

## **Newton's First Law of Motion**

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Newton's first law of motion states that an object either continues to be in state at rest or in motion unless acted upon by an external force. A skateboard, in this case, is the object used to satisfy Newton's first law of motion when three children named Tom, Jerry and Spike are playing at a skating rink. When Tom and Jerry are situated on a skateboard and Spike starts pushing them, Spike requires significant time and energy for the skateboard to start moving. When the skateboard starts moving, it moves almost freely on the smooth pavement in the direction that Spike is pushing it and little effort is required to get it going. However, if Spike wants to stop the skateboard, he requires a significant amount of energy to bring it to a halt.

To change an object's motion, inertia needs to be overcome by an unbalanced force (Roemmele and Sederberg 285). When Spike applies force on the skateboard, he provides an unbalanced force. Suddenly, Tom and Jerry are thrust forwards towards the direction in which Spike applies the force as they continue to stay in their resting position. This tendency of objects to oppose a change in motion is referred to as inertia. Friction is the force that opposes motion. Friction force is present between the skateboard and the ground, and Spike has to continually push the skateboard to keep it in motion. If Spike stops pushing the skateboard, friction will eventually make the skateboard's wheels stop moving. All the skateboard's states of motion or rest require an unbalanced force from Spike to push or stop the skateboard. Newton's first law of motion is therefore satisfied, as the objects continue to stay in their resting position unless Spike provides an unbalanced force. After Spike stops pushing them, Tom decides to skate on his own. In his skating, Tom does some jumps using the skateboard. As soon as he jumps up, he realizes that he has to come down. The gravitational force is responsible for bringing the skateboard and Tom down.

### References

Roemmele, Christopher, and David Sederberg. *Lazy Days: An Active Way to Put Newton's First Law into Motion (Or Rest)*. *The Physics Teacher* 55.5 (2017): 285.