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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

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