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| **Lesson Number: 22.2** | | | | |
| **Lesson Title: Electric Field Strength** | | | | |
| **Specification Reference** | | | **3.7.3.1, 3.7.3.2** | |
| **Learning Objectives** | | | | |
| Permittivity of free space,  Electric field strength.  *E* as force per unit charge defined by  Magnitude of *E* in a uniform field given by  Derivation from work done moving charge between plates: *Fd* = *Q*Δ*V* | | | | |
| **Opportunities for Assessment** | | | | |
| Page 365 questions | | | | |
| **Starter:** | Slide #1 is an introduction to electric field strength – parallels may be drawn with previous work on gravitational fields. It is important that pupils *understand* what it is they are trying to measure and can quantify their answers by hypothesising the units | | | |
| **Main:** | Slide #2 is an animated work through deriving the main formula  Slide #3 has the important main three bullet points needed when describing the field between parallel plates – students *should* be able to come up with these before seeing them!  Slide #4 and #5 work through to derive the formula  Slide #6 is an extension into what the permittivity of free space is. Although the constant is needed, a definition is not nor is its derivation. | | | |
| **Plenary:** | Slide #7 is a summary | | | |
| **Homework:** | | Page 365 questions; research on lightning and lightning conductors | | |
| **Differentiation / Extension / S&C** | | | | |
| Research on the permittivity of free space and its use in other physics constants (e.g. the speed of light) | | | | |
| **Numeracy / Literacy** | | | | **SMSC / Fundamental British Values** |
| Derivation of formulae and units | | | | None |
| **RESOURCES:** | | | | |
| None | | | | |
| **Risk Assessment** e.g. CLEAPSS card reference | | | | |
| None | | | | |
| **Working Scientifically (HSW)** | | | | |
| See “The lightning conductor” on page 363 | | | | |