

Objectives:

1. Describe examples of force and identify appropriate SI units used to measure force.
2. Explain how the motion of an object is affected when balanced and unbalanced forces act on it.
3. Compare and contrast four kinds of friction
4. Describe how earth's gravity and air resistance affect falling objects
5. Describe the path of a projectile and identify the forces that produce projectile motion
6. Calculate force, mass, and/or acceleration using the formula from Newton's second law
7. Calculate the weight of objects and relate it to its mass
8. Describe what normal force is
9. Draw and interpret force diagrams (balanced force, unbalanced force, acceleration, net force, etc.)
10. Define terminal velocity
11. Describe what affects air resistance and how?
12. Describe inertia in terms of Newton's first law.
13. Explain how action and reaction forces are related according to Newton's third law of motion
14. Calculate momentum of an object and describe what happens when momentum is conserved during a collision

Assessments:

1. Assignments:
 - a. castle learning
 - b. unbalanced and balanced forces worksheet #1 (linked to website)
 - c. balanced and unbalanced forces worksheet #2
 - d. Bill Nye friction video worksheet
 - e. acceleration due to gravity video worksheet
 - f. Newton's second law equation worksheet
 - g. Forces calculations worksheet
 - h. book worksheets 12.1 - 12.3 and wordwise
2. Labs:
 - a. gravitational force and mass lab
 - b. friction inquiry lab
 - c. projectile motion inquiry/simulation lab
 - d. Inertia mini lab inquiry
 - e. Acceleration lab
 - f. momentum simulation lab
3. Tests and Quizzes:
 - a. 1 closed notebook quiz
 - b. 1 open notebook quiz
 - c. Test

Vocabulary:

- force
- newton

- net force
- friction
- static, rolling, sliding, and fluid friction
- air resistance
- gravity
- terminal velocity
- normal force
- weight
- balanced and unbalanced force
- projectile motion
- mass
- inertia
- momentum
- law of conservation of momentum