Physics

Semester 1, Fall 2025

Weeks 7-8

Monday / Tuesday (Sept 22 – 23)

- T: 5E - explain and apply the concepts of equilibrium and inertia as represented by Newton's first law of motion using relevant real-world examples such as rockets, satellites, and automobile safety devices
- 5F - calculate the effect of forces on objects, including tension, friction, normal, gravity, centripetal, and applied forces, using free body diagrams and the relationship between force and acceleration as represented by Newton's second law of motion
- 5G - illustrate and analyze the simultaneous forces between two objects as represented in Newton's third law of motion using free body diagrams and in an experimental design scenario
- O: I will be able to explain the concept of force
- D: by completing an Actively Learn and a Lab involving inertia.
- A: Newton's Laws, force, inertia
- Y: How does inertia apply to a car accident?

Wednesday / Thursday (Sept 24 – 25)

Journal 2.1

- What was my grade for the first 6-weeks? Am I happy with it? What will I do this six-weeks as compared to the 1st six-weeks?

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- 5G - illustrate and analyze the simultaneous forces between two objects as represented in Newton's third law of motion using free body diagrams and in an experimental design scenario
- O: I will be able to identify and explain the parts of a free body diagram
- D: by completing a worksheet after I participate in a lecture, watch a video, and discuss real world examples with my group.
- A: Free body diagrams, Newton's 1^{st} and 3^{rd} Laws
- Y: What are the steps in setting up and labeling a free body diagram?

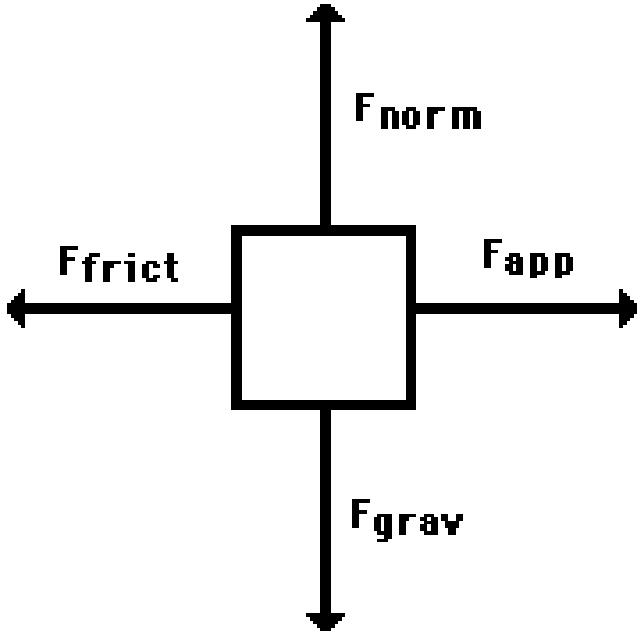
Notes – Newton's 1st and 3rd Laws

- 1st Law: An object in motion will remain in motion unless acted on by an external force. An object at rest will remain at rest unless acted on by an external force.

- 3rd Law: For every action there is an equal but opposite action.

Free Body Diagram

- Free-body diagrams are diagrams used to show the relative magnitude and direction of all forces acting upon an object in a given situation.



Types of Forces

- Gravity
- Normal
- Applied
- Friction

Inertia

- a property of matter by which it continues in its existing state of rest or uniform motion in a straight line, unless that state is changed by an external force.

- Essentially, inertia is Newton’s First Law

- Does not depend on velocity, shape, or momentum, it ONLY depends on mass. More mass = more intertia

Unit of Measurement

- Newton = N

- 1 N = 1 kg m/s^2

Free Body Diagrams

- Complete the worksheet in Canvas.

Friday (Sept 26)

- C-day

Monday / Tuesday (Sept 29 – 30)

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- **5G** - illustrate and analyze the simultaneous forces between two objects as represented in Newton's third law of motion using free body diagrams and in an experimental design scenario
- O: I will be able to explain scenarios of real world situations as they pertain to Newton's 1st and 3rd laws
- D: by completing a worksheet.
- A: Free body diagrams, Newton's 1st and 3rd Laws
- Y: How are Newton's Laws observed in everyday life?

Wednesday / Thursday (Oct 1 – 2)

- Substitute on Thursday

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- **5F** - calculate the effect of forces on objects, including tension, friction, normal, gravity, centripetal, and applied forces, using free body diagrams and the relationship between force and acceleration as represented by Newton's second law of motion
- **5G** - illustrate and analyze the simultaneous forces between two objects as represented in Newton's third law of motion using free body diagrams and in an experimental design scenario
- O: I will be able expand my understanding of Newton's Laws
- D: by completing a POGIL.
- A: Free body diagrams, Newton's 1st and 3rd Laws
- Y: How are Newton's Laws responsible for motion?

Friday (Oct 3)

- C-day
- Substitute