**Name that force**

Forces make things change.

Draw a line from each picture to the name of the force.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | ⚫ |  | ⚫ | Magnetic force |
|  | ⚫ |  | ⚫ | Friction |
|  | ⚫ |  | ⚫ | Pull |
|  | ⚫ |  | ⚫ | Weight |
|  | ⚫ |  | ⚫ | Upthrust |
|  | ⚫ |  | ⚫ | Push |
|  | ⚫ |  | ⚫ | Electrostatic force |

*Physics > Big idea PFM: Forces and motion > Topic PFM1 Forces > Key concept PFM1.2: Describing forces*

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| --- |
| **Diagnostic question** |
| **Name that force** |

**Overview**

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| --- | --- |
| Learning focus: | Forces arise when two objects interact; the force on one object is always equal in size, and opposite in direction to the force on the other object; force arrows indicate the size, direction and location of each force. |
| Observable learning outcome: | Name the types of forces acting in everyday situations. |
| Question type: | Simple multiple choice |
| Key words: | force, electrostatic, friction, magnetic, push, pull, upthrust, weight |

|  |  |
| --- | --- |
| **P** | **PRIOR UNDERSTANDING**  This diagnostic question probes understanding of ideas that are usually taught at age 5-11, to aid transition from earlier stages of learning. |

**What does the research say?**

From their earlier studies, students are probably familiar with naming forces.

Erickson and Hobbs (1978) suggest that using activities, in which students are asked to identify pairs of forces in terms of object A pushing object B etc., can improve recognition and understanding.

Recalling (familiar) names of forces and describing them in term of object A pushing on object B connects previous learning with the first steps of a more analytical approach to forces.

**Ways to use this question**

Students should complete the question individually. This could be a pencil and paper exercise, or you could use an electronic ‘voting system’ or mini white boards and the PowerPoint presentation.

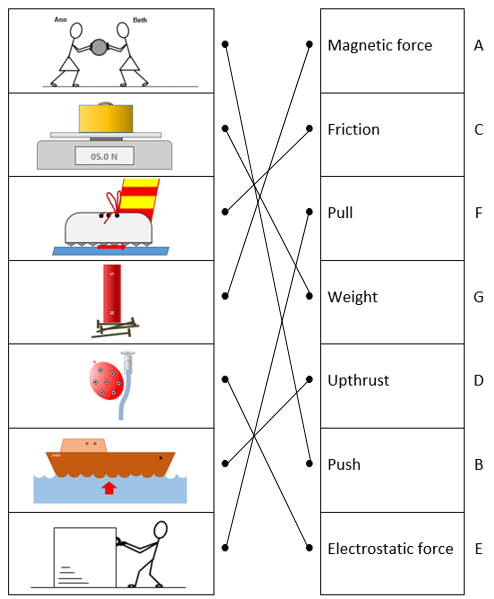
The answers to the question will show you whether students understood the concept sufficiently well to apply it correctly.

If there is a range of answers, you may choose to respond through structured class discussion. Ask one student to explain why they gave the answer they did; ask another student to explain why they agree with them; ask another to explain why they disagree, and so on. This sort of discussion gives students the opportunity to explore their thinking and for you to really understand their learning needs.

*Differentiation*

You may choose to read the questions to the class, so that everyone can focus on the science. In some situations it may be more appropriate for a teaching assistant to read for one or two students.

**Expected answers**

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**How to respond - what next?**

This is largely a recall exercise, although it can be helpful to future understanding of forces to also rehearse a description of each force in terms of terms of object A pushing object B. For example in ‘upthrust’, the water is pushing up on the boat (and the boat is pushing down on the water).

If students have difficulties in identifying forces, a good response might be to teach the key features of each force and then give the students an activity in which they can practise using the force names, so that they can consolidate their recall. This could be a circus of different examples set up around the room.

**Acknowledgments**

Developed by Peter Fairhurst (UYSEG).

Images: UYSEG

**References**

Erickson, G. and Hobbs, E. (1978) ‘The developmental study of student beliefs about force concepts’, Paper presented to the 1978 Annual Convention of the Canadian Society for the Study of Education. 2 June, London, Ontario, Canada.