

Learning Target: I can use Newton's Laws of Motion to explain how balanced and unbalanced forces affect an object's motion.

Newton's Laws Balanced & Unbalanced Forces Video Notes

PART 1: WHAT ARE FORCES?

A force is a _____ or a _____ that can change an object's _____.

Forces can:

- _____ motion
- Stop motion
- _____ objects up
- _____ objects down
- Change _____

But here's the key idea: It's not just about how _____ a force is—it's about how forces work _____.

That's where balanced and unbalanced forces come in.

PART 2: BALANCED FORCES

Balanced forces occur when forces acting on an object are _____ in size and _____ in direction. When forces are balanced:

- The net force is _____

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- Motion does _____ change

That means:

- An object at rest stays at _____
- An object in motion keeps _____ at the same _____ and _____

This perfectly matches Newton's First Law of Motion, also called the Law of _____. Newton's First Law says: An object will remain at rest or in uniform motion unless acted on by an _____ force. For example: A book resting on a table doesn't move because _____ pulling down is _____ by the table _____. No net force. No change in _____.

PART 3: UNBALANCED FORCES

Unbalanced forces occur when forces acting on an object are not _____.

When forces are unbalanced:

- The net force is _____ zero
- The object's motion _____

This could mean:

- Speeding up
- _____ down
- Changing _____
- Starting or stopping _____

This connects directly to Newton's Second Law of Motion. Newton's Second Law says: The acceleration of an object depends on the _____ acting on it and its _____.

In simple terms:

More force = _____ acceleration

More mass = _____ acceleration

For example: Kicking a soccer ball causes it to _____ because the force from your foot is _____, changing the ball's _____.

PART 4: NEWTON'S THIRD LAW & FORCES

Newton's Third Law of Motion helps explain how forces always work in pairs. Newton's Third Law says: For every action, there is an equal and _____. When you push on an object:

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- The object pushes back on you with _____ force
- These forces act on _____ objects

For example:

When a skateboarder pushes _____ on the _____, the ground pushes the skateboarder _____ causing _____.

PART 5: PUTTING IT ALL TOGETHER

Let's construct a full explanation:

- Balanced forces result in no change in _____ because the net force is ____ (Newton's ____ Law).
- Unbalanced forces cause a change in _____, such as _____, _____, or _____ change (Newton's ____ Law).
- Forces always occur in _____ that act on _____ objects (Newton's ____ Law).