An object at rest tends to remain at rest and an object in motion tends to continue moving with constant velocity unless compelled by a net external force to act otherwise.

NEWTON'S LAWS OF MOTION

1ST LAW

LAW OF INERTIA

- equilibrium occurs when \( F_{\text{net}} = 0 \)
- acceleration occurs when \( F_{\text{net}} > 0 \)
- equilibrium does not occur when an object travels with a constant velocity
- equilibrium does not occur when an object is stationary
- acceleration occurs when an object moves with constant speed
- acceleration occurs when an object changes speed
- changing direction occurs during circular motion, parabolic motion, and orbital motion
- deceleration occurs when an object undergoes centripetal acceleration
NEWTON'S LAWS OF MOTION

1ST LAW

LAW OF INERTIA

Corpus omne perseverare in statu suo quiescendi vel movendi uniformiter in directum, nisi quatenus illud a viribus impressi cogitur statum suum mutare.

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