# Newton's Second Law – Reading Comprehension Worksheet

Name: _____ Class: _____ Date: _____

## Reading Passage

Newton's Second Law explains how forces make objects speed up, slow down, or change direction. The law says that acceleration depends on two things: the size of the force and the mass of the object. Acceleration means how quickly something changes its speed. The law can be written as F = m × a. A bigger force makes an object accelerate more. A bigger mass makes an object accelerate less for the same force.

### Everyday Examples:

1. Pushing a bicycle: A light bicycle speeds up easily. A heavy bicycle needs more force.

2. Kicking a ball: A football moves far when kicked. A bowling ball needs a much stronger kick.

3. A car speeding up: Pressing the accelerator increases the force from the engine, so the car accelerates.

4. A rocket taking off: A rocket pushes gas downward with a huge force. This creates an upward force that makes the rocket accelerate into the sky.



## Part A – Closed-Ended Questions:

1. What does Newton's Second Law explain?

2. Write the equation for Newton's Second Law.

3. If you use a bigger force, what happens to the acceleration?

4. A force of 20 N acts on a 4 kg object. What is its acceleration?

5. Which object needs more force to accelerate: a light object or a heavy object?

## Part B – Open-Ended Questions:

6. Why is a heavy object harder to accelerate than a light object?

7. Describe one real-life example of Newton's Second Law.

8. Why does a rocket accelerate upward even though gravity pulls it down?

9. How does Newton's Second Law help us understand the motion of a car?

10. Describe a simple experiment that shows the relationship between force and acceleration.

## Answer Key – Part A:

1. It explains how forces make objects accelerate.

2. $F = m \times a$

3. The acceleration becomes bigger.

4. $a = 20 / 4 = 5\ m/s^2$

5. A heavy object.

## Answer Key – Part B:

6. A heavy object has more mass and resists changes in motion, so it needs a bigger force to accelerate.

7. Example: An empty shopping cart speeds up quickly when pushed. A full cart is heavier and needs more force.

8. A rocket produces a large upward thrust. Even though gravity pulls downward, thrust is bigger, creating upward acceleration.

9. Pressing the accelerator increases the engine force, causing acceleration. A heavier car accelerates less with the same force.

10. A trolley pulled by a falling weight shows that increasing force increases acceleration.