Subject	Y7 Threshold Knowledge – Autumn/Spring/Summer term	How to support students' learning
Maths	**Autumn/Spring/Summer Term** **Place Value and Rounding -** 1. Understand and write integers up to one billion in words and figures. 2. Order a list of positive integers. 3. Compare and order any number up to one billion. 4. Recognise the place value of any number in an integer up to one billion. 5. Understand place value for decimals. 6. Order decimals. 7. Multiplying by powers of 10. 8. Dividing by powers of 10. 9. Use appropriate units. 10. Converting units of length, mass and capacity. 11. Rounding integers. 12. Rounding decimals. 13. Rounding integers using significant figures. 14. Rounding decimals using significant figure. **Efficient Calculations -** 15. Mental strategies for addition and subtraction. 16. Use formal methods for addition of integers. 17. Use formal methods for subtraction of integers. 18. Adding decimals. 19. Subtracting decimals. 20. Know the commutative law and use it to calculate efficiently. 21. Know the associative law and use it to calculate efficiently. 22. Know the distributive law and use it to calculate efficiently. 23. Properties of multiplication. 24. Use formal methods to multiply integers. 25. Multiplying decimals. 26. Estimating calculations. 27. Understand and use order of operations. 28. Using a calculator. **Types of Number -** 29. Identify multiples. 30. Finding the lowest common multiple. 31. Using divisibility tests. 32. Identify square numbers. 33. Identify square roots. 34. Identify cube numbers.	• Student can complete independent practice on Dr Frost Maths • https://www.drfrost.org/index.php • Dr Frost Maths has topic-based learning with videos to support students and questions available that give automatic feedback to students. • Otherwise, students can also access past papers that can be completed online. • All homework and revision for students will be set on Dr Frost by their class teacher. • **Other useful websites:** Maths Genie (topic based and past papers) https://www.mathsgenie.co.uk/gcse.php • On Maths (online papers) https://www.onmaths.com/

	35. Identify cube roots. 36. Calculate higher powers and roots. 37. Estimating roots and powers. 38. Identify factors. 39. Finding the highest common factor. 40. Identify prime numbers. 41. Prime factor decomposition. **Directed Number -** 42. Know the absolute value of a number. 43. Position integers on a number line. 44. Position decimals on a number line. 45. Compare and order directed numbers. 46. Understand and use zero pairs. 47. Add directed numbers. 48. Subtract directed numbers. 49. Multiplication of directed numbers. 50. Division of directed numbers. **Fractions, Decimals & Percentages -** 51. Represent tenths and hundredths as diagrams. 52. Represent tenths and hundredths on number lines. 53. Convert a decimal to a fraction. 54. Convert a decimal to a percentage. 55. Convert a fraction to a decimal. 56. Convert a fraction to a percentage. 57. Convert a percentage to a decimal. 58. Convert a percentage to a fraction. 59. Compare and order fractions, decimals and percentages. 60. Writing fractions. 61. Represent any fraction as a diagram. 62. Understand fractions as division. 63. Properties of division. 64. Use formal methods to divide integers. 65. Convert fractions to recurring decimals. 66. Identify and use equivalent fractions. 67. Simplifying fractions. 68. Ordering fractions. 69. Understand that 1 can be written as n/n. 70. Write whole numbers as fractions. 71. Represent fractions on number lines. 72. Dividing decimals. **Fractions and Percentages of Amounts -** 73. Calculate fractions of an amount without a calculator. 74. Calculate fractions of amounts with a calculator.	

