

8th Grade Study Guide

Chapter 3

NEWTON'S SECOND LAW Section 1

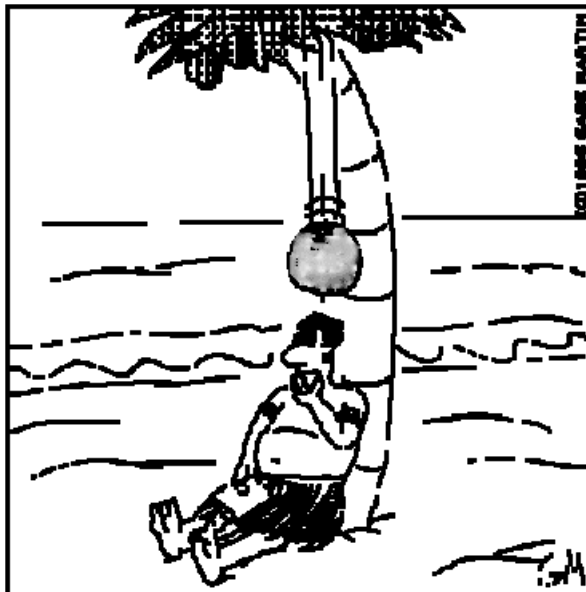
- Define Newton's second law, give real world examples.
- Calculate force using: Force = mass x acceleration ($F=ma$)
- Understand friction as a force and identify examples.
- Delineate static friction, sliding friction and rolling friction.
- Define and demonstrate air resistance and terminal velocity.

GRAVITY Section 2

- Define gravity and explain the factors that affect its strength.
- Show how the range of gravity is explained by the law of universal gravitation.
- Delineate weight and mass.
- Calculate the weight of an object using Earth's acceleration.
- Explain the relationship between free fall and weightlessness.
- Define projectile; demonstrate how vertical and horizontal motions are independent.
- Explain centripetal force and acceleration; give examples.

THE THIRD LAW OF MOTION Section 3

- Define Newton's third law. Give real world examples.
- Define and calculate momentum: momentum = mass x velocity ($p=mv$)
- Calculate force using momentum.
- Demonstrate the law of conservation of momentum.



Centuries before Isaac Newton's discoveries, Polynesian mathematician Pao Lau would have discovered the laws of gravity first.....had he ever come out of the coma.