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| **Key Topics and Learning Sequence**  |
| **= First Steps** |  **= Moving On** |  **= Stretch** |  **= Challenge** |
| 1. **Ratio represented algebraically and graphically**
2. **Write** a ratio with 2 or 3 parts using algebraic notation
3. Given a numerical and equivalent algebraic ratio, **write an equation** relating the parts of the ratio
4. Understanding the connection between equations and **graphical representations** of the numerical ratio
 | 1. **Direct Proportion**
2. Understand what is meant by **directly proportional** and when a linear relation is NOT directly proportional
3. Write **equations** representing direct proportions
4. **Derive and use an equation** from given values of two variables
5. Look at more complex direct proportion to the **square, cube or square root** of a variable
 | 1. **Inverse Proportion**
2. Understand what is meant by **inversely proportional**
3. Write **equations** representing inverse proportions
4. Know how to **derive and use an equation** from given variables
5. Look at more complex inverse proportion to the **square, cube and square root** of a variable
 | **4. Proportion in practice**1. Can apply proportional reasoning and algebraic forms to problems in a range of **contexts** including:
2. **Scientific laws** such as gravity and Coulomb’s law
3. An Appreciation of the role of proportion in **art and architecture**, including for example the Golden Ratio
4. An appreciation of the role of scale, ratio and proportion in **maps and scale models**
5. An ability to use proportional reasoning to **estimate solutions** to problems
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| **How does this unit fit into your mathematical learning journey?** | **Further Exploration, Enrichment and Cultural Capital** |
| This unit of work build on work you did on **proportional reasoning** and **ratio** in **year 7** and which you then deepened in work **on ratio** in **year 9**. It links work you did on **algebra** in **year 7 and 8** and also on **graphs and functions in year 9**. All of these different strands are pulled together in this important unit. | **Enrichment:** * Multiplication Square <https://nrich.maths.org/2821>
* What is possible? <https://nrich.maths.org/whatspossible>

**Cultural Capital:** Search; How did the early humans keep count? Explore how the Hindu Arabic number system was formed. |

**LPS Mathematics: Year 10 - Unit 6 Ratio and proportion with algebra**

 **Enquiry Question:** “**What is an inverse square law?**

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**Date: Initial Thoughts:**

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**Date: New Thoughts:**

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**Date: Final Thoughts:**

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