

As you transition from Year 11 to Year 12, it is very important to refresh your memory on certain core mathematical skills. Moreover, it is vital that you have a sound understanding of some more difficult skills. In the tables below, you will find **180 skills** that you should be confident with as you start Year 12. Get 100% on each and use the videos if you are stuck.

Number

Topics	Clip Number	R	A	G
Indices, powers & roots				
Index form 1 (intro)	102			
Index form 2 (power of 0 & 1)	103			
Index form 3 (power of negative integers)	104			
Index form 4 (multiplying indices)	105			
Index form 5 (dividing indices)	106			
Index form 6 (power of power rule)	107			
Index form 7 (powers of unit fractions)	108			
Index form 8 (powers of non-unit fractions)	109			
Index form 9 (combination of rules)	110			
Multiplication & division with surds 1	113			
Multiplication & division with surds 2	114			
Simplifying surds	115			
Brackets involving surds 1	116			
Brackets involving surds 2	117			
Rationalising surds 1	118			
Rationalising surds 2	119			
Order of operations 3 (indices & roots)	120			

Algebra

Topics	Clip Number	R	A	G
Substitution				
Substitution 1	780			
Substitution 2	781			
Substitution 3	782			
Substitution 4	783			
Substitution 5	784			
Substitution 6	785			
Substitution 7	786			
Substitution 8	787			
Substitution (Equations of motion 1)	788			
Substitution (Equations of motion 2)	789			

Algebra (continued)

Topics	Clip Number	R	A	G
Manipulating expressions				
Collecting like terms 2	157			
Simplifying expressions involving multiplication	158			
Simplifying expressions involving division	159			
Expand two single brackets & simplify	161			
Expand double brackets 1	162			
Expand double brackets 2	163			
Expand double brackets 3	164			
Expand brackets (difference of two squares)	165			
Expand triple brackets	166			
HCF of algebraic expressions	167			
Factorise simple expressions 1	168			
Factorise simple expressions 2	169			
Simplifying expressions by factorising 1	170			
Simplifying expressions by factorising 2	171			
Expressions with algebraic fractions	172			
Indices with algebraic expressions 1	173			
Indices with algebraic expressions 2	174			
Indices with algebraic expressions 3	175			
Linear equations				
Solve 1 step equations (balance method)	178			
Solve 2 step equations (involving multiplication)	179			
Solve 2 step equations (involving division)	180			
Solve 2 step equations (x on denominator)	181			
Solve 2 step equations (x negative)	182			
Solve 3 step equations	183			
Solve equations with x on both sides 1	184			
Solve equations with x on both sides 2	185			
Solve equations with x on both sides 3	186			
Solve equations with algebraic fractions	187			
Setup & solve equations (in context)	188			
Simultaneous equations by elimination 4	193			
Simultaneous equations by substitution	194			
Simultaneous equations (in context)	195			
Linear sequences and graphs				
Midpoint of a line segment	200			
Gradient of a line segment 1	201			
Gradient of a line segment 2 (negative)	202			
Gradient of a line segment 3 (fractions)	203			
Gradient of a line segment 4 (summary)	204			
Straight line graphs 1	206			
Straight line graphs 2	207			
Straight line graphs 3	208			
Straight line graphs 4	209			

Algebra (continued)

