| Prior Learning | At KS3, students have learned about the effects of forces and including pressure when force is applied on an area. At KS4, students have developed more advanced mathematical skills including manipulating equations and plotting/analyzing graphs. |
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| Lesson Number | AQA Spec | Title | Content | Assessment |
|---|---|---|---|---|
| 1 | | 4.5 | • Estimate the results of simple calculations.<br>• Round numbers to make an estimate.<br>• Calculate order of magnitude. | |
| 2 | 4.5.6.1.1<br><br>4.5.6.1.2<br><br>4.5.6.1.4 | Speed | • Calculate speed using distance travelled divided by time taken.<br>• Calculate speed from a distance–time graph.<br>• Measure the gradient of a distance–time graph at any point. | |
| 3 | 4.5.6.1.3<br>4.5.6.1.5 | Acceleration | • Describe acceleration.<br>• Calculate acceleration.<br>• Explain motion in a circle. | |
| 4<br><br>TRIPLE ONLY | 4.8.1.1<br><br>4.8.1.3 | The Solar System | • Describe the orbits of planets and moons in the Solar System.<br>• Distinguish between planets, dwarf planets and moons. | **P8 Content** |
| 5<br><br>TRIPLE ONLY | 4.8.1.3 | Orbits of planets, moons and artificial satellites | • Compare the orbital motion of moons, artificial satellites and planets in the Solar System.<br>• Describe what keeps bodies in orbit around planets and stars.<br>• Explain how for circular orbits, an object can have a changing velocity but unchanged speed.<br>• Explain why bodies must move at a particular speed to stay in orbit at a particular distance. | |
| 6 | 4.5.6.1.1 | | • Draw velocity–time graphs. | |

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| | 4.5.6.1.3 <br><br> 4.5.6.1.5 | Velocity–time graphs | • Calculate acceleration using a velocity–time graph. <br> • Calculate displacement using a velocity–time graph. | Teacher Assessed 15 Marks |
| **7** | 4.5.7.1 <br><br> 4.5.7.2 <br><br> 4.5.7.3 <br><br> **Higher tier only** | Momentum | • Trilogy students do not need to know and understand the content in the middle section: Changes in momentum, or the calculations in the last section: Conservation of momentum, although the idea of conservation of momentum is required (qualitatively). <br> • Explain what is meant by momentum. <br> • Apply ideas about rate of change of momentum to safety features in cars. <br> • Use momentum calculations to predict what happens in a collision. | Quiz 25 Marks |
| **8** | 4.5.6.1.5 | Calculations of motion | • Describe uniform motion. <br> • Use an equation for uniform motion. <br> • Apply this equation to vertical motion. | |
| **9** | 4.5.6.3.1 <br> 4.5.6.3.2 <br> 4.5.6.3.3 <br> 4.5.6.3.4 | Keeping safe on the road | • Explain the factors that affect stopping distance. <br> • Explain the dangers caused by large deceleration. <br> • Estimate the forces involved in the deceleration of a road vehicle. <br> • Apply the idea of rate of change of momentum to explain safety features. | |
| **End of Unit test Assessment: Teacher** | | | |
| **Where we will use these ideas again** | P8 - Orbits of planets, moons and artificial satellites. | | | |