

# Scheme of Learning: Year 10 Summer Term

## Topic Sequence: Number

13	14
<b>Non-calculator methods</b>	<b>Indices and Roots</b>

## Topic Overview: Non-calculator methods

This section revises and extends KS3 content for calculation. Mental methods and using number sense are used alongside the formal methods for all four operations with integers, decimals and fractions. Limits of accuracy are explored and compared with rounding and Higher tier students will look at all aspects of irrational numbers including surds. Students look at all aspects of irrational numbers, including surds and learn to calculate with them, simplify expressions with surds and rationalise denominators

## Learning Sequence:

Mental/written methods for the four operations (R): This step looks over mental and written methods for addition, subtraction, multiplication and division including using decimals and fractions

Exact answers: This section prepares higher tier students for the upcoming topic of surds as well as reminding all students of the language of 'in terms of  $\square$ '

Rational / Irrational numbers: (H) Students have previously met some irrational numbers such as  $\pi$  and  $\sqrt{2}$  and this step formalises this learning and the associated language. Students revisit recurring decimals seeing they are not irrational and how to convert to fractions

Understand and use surds. (H) The first two steps look at the definition of a surd as the irrational root of a rational number, and writing surds in simplified form.

Calculate with surds (H): Having established the behaviour of surds when multiplied and divided in the previous step, pupils now investigate addition and subtraction, establishing the rules and using calculators in both exact and decimal forms

Manipulate with surds (H): Pupils use expand and factorise brackets containing surds to simplify expressions

Rationalising the denominator (H): Pupils learn how to rationalise the denominator of a fraction containing both just a surd, and a surd with an integer.

Rounding (R): Revision topic to remind of the difference between decimal places and significant figures

Estimating (R): Students need to round to 1 significant figure before calculating. Also knowledge of square and cube numbers to estimate roots.

Limits of accuracy: Students have met error intervals at KS3 and this step extends this

Upper and Lower bounds (H): This builds on the previous step to include calculations and applied questions

Use number sense: Building on the strategies used for the four operations in the earlier review steps, this step focuses on deriving facts from known facts

Sequence of Learning:		Topic Resources:	
1	Mental/written methods for the four operations (R)	<b>Knowledge Maps:</b>	Index Numbers Surds Rounding
2	Exact answers:		
3	Rational / Irrational numbers		
4	Understand and use surds		
5	Calculate with surds		
6	Manipulate with surds	<b>Assessment:</b>	
7	Rationalising the denominator	<b>Knowledge:</b>	End of topic assessment
8	Rounding (R)	<b>Application of Knowledge:</b>	Termly summative assessment
9	Estimating (R)	<b>Supportive Reading:</b>	
10	Limits of Accuracy	<b>Any supported reading listed here</b>	Sparx Maths <a href="http://www.sparxmaths.co.uk">www.sparxmaths.co.uk</a>
11	Upper and Lower Bounds (H)		Corbett Maths : <a href="http://www.corbettmaths.com">www.corbettmaths.com</a>
12	Use number sense		AQA Revision Guide