

Force & Motion

Can an object's acceleration be a negative number? Why or why not? - Yes. When an object slows down and the final speed is less than the initial speed, the object's acceleration will be a negative number.

If forces occur in equal but opposite pairs, how can anything ever move? – According to Newton's third law, the equal and opposite forces work on different objects. Read more about this here:

<http://www.mansfieldct.org/schools/mms/staff/hand/Lawshowcananythingmove.htm>

Two crates, one heavy and one light, are at rest on a waxed floor. Which crate will need a greater force to provide the same acceleration? Use the concept of inertia to explain your answer. – The heavy crate has more inertia, so it requires more force to make it accelerate.

Explain the role of friction in walking on a sidewalk versus walking on a sidewalk covered with ice. – Friction between your shoe and the sidewalk allows you to push against the sidewalk. Ice decreases this friction.

You sit on a rock. Your weight is a force acting on the rock. What force acts on you? – The rock provides an upward force that is equal to your weight since you are not moving.

How is acceleration related to change in speed? – Acceleration is the change in velocity divided by the time needed for the change to occur, and velocity changes when speed changes.