	75. Use a given fraction to find the whole and/or other fractions. 76. Find a percentage of an amount without a calculator. 77. Find a percentage of an amount with a calculator. 78. Express one number as a fraction or a percentage of another using a calculator. 79. Express one number as a fraction or a percentage of another without a calculator. 80. Calculate percentage increase and decrease with a calculator. 81. Calculate percentage increase and decrease without a calculator. 82. Finding the percentage an amount has been changed by. **Constructing Graphs -** 83. Collect and record data using tables. 84. Identify discrete and continuous data. 85. Identify primary and secondary data. 86. Draw pictograms. 87. Interpret pictograms. 88. Work out intervals on a number line. 89. Draw bar charts. 90. Draw multiple bar charts. 91. Construct pie charts. 92. Interpret bar charts. 93. Interpret multiple bar charts. 94. Interpret pie charts. 95. Criticise charts and graphs. **Expressions -** 96. Understand that a letter can be used to represent a generalised number. 97. Understand and recognise that a letter can be used to represent a specific unknown value or a variable. 98. Know the meaning of and identify term, coefficient, factor, product, expression, formula, equation and identity. 99. Understand that algebraic notation follows particular conventions and that following these aids clear communication. 100. Given a numerical input, find the output of a function machine. 101. Given a numerical output, find the input of a function machine. 102. Given an algebraic input, find the output of a function machine.	

	103. Find the function machine given an expression. 104. Simplify algebraic expressions by collecting like terms. 105. Simplify algebra with multiplication. 106. Simplify algebraic fractions by cancelling common factors. 107. Substituting into expressions. 108. Substituting into real-life formulae. 109. Substituting into algebraic formulae. 110. Expand a single bracket. 111. Expand multiple single brackets and simplify. 112. Factorise into a single bracket. 113. Form algebraic expressions. **Averages -** 114. Find and interpret the mean. 115. Find and interpret the median. 116. Find and interpret the range. 117. Find and interpret the mode. 118. Identify outliers and the effect outliers have on average. **Operations with Fractions -** 119. Add and subtract fractions from integers expressing the answer as a single fraction. 120. Add and subtract fractions with the same denominator. 121. Adding fractions. 122. Subtracting fractions. 123. Adding mixed numbers. 124. Subtracting mixed numbers. 125. Use equivalence to add and subtract decimals and fractions. 126. Multiply a fraction by an integer. 127. Multiplying fractions. 128. Multiplying mixed numbers. 129. Understand and use the reciprocal. 130. Divide a fraction by an integer. 131. Dividing fractions. 132. Dividing mixed numbers. **Proportion -** 133. Appreciate that any two numbers can be connected via a multiplicative relationship. 134. Be able to calculate the multiplier for any given two numbers. 135. Solve problems with direct proportion.	

	Sequences - 136. Appreciate that a sequence is a succession of terms formed according to a rule. 137. Understand that a sequence can be generated and described using term-to-term approaches. 138. Understand that a sequence can be generated and described by a position-to-term rule. 139. Find missing numbers within sequences. 140. Predict and check the next term. 141. Identify even and odd numbers. 142. Describe and continue other sequences. 143. Check whether a term can be in a sequence by inspection. 144. Describe and continue a sequence given diagrammatically. 145. Describe and continue arithmetic sequences. 146. Describe and continue geometric sequences. 147. Describing types of sequences. 148. Represent sequences graphically. 149. Find the rule for the nth term of a linear sequence. 150. Find the rule for the nth term of a linear sequence given diagrammatically. 151. Generate linear sequences given an algebraic rule. 152. Generate other sequences given a complex algebraic rule. 153. Find any term in a sequence. **Similarity and Enlargement -** 154. Understand scale factors as multiplicative representations. 155. Work out missing sides and angles in a pair of given similar shapes. 156. Explore relationships between similar shapes. 157. Draw and interpret scale diagrams. 158. Interpret maps using scale factors and ratio. 159. Enlarge a shape by a positive integer scale factor. 160. Enlarge a shape by a positive integer scale factor from a point. 161. Enlarge a shape by a positive fractional scale factor. 162. Describe enlargements. 163. Identify invariant points and lines. **Probability -** 164. Understand and use probability phrases. 165. Understand and use the probability scale.	

	166. Writing probabilities as fractions, decimals and percentages. 167. Listing outcomes. 168. Construct sample space diagrams. 169. Find probabilities from a sample space diagram. 170. Using experimental data to estimate probabilities. 171. Understand that increasing the number of trials leads to a more accurate estimate of the theoretical probability. 172. Expected outcomes. 173. Calculate probability of independent events. 174. Use the property that probabilities sum to 1.	