Subject	Y7 Threshold Knowledge – Autumn/Spring/Summer term	How to support students' learning
Science	**Autumn Term** **Energy Transfers -** 1. Understand the 8 stores of energy and describe key features of them. Understand the 4 energy pathways and know that energy cannot be created or destroyed but can be transferred, stored or dissipated. **Particle Model -** 2. Know how particles are arranged in matter and how temperature effects this. Define the terms density, pressure and diffusion. **Atoms -** 3. Describe and label the structure of an atom and how atomic structure relates to the Periodic Table. **Cells -** 4. Describe in detail the features of an animal and a plant cell and compare structures. Explore how to use a microscope and record what it shows. Describe what specialised cells are and give examples. **Heating and Cooling -** 5. Know that the thermal energy of an object depends upon its mass, temperature and the material it is made of. Describe in terms of particles how thermal energy is transferred by conduction, convection and radiation including diagrams. **Spring Term** **Separating Mixtures -** 6. Define the terms compound and mixture and draw the particle diagrams for each. Safely carry out and know a variety of separation techniques. **Contact Forces -** 7. Identify the effects of forces on objects, describe different forces in detail including factors affecting them. Explain the difference between contact and non-contact forces. Safely carry out Hooke's law practical and complete calculations for it.	• Use BBC bitesize: https://www.bbc.co.uk/bitesize/subjects/z4882hv . • Get pupils to set themselves quizzes on Educake (The Science Department's homework platform) to help them revise topics they are trying to understand. • Talk about science at home and what students have learnt today. As well as discuss new scientific advances in the news. • Watch David Attenborough documentaries about the planet e.g., Blue planet. • Watch BBC Four's 'Chemistry: A volatile history' documentary. • Watch 'Into the universe with Stephen Hawking' documentary. Use the link below to help find lessons you need to refresh and want to revise; https://continuityoak.org.uk/lessons

	Movement - 8. Know the different parts of the skeleton and demonstrate the roles of muscles around the body. Understand what joints are and the four examples of them. **Work Done -** 9. Define work done. Recall and use the equation: Work done (J) = force (N) x distance moved (m). Understand how machines like levers and pulleys make work easier. **Elements and Fundamentals -** 10. Know that elements are listed on the Periodic Table. Demonstrate an understanding of simple word equations and formulae for elements and compounds. **Breathing -** 11. Demonstrate understanding of the respiratory system and how gas exchange takes place within it. Explain how different factors affect breathing. **Summer Term** **Digestion -** 12. Understand that knowledge of digestion and a healthy balanced diet allows humans to live a healthier lifestyle. Describe how the body uses enzymes to break large food molecules into smaller more useful ones. Know some effects of drugs on the body. **The Periodic Table -** 13. Know the electronic structure of the first 20 elements on the periodic table and how this relates to their position. Identify the properties and trends within groups. **Chemical Reactions -** 14. Recall the term conservation of mass within chemical reactions and define reactions such as combustion and thermal decomposition. Know what exothermic and endothermic reactions are. **Wave Properties -** 15. Demonstrate understanding of transverse and longitudinal waves, including diagrams, examples and uses. Define the terms wavelength, amplitude and frequency.	

	Understand what a water wave is and how to calculate the speed of one. **Photosynthesis -** 16. Demonstrate what photosynthesis is including a word equation and how a plant is adapted to support this process and transportation. Explain the correlation between light intensity and the rate of photosynthesis. **Respiration -** 17. Understand that all living things respire to release energy. Know where the reactants needed for respiration come from. Explain how respiration is vital for exercise and relate this to the word equations for aerobic and anaerobic respiration.	