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| **Lesson Number: 22.1** | | |
| **Lesson Title: Field Patterns** | | |
| **Specification Reference** | | **3.7.3.2** |
| **Learning Objectives** | | |
| Representation of electric fields by electric field lines. | | |
| **Opportunities for Assessment** | | |
| Page 361 questions | | |
| **Starter:** | Slides #1 and #2 form a recap from KS 3 and 4 about static electricity and field | |
| **Main:** | Slide #3 recaps the gold leaf electroscope and it’s charging and discharging – a recommend demonstration (works better on dry days)  Slide #4 explains the shuttling ball demonstration that can be performed here. Ensure you are aware of, and prevent the danger from, high voltage plates with this demonstration!  Slides #5 - #8 are a basic drawing exercise of field patterns – an extension task is to link the point charges with the work on gravitational fields and also think about what the best possible properties would be to create perfect uniform fields (Infinitely large parallel plates) | |
| **Plenary:** | Slide #9 is a summary | |

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| **Homework:** | Page 361 questions | |
| **Differentiation / Extension / S&C** | | |
| Pupils can perform gold leaf experiments themselves and come to conclusions about how they work | | |
| **Numeracy / Literacy** | | **SMSC / Fundamental British Values** |
| Recap of formula for current and charge | | None |
| **RESOURCES:** | | |
| Demo 1:   * Gold leaf electroscope * Charging rod * Cloth   Demo 2:   * High voltage source (DC) * Two parallel plates * Conductive ball (Ping pong ball painted with conductive paint) * Insulating cotton / string attached to ball * Micro-ammeter and stop watch (Optional) * Safety screen, high voltage leads | | |
| **Risk Assessment** e.g. CLEAPSS card reference | | |
| Demo 2 uses high voltage equipment and safeguards must be put in place to ensure neither student nor teacher will touch the plates directly  DC electricity only to be used with high voltage equipment  Ensure laboratory RCCD units are operating correctly prior to high voltage equipment being used | | |
| **Working Scientifically (HSW)** | | |
| See “Chips and Charge” on page 359 | | |