Physics 0	**Class Handout**	**Week 7**

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Newton's Second Law of Motion

Introduction:
Newton's Second Law of Motion describes the relationship between an object's mass, acceleration, and the force applied to it. This law is crucial for understanding how objects respond to forces and how their motion changes. Let's explore this law and its implications.

Newton's Second Law of Motion:
When a body is acted upon by a net force, the body's acceleration multiplied by its mass is equal to the net force.

Newton's Second Law can be expressed mathematically as:
$F = m \cdot a$

Where:

F represents the force applied to an object (in newtons, N).
m is the mass of the object (in kilograms, kg).
a is the acceleration of the object (in meters per second squared, m/s^2).

Questions:

Question 1:
Imagine an astronaut with a mass of 75 kg on a planet with a gravity acceleration of 8.5 m/s^2. Calculate the force of gravity acting on the astronaut on this planet.

Question 2:
A car with a mass of 1,200 kg is initially at rest. A constant force of 6,000 N is applied to the car. Calculate the following:

The acceleration of the car.
The time it takes for the car to reach a speed of 30 m/s.
The distance the car travels during this acceleration.