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SCIENCE FUNDAMENTAL KNOWLEDGE QUIZ BOOKLET



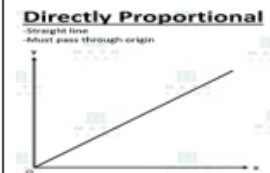
Key Stage 4 Paper 2 Physics



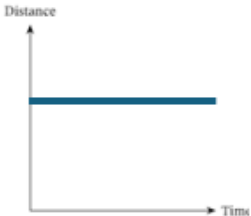
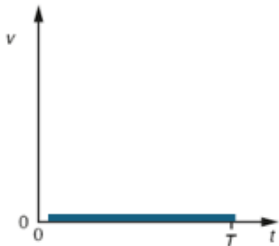

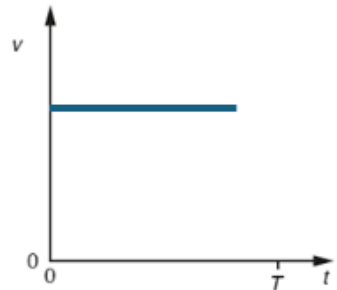
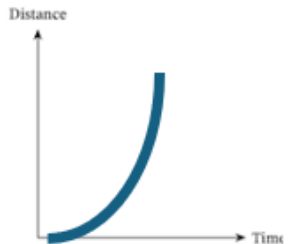
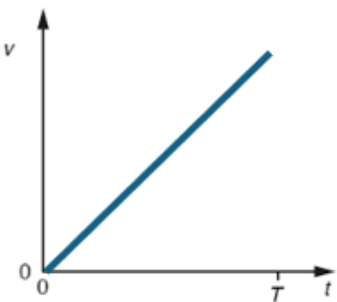
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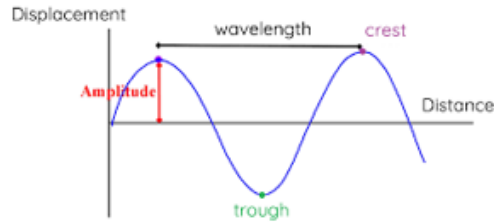
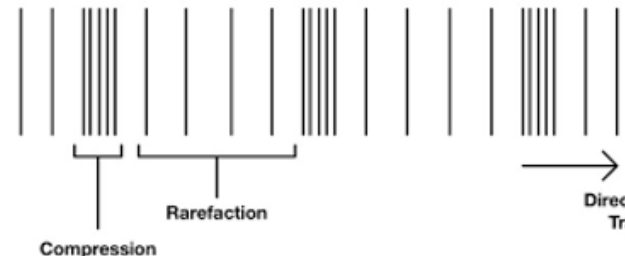
P5 – Forces 1

<p>Explain why forces are vectors</p> <p><u>Has a magnitude and Direction</u></p>	<p>Explain why time is a scalar</p> <p><u>Has magnitude only</u></p>	<p>State the units of the following:</p> <p>Force: <u>Newtons</u></p> <p>Mass: <u>Kilograms</u></p> <p>Time: <u>Seconds</u></p> <p>Velocity: <u>m/s</u></p>	<p>Describe what velocity is?</p> <p><u>Speed</u> in a given <u>Direction</u></p>	<p><u>According</u> the newtons 3rd law, if you push against a wall the wall will push back with an... <u>Equal and opposite force</u></p>
<p>If Mass doubles the weight doubles. Describe this relationship.</p> <p><u>Directly proportional</u></p>	<p>To find the centre of mass make a hole in the object and hang it <u>Freely</u> from a clamp. Hang a weight on a piece of string from the <u>Same</u> clamp. Draw a <u>Line</u> Where the string is hanging. <u>Repeat</u> at a different hole. Where the lines <u>Cross</u> is the centre of mass</p>	<p>If the results force is zero, describe the 2 possible motions of the object</p> <p><u>Stationary</u></p> <p><u>Constant speed</u></p>	<p>If an object has a results force describe the 2 possible motions the object can have.</p> <p><u>Accelerating</u></p> <p><u>Deaccelerating</u></p>	 <p>The object is moving right, describe the motion</p> <p><u>Deaccelerating</u></p>
 <p>Describe the motion</p> <p><u>Constant speed</u></p>	<p>What is this the definition of?</p> <p>'Energy transferred'</p> <p><u>Work Done</u></p>	<p>Describe how to measure the extension of a spring</p> <p><u>Use a ruler, measure original length, new length and find the difference</u></p>	<p>Draw a graph to show a directly proportional relationship</p> 	<p>State what an elastic object is</p> <p><u>Change shape, but will return to it's original</u></p>

