



# Physics PAPER 2 DRIP SHEETS

(Directed Revision Invested by Parents)

Contents

**(Topic P5) Forces**

**(Topic P6) Waves**

**(Topic P7) Magnetism and electromagnetism**

***(Topic P8) Space physics (single sciences ONLY)***

## Information

Parents and carers often ask us how they can help the students prepare for their science exams. DRIP sheets are a way to get parents involved with the revision process. The essential facts needed for the science exams can be memorised together. Similar to when you helped your child learn their spellings or timetables at primary school.

This booklet contains **all** the science facts for GCSE physics paper 2. There are 6 DRIP sheets in total, two for biology (paper 1 and paper 2), two for chemistry (paper 1 and paper 2) and two for physics (paper 1 and paper 2).

Content for the single science GCSE and combined sciences are included together. The grey boxes contain facts for the single sciences exam. You will not need to learn these if you are studying for combined sciences. Higher tier GCSE facts are also included. You do not need to learn these facts if you are sitting the foundation level tier.

**PHYSICS paper 2**

Given on the equation sheet		Module	PAPER
Kinetic Energy	$E_k = \frac{1}{2} \times m \times v^2$	P1	PHYSICS PAPER 1
Gravitational potential	$E_p = m \times g \times h$	P1	
Power 1	$P = E \div t$	P1	
Power 2	$P = W \div t$	P1	
Efficiency 1	Efficiency = useful power output $\div$ total power in	P1	
Efficiency 2	Efficiency = useful energy output $\div$ total energy in	P1	
Elastic energy	$E_e = \frac{1}{2} \times k \times e^2$	P1	
Specific heat capacity	$\Delta E = m \times c \times \theta$	P1	
Charge	$Q = I \times t$	P2	
Voltage	$V = I \times R$	P2	
Power 3	$P = V \times I$	P2	
Power 4	$P = I^2 \times R$	P2	
Energy ( <b>HIGHER ONLY</b> )	$E = Q \times V$	P2	
Density	$\rho = m \div \text{vol}$	P3	
Latent heat	$E = m \times L$	P3	
Gas pressure	$P_1 \times V_1 = P_2 \times V_2$	P3	
Weight	$W = m \times g$	P5	PHYSICS PAPER 2
Work done	$W = F \times s$	P5	
Force on a spring	$F = k \times e$	P5	
Acceleration	$a = \Delta v \div t$	P5	
Force on a mass	$F = m \times a$	P5	
Momentum	$P = m \times v$	P5	
Speed 1	$v = s \div t$	P5	
Acceleration	$v^2 - u^2 = 2as$	P5	
Period	$T = 1 \div f$	P6	
Wave equation	$v = f \times \lambda$	P6	
Force on a wire in a mag field	$F = B \times I \times l$	P7	

