# Newton's First Law Worksheet

Newton's First Law, also called the Law of Inertia, states that an object will remain at rest or continue moving at a constant speed in a straight line unless acted on by an unbalanced external force. This explains why a ball on the ground does not move unless someone kicks it, and why a moving bus causes passengers to lean forward when it suddenly stops. In everyday life, forces such as friction, pushes, and pulls are responsible for changing an object's motion. Without these forces, objects would continue doing exactly what they were already doing.

## Part A — Close-Ended Questions

1. Newton's First Law is also known as the Law of _____.
2. An object at rest will stay at rest unless acted on by a _____ force.
3. A ball rolling on the ground eventually stops because of:
   a) inertia  b) gravity  c) friction  d) no forces acting
4. When a bus suddenly stops, passengers move forward because:
   a) the bus pushes them  b) their inertia keeps them moving
   c) gravity pulls them forward  d) air resistance increases
5. If the net force on an object is zero, the object must:
   a) speed up  b) slow down  c) move at constant velocity  d) fall downward
6. Which situation best shows Newton's First Law?
   a) A rocket speeding up  b) A ball rolling forever on a frictionless surface
   c) A swimmer pushing water backward  d) A balloon releasing air



## Part B — Open-Ended Questions

7. Explain Newton's First Law in your own words.

8. Give an example of Newton's First Law involving an object at rest.

9. Give an example of Newton's First Law involving an object in motion.

10. Why do passengers need seatbelts? Explain using inertia.

11. A coin slides across a smooth table and slows down. Does this break Newton's First Law? Explain.

12. A student says, "Objects need a force to keep moving." Explain why this is incorrect.

**Part C — Fun Experiment: The Tablecloth Pull Trick**

Objective:

To observe inertia and understand Newton's First Law.



Materials:

- Smooth table
- Plastic cup
- Thin cloth or paper towel

Procedure:

1. Place the cloth on the table.
2. Put the cup on top.
3. Pull the cloth quickly and straight.
4. Observe what happens.

Reflection Questions:

13. What happened to the cup when you pulled the cloth?

14. How does this experiment show Newton's First Law?

15. What would happen if you pulled the cloth slowly? Why?

**Answer Key**

**Part A Answers:**

1 inertia 2. unbalanced force 3-c 4-b 5-c 6-b

**Part B Sample Answers**

7. Objects do not change what they are doing unless a force makes them. If something is still, it stays still. If something is moving, it keeps moving in the same direction and at the same speed unless a force slows it down, speeds it up, or changes its direction.

8. A book on a table stays still until someone pushes it. Without a push or pull, it will not start moving because no unbalanced force acts on it.

9. A skateboard rolling forward keeps moving until friction or a foot slows it down. Without friction, it would continue moving at the same speed.

10. When a car stops suddenly, passengers' bodies want to keep moving forward due to inertia. Seatbelts provide the force needed to stop them safely.

11. This does not break Newton's First Law. The coin slows because friction acts on it. Friction is the unbalanced force that changes its motion.

12. Objects naturally keep moving unless a force acts on them. Forces are only needed to change motion, not maintain it. In everyday life, friction makes objects slow down, not a lack of force.

**Part C Sample Reflections**

13. The cup stayed almost in place because it resisted changes in motion.

14. The cup’s inertia kept it at rest even though the cloth moved quickly.

15. If you pull the cloth slowly, the cup will move with the cloth because friction has more time to act on it.