|  |
| --- |
| **Year 8: Curriculum Map : Physics** |
|  | **Autumn** | **Spring** | **Summer** |
| **Assessment Objectives** | **AO1** - Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures (40%)**AO2** - Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. (40%)**AO3** - Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures. (20%) |
| **Unit Length** | **Topic:** P4 Energy 2 – 15 lessons | **Topic:** P5 Electricity 2 – 15 lessons. | **Topic:** P6 Waves 1 – 14 lessons |
| **Key Learning Outcomes** | 1. Energy recap
2. What are the different energy resources?
3. What are the pros and cons of the different energy resources?
4. How many blades on a wind turbine are the most efficient?
5. How can we test our hypothesis from point 4?
6. Interpret our results from point 5.
7. How can we interpret pie chart results into an extended writing answer?
8. Progress assessment
9. Reteach and DIRT
10. What is power?
11. What is the equation for power?
12. How can we test the power of an appliance?
13. Revision
14. End of Unit assessment.
15. Reteach and DIRT.
 | 1. What is static electricity?
2. How is electricity generated?
3. Who helped to domesticate electricity?
4. What is the national grid?
5. Progress assessment
6. Reteach and DIRT
7. What is electrical resistance?
8. How is electrical resistance affected in an electrical circuit?
9. How can we test how resistance is affected in electrical circuits?
10. How can we increase the resistance of a wire?
11. How can we stay safe around electrical equipment?
12. How do we wire plugs?
13. Revision
14. End of Unit assessment
15. Reteach and DIRT.
 | 1. What are the types of waves and their characteristics?
2. What are light waves?
3. How do eyes help us to see?
4. How does visible light show different colours in filters and objects?
5. What is the darkest material ever made?
6. Progress assessment
7. Reteach and DIRT
8. What are sound waves?
9. How does amplitude and frequency change the loudness and pitch of a sound?
10. How do ears help us to hear?
11. How do transverse waves travel through space, and how does thermal energy transfer without a medium?
12. Revision
13. End of Unit assessment
14. Reteach and DIRT
 |
| **Prior knowledge** | **Year 7 (taken from the year 7 physics curriculum map)**1. What are the different energy stores?
2. How is energy transferred from one store to the other?
3. How do we convert the joule into kilojoules e.t.c?
4. How much energy is found in our food?
5. How can we plan a healthy diet which contains the right amount of nutrients and calories?
6. What are the impacts of having too much energy in the food we eat?
7. What is the difference between useful and wasted energy?
8. How can energy be transferred via conduction?
9. How can energy be transferred via convection?

**KS2**1/2/3b) Processes that involve energy transfer: change motion, dropping an object, completing an electrical circuit, stretching a spring, metabolism of food, burning fuels3/4) Comparing the starting with the final conditions of a system and describing increases and decreases in the amount of energy associated with movements, temperatures, changes in positions in a field, in elastic distortions and in in chemical compositions.Using physical processes and mechanisms, rather than energy, to explain the intermediate steps that bring about such changes | **Year 7 (taken from the year 7 physics curriculum map)**1. What if the difference between conductors and insulators?
