	Unit 5: Forces - Moments	
1	Moment	the turning effect of a force
2	Calculation	moment of a force (N/m) = force (N) x distance (m) M = *f* x d
3	Balanced moment	the total clockwise moment about a pivot equals the total anticlockwise moment about that pivot
	Lever	acts as a force multiplier to allow a larger force to act upon the load than is supplied by the effort
4	Pivot	point about which the lever turns
5	Load	object being moved by a lever
	Effort	force applied to one end of a lever
	Pressure in a fluid	
6	Pressure in a fluid	causes a force normal (at right angles) to any surface
7	Fluid	liquid or gas
8	Equation	pressure (Pa) = $\frac{\text{force normal to a surface (N)}}{\text{area of that surface (m}^2\text{)}}$ P = F/A
9	Pressure in a liquid column	pressure increases as depth increases, due to the weight of liquid above
10	Equation	pressure (Pa) = height (m) × density (kg/m^3) × g.f.s (N/kg) p = h ρ g
11	Upthrust	submerged object has greater pressure on bottom surface than the top surface, creating a resultant force upwards
12	Atmospheric pressure	created by air molecules colliding with a surface. Air pressure decreases with height
	Changes in momentum	
13	Change in momentum	occurs when a force acts on an object that is moving, or able to move
14	Equation	force (N) = mass(kg) x change velocity (m/s)/change time (s) $F = \frac{m\ \Delta v}{\Delta t}$

	Unit 7: Electromagnetism	
	Motors & loudspeakers	
15	Electric motor	a coil of wire carrying a current in a magnetic field which rotates, due to the force on the conductor
16	Loudspeaker	use the motor effect to convert variations in current in electrical circuits to pressure variations in sound waves

	Induced potential, transformers and the National Grid	
17	Generator effect	when motion between a conductor and a magnetic field creates electricity
18	Induced potential	caused when a coil of wire is moved in a magnetic field or a magnet is moved into a coil of wire
19	Induced current	caused by the induced potential, if the conductor is connected in a complete circuit
20	Increasing induced potential	• the speed of movement is increased • the magnetic field strength is increased • the number of turns on the coil is increased
21	Alternator	uses generator effect to produce alternating current
22	Dynamo	uses generator effect to produce direct current
23	Microphone	uses generator effect to convert the pressure variations in sound waves into variations in current

	Transformers	
24	Transformer	use electromagnetic induction to change the voltage of alternating currents.
25	Structure	consists of a primary coil and a secondary coil wound on an iron core
26	Step up transformer	increases the potential difference of an alternating current
27	Step down transformer	decreases the potential difference of an alternating current
28	Equation	$\frac{\text{primary voltage}}{\text{secondary voltage}} = \frac{\text{number turns on primary coil}}{\text{number turns on secondary coil}}$
29	Power output	if 100% efficient, power output would equal power input Vs × Is = Vp × Ip

	Topic 6 – WAVES	
	Reflection of waves	
30	Reflection	the return of light or sound waves from a surface
31	Law of Reflection	angle of incidence = angle of reflection
32	Normal	an imaginary line at 90° to the surface
33	Incident ray	light ray moving towards a surface or boundary
34	Reflected ray	light ray leaving a surface or boundary

	Sound waves	
35	Sound	sensation resulting from waves causing the ear drum and other parts of ear to vibrate
36	Echo	reflection of sound waves
37	Range human hearing	20Hz – 20kHz
38	Ultrasound	high frequency wave that is partially reflected when they meet a boundary between two different media
39	Seismic wave	produced by earthquakes
40	P-wave	longitudinal waves that travel at different speeds through solids and liquids
41	S-wave	transverse waves that cannot travel through a liquid
42	Echo sounding	high frequency sound waves used to detect objects in deep water and measure water depth

	Lenses		
43	Convex lens		parallel rays of light are brought to a focus at the principal focus. Image is real or virtual
44	Concave lens		light rays that pass through the lens are spread out. Image produced is always virtual
45	Real image	an image that can be projected onto a screen	
46	Virtual image	an image which appears to come from behind the lens	
47	Magnification	magnification = $\frac{\text{image height}}{\text{object height}}$	

	Visible light	
48	Spectrum	a series of similar waves arranged in order of wavelength or frequency
49	Coloured light	each colour within the visible light spectrum has its own narrow band of wavelength and frequency
50	Coloured object	determined by which wavelengths of light are reflected
51	Coloured filter	absorbs certain wavelengths and transmits other wavelengths
52	Absorbed	light wave transfers energy at the boundary of material and does not pass through, nor is reflected
53	Transmitted	light wave continues to move through a material
54	Black object	all wavelengths absorbed the objects appears black
55	White object	all wavelengths reflected equally the object appears white
56	Transparent	transmitting light to pass through so that objects behind are clearly visible
57	Translucent	transmitting and diffusing light through so that objects beyond are not clearly visible
58	Diffuse reflection	reflected light is scattered in all directions from a rough surface
59	Specular reflection	reflection from a smooth, flat surface

	Black body radiation	
60	Black body	object that absorbs, but does not reflect or transmit, infrared radiation
61	Perfect black body	object that absorbs all of the infrared radiation incident on it. Also, the best possible emitter of infrared radiation
62	Constant temperature	body at constant temperature is absorbing radiation at the same rate as it is emitting radiation.
63	Temperature of earth	depends on the rates of absorption and emission of radiation and reflection of radiation into space