What is the difference between a vector and a scalar quantity?	**Is Force a vector or scalar quantity?**
What is the weight of an object?	**Define the centre of mass**
Define resultant force	**Define work done**
Define Hooke's Law	**If a force of friction acts on an object what happens to the object?**

Vector	A vector quantity has a magnitude (size) and direction, whereas a scalar quantity has only a magnitude (size)
The single point from which the entire weight of an object can be considered to act	The force due to gravity on the object (due to the gravitational field of the planet)
The amount of energy required to move an object using a force 1J of work is done when a 1N force moved an object 1m	The sum of all forces acting on an object (can be determined scale vector diagrams as well as adding forces)
Its temperature rises	The extension of a spring is directly proportional to the force applied up to the limit of proportionality

Name the two features of a graph showing a directly proportional relationship	**Why do gases exert a pressure on surfaces?**
What effect does increasing gas temperature have on pressure? **Why?**	**What is the difference between speed and velocity?**
What is the difference between displacement and distance?	**Give approximate average speeds for:** **Walking** **Running** **Cycling**
What is the speed of sound in air?	**Why is an object travelling in a circle at a constant speed accelerating?**

Gas particles colliding with the surface causes the pressure	Straight line through the origin
Velocity is a vector quantity so it has a direction as well as a magnitude, speed is a scalar so has no direction.	As temperature increases, pressure increases. because… the higher the temperature the faster the gas particles are moving which causes impacts to be harder and happen more frequently (often).
Walking ≈ $1.5ms^{-1}$ Running ≈ $3ms^{-1}$ Cycling ≈ $6ms^{-1}$	Displacement is a vector quantity so it has a direction as well as a magnitude, distance is a scalar so has no direction.
Acceleration is the rate of change of **velocity**, which means that it is accelerating because the direction is changing so therefore the velocity is changing constantly.	Approximately $330ms^{-1}$

How do you calculate the velocity from a distance – time graph?	**How do you calculate the acceleration from a velocity-time graph?**
How do you calculate the distance travelled from a velocity – time graph?	**What is the equation for calculating gradient?**
How do you calculate the gradient of a curve at a particular value?	**How do you calculate the area under a curved line?**
At what rate will a falling object accelerate due to gravity?	**Why does a falling object reach terminal velocity?**

The gradient	The gradient
$m = \frac{\Delta y}{\Delta x}$ $gradient = \frac{change\ in\ y}{change\ in\ x}$	The area under the line
Count squares Calculate the area of each square (using the axis values on the scale) Multiply those two things together	Draw a tangent to the curve and calculate the gradient of that
As the object speeds up the drag on the object increases. The means that the resultant force on the object decreases, so the acceleration decreases too. Eventually the resultant force falls to zero and the acceleration falls to zero too. This constant speed is called terminal velocity.	$9.8ms^{-2}$

State Newton's First Law of Motion	**State Newton's Third Law of Motion**
What are the two part of a stopping distance called and how do they combine to make the overall stopping distance?	**Define Thinking Distance**
Define Braking Distance	**Give the approximate range of human reaction time**
Give five factors that affect Thinking Distance	**Give five factors that affect Braking Distance**

When two objects interact the forces that they exert on each other are equal and opposite.	If the resultant force on an object is zero: If the object is stationary, it will remain stationary If the object is moving the object will continue to move at a constant velocity (steady speed in a straight line)
The distance travelled by a vehicle while a driver reacts to a hazard	Thinking Distance & Braking Distance Stopping Distance = Thinking Distance + Braking Distance
0.2s to 0.7s	The distance travelled by a vehicle between the brakes being applied and the vehicle coming to a stop
1. Mass of vehicle 2. Road conditions (e.g. wet road etc) 3. Tyre quality 4. Brake quality 5. Speed of vehicle	1. Drug taking (including alcohol) 2. Distractions 3. Tiredness 4. Age 5. Speed of vehicle

Why are the large decelerations experienced in crashes hazardous?	**Define conservation of momentum**
Define closed system	**If a person jumps off a skateboard, explain why the board goes in the opposite direction to the skateboard and why the skateboard travels faster.**
Define a transverse wave	**Define a longitudinal wave**
Give examples of transverse waves **(2 things)**	**Give examples of longitudinal waves** **(2 things)**

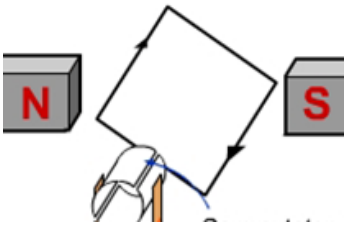
In a closed system, the total momentum before an event is equal to the total momentum after an event.	F = ma, so if the acceleration is larger then the force acting on us will be larger too. This larger force will cause greater damage.
The initial total momentum is zero. As momentum is conserved the momentum afterwards must also be zero. The skateboard and person travel in opposite directions with equal momentum so that they add to be zero. p = mv, so v = p/m. As the skateboard and person have the same momentum, the light skateboard will have the higher speed.	A situation where no external forces are acting
A wave with oscillations that are **parallel** to the direction of energy transfer	A wave with oscillations that are **perpendicular** to the direction of energy transfer
Sound & Ultrasound	Everything on the Electromagnetic Spectrum Water waves