## PHYSICS paper 2

### P5 Forces PART 1

Spec	QUESTION	ANSWER	TICK
Specification 4.5.1	What is a scalar quantity?	Scalar quantities have size only.	
	What is a vector quantity?	Vector quantities have size and direction.	
	How are vectors represented?	A vector quantity may be represented by an arrow.	
	How does an arrow represent the direction of a vector?	It points the way a force acts.	
	How does an arrow represent the magnet of a vector?	Its length.	
	What are contact forces?	Contact forces – the objects are physically touching.	
	What are non-contact forces?	Non-contact forces – the objects are physically separated.	
	Give some examples of contact forces	Friction, air resistance, tension and normal contact force.	
	Give some examples of non-contact forces	Gravitational force, electrostatic force and magnetic force.	
	Is force a scalar or vector?	Force is a vector quantity.	
	What is weight?	Weight is the force acting on an object due to gravity.	
	What does weight depend upon?	The gravitational field strength at the point where the object is.	
	What is the equation for calculating weight?	Weight = mass x gravitational field strength $W = m \times g$	
	What are the symbol and units of weight?	Weight, W, in Newton's, N	
	What are the symbol and units of mass?	Mass, m, in kilograms, k	
	What is the symbol and units of gravitational field strength?	Gravitational field strength, g, in newtons per kilogram, N/k	
	Where do we imagine weight acts from	The 'centre of mass'.	
	What is the relationship between weight and mass?	Directly proportional.	
	How is weight measured?	Using a calibrated spring-balance (a newton meter).	
What is a resultant force?	A number of forces acting on an object may be replaced by a single force that has the same effect as all the original forces acting together.		
Specification 4.5.2	What is work done?	Energy transferred.	
	What is the equation for work done?	Work done = force x distance $W.D. = F \times S$	
	What are the symbols and units of work done?	work done, W, in joules, J.	
	What are the symbols and units of force?	force, F, in Newton's, N.	
	What are the symbols and units of distance in the work done equation?	distance, s, in metres, m.	
	What is the definition of 1 joules of work done?	One joule of work is done when a force of one newton causes a displacement of one metre.	
	What is 1 joule the same as?	1 joule = 1 newton-metre.	
What does doing work on frictional surfaces do?	It causes a rise in the temperature of the object.		
Specification reference 4.5.3	What is the relationship between extension on a spring and force?	Directly proportional (provided that the limit of proportionality is not exceeded).	
	What is the limit of proportionality?	The point when damage to a spring or elastic band means the spring doesn't return to its original length.	
	What is the equation for finding the extension of a spring?	Force = extension x spring constant $F = k \times e$	
	What are the symbols and units of force?	force, F, in newtons	
	What are the symbol and units of the spring constant?	spring constant, k, in newtons per metre, N/m	
	What is the equation for finding the energy stored in a sketched spring?	$E.P.E = \frac{1}{2} \times \text{spring constant} \times \text{extension}^2$	

## PHYSICS paper 2

### P5 Forces part 2

Spec	QUESTION	ANSWER	TICK
Specification 4.5.4 <b>single science only</b>	What is another name for a turning force?	Moment of the force.	
	What is the equation for working out the moment of a force?	Moment of a force = force $\times$ distance.	
	What are the symbol and units for moments?	Moment of a force, M, in newton-metres, Nm.	
	What are the symbol and units for force?	Force, F, in newtons, N.	
	What are the symbol and units for distance?	Distance, d, is the perpendicular distance from the pivot to the line of action of the force, in metres, m.	
	If an object is balanced, what can be said about the clockwise and anticlockwise moments?	The total clockwise moment about a pivot equals the total anticlockwise moment about that pivot.	
	What systems can be used to transmit the rotational effects of forces?	A simple lever and a simple gear system can both be used to transmit the rotational effects of forces.	
Specification 4.5.5 <b>single science only</b>	What is a fluid?	A fluid can be either a liquid or a gas	
	What does pressure caused by a force do?	The pressure in fluids causes a force normal (at right angles) to any surface	
	What is the equation for working out pressure?	Pressure = force $\div$ area	
	What are the units and symbols of pressure?	Pressure, p, in Pascal's, Pa	
	What are the units and symbols of force?	Force, F, in newtons, N	
	What are the units and symbols of area?	Area, A, in metres squared, m <sup>2</sup>	
	What is the equation for finding the pressure in a column at a certain height?	Pressure = height of the column $\times$ density of the liquid $\times$ gravitational field strength [ $p = h \rho g$ ]	
	What are the units and symbols of pressure?	Pressure, p, in Pascal's, Pa	
	What are the units and symbols of height?	Height of the column, h, in metres, m.	
	What are the units and symbols of density?	Density, $\rho$ , in kilograms per metre cubed, kg/m <sup>3</sup> .	
	What are the units and symbols of gravitational field strength?	Gravitational field strength, g, in newtons per kilogram, N/kg.	
	What is up-thrust?	A partially (or totally) submerged object experiences a greater pressure on the bottom surface than on the top surface.	
	What is the atmosphere?	The atmosphere is a thin layer (relative to the size of the Earth) of air round the Earth.	
	What happens to the atmosphere as you increase with altitude?	The atmosphere gets less dense with increasing altitude.	
	Describe how air molecules create atmospheric pressure.	Air molecules colliding with a surface create atmospheric pressure.	
	Specification reference 4.5.6	What is distance?	Distance is how far an object moves.
Is distance a scalar or vector?		Distance is a scalar quantity.	
What is displacement?		Displacement includes both the distance an object moves, measured in a straight line from the start point to the finish point and the direction of that straight line.	
Is displacement a scalar or vector quantity?		Displacement is a vector quantity.	
What is the difference between speed and velocity?		Speed does not involve direction.	
Is speed a scalar or vector quantity?		Speed is a scalar quantity.	
What is a typical walking speed?		Walking-1.5 m/s	
What is a typical running speed?		Running-3 m/s	
What is a typical cycling speed?		Cycling-6 m/s	

