YEAR 4 - SCIENCE · ASSESSMENT

Balanced and Unbalanced Forces

A4-PHYS practical summative · 25% due: End of Component 4 (Lesson 16)

Summative task for the Physical sciences strand, modelled on the SCSA Year 4 exemplar balanced-and-unbalanced-forces task. Students analyse everyday situations by drawing labelled force arrows (arrow size showing force size), classifying the forces as balanced or unbalanced and justifying this from the object's movement, and identifying whether each force is a contact force (like friction) or a force that acts at a distance (like magnetism or gravity). Completed individually over one lesson. Assesses ULO4 (forces) and ULO7 (communicating and applying). Weighting is a school convention (25% of four equally weighted summatives), not mandated by the syllabus.

Task

Show what you know about **forces**! For each situation you will draw **force arrows**, decide if the forces are **balanced forces** or **unbalanced forces**, and say whether each force is a **contact** force or a force that acts **at a distance**.

Balanced forces are equal and opposite, so the object stays still. Unbalanced forces are not equal, so the object moves in the direction of the bigger force.

Situation 1 — A book resting on a table

1a. Draw the two force arrows acting on the book (gravity pulling down; the table pushing up).

1b. Are the forces balanced or unbalanced? How do you know?

Situation 2 — Kicking a soccer ball across the grass

2a. Name the force that slows the ball down as it rolls, and say whether it is a contact force or a force at a distance.

2b. While the ball is slowing down, are the forces balanced or unbalanced? Explain.

Situation 3 — Two magnets

3. Two magnets pull towards each other without touching. Name this force and say whether it is a contact force or a force at a distance.

Situation 4 — A tug-of-war

4a. Draw force arrows so that the forces are **unbalanced** and the **left** team wins.

4b. Explain what happens to the rope and why, using the words **unbalanced forces**.

Situation 5 — Show what you know

5. Sort these forces into the table: *friction, gravity, a push, magnetism, a pull*.

Contact force	Force at a distance

Aim for your best work: make your arrows clear and labelled, show the bigger force with a bigger arrow, and use force words (balanced, unbalanced, contact, at a distance, friction, gravity, magnetism) in your explanations.

Rubric criteria (weights as a percentage of this assessment)

Criterion	Weight	Descriptor
Balanced and unbalanced forces	30%	High (5–6): Correctly identifies balanced vs unbalanced forces in every situation and justifies each from the object's movement. Sound (3–4): Correctly identifies balanced vs unbalanced in most situations with some justification. Limited (1–2): Identifies balanced or unbalanced in a simple case with little justification.
Representing forces with arrows	30%	High (5–6): Draws clear, correctly directed and labelled force arrows, using arrow size to show the size of each force. Sound (3–4): Draws labelled force arrows in the correct directions. Limited (1–2): Draws arrows with some errors in direction or labelling.
Contact and non-contact forces	25%	High (5–6): Correctly classifies all forces as contact or at-a-distance and correctly names the forces involved (friction, gravity, magnetism). Sound (3–4): Correctly classifies most forces and names most correctly. Limited (1–2): Classifies or names some forces with errors.
Communication and scientific vocabulary	15%	High (3): Explains ideas clearly using correct scientific vocabulary (force, balanced, unbalanced, contact, at a distance, friction, gravity, magnetism) throughout. Sound (2): Explains clearly with some scientific vocabulary. Limited (1): Ideas are unclear or use little scientific vocabulary.