

Ch 3

Sec 3.3

obj: How does Newton's first law explain what happens in a car crash?

Newton's First Law and car crashes.

- Everyone in a moving car has inertia.
- Everyone's motion is in the direction of the moving car.
- Seatbelts are used to make us part of the car.

Newton's 2nd Law + Gravitational Acceleration

- Gravity can act like a net force.
 - * Gravity can cause an object to accelerate.
 - * Gravity will cause the same acceleration on all objects.
 - * Independent of the objects mass.
 - * Independent of the objects shape.
- The acceleration is called gravitational acceleration.
 - $g = 9.8 \text{ m/s}^2$ on Earth.
- Air resistance is a frictional force that acts against the motion of objects in free fall.
 - * Objects in free fall reach a terminal velocity.
 - * Balanced forces acting on the object.
 - * Forces are air resistance and the objects weight

Centripetal Force

- The net force that causes an object to follow a curved path.
- * Is a center seeking force.
- * The direction is towards the center of the circle.
- * Causes the objects centripetal acceleration.