**PHYSICS paper 2**

What is the speed of sound in air?	Speed of sound in air is 330 m/s.	
What is the equation for working out distance from speed and time?	Distance travelled = speed x time $S = V \times T$	
What are the units and symbols of distance?	Distance, s, in metres, m.	
What are the units and symbols of speed?	Speed, v, in metres per second, m/s.	
What are the units and symbols of time?	Time, t, in seconds, s	
What is velocity?	The velocity of an object is its speed in a given direction.	
Is velocity a vector or scalar quantity?	Velocity is a vector quantity.	
How do you work out speed from a distance time graph?	The speed of an object can be calculated from the gradient of its distance–time graph.	
<b>HIGHER ONLY</b> How do you work out speed from an object accelerating on a distance time graph?	(HT only) Its speed at any particular time can be determined by drawing a tangent and measuring the gradient of the distance–time graph at that time.	
What is the equation for working out acceleration?	Acceleration = $\frac{\text{final velocity} - \text{initial velocity}}{\text{time taken}}$	
What are the units and symbols of acceleration?	Acceleration, a, in metres per second squared, m/s <sup>2</sup>	
What are the units and symbols of change in velocity?	change in velocity, $\Delta v$ , in metres per second, m/s	
What are the units and symbols of time?	Time, t, in seconds, s	
What is the term given to objects slowing their velocity?	Decelerating.	
How can you calculate acceleration from a velocity time graph?	The gradient of a velocity–time graph.	
<b>HIGHER ONLY</b> How do you find the distance travelled by an object from a velocity time graph?	(HT only) The distance travelled by an object (or displacement of an object) can be calculated from the area under a velocity–time graph.	
What is the second acceleration formulae?	$v^2 = u^2 + 2As$ .	
What are the units and symbols of final velocity?	Final velocity, v, in metres per second, m/s.	
What are the units and symbols of initial velocity?	Initial velocity, u, in metres per second, m/s.	
What are the units and symbols of acceleration?	Acceleration, a, in metres per second squared, m/s <sup>2</sup>	
What are the units and symbols of distance?	Distance, s, in metres, m	
Describe the forces acting on something falling through a fluid	An object falling through a fluid initially accelerates due to the force of gravity. Eventually the resultant force will be zero and the object will move at its terminal velocity.	
What is Newton's first law of motion?	Objects will remain stationary or at a constant speed unless acting upon by a force	
Describe the forces on an object travelling at constant speed	The resistive forces balance the driving force.	
<b>HIGHER ONLY</b> What is inertia?	The tendency of objects to continue in their state of rest or of uniform motion is called inertia.	
What is the relationship between force, acceleration and mass? (Newton's 2 <sup>nd</sup> law of motion)	Proportional to the resultant force acting on the object, and inversely proportional to the mass of the object.	
What is the equation for finding force from mass and acceleration?	Resultant force = mass x acceleration	
What are the units and symbols of force?	Force, F, in Newtons, N	
What are the units and symbols of mass?	Mass, m, in kilograms, kg	
What are the units and symbols of acceleration?	Acceleration, a, in metres per second squared, m/s <sup>2</sup>	
What is Newton's 3 <sup>rd</sup> law of motion?	Whenever two objects interact, the forces they exert on each other are equal and opposite.	
What is the stopping distance?	Thinking distance + braking distance	
What is the relationship between braking force and stopping distance?	For a given braking force the greater the speed of the vehicle, the greater the stopping distance.	
What are the typical reaction times for a person?	0.2 s to 0.9 s.	
What affects a driver's reaction time?	A driver's reaction time can be affected by tiredness, drugs and alcohol. Distractions may also affect a driver's ability to react.	
What affects braking distance?	Wet or icy conditions or vehicle's brakes or tyres	
Describe how forces slow a car down	When a force is applied to the brakes of a vehicle, work done by the friction force between the brakes and the wheel reduces the kinetic energy of the	

