


# Chapter 2 Notes

Forces

# Section 2.1 Notes

»» The Nature of Force

# Key Concepts

- ▶ How is force described?
  - ▶ How are unbalanced and balanced forces related to an objects motion?
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# Force

- ▶ A push or pull
- ▶ Described by:
  - Strength
  - Direction in which it acts
- ▶ Measured in Newtons (N)
  - Lifting a lemon!



# Force

- ▶ Represented by an arrow pointing in the direction of the force



5N



5N

# Net Force

- ▶ Combination of all forces acting on an object
- ▶ Determines
  - If object moves
  - How fast



A diagram illustrating the concept of net force. It shows two horizontal arrows pointing towards each other. The left arrow is red and labeled "5 N". The right arrow is blue and also labeled "5 N". To the right of the blue arrow is an equals sign followed by a zero, indicating that the net force is zero.

$$5\text{ N} \rightarrow \leftarrow 5\text{ N} = 0$$

Forces may cancel each other and produce no net force.

# Unbalanced Forces

- ▶ Cause an object to start moving, stop moving, or change direction

# Unbalanced Forces



**Unbalanced Forces in the Same Direction**  
When two forces act in the same direction, the net force is the sum of the two individual forces. The box moves to the right.



**Unbalanced Forces in the Opposite Direction**  
When two forces act in opposite directions, the net force is the difference between the two individual forces. The box moves to the right.

# Balanced Forces

- ▶ Balanced forces acting on an object do not change the object's motion.



## **Balanced Forces in Opposite Directions**

When two equal forces act in opposite directions, they cancel each other out. The box doesn't move.