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| **Subject** | **Year 10 Higher Threshold Concepts – Spring Term** | **How to support students’ learning** |
| Mathematics | **Volume and Circles, Spheres and Pyramids**   * Find the volume and surface area of prisms * Find the volume and surface area of pyramids * Find the volume and surface area of cones * Find the volume and surface area of spheres * Find the volume and surface area of frustums * Find the volume and surface area of composite shapes   **Congruent and Similar Shapes**   * Understand similarity * Find unknown sides in similar shapes * Understand congruence * Prove that two triangles are congruent * Find the perimeter, area, surface area and volume of similar shapes   **Direct and Inverse Proportion**   * Constructing direct proportion equations * Understand graphs of direct proportion * Constructing inverse proportion equation * Understand graphs of inverse proportion   **Percentage Change**   * Perform compound interest calculations * Perform calculations involving growth and decay   **Graphical Solutions of Equations**   * Understand and calculate equations of parallel and perpendicular lines * Solve simultaneous equations graphically * Solve simultaneous equations involving quadratics graphically   **Accuracy and Bounds**   * Find error intervals * Find bounds for calculations | * Encourage your child to learn formulas for calculating the areas of basic 2D shapes, e.g. rectangles, triangles, parallelograms, trapeziums * Discuss 3d shapes in real-life, e.g., smarties tubes are hexagonal prisms, the Egyptian Pyramids * Encourage your child to have the correct equipment for lessons, e.g. a pencil, ruler, calculator * Use [www.sparx.com](https://sparxmaths.com/)for support if needed. Teachers will have provided your child with a login and password * Encourage your child to show all their working out. If they have homework online, then encourage them to write down all their working out in their exercise books * Encourage your child to look at real-life rotation and size changes within everyday objects * Encourage your child to have the correct equipment for lessons, e.g. a pencil, protractor, calculator * Use [www.sparx.com](https://sparxmaths.com/)for support if needed. Teachers will have provided your child with a login and password * Encourage your child to show all their working out. If they have homework online, then encourage them to write down all their working out in their exercise books * Encourage your child to look at real-life graphs and tables of data * Encourage your child to show clear working out as the find the constant of proportionality * Discuss real-life applications of ratio and proportion, e.g. baking and currency exchange (direct proportion), the fact it takes longer for 2 people to paint the same fence than 3 people (indirect proportion) * Encourage your child to have the correct equipment for lessons, e.g. a pencil, ruler, calculator * Use [www.sparx.com](https://sparxmaths.com/)for support if needed. Teachers will have provided your child with a login and password * Encourage your child to show all their working out. If they have homework online, then encourage them to write down all their working out in their exercise books * Encourage your child to use a multiplier when solving percentage problems * Discuss real-life percentage problems, e.g. discounts, interest rates, tax, population growth etc * Use [www.sparx.com](https://sparxmaths.com/)for support if needed. Teachers will have provided your child with a login and password * Encourage your child to show all their working out. If they have homework online, then encourage them to write down all their working out in their exercise books * Encourage your child to use the website www.GeoGebra.org to plot functions to see what their graphs look like * Encourage your child to have the correct equipment for lessons, e.g. a pencil, ruler, calculator * Use [www.sparx.com](https://sparxmaths.com/)for support if needed. Teachers will have provided your child with a login and password * Encourage your child to show all their working out. If they have homework online, then encourage them to write down all their working out in their exercise books * Encourage your child to review their rounding knowledge * Discuss real-life error intervals, e.g. a box of cereal may not contain exactly the weight that is mentioned on the box * Encourage your child to have the correct equipment for lessons, e.g. a calculator * Use [www.sparx.com](https://sparxmaths.com/)for support if needed. Teachers will have provided your child with a login and password * Encourage your child to show all their working out. If they have homework online, then encourage them to write down all their working out in their exercise books |