

Subject: Maths **Year** 9 **Ability** Higher

Half Term 2 / weeks	Week 1-2	Week 3-4	Week 5	Final week of the half term
Topic	Index Laws, Expanding and Factorising Unit 3	Rounding and Estimation Unit 4	Substitution and solving equations Unit 5	Reteach and Retention
Topic overview Students will learn...	To start to see and use the key skills of algebra in context with particular focus on expanding and factorising.	To understand the meaning of an answer in “context” so students are able to see if this answer is of suitable magnitude and accuracy	Students are able to substitute values into a formula or expression to find unknown values and students are able to solve simple equations that use the basic operations.	Focus on the process of reteach and retention for this half term, knitting together the learning in reaction to the assessments completed. Students will follow a bespoke set of lessons looking at errors seen this in the work covered in this half term and any supporting knowledge. If this is covered staff will look forward to cover historic supporting knowledge for the next half term.
Components	Students should be able: <ul style="list-style-type: none"> To use the laws of Indices To simplify and collect like terms To expand single brackets To expand and simplify expressions with more than one pair of brackets To expand a pair of double brackets and simplify to make a quadratic expression To factorise expressions with one pair of brackets To factorise quadratics with and without non unit coefficient of x^2 	Students should be able: <ul style="list-style-type: none"> To round a number to a given amount of decimal places or significant places To round numbers to 1 s.f to estimate calculations To find upper and lower bounds To use upper and lower bound in various calculations To multiply and divide decimals To use BIDMAS to correctly calculate an answer 	Students should be able: <ul style="list-style-type: none"> To substitute both positive and negative numbers into expressions To solve linear equations 	Staff complete a program of adaptive reteaching on specific topics based on the individual/class needs within their groups that have been flagged in this block of learning. Regular assessments are used to identify gaps in learning. Any gaps found are then addressed in lessons to help support learning and retention. Clear areas for improvement are monitored by individual staff and at a departmental level.
What students should already know (prior learning components)	Students will need to show knowledge of place value and good mental arithmetic as well as use of a calculator. Push the need for working out to support their mathematical process	Students base understanding of number work, in particular factors and multiples will be needed for this. Division of not just integers but also algebraic terms. Students need a basic algebra understanding (i.e $3a$ means $3 \times a$)	Students will need to understand algebraic expressions, have good mental arithmetic, and be able to recall the formulas for area of 2D shapes	All the half term content will have been covered by this point. Staff will use departmental tracking documents to analyse the gaps in learning from the most recent assessments and all previous assessments. The ability to structure and breakdown a problem-solving question as exemplified in the TFI questions throughout the course.

Transferrable knowledge (skills)	These algebraic skills are used to increasing levels of difficulty from this point onwards. These skills are key to all future work in algebra especially solving quadratics. Confidence here with indices will be revisited later in KS4 with negative and fractional problems as well as in KS5 for differentiation. The use of powers will also be needed when using standard form.	Along with multiplication there are more marks for rounding to dp/sf than any other topic in maths due to it being a feature at the end of many questions. (this is a particular focus for money questions). The use of estimation should also be encouraged in all future topics and questions to address the validity of the answers being given with students asking "does this sound right"	Substitution skills will be used consistently with any question that uses a formula. This will be used throughout KS3/4/5 and the understanding that BODMAS plays in this should be stressed. Solving equations here sets out the basic skills that will be needed in increasingly harder questions and the ability to manipulate algebra will be needed in numerous contexts and topics. Eq SUVAT equations that are used in KS5 use these skills	This activity should serve to highlight and address areas of weakness in teaching and learning or retention. This early intervention to understand specific key areas for improvement or development. This should help to build confidence and improve students' ability to answer these and directly sequential problems.
Key vocabulary student will know and learn	Indices, Powers, Expressions, Roots, Expand, Brackets, Double brackets, Collect like terms, Simplify, Factorise, Quadratic, Coefficient, Algebraic fractions,	Rounding, Whole numbers, Nearest, Ten, Hundred, Thousand, Significant figures, Decimal places, Estimation, Bounds, Upper, Lower, Operations,	Substitution, Expressions, Letter, Negatives, Formulas, Solve Linear equations, Coefficients, Brackets, Expand, Forming, Angles, Perimeters, Area,	
Assessment activities	Sparx Homework - Indices Year 9 Test 2 - This will be completed in lesson (~50mins) at the end of the half term before the R&R section. It will cover the topics taught in this unit primarily but other previous knowledge maybe included.	Sparx Homework - Rounding and Estimation Year 9 Test 2 - This will be completed in lesson (~50mins) at the end of the half term before the R&R section. It will cover the topics taught in this unit primarily but other previous knowledge maybe included.	Sparx Homework - Substituting and solving equations Year 9 Test 2 - This will be completed in lesson (~50mins) at the end of the half term before the R&R section. It will cover the topics taught in this unit primarily but other previous knowledge maybe included.	AFL and adaptive teaching will continue to support staff to assess the address areas.
Resources available	Sparx clips: M135, M150, M608, M795, M531, M549, M237, M792, M960, M100, M908 Departmental lesson folder Departmental resource folder www.corbettmaths.com www.justmaths.co.uk www.mathsbox.org.uk www.mathsgenie.co.uk www.mathspad.co.uk	Sparx clips: M431, M994, M131, M878, M730, U301, U657, M730, U587, M803, M263, M521 Departmental lesson folder Departmental resource folder www.corbettmaths.com www.justmaths.co.uk www.mathsbox.org.uk www.mathsgenie.co.uk www.mathspad.co.uk	Sparx clips: M417, M327, M208, M707, M509, M554, U343 Departmental lesson folder Departmental resource folder www.corbettmaths.com www.justmaths.co.uk www.mathsbox.org.uk www.mathsgenie.co.uk www.mathspad.co.uk	Before any assessments are completed, revision and guidance materials are provided for students to assist in independent study.
Notes Why this topic is important...	The start of this topic looks at the use of powers in maths and how this is used and written. These then move into the ideas of the laws of indices and how these can be used to great effect to simplify complex questions. Perhaps the most important skill seen here though is the ability to expand and factorise. This is a corner stone of maths that is used all the way through to degree level. These skills used here will be used to solve and understand quadratics at KS4 and cubic and beyond at KS5.	The ability to round (esp SF) is a key topic that is needed in many topics that are covered later in the curriculum. Many answers that use a calculator to find them (eg trig) will use these skills. An appreciation of the accuracy of an answer is important and the use of bounds shows this that should be shown to students in a context of possibly misleading information in real life.	Substitution is possibly the widest used mathematical skill outside of maths itself. The ability to use a formula or rule to find information is used in numerous different contexts. The solving of linear equations here does however provide the underpinning to a large proportion of algebra from rearranging to simultaneous equations and quadratic equations.	This is an important point in the curriculum plan that enables individual teachers to review the gaps in learning for the classes they teach. The half-termly assessments are used to track students' progress and enable teachers to react quickly to any gaps in knowledge and prepare students for the next assessment. The feedback and modelling of the exam answers enables students to pick up exam techniques and the ability to communicate effectively.