

## Module 2 - Forces and movement

What is the difference between a vector and a scalar?	A vector has magnitude (size) and direction whereas a scalar has size only.
What is the difference between speed and velocity?	Speed is a scalar and velocity is a vector - speed in a particular direction.
What words should we use when describing motion?	Speed, direction, constant (no acceleration or changing speed and/or direction - acceleration,
What can help us to describe the movement of a body	Graphs: these may be distance-time graphs or velocity-time graphs.
What does the slope of a distance-time graph represent	Speed.
What is the velocity of a body?	It is its speed in a given direction.
What is the acceleration of a body?	It is the rate of change of velocity (change in velocity divided by time).
What is the unit of velocity?	Metres per second (m/s)
What is the S.I. unit of acceleration?	Metres per second squared
What is the S.I. unit of distance?	metres (m)
What is the S.I. unit of time?	second (s)
How can you find acceleration from a velocity/time graph?	The slope (gradient) of a velocity-time graph represents acceleration.
How can you find distance travelled from a velocity/time graph?	The area under a velocity-time graph represents distance travelled.
How can you change the speed of a body	Make a force act on it.
What is acceleration evidence of?	A 'net force' or 'unbalanced forces' acting on a body.
What happens whenever two bodies interact?	The forces they exert on each other are equal and opposite.
What is a resultant force?	A number of forces acting on a body may be replaced by a single force which has the same effect on the body as the original forces all acting together.
If the resultant force acting on a stationary body is zero, what will the body do?	The body will remain stationary.
If the resultant force acting on a stationary body is not zero, what will the body do?	The body will accelerate in the direction of the resultant force.
If the resultant force acting on a moving body is zero the body, what will the body do?	It will continue to move at the same speed and in the same direction.
If the resultant force acting on a moving body is not zero, what will the body do?	The body will accelerate in the direction of the resultant force.
What does it mean when a vehicle travels at a steady speed?	It means that the frictional forces balance the driving force.
How is braking force related to stopping distance?	The greater the speed of a vehicle the greater the braking force needed to stop it in a certain distance.
What two parts make up the stopping distance of a vehicle?	The stopping distance of a vehicle depends on the distance the vehicle travels during the driver's reaction time and the distance it travels under the braking force.
What can affect a driver's reaction time?	Tiredness, drugs and alcohol.
What can affect vehicle's braking distance?	Adverse road and weather conditions and poor condition of the vehicle.
How does speed through a fluid affect friction?	The faster a body moves through a fluid the greater the frictional force which acts on it.
What is terminal velocity?	The speed reached when a body falls through a fluid and weight equals drag.
How is kinetic energy related to speed?	The faster the speed the higher the kinetic energy.

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What happens when a force causes a body to move through a distance?	Energy is transferred and work is done.
What is 'work'?	Work is done whenever energy is transferred - it is the result of energy transfer.
What energy transfer occurs when work done against frictional forces?	Kinetic energy is transformed into heat.
When work is done on the object to change its shape how can that energy be stored?	As elastic potential energy.
What does kinetic energy of a body depend on?	The kinetic energy of a body depends on its mass and its speed.
What two things increase with speed?	The faster a body is moving the more kinetic energy and momentum it has.
When working out what happens to bodies as a result of explosions or collisions; which is the most useful to think about, momentum or energy change?	Momentum.
What is the law of conservation of momentum?	The sum of the momentum of bodies before an event is equal to the sum of the momentum after the event as long as no external forces act.
Is momentum a scalar or a vector?	A vector - momentum has both magnitude and direction.
What causes a change in momentum?	When a force acts on a body that is moving, or able to move, a change in momentum occurs.
What happens when a change in momentum of a body occurs?	Acceleration
What is the impulse of a force?	The force multiplied by the time it acts.
What is impulse equal to?	The change in momentum it produces.