Topics	Clip Number	R	A	G
Linear sequences and graphs (continued)				
Straight line graphs 5	210			
Straight line graphs 6	211			
Straight line graphs 7	212			
Straight line graphs 8	213			
Straight line graphs (parallel)	214			
Straight line graphs (perpendicular) 1	215			
Straight line graphs (perpendicular) 2	216			
Straight line graphs (alternative way to define)	220			
Solving equations & straight lines	217			
Solving simultaneous equations using straight lines 1	218			
Solving simultaneous equations using straight lines 2	219			
Quadratics				
Factorise quadratic expressions 1	223			
Factorise quadratic expressions 2	224			
Factorise quadratic expressions 3	225			
Factorise quadratic expressions 4	226			
Factorise quadratic expressions 5	227			
Factorise quadratic expressions 6	228			
Simplify algebraic fractions (involving quadratics)	229			
Completing the square 1	235			
Completing the square 2	236			
Completing the square 3	237			
Using the discriminant	243			
Solving quadratic equations 1 (by factorising)	230			
Solving quadratic equations 2 (by factorising)	231			
Solving quadratic equations 3 (by factorising)	232			
Solving quadratic equations 4 (by factorising)	233			
Solving quadratic equations 5 (inverse operations)	234			
Solving by completing the square 1	238			
Solving by completing the square 2	239			
Solving using the quadratic formula 1	241			
Solving using the quadratic formula 2	242			
Quadratic equations from algebraic fractions	244			
Quadratic equations in context	245			
Simultaneous equations involving quadratics	246			
Find the y-intercept of a quadratic graph	252			
Find the x-intercept (roots) of a quadratic graph	253			
Find the line of symmetry of a quadratic graph	254			
Find the turning point of quadratic graphs 1	255			
Find the turning point of quadratic graphs 2	256			
Sketch a fully labelled quadratic graph	257			
The discriminant & quadratic graphs	258			
Simultaneous equations using graphs (quadratic & linear)	259			
Using a quadratic graph to solve a related quadratic equation	260			

Algebra (continued)

Topics	Clip Number	R	A	G
Exponentials				
Manipulating powers 1	790			
Manipulating powers 2	791			
Manipulating powers 3	792			
Manipulating powers 4	793			
Manipulating powers 5	794			
Manipulating powers 6	795			
Exponential equations 1	796			
Exponential equations 2	797			
Exponential equations 3	798			
Harder exponential problems	799			
Exponential graphs (drawing)	302			
Exponential growth graphs	800			
Exponential decay graphs	801			
Points on exponential graphs 1	802			
Points on exponential graphs 2	803			
Real life exponential growth 1	804			
Real life exponential growth 2	805			
Real life exponential growth 3	806			
Real life exponential growth 4	807			
Real life exponential decay 1	808			
Real life exponential decay 2	809			
Real life exponential decay 3	810			
Real life exponential decay 4	811			
Circles				
Equation of a circle – centre origin 1	778			
Equation of a circle – centre origin 1	779			
Equation of a circle 1 (find centre and radius)	314			
Equation of a circle 2 (write equation)	315			
Equation of a circle 3 (location of points)	316			
Equation of a circle 4 (not standard form)	317			
Inequalities				
Integer solutions to inequalities	267			
Multiple inequalities on a number line	268			
Solve single linear inequalities 1 (positive x)	269			
Solve single linear inequalities 2 (negative x)	270			
Solve single linear inequalities 3 (difficult)	271			
Linear inequalities as graph regions 1	273			
Linear inequalities as graph regions 2	274			
Linear inequalities as graph regions 3	275			
Linear inequalities as graph regions 4	276			
Solving quadratic inequalities	277			

Algebra (continued)

Topics	Clip Number	R	A	G
Formulae				
Change the subject of the formula 1 (1 step)	280			
Change the subject of the formula 2 (2 step)	281			
Change the subject of the formula 3 (negative x)	282			
Change the subject of the formula 4 (x on denominator)	283			
Change the subject of the formula 5 (x with powers)	284			
Change the subject of the formula 6 (x on both sides)	285			
Change the subject of the formula 7 (x on both sides/denominator)	286			
Important graphs				
Cubic graphs (recognising)	299			
Reciprocal graphs 1	300			
Reciprocal graphs 2	301			
Sine graph	303			
Cosine graph	304			
Tangent graph	305			
Sine, cosine, tangent summary	306			
Graph transformations				
Graph transformations 1 $f(x) \pm a$	307			
Graph transformations 2 $f(x \pm a)$	308			
Graph transformations 3 $af(x)$	309			
Graph transformations 4 $f(ax)$	310			
Graph transformations 5 $f(x)$	311			
Graph transformations 6 $f(x)$	312			
Graph transformations 7 (combined)	313			

Geometry and measures

Topics	Clip Number	R	A	G
Non-calculator trigonometry 1	845			
Non-calculator trigonometry 2	846			
Non-calculator trigonometry 3	847			
Non-calculator trigonometry 4	848			
Non-calculator trigonometry 5	849			
Non-calculator trigonometry 6	850			
Non-calculator trigonometry 7	851			
Non-calculator trigonometry (Problem solving 1)	852			
Non-calculator trigonometry (Problem solving 2)	853			