Science & Scripture Workbook

Newton's Second Law of Motion



By Katie Swank

Student Name: _____

Science & Scripture Workbook:
Newton's Second Law of Motion

The Core Concept

Newton's Second Law of Motion states that the acceleration of an object depends on two things: the net force acting upon the object and the mass of the object.
This is perfectly summed up by the famous formula:

$$\text{Force} = \text{Mass} \times \text{Acceleration} \quad (F = ma)$$

Mass is how much "stuff" or matter is in an object.
Acceleration is how fast an object changes its speed or direction.
Force is the push or pull required to move that mass.

Fill-in-the-Blanks Challenge

Word Bank:
Acceleration • Greater • Less • Mass • Force • Double • Net • Kilograms • Newtons • Direction

Newton's Second Law focuses on how a _____ changes an object's motion.

The amount of matter in an object is called its _____.

The heavier an object is, the more force you need to give it the same _____.

If you push an object with more force, it will move with _____ acceleration.

In science, force is measured in a unit called _____ (N).

Mass is typically measured in grams or _____.

Acceleration always happens in the same _____ as the net force that is pushing or pulling it.

If you want to push an object that has double the mass of another object, you will need _____ the force to move it at the same rate.

An object with less mass requires _____ force to speed up quickly.

The overall force acting on an object after all forces are combined is called the _____ force.

Scriptural Connections: Force, Mass, and Acceleration in Action

In the Bible, we see many physical demonstrations of Newton's Second Law. When people relied on God's strength (Force), small objects (Mass) achieved incredible speeds and impacts (Acceleration)!

1. David and Goliath (1 Samuel 17:49)

"Reaching into his bag and taking out a _____, he slung it and struck the Philistine on the forehead. The stone sank into his forehead, and he fell facedown on the ground."

The Physics Connection: A smooth stone has a small mass. Because David swung the sling with great force (multiplied by God's power), the stone achieved massive acceleration. That high force upon impact was enough to bring down a giant.

2. Samson and the City Gates (Judges 16:3)

"But Samson lay there only until _____. Then he got up and took hold of the doors of the city gate, together with the two posts, and tore them loose, bar and all. He lifted them to his _____ and carried them to the top of the hill that faces Hebron."

The Physics Connection: City gates and posts have an enormous amount of mass. To change their acceleration from zero (standing still) to moving up a hill, Samson required a massive amount of force, which the Holy Spirit provided.

3. Elijah Outrunning Chariots (1 Kings 18:46)

"The power of the Lord came on Elijah and, tucking his _____ into his belt, he ran ahead of Ahab all the way to Jezreel."

The Physics Connection: To accelerate a human body (mass) fast enough to outrun literal horses and chariots, an incredible net force had to be applied. God supplied the exact physical force Elijah needed to sustain that intense acceleration.

4. The Walls of Jericho (Joshua 6:20)

"When the _____ sounded, the army shouted, and at the sound of the trumpet, when the men gave a loud shout, the wall collapsed; so everyone charged straight in, and they took the city."

The Physics Connection: Huge stone walls have massive mass and naturally stay at rest. The sound frequencies, shouts, and divine intervention created a powerful physical wave of force that caused the walls to accelerate downward and collapse.

5. Sinking in the Waves (Exodus 15:10)

"But you blew with your breath, and the _____ covered them. They sank like lead in the mighty waters."

The Physics Connection: Lead has a very dense mass. When the force of gravity pulled down on the heavy armor and equipment of Pharaoh's army, they accelerated downward through the water rapidly, unable to fight the force of the sea.