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| **Lesson Number: 24.1a** |
| **Lesson Title: Investigation of the of the relationship between the force, magnetic flux density, current and length of wire using a top pan balance****Required Practical 10** |
| **Specification Reference** | **3.7.5.1** |
| **Learning Objectives** |
| Force on a current-carrying wire in a magnetic field: *F* = *BIl* when field is perpendicular to current. |
| **Opportunities for Assessment** |
| Assessing the practical aspect of the lesson**Skills Assessment (Required practical 10)**AT (a),(b),(f) |
| **Starter:** | Recap magnetic flux and motor force from last lesson (Slides #1 and #2) |
| **Main:** | Slide #3 explains to students that their teacher will decide how much dependence they are given in this experiment. See pages 100-102 of the AQA practical handbook for Physics for full detailsSlide #4 outlines the assessed skills that will be looked at by the teacher. Students should keep these in mind and ensure that their teacher watches them perform these skills during the practical.Depending on the outcomes that the teacher wishes to assess, the pupils can either be given a method to follow or a lesson can be used as a full research and planning sessionThe experiment needs to be performed. See pages 100-104 of the practical handbook for A-Level Physics for full details. |
| **Plenary:** | Go over the experiment and the results; write up the experiment in full; discuss the assessing of the skills and the outcome assessed by the teacher. |

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| **Homework:** | Write up the experiment |
| **Differentiation / Extension / S&C** |
| Assistance / guidance on the planning of the experiment can be altered for group’s ability |
| **Numeracy / Literacy** | **SMSC / Fundamental British Values** |
| Use of formula ***F=BIL*** | Team work in a practical lessonUnderstanding other people’s opinions and ideas in the planning of the experiment |
| **RESOURCES:**PRACTICAL 10 - AQA Notes and Method – (1 copy unless specified additional methods) |
| Per group:* A 25cm length of straight bare copper wire of thickness 1.5mm, for example
* Low voltage variable DC supply (eg 0-6V)
* Ammeter (eg 0-10A with 0.1A precision or better)
* Two crocodile clips
* Two clamps on stands
* Three connecting leads
* Four magnadur magnets with a metal cradle
* An electronic top pan balance with precision 0.1g or better
* 30cm ruler
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| **Risk Assessment** e.g. CLEAPSS card reference |
| Wires can get hot, do not exceed 4V, internal fuses can go on LV packs if used for more than a few seconds as this demonstration is a short circuit |
| **Working Scientifically (HSW)** |
| Assessed practical and write-up |