

Chapter 3: Forces

I Can Statements

I can...

1. Define force.
2. Identify forces acting on an object in a given situation and use arrows to represent them in a force diagram.
3. Add forces acting in the same direction or opposite directions to get a net force.
4. Use the Newton as the metric unit of force.
5. Recognize that when forces are balanced,
 - a. The net force acting on the object is zero.
 - b. An object at rest will stay at rest.
 - c. An object in motion will stay in motion with the same speed and direction.
 - d. This represents Newton's first law of motion.
6. State Newton's first law of motion, give an example, and relate it to mass.
7. Recognize that when forces are unbalanced,
 - a. The net force acting on the object is not zero.
 - b. The object will accelerate in the direction of the unbalanced force according to $F = ma$.
 - c. This represents Newton's second law of motion.
8. State Newton's second law of motion.
9. Make calculations with the equation from Newton's second law of motion, $F = ma$.
10. Define friction.
11. Distinguish between sliding, rolling, and fluid friction (lubricants).
12. Explain how the force of gravity between any two objects depends on mass and distance.
13. Use 9.8 m/s^2 to represent the acceleration of gravity for objects near the Earth's surface.
14. Explain how terminal velocity affects gravity to create a balanced force.

15. Make calculations involving weight, mass, and the acceleration of gravity.
16. Distinguish between weight and mass.
17. State Newton's third law of motion and give an example.
18. Determine what part centripetal forces play in objects moving in a curved path.
19. Make calculations involving momentum, mass, and velocity.