# Newton's Third Law

By Jean-François Brière, Michael Dugdale, Rhys Adams, Greg Mulcair, Jon Sumner, Joel Trudeau

Out of Class | In Class (Instructor) | In Class (Students)

**Begin Here.**

**01**

Students complete a reading on Newton's third law.

Students take a photo of two static interacting objects.

- The photo must showcase specific features from a list
- Collectively each pre-assigned group must exhaust the full list
- The photos are uploaded into a Visual Classrooms space limited to the group members

Students:

- Draw free body diagrams for both objects
- Identify action-reaction pairs
- Upload their work to Visual Classrooms

Students are instructed to split into their pre-assigned groups.

**02**

In pairs within their group, students compare their FBDs and photos and assess them for correctness.

The instructor models two examples of horiztonal pushing:

- A static problem
- A dynamic problem

Students analyze three scenarios (two dynamic and one static) distributed by the instructor to

- Create a pair of FBDs
- Identify action-reaction pairs

The instructor reviews the exercise, emphasizing the characteristics of action-reaction pairs.

**03**

The instructor models an example of vertically stacked objects.

Students analyze two scenarios (one dynamic and one static) distributed by the instructor to

- Create a pair of FBDs
- Identify action-reaction pairs

The instructor reviews the exercise, emphasizing the characteristics of action-reaction pairs.

**04**

In Visual Classrooms, students:

- Rework their original diagrams
- Explain in writing the changes they make

Students:

- Provide feedback on the work of their group members, revising their own work as many times as necessary based on feedback they receive
- Submit a final version

Individual Work
Work in Groups
Whole Class
Reading
Research
Problem Solving
Discussion
Peer-Review
Instruction