## PHYSICS paper 2

		vehicle and the temperature of the brakes increases.	
	What is the relationship between vehicle speed and braking force?	The greater the speed of a vehicle the greater the braking force needed.	
	What is the relationship between braking force and deceleration of a vehicle?	The greater the braking force the greater the deceleration of the vehicle	
	What can large decelerations do to a moving vehicle?	Large decelerations may lead to brakes overheating and/or loss of control.	
Specification reference 4.5.7	<b>HIGHER ONLY</b> What is the equation for momentum	Momentum = mass x velocity $P = m \times v$	
	<b>HIGHER ONLY</b> What are the symbols and units for momentum?	Momentum, p, in kilograms metre per second, kg m/s	
	<b>HIGHER ONLY</b> What are the symbols and units for mass?	Mass, m, in kilograms, kg	
	<b>HIGHER ONLY</b> What are the symbols and units for velocity?	Velocity, v, in metres per second, m/s	
	<b>HIGHER ONLY</b> What is the conservation of momentum?	In a closed system, the total momentum before an event is equal to the total momentum after the event.	
Specification reference 4.5.7 single	What happens when a moving object experiences a force in terms of momentum?	When a force acts on an object that is moving, or able to move, a change in momentum occurs.	
	How does an increase in contact time affect force?	An increase in contact time reduces the applied force	
	How does a decrease in contact time affect force?	A decrease in contact time increases the applied force	



## P6 Waves

Spec	QUESTION	ANSWER	TICK
Specification 4.6.1	What are the two types of waves?	Transverse or longitudinal.	
	What type of waves are water waves?	Transverse wave.	
	Do longitudinal waves or transverse waves show compression and rarefaction?	Longitudinal waves show areas of compression and rarefaction.	
	What type of waves are sound waves?	Longitudinal.	
	What is the amplitude of a wave?	The maximum displacement of a point on a wave.	
	What is the wavelength of a wave?	The distance from peak to peak on a wave.	
	What is the frequency of a wave?	The frequency of a wave is the number of waves passing a point each second.	
	What is the equation for finding the period of a wave?	Period = $1 \div$ frequency	
	What are the symbols and units for period?	Period, T, in seconds, s.	
	What are the symbols and units for frequency?	Frequency, f, in hertz, Hz.	
	What is the wave speed?	The speed at which the energy is transferred (or the wave moves) through the medium.	
	What is the equation for wave speed?	Wave speed = frequency x wavelength.	
	What are the symbols and units for wave speed?	Wave speed, v, in metres per second, m/s.	
	What are the symbols and units for frequency?	Frequency, f, in hertz, Hz.	
What are the symbols and units for wavelength?	Wavelength, $\lambda$ , in metres, m.		
Specification 4.6.1 single science only	What is the term used to describe waves bouncing on a surface?	Reflection.	
	What is the term used to describe waves moving into or through a material?	Absorb and transmit.	
	When sound waves pass through a solid what happens to the particles in that solid?	Sound waves can travel through solids causing vibrations in the solid	
	Describe how sound is heard	Within the ear, sound waves cause the ear drum and other parts to vibrate which causes the sensation of sound	
	What is the normal range of human hearing?	20 Hz to 20,000Hz.	
	What is ultrasound?	Ultrasound waves have a frequency higher than the upper limit of hearing for humans.	
	How can ultrasound be used to detect how far a boundary is away?	The time taken for the reflections to reach a detector can be used to determine how far away such a boundary is.	

