

NEWTON'S 3RD LAW OF MOTION

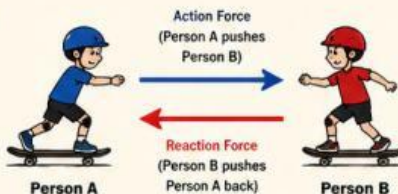
For every action, there is an equal and opposite reaction.

WHAT IS IT?

Newton's Third Law of Motion states that when one object exerts a force on a second object, the second object simultaneously exerts a force back on the first object.

KEY IDEA

- Forces always come in **pairs**.
- The forces are **equal in size** but **opposite in direction**.
- The forces act on **different objects**.



REMEMBER!

Action and reaction forces do **NOT** cancel each other out because they act on **different objects**.

Big or small, fast or slow—forces always come in pairs!

EXAMPLES IN EVERYDAY LIFE

1. Rocket Launch



Action: Rocket pushes gas downward.
Reaction: Gas pushes rocket upward.

2. Swimming



Action: Swimmer pushes water backward.
Reaction: Water pushes swimmer forward.

3. Walking



Action: Foot pushes ground backward.
Reaction: Ground pushes you forward.

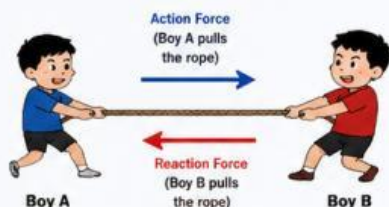
4. Gun Recoil



Action: Gun pushes bullet forward.
Reaction: Bullet pushes gun backward.

VISUAL REMINDER

For every **ACTION** (force), there is an **EQUAL** and **OPPOSITE REACTION**.



Equal in size, opposite in direction, on different objects.

CHECK YOUR UNDERSTANDING!

Identify the action and reaction forces in each situation.

- A person jumps off a boat. _____
- You throw a ball forward. _____
- A balloon is released and air rushes out. _____
- Two ice skaters push away from each other. _____

THINK:

What is the **ACTION**?
What is the **REACTION**?
On which objects do they act?



The world is full of **action-reaction pairs**.

Once you see them, you'll see them everywhere!