2. What are electrical circuits, and what is the difference between series and parallel circuits?
3. What is current, and how does it behave differently in series and parallel circuits?
4. What is potential difference?
5. How does potential difference behave differently in series and parallel circuits?
6. What are magnets?
7. How can we plot magnetic field lines?
8. How can we create an electromagnet?
9. How can we change the strength of electromagnets?
10. How can test electromagnets and their strength?

**KS2**1/2/3b) Processes that involve energy transfer: change motion, dropping an object, completing an electrical circuit, stretching a spring, metabolism of food, burning fuels3/4) Comparing the starting with the final conditions of a system and describing increases and decreases in the amount of energy associated with movements, temperatures, changes in positions in a field, in elastic distortions and in in chemical compositions.Using physical processes and mechanisms, rather than energy, to explain the intermediate steps that bring about such changes  | **Light****Year 6**Demonstrates an understanding that light is a spectrum of colours.Is able to describe that light travels in a straight line.Is able describe the route of light from its source to the eye.Has the ability to use the idea of light travelling in straight lines to explain the shape of shadows.**Year 3**Demonstrates an understanding that we need light to see things and that dark is the absence of light.Is able to describe how light is reflected from surfaces.Demonstrates an understanding that the sun is a natural light source and can be dangerous to look at.Is able to describe how a shadow is formed when light is blocked.Is beginning to demonstrate an understanding of why the size of a shadow changes.**Sound**Demonstrates an understanding that sounds are caused by vibrations.Understands that sounds can travel through different medium.Is beginning to understand that volume is caused by the strength of vibrations.Demonstrates an understanding that pitch and volume can be changed.Understands that sound gets fainter the further away from its source. |
| **CEIAG** **Specific careers links** | Renewable energy researchElectricianPAT testerEngineer | ElectricianEngineer  | EngineerLight engineerSound technicianMusician |
| **RRSA** | Article 14: Freedom of thought, belief and religionArticle 24: Health and the Health servicesArticle 28: Right to educationArticle 29: Goals of educationArticle 27: Adequate standard of living | Article 14: Freedom of thought, belief and religionArticle 24: Health and the Health servicesArticle 28: Right to educationArticle 29: Goals of educationArticle 27: Adequate standard of living | Article 14: Freedom of thought, belief and religion Article 28: Right to educationArticle 29: Goals of educationArticle 27: Adequate standard of living  |
| **Cross curricular links** | Maths – speed distance time graphsDesigning turbines - technology | Numeracy- MathsSafe wiring - technology | Numeracy – Maths Lighting – DramaLoudness and pitch - music |
| **Useful websites/videos** | <https://www.bbc.co.uk/bitesize/topics/zc3g87h/articles/zdycr2p> - Continuation of energy, looking at energy resources and generating electricity. <https://classroom.thenational.academy/units/energy-0b08> - oak academy energy lessons | <https://www.bbc.co.uk/bitesize/topics/zc3g87h> - introduction to energy<https://classroom.thenational.academy/units/electricity-and-magnetism-ab64> - oak academy electricity lessons  | <https://www.bbc.co.uk/bitesize/topics/zgy39j6> - introduction to electricity?<https://classroom.thenational.academy/units/light-and-space-fa61> - oak academy light lessons<https://classroom.thenational.academy/units/sound-waves-0e79> - oak academy sound lessons |
| **Wider Reading** | **Reading**:<https://www.energy-uk.org.uk/energy-industry/renewable-generation.html#:~:text=Renewables%20produce%20more%20than%2020,strategy%20to%20reduce%20carbon%20emissions>. – renewable energy in the UK | <https://www.exchangeutility.co.uk/news/ever-wondered-how-much-electricity-is-generated-by-lightning/> - how much energy is in a lightning strike | <https://www.smithsonianmag.com/science-nature/heres-what-the-black-hole-in-the-center-of-the-milky-way-looks-like-180980078/> - black hole at the centre of our galaxy, and how far away it is in light years |
| **Literacy Programme** | * Decode it NOW
* Guided practice/model answers
* Sentence Starters
* Writing strategies
 | * Decode it NOW
* Guided practice/model answers
* Sentence Starters
* Writing strategies
 | * Decode it NOW
* Guided practice/model answers
* Sentence Starters
* Writing strategies
 |
| **Independent Learning Tasks** | Mind-map revision homeworkRetrieval practice homework Knowledge Organiser practice Questions. Selective reading activity. Points grid ILT. | Mind-map revision homeworkRetrieval practice homework Knowledge Organiser practice Questions.Selective reading activity. Points grid ILT. | Mind-map revision homeworkRetrieval practice homework Knowledge Organiser practice Questions.Selective reading activity. Points grid ILT. |