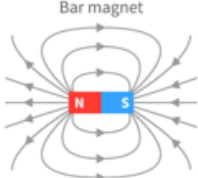
P5- forces 2

<p>Draw a distance – time graph to show stationary</p> 	<p>Draw a velocity-time graph to show stationary</p> 	<p>Draw a distance time graph to show constant speed</p> 	<p>Draw a velocity time graph to show a constant speed</p> 	<p>Draw a distance time graph to show acceleration</p> 
<p>Draw a velocity time graph to show acceleration</p> 	<p>Why is a pulley used to hold the string in the acceleration practical?</p> <p><u>To reduce friction with the table</u></p>	<p>How can friction be reduced in the acceleration practical?</p> <p><u>Air track</u></p>	<p>Which piece of apparatus has can measure time more accurately than a stopwatch?</p> <p><u>Light Gate</u></p>	<p>What is this the definition of?</p> <p><u>'Distance travelled reacting to a stimulus'</u></p> <p><u>Thinking distance</u></p>
<p>What is this the definition of?</p> <p><u>'Distance travelled after breaks are applied'</u></p> <p><u>Breaking distance</u></p>	<p>State 3 factors that affect thinking distance</p> <p><u>-Drugs</u></p> <p><u>-Alcohol</u></p> <p><u>-Tiredness</u></p>	<p>State 3 factors that affect breaking distance</p> <p><u>Icy road</u></p> <p><u>Poor brakes</u></p> <p><u>Poor Tyres</u></p>	<p>When an object is falling through air which force acts:</p> <p>Downwards: <u>Weight</u></p> <p>Upwards: <u>Air resistance</u></p>	<p>When will a falling object reach terminal velocity?</p> <p><u>When weight and air resistance are equal</u></p>

P6 – Waves

<p>What do waves transfer?</p> <p><u>Energy</u></p>	<p>What are waves caused by?</p> <p><u>Vibrations</u></p>	<p>A transverse wave has <u>Vibrations</u> that travel <u>Perpendicular</u> to the direction of travel</p>	<p>A longitudinal wave has <u>Vibrations</u> that travel <u>Parallel</u> to the direction of travel</p>	<p>Give an example of a:</p> <p>Transverse wave: <u>Light</u></p> <p>Longitudinal wave: <u>Sound</u></p>
<p>Label: Wavelength, Amplitude, Peak, Trough</p> 				<p>What is the unit of:</p> <p>Wavelength: <u>m</u></p> <p>Frequency: <u>Hz</u></p> <p>Wave Speed: <u>m/s</u></p> <p>Time period: <u>s</u></p>
<p>What wave needs to be set up to measure wavelength of a string?</p> <p><u>Standing wave</u></p>	<p>What does frequency mean in terms of waves?</p> <p><u>Number of waves per second</u></p>	<p>State the electromagnetic spectrum in order from Longest to shortest wavelength</p> <p><u>Radio, Micro, IR, Visible, UV, X-ray, Gamma</u></p>	<p>Which EM wave is used to:</p> <p>Communicate with satellites: <u>Microwaves</u></p> <p>Identify broken bones: <u>X-Ray</u></p> <p>Used in night vision: <u>IR</u></p>	<p>Which colour emits and absorbs the most Infrared radiation?</p> <p><u>Matt Black</u></p>
<p>Why do you measure the distance of 10 waves to find the wavelength?</p> <p><u>Reduces random error</u></p>	<p>How can you measure frequency of a water wave more easily?</p> <p><u>Record a video</u></p>	<p>What is the name of a reflected sound wave?</p> <p><u>Echo</u></p>	<p>What happens to the temperature if energy is absorbed?</p> <p><u>Increases</u></p>	<p>HT Only- what direction does a wave move if it goes into a <u>more dense</u> material?</p> <p><u>Towards Normal</u></p>

P7 – Electromagnetism

<p>What do we call the ends of a magnet?</p> <p>North and South</p>	<p>Draw the magnetic field around a bar magnet</p> 	<p>How can you tell where a magnet is the strongest?</p> <p>The lines of force are closer together</p>	<p>What is an induced magnet?</p> <p>A magnetic material that is placed in a magnetic field</p>	<p>What is produced around a current carrying wire?</p> <p>Magnetic Field</p>
<p>What do we call a coil of current carrying wire?</p> <p>A solenoid</p>	<p>What shape is the magnetic field of a solenoid?</p> <p>Same shape as a bar magnet</p>	<p>Describe the magnetic field inside a solenoid.</p> <p>Strong and uniform</p>	<p>What is produced by putting an iron core inside a solenoid?</p> <p>Electromagnet</p>	<p>Name the 4 magnetic materials</p> <p>Iron, Nickel, Cobalt, Steel</p>
<p>State an advantage of an electromagnet?</p> <p>Can be switched on and off</p>	<p>When two magnetic fields <u>interact</u> this is called the _____ effect</p> <p>Motor</p>	<p>What is the unit of</p> <p>Force - <u>Newtons</u> (N) Length – <u>Metres</u> (m) Magnetic Flux Density – <u>Tesla</u> (T)</p>	<p>In Flemmings left hand rule what does the first finger represent?</p> <p>Magnetic Field (N to S)</p>	<p>In Flemmings left hand rule what does the second finger represent?</p> <p>Current (positive to negative)</p>
<p>In Flemmings left hand rule what does the thumb represent?</p> <p>Force</p>	<p>How does a motor work?</p> <ul style="list-style-type: none"> • Current flows in different directions on each side of the coil causing forces to act. • The forces cause the coil to spin clockwise or anticlockwise • Each half-turn the split ring commutator changes the direction of the current • This keeps the forces in the same direction 		<p>What do opposite poles do?</p> <p>Attract</p>	<p>What do same poles do?</p> <p>Repel</p>