**PHYSICS paper 2**

	What produce seismic waves?	Seismic waves are produced by earthquakes.	
	What types of waves are seismic P waves?	P-waves are longitudinal, seismic waves.	
	What types of waves are seismic S waves?	P-waves travel at different speeds through solids and liquids.	
	What is an S wave unable to travel through?	S-waves are transverse, seismic waves. S-waves cannot travel through a liquid.	
	What do S waves and P waves provide evidence for?	P-waves and S-waves provide evidence for the structure and size of the Earth's core.	
	What is echo sounding?	Echo sounding, using high frequency sound waves is used to detect objects in deep water and measure water depth.	
Specification 4.6.2	What are electromagnetic waves?	Electromagnetic waves are transverse waves that transfer energy from the source of the waves to an absorber.	
	What can be said about the speed of electromagnetic waves through a vacuum?	All types of electromagnetic wave travel at the same velocity through a vacuum (space) or air.	
	How are electromagnetic waves grouped along the spectrum?	The waves that form the electromagnetic spectrum are grouped in terms of their wavelength and their frequency.	
	Name the electromagnetic waves in order from high wavelength to low wavelength	Radio, microwave, infrared, visible light (red to violet), ultraviolet, X-rays and gamma rays.	
	Why can't our eyes see all the electromagnetic spectrum?	Our eyes only detect visible light and so detect a limited range of electromagnetic waves.	
	<b>HIGHER ONLY</b> What impacts whether electromagnetic waves are absorbed, transmitted, refracted or reflected?	(HT only) Wavelength	
	<b>HIGHER ONLY</b> What causes electromagnetic wave to refract?	(HT only) Difference in velocity of the waves in different substances.	
	<b>HIGHER ONLY</b> How are radio waves produced?	(HT only) Radio waves can be produced by oscillations in electrical circuits.	
	<b>HIGHER ONLY</b> How are radio waves detected?	(HT only) When radio waves are absorbed they may create an alternating current with the same frequency as the radio wave itself, so radio waves can themselves induce oscillations in an electrical circuit.	
	Where do gamma rays come from?	Changes in the nucleus of an atom.	
	Which electromagnetic waves can have a hazardous effect on the human body?	Ultraviolet waves, X-rays and gamma rays can have hazardous effects on human body tissue.	
	What is a radiation dose?	Radiation dose (in Sieverts) is a measure of the risk of harm resulting from an exposure of the body to the radiation.	
	What are the impacts of ultraviolet radiation on skin?	Ultraviolet waves can cause skin to age prematurely and increase the risk of skin cancer	
	What are the impacts of x rays and gamma rays on your body?	X-rays and gamma rays are ionising radiation that can cause the mutation of genes and cancer.	
	What do we use radio waves for?	Radio waves – television and radio	
	What do we use microwaves for?	Microwaves – satellite communications	
	What do we use infrared waves for?	Infrared – electrical heaters, cooking food, infrared cameras	
	What do we use visible light for in terms of industrial application?	Visible light – fibre optic communications	
	What do we use ultraviolet waves for?	Ultraviolet – energy efficient lamps, sun tanning	
	What do we use x rays and gamma rays for?	X-rays and gamma rays – medical imaging and treatments.	
Specification reference 4.6.2 single science only	In simple terms, how does a lens work?	A lens forms an image by refracting light	
	How does a convex lens work?	In a convex lens, parallel rays of light are brought to a focus at the principal focus	
	What is the distance from the lens to the principle focus called?	The focal length	
	What are ray diagrams used for?	Ray diagrams are used to show the formation of images by convex and concave lenses	
	What types of images are produced by a convex lens?	The image produced by a convex lens can be either real or virtual	
	What type of image does a concave lens always form?	The image produced by a concave lens is always virtual	