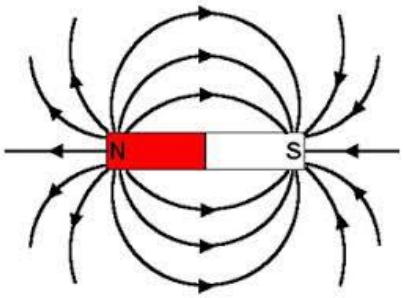
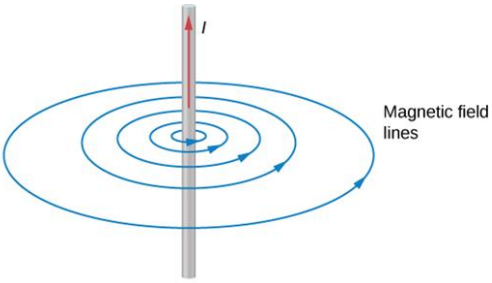
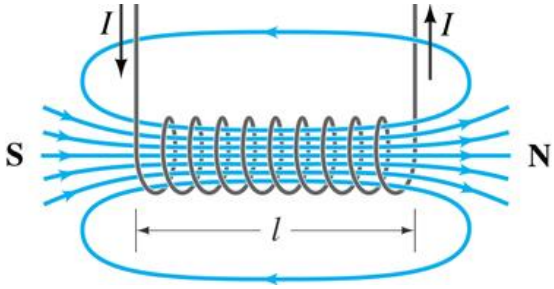
Define the amplitude of a wave	**Define the wavelength of a wave**
Define the frequency of a wave	**Define the time period of wave or cycle**
Define a wave	**Name the seven types of Electromagnetic Wave in order of *increasing wavelength***
Name the seven types of Electromagnetic Wave in order of *increasing frequency*	**Name the seven types of Electromagnetic Wave in order of *decreasing wavelength***

The distance from one point on a wave to the equivalent point on the next wave (usually measured peak to peak)	The maximum displacement from equilibrium position
The time taken for one complete wave or cycle	The number of waves per second passing a point
Gamma Rays X-Rays Ultraviolet Visible Light Infrared Microwaves Radio waves	The transfer of energy without transferring material
Radio waves Microwaves Infrared Visible Light Ultraviolet X-Rays Gamma Rays	Radio waves Microwaves Infrared Visible Light Ultraviolet X-Rays Gamma Rays

Name the seven types of Electromagnetic Wave in order of *decreasing frequency*	**What happens when a wave refracts and why does it occur?**
Give the uses with reasons and hazards of: **Radio waves**	**Give the uses with reasons and hazards of:** **Microwaves**
Give the uses with reasons and hazards of: **Infrared**	**Give the uses with reasons and hazards of:** **Visible Light**
Give the uses with reasons and hazards of: **Ultraviolet**	**Give the uses with reasons and hazards of:** **X-Rays**

Refraction is the change in direction of a wave caused by the change in speed of the wave (for example when light travels from one material to another).	Gamma Rays X-Rays Ultraviolet Visible Light Infrared Microwaves Radio waves
Used for cooking because they are absorbed by water and cause it to get hotter. Used for mobile phones because they cause electric current in circuits like microwaves. Used for satellite communications because they will pass through the atmosphere. They may cause heating of body tissue.	Used for TV and Radio signals because they create a current in an electric circuit. There are no dangers associated with radio waves
Used to produce images in cameras because camera film or CCD chips respond to visible light. May cause eye damage if exposed to high intensity.	Used for TV remote controls because it is easily produced and detected. Used for thermal imaging as infrared is given off by everything with a temperature and more is given off by hotter things. May cause burns if exposed to high intensity.
Used to detect broken bones as they are absorbed by the dense bones but not the lower density soft tissue. Can cause cancer as they are ionising so may cause damage to DNA.	Used for security marking as some inks will absorb UV and emit visible light. A material that does this coats energy saving lightbulbs. Can cause sunburn and skin cancer.

Give the uses with reasons and hazards of: **Gamma Rays**	**What is the shape of the magnetic field around a bar magnet?**
What is the shape of the magnetic field around a solenoid?	**What is the shape of the magnetic field around a straight wire?**
Which rule can be used to determine the direction of magnetic field lines in a solenoid and round a wire?	**Why does a compass point North and what direction does that tell us about the Earth's core?**
What is Fleming's Left Hand Rule? (Including what each finger stands for)	**Which direction is this electric motor going to spin?** 

	Used to kill cancer cells (radiotherapy) because they are ionising so cause damage the cells. Can be used to kill bacteria for the same reason. Can cause cell damage or cancer as they are ionising so may cause damage to DNA.
	
The compass needle aligns with the Earth's magnetic field lines which tells us that the Earth's core is magnetic	The right hand "cork screw"
Anti-clockwise (Using Fleming's Left Hand Rule should give you an upward force on the right hand side and a downwards force on the left hand side)