Year 7 Big Picture

<u>BIG Ideas</u>

1.   Use positive integer powers and associated real roots ● ● ●
2.   Apply the order of operations including brackets ● ●
3.   Convert between terminating decimals and fractions ● ●
4.   Write a quantity as a fraction or percentage of another ●
5.   Use multiplicative reasoning to interpret percentage change ● ●
6.   Understand how to multiply with fractions and mixed numbers ● ● ●
7.   Check calculations using inverse operations ● ●
8.   Select and use checking strategies in a range of contexts ●
9.   Simplify and manipulate expressions by collecting like terms ●
10. Simplify and manipulate expressions by multiplying a single term over a bracket ●
11. Substitute numbers into formulae ● ●
12. Solve linear equations in one unknown ● ●
13. Calculate surface area of cubes and cuboids ● ●

<u>Essential experiences</u>

- The story of Srinivasa Ramanujan and the number 1729 is shared when learning about cube numbers
- The patterns of Pascal's triangle are used (prime numbers, multiples, powers of 2, triangle numbers)
- The determination against the odds shown by Sophie Germain is shared (Sophie Germain primes)
- Narcissistic numbers are used when learning about powers (153, 370, 371, 407, 1634, 8208, 9474, 54748, …)
- Students learn that John Napier, inventor of the 'bones', also invented the decimal point
- Students complete the Mayan multiplication jigsaw
- During the introduction to significant figures, the wealth of Jeff Bezos, and age in seconds, is explored
- Students discover that the equals sign was invented by a Welsh mathematician, Robert Recorde
- Archimedean solids are used when exploring simpler polyhedra and Euler's formulae
- A link between adjacent units using Goldberg Polyhedra is made when substituting into formulae
- The bar model is used when working with ratio
- Students explore growing patterns when working with linear sequences
- Students are taught a brief history of length (and mass, and capacity)
- Students learn some features of UK tax returns as part of their work on percentages
- When dividing with fractions, the 'division without dividing' example is posed
- The origins of algebra are shared in the Al Khwarizmi's algebra activity
- Students are shown the Curry Triangle paradox
- Heron's alternative formulae for the area of a triangle is explored
- Students learn that a Scottish engineer, William Playfair, invented both the bar chart and the pie chart
- Students discover that Florence Nightingale was really a statistician!