## PHYSICS paper 2

	What is the equation for magnification?	magnification = image height ÷ object height	
	What are the units for magnification?	Magnification is a ratio and so has no units.	
	What are the measurements that image height and object height should be measured in?	Image height and object height should both be measured in either mm or cm.	
	How will the exam board represent a convex lens in the exam?		
	How will the exam board represent a concave in the exam?		
	Why are colours different from each other on the electromagnetic spectrum?	Each colour within the visible light spectrum has its own narrow band of wavelength and frequency	
	What is reflection from a smooth surface in a single direction called?	Specular reflection	
	What is reflection from a rough surface causing scattering called?	Diffuse reflection	
	Describe how colour filters work	Colour filters work by absorbing certain wavelengths (and colour) and transmitting other wavelengths (and colour).	
	What determines the colour of an opaque object?	The colour of an opaque object is determined by which wavelengths of light are more strongly reflected	
	What happens to wavelengths of light not reflected?	Wavelengths that are not reflected are absorbed	
	What happens if all wavelengths of light are reflected equally?	If all wavelengths are reflected equally the object appears white	
	What happens if all wavelengths of light are absorbed equally?	If all wavelengths are absorbed the objects appears black.	
	What are the two names given to objects that transmit light?	Objects that transmit light are either transparent or translucent.	
Physics Single science only 4.6.3	What type of bodies emit and absorb infrared radiation?	All bodies (objects), no matter what temperature, emit and absorb infrared radiation.	
	What is the relationship between the temperature of a body and the infrared radiation it radiates?	The hotter the body, the more infrared radiation it radiates in a given time.	
	What is a perfect black body?	A perfect black body is an object that absorbs all of the radiation incident on it.	
	What is the best type of emitter?	A black body. If they absorb well, they also emit well.	
	What can be said about a body at constant temperature in terms of the radiation emitted and absorbed?	(HT only) A body at constant temperature is absorbing radiation at the same rate as it is emitting radiation.	
	What causes the temperature of a body to rise?	The temperature of a body increases when the body absorbs radiation faster than it emits radiation.	
	What factors impact the temperature of the Earth?	(HT only) The temperature of the Earth depends on many factors including: the rates of absorption and emission of radiation, reflection of radiation into space.	

### P7 Electromagnetic radiation

Spec	QUESTION	ANSWER	TICK
Specification 4.7.1	Where are the magnetic forces on a magnet strongest?	The poles of a magnet are the places where the magnetic forces are strongest.	
	What happens when two magnets are brought close together?	When two magnets are brought close together they exert a force on each other.	
	What do two like poles do?	Two like poles repel each other.	
	What do two unlike poles do?	Two unlike poles attract each other.	
	What type of force is attraction and repulsion (contact or non-contact)?	Attraction and repulsion between two magnetic poles are examples of non-contact force.	
	What does a permanent magnet do?	A permanent magnet produces its own magnetic field.	
	What is an induced magnet?	A material that becomes a magnet when it is placed in a magnetic field.	
	What type of force does an induced magnet always cause?	Induced magnetism always causes a force of attraction.	



**PHYSICS paper 2**

	What happens when an induced magnet is removed from a magnetic field?	When removed from the magnetic field an induced magnet loses most/all of its magnetism quickly.	
	What is the region around a magnet where a force is experienced called?	The region around a magnet where a force acts is called the magnetic field.	
	What is the type of force experienced between a magnet and magnetic material called?	The force between a magnet and a magnetic material is always one of attraction.	
	What does the strength of a magnet depend upon?	The distance from the magnet. The field is strongest at the poles of the magnet.	
	How do you determine the direction of a magnetic field?	The direction of the magnetic field at any point is given by the direction of the force that would act on another north pole placed at that point	
	What is the direction of a magnet around a permanent magnet?	The direction of a magnetic field line is from the north (seeking) pole of a magnet to the south (seeking) pole of the magnet.	
	What is inside a compass?	A magnetic compass contains a small bar magnet.	
	True or false, the Earth has a magnetic field	True. The Earth has a magnetic field.	
	How does a compass work?	The compass needle points in the direction of the Earth's magnetic field.	
Specification 4.7.2	What happens around a wire when current flows?	A magnetic field is produced around the wire.	
	What factors affect the strength of a field around a current carrying wire?	The current through the wire and the distance from the wire.	
	How can you increase the strength of the magnet field around a current carrying wire?	Shaping a wire to form a solenoid.	
	What is the shape of a magnetic field inside a solenoid?	The magnetic field inside a solenoid is strong and uniform.	
	What does adding an iron core do to the strength of the magnetic field around a solenoid?	Adding an iron core increases the strength of the magnetic field of a solenoid.	
	What is the name given to a solenoid with an iron core?	An electromagnet.	
	<b>HIGHER ONLY</b> What happens when a current carrying wire is placed in a magnet field?	They exert a force on each other.	
	<b>HIGHER ONLY</b> What is the name of the phenomena mentioned in the previous question?	The motor effect	
	What is the equation for finding the force acting on a current carrying wire in a magnetic field?	Force = magnetic flux density $\times$ current $\times$ length	
	What are the symbols and units for force?	Force, F, in Newton's, N	
	What are the symbols and units for magnetic flux density?	Magnetic flux density, B, in tesla, T	
	What are the symbols and units for current?	Current, I, in amperes, A (amp is acceptable for ampere)	
	What are the symbols and units for length?	Length, l, in metres, m	
	<b>HIGHER ONLY</b> Name two devices that use the motor effect which are not motors	Loudspeakers and headphones use the motor effect to convert variations in current in electrical circuits to the pressure variations in sound waves.	
	<b>HIGHER ONLY</b> What happens when a wire is moved through a magnetic field?	A current is induced (made to flow).	
Specification 4.3.3	<b>HIGHER ONLY</b> What is the name of the phenomena from the previous question?	The generator effect.	
	<b>HIGHER ONLY</b> What is the generator effect used for?	The generator effect is used in an alternator to generate ac and in a dynamo to generate dc.	
	<b>HIGHER ONLY</b> How do microphones use the generator effect?	Microphones use the generator effect to convert the pressure variations in sound waves into variations in current in electrical circuits.	
	<b>HIGHER ONLY</b> In simple terms what is a basic transformer made up of?	A basic transformer consists of a primary coil and a secondary coil wound on an iron core.	
	<b>HIGHER ONLY</b> Why is an iron core used in a transformer?	Iron is used as it is easily magnetised.	
	<b>HIGHER ONLY</b>	If transformers were 100 % efficient, the electrical	

