



Unit 4 Plan: **Newton's Laws**
 Physics1 Honors @ PalmHarborUniversityHigh

Day	Date	Topic	Assignments Due / Schedule
1		Read Section 4.1, pages 87-95 CW#1: problems 1-14 (section 4.1)	Finish In-class assignment
2		Review Section 4.1 (<i>bonus: note sheet</i>) Video: Law of Inertia	Read Section 4.2, pages 96-101 HW#1: Ch 4 problems 15-18
3		Using Newton's Laws (<i>bonus: note sheet</i>) Ch 4.2 Notes: Mass vs. Weight	HW#2: Ch 4 problems 19-20
4		Friction Notes (Ch 5.2) CW#2: Friction Problems (<i>print out from web</i>)	Read Section 5.2, pages 126-130 HW#3: Chapter 5: #17,19,23,94
5		Friction Mini-Lab	
6		Terminal Velocity Intro 3 rd Law	Read Section 4.3, pages 102-107 HW#4: Practice Problems 28-32
7		CW#3: Newton's 3 rd Law Worksheet	
8		Newton's Law Mechanical Universe Video	HW#5: p.112: 41,43,46,47,48,52,53,56 p. 140: 56,61,75
9		Review	Bonus Problems p. 113: 60,61,64,71,72 p. 142: 90,91,92
10		Unit 4 Test	Newton Scrapbook Due _____ ?

Note: Homework is due on the day following the assignment, unless otherwise noted.

Objectives / Essential Learnings: (key terms in bold)

1. Define **force** and be able to identify the **four basic forces**
2. Differentiate between **contact forces** and **field forces**.
3. Understand and draw **free-body diagrams**.
2. State **Newton's three laws of motion** and display an understanding of their applications.
3. Be able to determine a **net force** that causes acceleration.
4. Distinguish between **weight** and **mass** and use Newton's second law to relate them.
5. Differentiate between **actual weight** and **apparent weight**.
6. Define **friction** and be able to use the **coefficient of friction** to solve problems.
7. Demonstrate an understanding of the meaning of **net force** and be able to calculate the acceleration that results.
8. State the requirements for **equilibrium**.
9. Understand the definition of **free fall** and the causes of **air resistance** and **terminal velocity**.
10. Identify an **action-reaction pair** of forces and its role in a body's acceleration

(weight) $F_g = mg$

(force of friction) $F_f = \mu F_N$

Equilibrium: $\sum F = 0$ or $F_{net} = 0$ **Newton's 2nd Law:** $\sum F = ma$ or $F_{net} = ma$ or $a = \frac{F_{net}}{m}$