**Graphical user interface

Description automatically generated with medium confidenceNewton’s Laws and Momentum** (Phys)

RAG your understanding.

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|  | **Start of Topic** | **End of Topic** | **Revised** |
| **Force and Motion** |  |  |  |
| P.5.6.2.a - I can explain the motion of an object moving with a uniform velocity, and identify that forces must be in effect if its velocity is changing, by stating and applying Newton’s First Law |  |  |  |
| P.5.6.2.b. - I can explain that the acceleration of an object is proportional to the resultant force acting on the object, and calculate the force or acceleration for an object by recalling and applying the equation: F = ma |  |  |  |
| ***P.5.6.2.c (HT) - I can describe inertia as the tendency of objects to continue being at rest or in uniform motion, and inertial mass as a measure of how difficult it is to change the velocity of an object, defining it as the ratio of force over acceleration*** |  |  |  |
| P.5.6.2.d. - I can estimate the speed, accelerations and forces of large vehicles involved in everyday road transport |  |  |  |
| P.5.6.2.e. - I can apply Newton’s Third Law to examples of equilibrium situations |  |  |  |
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| **Momentum** |  |  |  |
| P.5.7.1.a. - I can calculate momentum by recalling and applying the equation:  p = mv |  |  |  |
| P.5.7.2.a. - I can explain and apply the idea that, in a closed system, the total momentum before an event is equal to the total momentum after the event. |  |  |  |
| P.5.7.2.b. - I can describe examples of momentum in a collision. |  |  |  |
| ***P.5.7.2.c (Physics only) - I can complete conservation of momentum calculations involving two objects.*** |  |  |  |
| ***P.5.7.3.a (Physics only) - I can explain that when a force acts on an object that is moving, or able to move, a change in momentum occurs.*** |  |  |  |
| ***P.1.7.3.b (Physics only) - I can calculate a force applied to an object, or the change in momentum it causes, by applying but not recalling the equation:***  ***F = mΔv/Δt*** |  |  |  |
| ***P.5.7.3.c (Physics only) - I can explain that an increased force delivers an increased rate of change of momentum.*** |  |  |  |
| ***P.5.7.3.d (Physics only) - I can apply the idea of rate of change of momentum to explain safety features such as air bags, seat belts, helmets and cushioned surfaces.*** |  |  |  |

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| **Stopping distances** |  |  |  |
| P.5.6.3.1.a. - I can calculate the stopping distance of a vehicle as the sum of the thinking distance and braking distance |  |  |  |
| P5.6.3.1.b. - I can explain the effect of an increased speed on the stopping distance of a vehicle under a constant braking force |  |  |  |
| ***P.5.6.3.1.c (Physics only) - I can estimate how the distance for a vehicle to make an emergency stop varies over a range of speeds and can interpret graphs relating speed to stopping distance.*** |  |  |  |
| P.5.6.3.2a. - I can state typical reaction times and describe factors that affect reaction time and evaluate the effect of various factors on thinking distance. |  |  |  |
| P5.6.3.2b. - I can explain methods to measure human reaction times and interpret and evaluate measurements from simple methods to measure reaction times. |  |  |  |
| P5.6.3.3. - I can describe factors that affect the braking distance of vehicles and the implications for safety. |  |  |  |
| P5.6.3.4a. - I can describe the energy transfers involved when work is done by the friction force between the brakes and the wheels causes a vehicle to stop. |  |  |  |
| P5.6.3.4b - I understand that a greater braking force causes a greater deceleration and can explain the dangers caused by large decelerations. |  |  |  |