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| **Lesson Number: 21.1** |
| **Lesson Title: Gravitational Field Strength** |
| **Specification Reference** | **3.7.2.1 / 3.7.2.2** |
| **Learning Objectives** |
| Gravity as a universal attractive force acting between all matterRepresentation of a gravitational field by gravitational field lines*g* as force per unit mass as defined by  |
| **Opportunities for Assessment** |
| Page 339 Questions |
| **Starter:** | Slide #1 allows an open discussion as to what is gravity – Note that Einstein’s theory of gravity is not covered in this course however some students may want to discuss it |
| **Main:** | Slide #2 outlines the probable outcomes of the discussionSlide #3 explains the mathematical derivation of the formula (from Newton’s second law) and units for gravitational field strength. Pupils sometime get confused about the units so slide #5 reiterates this.Slide #4 explains freefall and the idea that all objects fall at the same acceleration in a gravity field. Links can be made to Terminal Velocity in the Year 1 courseSlide #6 shows how the field lines are drawn around a planet and also compares to a uniform field as used on a planet surface (and in classroom experiments)Slide #7 explains some preconceptions that students have and should iron out any misunderstandings |
| **Plenary:** | Slide #8 is a summary of the key points |
| **Homework:** | Page 339 questions; Research the gravity on different planets |
| **Differentiation / Extension / S&C** |
| Research the gravity on different planets and how this varies with mass **and** radius |
| **Numeracy / Literacy** | **SMSC / Fundamental British Values** |
| Derivation of formula and unitsEquivalent units | Use of Newton’s second law and links to freefall. Use of estimations to use uniform fields for calculations. |
| **RESOURCES:** |
| NoneOptional - (*g* can be found by performing the pendulum experiment from Year 1 course) |
| **Risk Assessment** e.g. CLEAPSS card reference |
| None |
| **Working Scientifically (HSW)** |
| N/A |