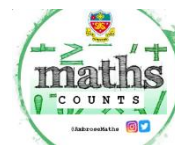


## Knowledge Organiser



### Lent Term Set 3

### Year 11

Topic	Self-Assessment	Independent Learning and homework tasks	
		MyMaths	CorbettMaths.com
Recognise and use rules for number and pattern sequences, including triangular, square, cube & Fibonacci-type numbers, arithmetic sequences, quadratic sequences and geometric sequences.		Algebra, Sequences, Arithmetic / Geometric Sequences1	Video 374, 375
Finding the nth term for linear sequences (4).		Algebra, Sequences, Recognising Sequences	Video 286 - 7, 287a
Finding the nth term for quadratic sequences.		Algebra, Sequences, Quadratic Sequences	Video 288, 388a
Use algebra to prove number statements and disprove number statements using a counter example		Algebra, Proof & Identities, Proof	Video 365
Re-arranging equations where the new subject appears once		Algebra, Expression & Formulae, Rearranging 1	Algebra/Changing the subject video 8
Re-arranging equations where the new subject appears more than once		Algebra, Expression & Formulae, Rearranging 2	Algebra/Changing the subject video 8
Understanding index notation.		Number, Powers and roots, Indices 1	Video 174
Multiplying, dividing and raising one power to another power.		Number, Powers and roots, Indices 1	Video 175
Understanding and using negative indices		Number, Powers and roots, Indices 2	Video 173
Being able to evaluate fractional indices		Number, Powers and roots, Indices 3	Video 173
Use co-ordinates in three dimensions.		Algebra, Coordinates, 3D coordinates	Video 86
Finding a fraction of a quantity, ordering fractions and simplifying fractions		Number, Fractions, Fractions of amounts / ordering and simplifying fractions	Video 137 / 144
Adding, subtracting & multiplying fractions		Number, Fractions	Video 132 - 137
Understanding reciprocals and dividing fractions		Number, Fractions, Dividing Fractions	Video 134
Add, subtract, multiply and divide algebraic fractions.		Algebra, Algebraic Manipulation	Video 21 - 24

Solve equations involving fractions with algebraic denominators		Algebra, Algebraic Manipulation	Video 110 - 112
Recognise and use the equation of a circle with centre at the origin (7).		Algebra, Graphs, Equation of a circle / Tangents and chords	Video 372
Express positions and lines in terms of vectors		Shape, Vectors, Vectors 1 & 2	Video 353
Use the sine and cosine rules to find unknown lengths and angles of any triangle		Shape, Trigonometry, Sine Rule / Cosine Rule missing sides / angles	Video 333 - 336
Find the area of any triangle. Know the exact values of $\sin\theta$ and $\cos\theta$ and $\tan\theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and $90^\circ$		Shape, Trigonometry, Trig Area of a Triangle	Video 337 / 341
Find approximate solutions to equations numerically using iteration, including the use of suffix notation in recursive formulae		Algebra, Equations - approx. solutions, Iterations	Video 373

## Lent Term Knowledge

### Sine and Cosine Rules

Sine Rule	Cosine Rule
Two sides and a NOT included angle	Two sides and the included angle
$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$	$a^2 = b^2 + c^2 - 2bc \cos A$
Two angles and any side	All three sides only
$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$	$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$

### Trigonometry Exact Values

	$0^\circ$	$30^\circ$	$45^\circ$	$60^\circ$	$90^\circ$
sin	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
tan	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	—

### Rules of Indices

For  $a \neq 0, b \neq 0$

Rule	Example
$a^x \times a^y = a^{x+y}$	$a^3 \times a^2 = a^{3+2} = a^5$
$a^x \div a^y = a^{x-y}$	$a^6 \div a^2 = a^{6-2} = a^4$
$(a^x)^y = a^{xy}$	$(a^2)^3 = a^{2 \times 3} = a^6$
$a^0 = 1$	$a^0 = 1$
$a^{-x} = \frac{1}{a^x}$	$a^{-5} = \frac{1}{a^5}$
$a^{\frac{x}{y}} = \sqrt[y]{a^x} = (\sqrt[y]{a})^x$	$a^{\frac{3}{5}} = \sqrt[5]{a^3} = (\sqrt[5]{a})^3$

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