Newton’s third law: interaction pairs

Teacher / technician

YEAR 10 / LESSON 6 / PHYSICS ONLY

Staff preparation and answer guidance. Keep separate from student sheets. Record actual measurements separately from labelled practice examples.

Coverage and delivery

Physics only: 1.29P. Newton’s third law.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, five groups of six

Item	Per pair / setup	Class total
Force meters	2 per group	10
Short loops	1 per group	5
Booklets and rulers	1 per learner	30 of each

Immediate safety

Keep meters low over the bench, use small steady pulls and stay below the lower rated maximum. Do not jerk, release stretched meters or attach them to people.

Preparation and delivery

Read alongside the student method

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1. Arrange five groups of six, with roles rotating for pulling, reading and diagramming. Check hooks, loops and zero readings.

2. Choose three low pulls visible on both scales without approaching their limit. Treat discrepancies as uncertainty; do not replace readings with ideal values.

Close of lesson

• Ease the force to zero before disconnecting; return meters and loops.

Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

Answers and teaching notes

Expected explanations • do not give as experimental observations

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- One force acts on each object.
- No: the partners act on different objects.
- Zero error, reading uncertainty, alignment or scale resolution.
- The ground’s forward frictional force on the foot.
- The smaller mass, since a = F/m.
- No. Earth’s pull on the book pairs with the book’s pull on Earth.

References and provenance

Pearson Physics specification

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.