Unidad 5: Actividad 1

**Newton’s laws of motion**

physics



[basketball; Newton's laws of motion](https://cdn.britannica.com/91/149891-050-8B81F749/basketball-player-jump-shot-arcing-path-Isaac.jpg). When a basketball player shoots a jump shot, the ball always follows an arcing path. The ball follows this path because its motion obeys Isaac Newton's laws of motion.

## **Newton’s first law: the law of inertia**

Newton’s first law states that if a body is at rest or moving at a constant speed in a straight line, it will remain at rest or keep moving in a straight line at constant speed unless *it*1 is acted upon by a [force](https://www.britannica.com/science/force-physics). In fact, in classical Newtonian mechanics, there is no important distinction between rest and [uniform motion](https://www.britannica.com/science/linear-motion) in a straight line; *they2* may be regarded as the same state of motion seen by different observers, *one3* moving at the same [velocity](https://www.britannica.com/science/velocity) as the particle and *the other4* moving at constant velocity with respect to the particle. This [postulate](https://www.britannica.com/dictionary/postulate) is known as the law of [inertia](https://www.britannica.com/science/inertia).

The [law of inertia](https://www.britannica.com/science/law-of-inertia) was first formulated by [Galileo Galilei](https://www.britannica.com/biography/Galileo-Galilei) for horizontal motion on Earth and was later generalized by [René Descartes](https://www.britannica.com/biography/Rene-Descartes). Although the principle of inertia is the starting point and the fundamental assumption of classical mechanics, it is less than intuitively obvious to the untrained eye. In Aristotelian mechanics and in ordinary experience, objects *that5* are not being pushed tend to come to rest. The law of inertia was deduced by Galileo from his experiments with balls rolling down inclined planes.

For Galileo, the principle of inertia was fundamental to *his6* central scientific task: he had to explain how is it possible that if Earth is really spinning on its axis and orbiting the Sun, we do not sense that motion. The principle of inertia helps to provide the answer: since we are in motion together with Earth and our natural tendency is to retain that motion, Earth appears to us to be at rest. Thus, the principle of inertia, far from being a statement of the obvious, was once a central issue of scientific [contention](https://www.merriam-webster.com/dictionary/contention). By the time Newton had sorted out all the details, it was possible to accurately account for the small deviations from this picture caused by the fact that the motion of Earth’s surface is not uniform motion in a straight line (the effects of rotational motion are discussed below). In the Newtonian formulation, the common observation that bodies that are not pushed tend to come to rest is attributed to the fact that *they7* have unbalanced forces acting on them, such as [friction](https://www.britannica.com/science/friction) and air resistance.

1. **Buscar conectores de condición en el texto. Marcar la/las oraciones en condicional. ¿En qué tipo de condicional está cada oración?**
2. **Marca con un color la condición y con otro el resultado/consecuencia.**
3. **Elegir la opción correcta de traducción.**
4. Si un cuerpo está en reposo o en movimiento a una velocidad constante en línea recta, …
5. permanece en reposo o se mantiene en movimiento en línea recta a una velocidad constante.
6. puede permanecer en reposo o mantenerse en movimiento en línea recta a una velocidad constante.
7. permanecerá en reposo o se mantendrá en movimiento en línea recta a una velocidad constante.
8. Cuando un jugador de básquet lanza un tipo en suspensión, …
9. la pelota siempre sigue una trayectoria en forma de arco.
10. la pelota siempre seguirá una trayectoria en forma de arco.
11. la pelota debe siempre seguir una trayectoria en forma de arco.
12. ……., no percibimos ese movimiento..
13. Si la tierra realmente girara sobre su eje y orbitara alrededor del sol,
14. Si la tierra realmente está girando sobre su eje y orbitando alrededor del sol,
15. Si la tierra realmente gira sobre su eje y orbita alrededor del sol,
16. **Decir a qué hacen referencia las palabras enumeradas en el texto.**
17. **Escribir el equivalente en español de las siguientes frases extraídas del texto.**
18. Newton´s law of motion:
19. Newton´s first law:
20. …in classical Newtonian mechanics:
21. the starting point:
22. the fundamental assumption of classical mechanics:
23. ball rolling down inclined planes:
24. **Marcar en el texto los conectores que encuentres. Analizarlos y clasificarlos. (ej. de adicción, ejemplificación, contraste, etc.)**

Por ejemplo: and - adicción

1. **Marcar en el texto todas las formas verbales en voz pasiva. Completar el siguiente cuadro.**

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| **Voz Pasiva** | **Tiempo verbal** | **Infinitivo del verbo principal** | **Traducir**  | **Traducir con SE**  |
| May be regarded | Verbo modal pasiva | regard | Puede ser considerado | Se puede considerar |
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1. **Según el contexto, marcar en el cuadro anterior cual sería la traducción correcta.**