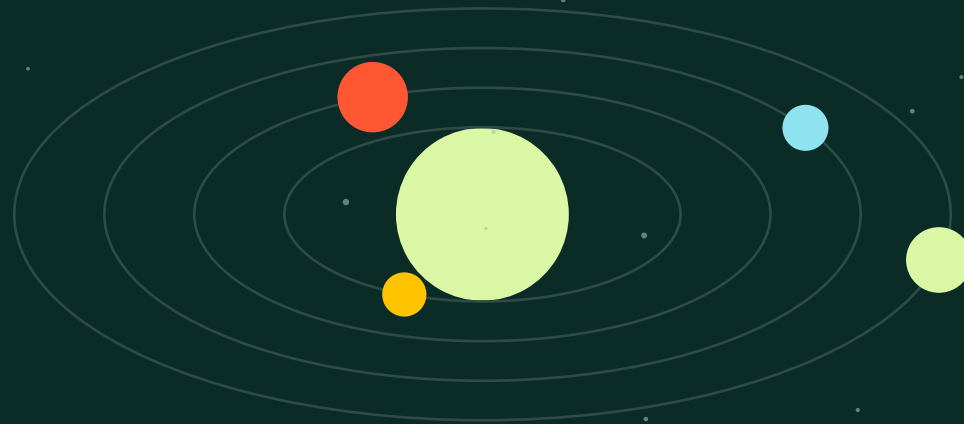




NEWTON'S LAWS OF MOTION

Force, mass and motion explained

Student Name · Physics · Class XI

CONTENTS

AGENDA

01 Introduction

02 Concepts

03 Experiment

04 Applications

05 Summary



Image

WHAT IS NEWTON'S LAWS?

Newton's three laws describe how objects move when forces act on them.

They explain everything from a rolling ball to rockets and planets, and they form the foundation of classical mechanics.



Diagram

KEY CONCEPTS

01

First law

Objects keep their state of motion unless a force acts.

02

Second law

Force equals mass times acceleration ($F = ma$).

03

Third law

Every action has an equal and opposite reaction.

EVERYDAY EXAMPLES

Situation	Law	Why
Seatbelts	First	Body keeps moving when the car stops
Pushing a trolley	Second	More force, more acceleration
Rocket launch	Third	Gas pushed down, rocket pushed up

Reference values for illustration.

TRY IT

EXPERIMENT

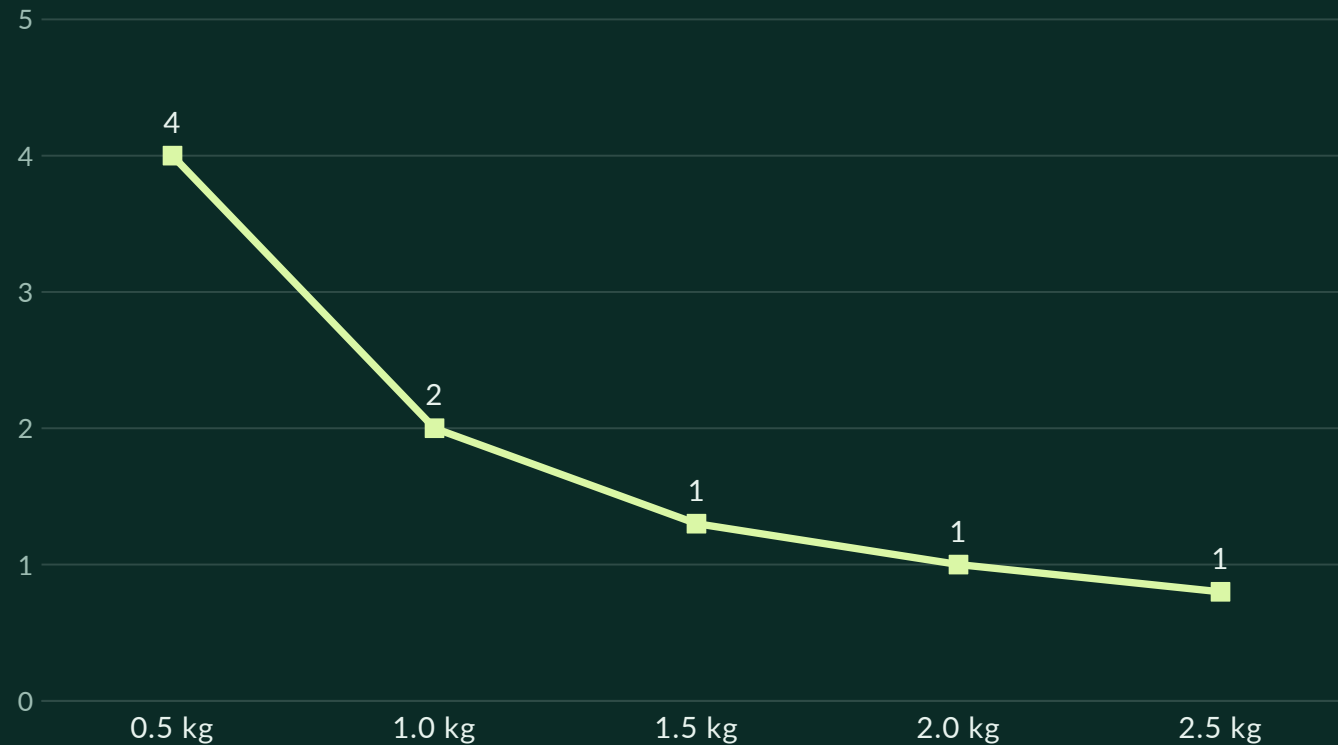
- Roll a trolley down a ramp with a fixed force
- Add masses to the trolley step by step
- Time the trolley over a fixed distance
- Calculate acceleration for each mass

SAFETY

Keep the ramp stable and stand clear of moving trolleys.

RESULTS

ACCELERATION VS MASS



With the same force, acceleration falls as mass rises (sample data).

Sample data for illustration — replace with your own figures.

APPLICATIONS

REAL-WORLD APPLICATIONS



Image 1

Vehicles

Brakes, airbags and seatbelts



Image 2

Sports

Kicking, throwing and running



Image 3

Space

Rockets and satellites

REMEMBER

QUICK FACTS

$$F = ma$$

second law in one line

$$1 \text{ N}$$

force to accelerate 1 kg at
 1 m/s^2

1687

year the laws were
published

SUMMARY

SUMMARY

- Objects resist changes in motion
- Force causes acceleration ($F = ma$)
- Forces come in action–reaction pairs
- The laws explain motion all around us

THANK YOU

Questions?

Student Name • Physics