, SP and/or AYK

Textbook Homework

UV-Understanding Vocabulary RC-Reviewing Concepts SP- Solving Problems AYK- Applying Your Knowledge

Date	Read	Homework Assignments 1 - 5	Due Date
Sept. 8	2.1- p. 28-31	p. 54-55 UV :1-5 RC : 1-5 SP : 1-2	Sept. 10
Sept. 10	2.2- p. 32-37	p. 54-55 UV : 6,7 RC : 6-12 SP : 4a-b, 7a-c	Sept. 12
Sept. 15	2.3- p. 43-45	p. 54-55 UV : 8-12 RC :18-20 SP : 10a-e AYK : 5 & 6	Sept. 17
Sept. 17	3.1- p. 5860 6.3- p. 151-153	p. 80-81 RC :1-5 AYK : 2 p. 161 RC : 24, 25	Sept. 19
Sept. 19	5.2- p. 113 -114 5.3- p. 119-123	p. 130-131 UV : 1-3, 5, 6, 9 RC : 1,2,6,7 SP : 4 a-b, 5 p. 130-131 UV : 9, 10 RC : 13-19 SP : 9, 10	Sept. 22

Check the class Website to get updates or to print out a new assignment sheet or other docs.

www.waltonhigh.org → Departments→ Science →Honors Freshmen Physics → Fall Handouts → Current unit.

Lingo to be learned - definitions are provided on-line

inertia, mass, force, net force, balanced forces, friction, static equilibrium, dynamic equilibrium, gravity, weight, Newton's First law of motion, Newton's Second law of motion, Newton's Third law of motion, action force, reaction force, air resistance, equilibrium, weightlessness, terminal velocity.

Equations Used in the Unit:

$$\vec{F} = m \cdot \vec{a}$$

$$\vec{a} = \frac{(\vec{v}_f - \vec{v}_i)}{t}$$

$$\vec{F}_g = m \cdot g$$