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| **Year 7: 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:** P1 Forces 1 – 17 lessons | **Topic:** P2 Energy 2 – 14 lessons. | **Topic:** P3 Electricity and Magnetism – 15 lessons |
| **Key Learning Outcomes** | 1. What are forces? 2. What are the different variables and why are they important? 3. How do we display different types of data? 4. What would happen to an object when balanced or unbalanced forces are exerted on it? 5. Progress assessment 6. Reteach and DIRT 7. Who was Isaac Newton and how did he contribute to Physics? 8. What is gravity and how does it influence an object’s weight? 9. What is our solar system? 10. What is speed and how is it calculated? 11. What is acceleration and how is it calculated? 12. How do we interpret distance-time graphs? 13. Revision 14. End of Unit assessment. 15. Reteach and DIRT. | 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. Progress assessment 8. Reteach and DIRT 9. What is the difference between useful and wasted energy? 10. How can energy be transferred via conduction? 11. How can energy be transferred via convection? 12. Revision 13. End of Unit assessment 14. Reteach and DIRT. | 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. Progress assessment 7. Reteach and DIRT 8. What are magnets? 9. How can we plot magnetic field lines? 10. How can we create an electromagnet? 11. How can we change the strength of electromagnets? 12. How can test electromagnets and their strength? 13. Revision 14. End of Unit assessment 15. Reteach and DIRT |
| **Prior knowledge** | **SCIENCE**  **Working Scientifically Skills:**  **S1:** Hypothesising: use scientific knowledge to predict the trend in results incline or mass affects the speed of an object.  Safety: risk assessment made  **S2:** Observations: collecting reliable data, using apparatus given  **S3**: Present data in a suitable form i.e. tabulate data, line graph  Identify patterns in data and write relevant conclusions.  **S4**: Use peers data to compare against for evaluation of data.  **Scientific content:**  YEAR 5  Is able to describe how some forces act upon stationary and moving objects (e.g. friction, air resistance, water resistance etc.)  Is beginning to understand how levers, pulleys and gears allow a small force to have a greater effect.  YEAR 3  Can demonstrate an understanding of how different surfaces affect how objects move across them.  Demonstrates an understanding of friction as a force acting between two objects in contact and magnetic force as a force acting at a distance.  YEAR 2  Shows an understanding in the difference between push and pull forces.  Is able to describe the direction of movement associated with push and pull forces.  Shows an understanding of the effect of gravity on objects.  Is beginning to understand friction as a force that acts to slow down a moving object.  Maths: Using units,rearranging equations and graph skills | 1/2/3b) Processes that involve energy transfer: change motion, dropping an object, completing an electrical circuit, stretching a spring, metabolism of food, burning fuels  3/4) 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 | Electric Current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and as flow of charge  Magnetic poles, attraction and repulsion  Magnetic fields by plotting with compass, representation by field lines  Earth’s magnetism, compass and navigation  The magnetic effect of a current, electromagnets, D.C. motors (principles only) |
| **CEIAG**  **Specific careers links** | Scientific research  Engineering  Architecture  Astrophysicist | Renewable energy research  Electrician  Dietician | Electrician  Engineer |
| **RRSA** | Article 14: Freedom of thought, belief and religion  Article 24: Health and the Health services  Article 28: Right to education  Article 29: Goals of education  Article 27: Adequate standard of living | Article 14: Freedom of thought, belief and religion  Article 24: Health and the Health services  Article 28: Right to education  Article 29: Goals of education  Article 27: Adequate standard of living | Article 14: Freedom of thought, belief and religion  Article 28: Right to education  Article 29: Goals of education  Article 27: Adequate standard of living |
| **Cross curricular links** | Maths – speed distance time graphs | Numeracy- Maths  Energy in food – food technology | Conductors and insulators – technology  Circuits – PE  Numeracy 0 Maths |
| **Useful websites/videos** | <https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/zs3896f> - introduction to forces  <https://classroom.thenational.academy/units/forces-and-motion-b426> - oak academy forces lessons | <https://www.bbc.co.uk/bitesize/topics/zc3g87h> - introduction to energy  <https://classroom.thenational.academy/units/energy-0b08> - oak academy energy lessons | <https://www.bbc.co.uk/bitesize/topics/zgy39j6> - introduction to electricity?  <https://classroom.thenational.academy/units/electricity-and-magnetism-ab64> - oak academy electricity lessons |
| **Wider Reading** | **Reading**:  <https://mathshistory.st-andrews.ac.uk/Biographies/Newton/> - who is Isaac Newton?  <https://news.softpedia.com/news/Why-Cheetah-is-the-Fastest-Land-Animal-69322.shtml> Spine of a Cheetah    <https://www.edgarsnyder.com/car-accident/cause-of-accident/cell-phone/cell-phone-statistics.html> - Car accident | <https://healthyeating.sfgate.com/benefits-eating-healthy-vs-unhealthy-7680.html> - healthy vs unhealthy eating  <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.designnews.com/electronics/15-semiconductor-electronic-innovations-2021> - innovations with electronics and conductors. |
| **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 homework  Retrieval practice homework  Knowledge Organiser practice Questions.  Selective reading activity.  Points grid ILT. | Mind-map revision homework  Retrieval practice homework  Knowledge Organiser practice Questions.  Selective reading activity.  Points grid ILT. | Mind-map revision homework  Retrieval practice homework  Knowledge Organiser practice Questions.  Selective reading activity.  Points grid ILT. |