

**SP2a Resultant forces**

Word	Pronunciation	Meaning
acceleration	<i>ack-sell-er-ate</i>	A measure of how quickly the velocity of something is changing. It can be positive if the object is speeding up or negative if it is slowing down.
balanced forces		When the forces in opposite directions on an object are the same size so that there is a zero resultant force.
resultant force		The total force that results from two or more forces acting upon a single object. It is found by adding together the forces, taking into account their directions.
scalar quantity		A quantity that has a magnitude (size) but not a direction. Examples include mass, distance, energy and speed.
speed		How fast something is moving. Often measured in metres per second (m/s), miles per hour (mph) or kilometres per hour (km/h).
unbalanced forces		When the forces in opposite directions on an object do not cancel out, to there is a non-zero resultant force.
vector quantity		A quantity that has both a size and a direction. Examples include force, velocity, displacement, momentum and acceleration.
velocity		The speed of an object in a particular direction. Usually measured in metres per second (m/s).

**SP2b Newton's First Law**

Word	Pronunciation	Meaning
<b>H</b> centripetal force		A force that causes objects to follow a circular path. The force acts towards the centre of the circle.

**SP2c Mass and weight**

Word	Pronunciation	Meaning
mass		A measure of the amount of material there is in an object. The units are kilograms (kg).
weight	<i>way-t</i>	The force pulling an object downwards. It depends upon the mass of the object and the gravitational field strength. The units are newtons (N).
gravitational field strength	<i>grav-it-ay-shon-al</i>	A measure of how strong the force of gravity is somewhere. It is the force on a 1 kilogram mass, so the units are newtons per kilogram (N/kg).

**SP2d Newton's Second Law**

Word	Pronunciation	Meaning
inertial mass	<i>in-err-shall</i>	The mass of an object found from the ratio of force divided by acceleration. The value is the same as the mass calculated from the weight of an object and gravitational field strength.

**SP2e Newton's Third Law**

Word	Pronunciation	Meaning
action–reaction forces		Pairs of forces on interacting objects. Action–reaction forces are always the same size, in opposite directions, and acting on different objects. They are not the same as balanced forces.
balanced forces		Forces acting on the same object. Balanced forces are always equal, in opposite directions, and always act on the same object. They do not have to be the same type of force. An object acted on by balanced forces will not change the way it is moving..
equilibrium		When a situation is not changing because all the things affecting it balance out.

**SP2f Momentum**

Word	Pronunciation	Meaning
conservation of momentum		The total momentum of moving objects before a collision is the same as the total momentum afterwards, as long as no external forces are acting.
momentum		The mass of an object multiplied by its velocity. Momentum is a vector quantity, with units kilogram metres per second (kg m/s).

**SP2g Stopping distances**

Word	Pronunciation	Meaning
thinking distance		The distance travelled by a vehicle while the driver reacts.
braking distance		The distance travelled by a vehicle while the brakes are working to bring it to a halt.
stopping distance		The distance in which a car stops, which is the sum of the thinking and braking distances.
reaction time		The time taken to respond to a stimulus.
stimulus		Something outside the body that can be detected by the body, such as a sight or sound.
response		The way the body reacts to a stimulus.

**SP2h Braking distance and energy**

Word	Pronunciation	Meaning
<b>kinetic energy</b>		A name used to describe energy when it is stored in moving things. The amount of energy stored depends on the mass of the object and on its speed (or velocity) squared.
<b>work done</b>		The energy transferred when a force acts through a distance to move an object or change its speed. It is calculated using the size of the force and the distance moved in the direction of the force. The unit for work done is the joule (J).

**SP2i Crash hazards**

Word	Pronunciation	Meaning
crumple zone		A vehicle safety device in which part of the vehicle is designed to crumple in a crash, reducing the force of the impact.
deceleration		slowing down – a negative acceleration