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| **In the mathematics faculty we aim to inspire the mathematician in every student, developing fluency and confidence in using maths to reason and solve problems. We seek to do this without placing limits on the attainment of any student and while developing universal human values including anti-racism and challenging sexism, homophobia and other forms of discrimination. *Year 8 Learning Journey*** | | |
| **Autumn** | | |
| Measuring the world - Which is superior, metric or imperial measurements? Estimation - How many steps does it take to walk from Langdon Park DLR to Crisp Street Market? Collecting and Representing Data - How could we work out the average height of a student in year 8? Indices and Roots - If I start with 1p and I double each day, how long before I am a millionaire? | | |
| *MEASURING THE WORLD*   1. What is a unit of measurement? 2. Creating units of length and converting between them- linked to Proportional Reasoning in year 7. 3. The history of the metric system. 4. Using the metric system. 5. The imperial system of units. 6. Measuring and calculating with time   *ESTIMATION 1*  1. Estimating everyday objects.  2. Rounding with integers and decimals.  3. rounding with significant figures.  *COLLECTING AND REPRESENTING DATA*   1. Collecting data- questionnaires, digital sources | 1. Representing data- pictograms, infographics. bar and vertical line charts, pie charts, two-way tables 2. Calculating with and interpreting data- common errors, drawing conclusions, communicating. 3. Data in context and carrying out a project.   *INDICES AND ROOTS*   1. Indices and repeated multiplication 2. Laws of indices in arithmetic 3. Generalising to laws of indices with algebra 4. What do 0 and negative indices mean? 5. Why are fractional indices connected to square and other roots? 6. From Arabic to Latin to English-history of roots | |
| **Spring** | | |
| Geometric Reasoning 1 - Why are there 360o in a full turn? Grid Algebra II - Does every equation have a solution? Standard Form - How many times are you bigger compared to an atom? | | |
| *GEOMETRIC REASONING 1*   1. What is the foundation of geometry? 2. Babylon and the origin of 360 degrees. 3. Other ways of measuring angles. 4. How can logic build up all the key geometric facts we need to know and use? 5. Proving key geometrical facts   *GRID ALGEBRA II*   1. Recap on algebraic methods 2. What is an inverse journey? | | 1. What is an equation? 2. What is an identity? 3. Using inverse journeys to solve equations. 4. The 17th century move to symbolic algebra   *STANDARD FORM*   1. What is Standard Form? 2. How is Standard Form used? 3. Multiplying and dividing in Standard Form 4. Adding and subtracting in Standard Form |
| **Summer** | | |
| Introduction to probability - In a class of 30, what is the probability that 2 of you will share the same birthday? Representing and Interpreting Data – Are all graphs useful? | | |
| *INTRODUCTION TO PROBABILITY*   1. What is chance and uncertainty? 2. Assigning numbers on chance- probability 3. Probability and fractions and ratio 4. Calculating simple probabilities 5. Sample spaces and repeated events 6. Expected and relative frequency 7. Frequency Trees | 1. Solving problems with probability 2. From Al-Khalil to Pascal -the history of probability   *REPRESENTING AND INTERPRETING DATA*   * + - 1. Representing data in pie charts, line graphs and scatter diagrams       2. How can we interpret different charts?       3. How can we compare charts | |
| Recommended reading/videos:  A brief history of time measurement: <https://nrich.maths.org/6070>  Randomness and probability:  <https://nrich.maths.org/5975>  Foundations of Geometry: <https://nrich.maths.org/1386>  Euclid: <https://www.gresham.ac.uk/lectures-and-events/euclid>  Fibonacci: <https://nrich.maths.org/2563>  History | Places to visit:  Bank of England museum: [www.bankofengland.co.uk](http://www.bankofengland.co.uk) - free but need to pre-book, lots of interesting maths stuff!  Winton maths gallery science museum: [www.sciencemuseum.org.uk](http://www.sciencemuseum.org.uk) free gallery with lots of maths  Legoland: [www.legoland.co.uk](http://www.legoland.co.uk) not free but as well as fun lots of maths related workshops once you’re there  Royal Observatory Greenwich: [www.rmg.co.uk](http://www.rmg.co.uk) again not free but lots of great maths stuff to see and interact with  Bletchley Park: [www.bletchleypark.org](http://www.bletchleypark.org) | |