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| **Key Topics and Learning Sequence**  |
| **= First Steps** |  **= Moving On** |  **= Stretch** |  **= Challenge** |
| **1. 2D Cartesian coordinate system**1. Plot a **coordinate** correctly

 1. Label the **axes** on a graph
2. Solve shape-related problems with coordinates
3. Find midpoints of two pairs of coordinates
4. Find the distance between two pairs of coordinates
 | **2 Functions**1. Find an **output** with a given **input**
2. Find an **input** given an output
3. Draw and interpret **mapping diagrams**
4. Use language such **as domain, range, discrete, continuous, and inverse.**
5. Use and apply **function notation.**
6. Use a **function** to create a table of coordinates
7. Understand and find **inverse functions.**
8. Understand and find **composite functions.**
 | **3. Graphs**1. Explore the **relationship** between functions and **graphs**
2. Plot the graph of a function using a **table of coordinates**
3. Identify the **y-intercept** from a linear graph
4. Find the **gradient** of a linear function from the graph
5. **Define** a linear function from its graph

**Investigate** the relationship between the gradients of parallel and perpendicular linear graphs | **4. Equation of a straight line**1. Plot a graph from its algebraic form
2. **Rearrange** an **equation** into the form **y=mx+c** to plot the graph.
3. Find the **gradient** given 2 coordinates **algebraically**
4. Find the y-intercept by **substituting** a **coordinate** into a formula.
5. Find the solution to two linear equations in two variables from their graphs
 | **5. Non-linear functions**1. Explore the different forms of a **quadratic equation** and how they relate to the graph.
2. Solve quadratic equations **graphically**
3. Solve quadratic equations **algebraically**
4. Find the solution to a linear and a quadratic equation in two variables from their graphs
5. Explore **cubic graphs**.
6. Explore **exponential graphs.**

Explore **reciprocal graphs** |
| **How does this unit fit into your mathematical learning journey?** | **Further Exploration, Enrichment and Cultural Capital** |
| This unit builds on the **proportional reasoning unit** in **Year 7** and the **algebra unit** you worked on in **Year 9**. In those we explored the relationships between two variables. This unit shows how **graphs can represent** these relationships**.** | **Enrichment:** **Explore straight lines in art**Explore the artists Barbara Hepworth and Naum Gabo and find pieces of their artwork which **create curves using straight lines.****Cultural Capital:** Visit your local go-karting centre and work out the graphical representation of your journey around the track  |

**LPS Mathematics: Year 10 - Unit 4 graphs and functions**

**Enquiry Question:** “**Can a function model a pandemic?”**

**Enquiry Question:** Can a function model the spread of a pandemic?

**Date: Initial Thoughts:**

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**Date: New Thoughts:**

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**Date: Final Thoughts:**

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