|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **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:**

**………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………**

**Date: New Thoughts:**

**…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………**

**Date: Final Thoughts:**

**………………………………………………………………………………………………………………………**

**………………………………………………………………………………………………………………………**

**………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………**

**………………………………………………………………………………………………………………………**