**Colton Hills Community School medium term planning**

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| **Topic title:**  .. Waves | **Year:** …8 **Term:** …Autumn | **Why we teach this:** … Waves builds on what we have learnt so far and looks at how waves | **Why we teach this here:** … having learnt about the building blocks of the universe and life, followed by organisms and machines we move towards larger scale effects. | |
| **Big questions:**   1. What is a wave? 2. How are waves formed? 3. What do waves do? 4. How can we use waves every day? 5. Do waves help us to hear and see? 6. Can waves be used to send information? 7. Are waves safe or dangerous? 8. Can waves travel through everything? | | **Builds on previous topics:** … particles, motion and pressure, energy, skeleton and gas exchange. | **Links to future topics:**  … Effects in terms of biology and chemistry and all physics. | |
| **Key knowledge:**   * describe the similarities and differences between light waves and waves in matter. * Explain how light waves travel through a vacuum; speed of light * describe the transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface. * use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye. * Observe light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras. * Describe colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection. | **Key knowledge continued:**   * Chemical reactions * defining acids and alkalis in terms of neutralisation reactions * the pH scale for measuring acidity/alkalinity; and indicators * reactions of acids with alkalis to produce a salt plus water * presenting chemical reactions as formulae+ equations * thermal decomposition * Energetics * energy changes on changes of state (qualitative) * exothermic and endothermic chemical reactions (qualitative). | |
| **Skills developed:**  Calculations, extended writing, identifying patterns and comparisons. Recording observations, researching information, make predictions using scientific knowledge and understanding, present observations and data using appropriate methods, including tables and graphs, select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent, and control variables where appropriate. | |
| **Mini/Interim assessments:**   * Multiple choice questions * Retrieval questions   **Termly summative assessment:**   * End of topic test * Year 8 Spaced learning assessment | | **Independent study tasks/resources:**   1. Seneca   <https://app.senecalearning.com/classroom/course/419c7523-d408-4bc7-9b96-f7f12abdacae/section/c170c4c1-8369-487e-8808-b1ad73472b8b/session>   1. Bitesize <https://www.bbc.co.uk/bitesize/topics/zw982hv> 2. OAK <https://teachers.thenational.academy/units/sound-waves-0e79> and <https://teachers.thenational.academy/units/light-and-space-fa61> | **Key vocabulary 1:**  Light  Sound  Electromagnetic  Spectrum  wavelength  crest  trough  Amplitude  Frequency  Period  luminous  Non- luminous  Hertz | **Key vocabulary 2:** Particles  compression  Rarefaction  oscillation  longitudinal  transverse  wave |
| **Cultural capital opportunities:** …  Discuss modern technological applications such as fibre optics in medicine and home use. Look at new developments and careers - engineering. Make pin hole cameras, periscopes, telescopes. Discuss fake news such as 5G and covid. | | **Whole school Curricular Concept links:** …Technological progress |

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| **Week/ Phase** | **Key Features** | |
| 1 | **Small Questions:** … | |
| **Key Activities/Resources:** … | **Retrieval focus:**  …  **Independent study:**  … |
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| 2 | **Small Questions:** … | |
| **Key Activities/Resources:**  … | **Retrieval focus:**  …  **Independent study:**  … |
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| 3 | **Small Questions:** … | |
| **Key Activities/Resources:**  … | **Retrieval focus:**  …  **Independent study:**  … |
| **Week/ Phase** | **Key Features** | |
| 4 | **Small Questions:** … | |
| **Key Activities/Resources:**  … | **Retrieval focus:**  …  **Independent study:**  … |
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| 5 | **Small Questions:** … | |
| **Key Activities/Resources:**  … | **Retrieval focus:**  …  **Independent study:**  … |
|  | | |
| 6 | **Small Questions:** … | |
| **Key Activities/Resources:**  … | **Retrieval focus:**  …  **Independent study:**  … |