## PHYSICS paper 2

	How would the electrical power input and output compare if a transformer was 100% efficient?	power output would equal the electrical power input.	
	<b>HIGHER ONLY</b> What is the equation that links the voltage and current on a primary coil to the voltage and current on the secondary coil of a transformer?	$V_s \times I_s = V_p \times I_p$	
	<b>HIGHER ONLY</b> What are the symbols and units for power input and output?	Power input and output, in watts, W	

### **P8 Space physics SINGLE SCIENCE STUDENTS ONLY**

Spec	QUESTION	ANSWER	TICK
Specification 4.8.1 single science only	How many stars are there in our solar system?	Within our solar system there is one star, the Sun	
	What planets orbit around our sun?	eight planets and the dwarf planets that orbit around the Sun	
	What are natural satellites?	The moons that orbit planets	
	What is our solar system part of?	Our solar system is a small part of the Milky Way galaxy.	
	How was our sun formed?	The Sun was formed from a cloud of dust and gas (nebula) pulled together by gravitational attraction.	
	What determines the life cycle of a star?	The life cycle is determined by the size of the star.	
	Draw a flow diagram of the life cycle of a star	See notes	
	What process produces all the naturally occurring elements in our universe?	Fusion processes in stars produce all of the naturally occurring elements	
	How are elements heavier than iron produced?	Elements heavier than iron are produced in a supernova	
Specification 4.8.2 single science only	How are elements distributed around the universe?	The explosion of a massive star (supernova) distributes the elements throughout the universe.	
	Which force provides the force that allows planets to form and satellites to maintain their orbits?	Gravity provides the force that allows planets and satellites (both natural and artificial) to maintain their circular orbits.	
	What has been identified from light of the most distance galaxies?	There is an observed increase in the wavelength of light from most distant galaxies.	
	What is the relationship between the wavelength of light, the speed and the distance of galaxies observed?	The further away the galaxies, the faster they are moving and the bigger the observed increase in wavelength	
	What is the effect called described in the previous two questions?	This effect is called red-shift.	
	What does red shift provide evidence of?	The observed red-shift provides evidence that space itself (the universe) is expanding and supports the Big Bang theory.	
	What is the big bang theory?	The Big Bang theory suggests that the universe began from a very small region that was extremely hot and dense.	
	What do observations on distant galaxies suggest in relation to the big bang?	Observations of supernovae suggest that distant galaxies are receding ever faster.	