**LANGDON PARK SIXTH FORM**

******

|  |  |  |
| --- | --- | --- |
| **Subject: Mathematics** | **Year: Y12** | **Topic 5.1: Kinematics**  |

|  |
| --- |
| ***What and Why*:** This is your first Mechanics unit, and will be focused on graphs and constant acceleration problems. This will build on some of your prior knowledge in physics, but with a more mathematical perspective. You will also be introduced to mathematical modelling of physical situations, which you will build on much more in year 13. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Key terms*** Speed
* Distance travelled
* Time
* Acceleration
* Velocity
* Position
* Displacement
* Scalar
* Vector
* Average speed
* Average velocity
 | **Graphs*** Be able to plot and interpret Displacement-Time Graphs
* Be able to plot and interpret Velocity-Time Graphs
* Interpret graphs for motion in a straight line
* Find and interpret displacement against time and interpretation of gradient
* Find and interpret velocity against time and interpretation of gradient and area under the graph.
 | **SUVAT*** Understand, use and derive the formulae for constant acceleration for motion in a straight line
* Extend to 2 dimensions using vectors.
 | **Modelling*** Model motion under gravity in a vertical plane using vectors
* projectiles
 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Specification point** | **Pre-reading** | **Application and Assessment (date)** | **Independent learning** | **Extension – Cultural Capital and Reading** |
| Q1, Q2, Q3, Q5 | **Topics you should be confident in prior to unit:** * Areas of trapeziums, triangles, rectangles
* Distance-time graphs
* Speed, distance formulae
* Rearranging formulae and substitution

**Websites**<https://app.mymaths.co.uk/871-lesson/motion-in-a-vertical-plane> | * End of unit assessment
* 50% seen
* 50% unseen
* 90% pass needed or resit required.
 | Kerboodle Online LoginMy MathsExam SolutionsMaths Genie  | YouTube: <https://www.youtube.com/watch?v=KDp1tiUsZw8>Hammer vs Feather: Physics on the Moon: Can you attempt your own calculations of the acceleration of gravity. You can estimate the height from where they are dropped, can all time it with your phones, and you know initial velocity is zero!<https://studywell.com/maths/mechanics/kinematics-objects-motion/> |

**Pre-assessment content review**

|  |  |  |
| --- | --- | --- |
| I feel secure in | I need to focus on | My action plan |

**Pre-assessment skills review**

|  |  |  |
| --- | --- | --- |
| I feel secure in | I need to focus on | My action plan |

**Post-assessment review**

|  |  |  |
| --- | --- | --- |
| Weaknesses in content knowledge | Skills I need to focus on | My action plan |
| Retest / review – teacher and student comment |

**Revision planning**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Spec point | Notes complete | Revision materials | Past paper Qs  | Timed conditions |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |