Year 12 Mathematics – Key vocabulary list

Appendix 1: Term 1

Unit 1: Algebraic expressions

Base	Expand	Index/indices	Rational
Coefficient	Expression	Irrational	Rationalise
Common factor	Factorise	Linear	Simplify
Difference of two squares	Index laws	Quadratic	Surd

Unit 2: Quadratics

Axes	Equal roots	Maps	Solution
Coefficient	Exact	Maximum	Solve
Complete the square	Expression	Minimum	Surd
Constant	Factorise	Quadratic	Turning point
Discriminant	Function f(x)	Range	Vertex
Distinct roots	Line of symmetry	Real	
Domain	Mapping	Root	

Unit 3: Equations and inequalities

Axes	Greater than	Non-linear	Set of Values
Coordinates	Hence	Paired solution	Simultaneous equations
Critical values	Inequality	Quadratic	Solve
Discriminant	Intersect	Real	Substitute
Eliminate/Elimination	Less than or equal to	Region	Substitution
Graph	Less than	Satisfy	Tangent
Greater than or equal to	Linear	Set notation	Union ∪

Unit 4: Graphs and transformations

$f(x+a)$	Column vector	Quartic	Stretch
$f(x)+a$	Cubic	Reciprocal	Transformation
$-f(x)$	Factor	Reflect	Translate
$f(-x)$	Intersect	Reflection	Translation
$af(x)$	Negative trend	Repeated root	x-axis
$f(ax)$	Origin	Root	y-axis
Asymptote	Parallel	Scale factor	
Axes	Positive trend	Sketch	

Unit 5: Straight line graphs

Area enclosed	Gradient	Parallel	Vertices
Axes	Intersection	Perpendicular	x -axis
Coordinate	Line segment	Reciprocal	x -intercept
Equate	Linear	Sketch	y -axis
Equation	Model	Substitute	y -intercept
Function	Origin	Vertex	$y=mx+c$

Unit 6: Circles

$(x-a)^2+(y-b)^2=r^2$	Circumcircle	Intersection	Radius
Bisect	Circumscribe	Midpoint	Tangent
Centre	Complete the square	Parallel	Triangle
Chord	Diameter	Perpendicular bisector	Vertex/Vertices
Circle	Discriminant	Perpendicular	$x^2+y^2=r^2$

Year 12 Mathematics – Key vocabulary list

Appendix 1: Term 2

Unit 7: Algebraic methods

Common denominator	Disprove	Linear	Quotient
Common factor	Exhaustion	Necessary	Remainder
Conjecture	Factor theorem	Polynomial	Show
Consecutive	Factor	Proof	Statement
Counter-example	Factorise	Prove	Sufficient
Demonstrate	Identity	Quadratic	Verify

Unit 8: The binomial expansion

Approximation	Constant	Factorial n!	$\binom{n}{r}$
Binomial theorem	Estimation	Integer	Pascal's triangle
Binomial	Expand	Natural number	Term
Coefficient	Expansion	${}^{n}C_{r}$	

Unit 9: Trigonometric ratios

Adjacent	Cosine rule	Maximum	Sine rule
Ambiguous case	Exact	Minimum	Tangent
Area	Graph	Opposite	Transformation
Bearing	Hypotenuse	Periodic	Vertex
Cosine	Interval	Sine	

Unit 10: Trigonometric identities and equations

Acute	Identity	Quadrant	Solve
Anticlockwise	Interval	Reflex	Tangent
Cosine	Obtuse	Show that …	Unit circle
Exact	Principal value	Sine	

Unit 12: Differentiation

$\lim_{h\to 0} f(x)$	Derivative	Limiting	Point of inflection
$\frac{d^2y}{dx^2}$	Differential	Line segment	Prove
$\frac{dy}{dx}$	Differentiation	Local maximum	Rate of change
Asymptote	First principles	Local minimum	Second order derivative
Change in x	Gradient	Maximum	Sketch
Change in y	Gradient function	Minimum	Stationary point
Classify	$h \to 0$	Normal	Strictly increasing
Decreasing	Increasing	Optimise	Tangent
Decreasing function	Increasing function	Point	Turning point

Year 12 Mathematics – Key vocabulary list

Appendix 1: Term 3

Unit 11: Vectors

$\begin{pmatrix} a \\ b \end{pmatrix}$	Distance	Origin	Unit vector $\hat{\boldsymbol{a}}$
Bearing	Force	Parallel	Vector
Collinear	**i** direction	Position vector	Velocity
Column vector	**j** direction	Positive x-axis	Vertex
Directed	Line segment	Resultant vector	x-component
Direction	Linear combination	Scalar	y-component
Displacement	Magnitude $\lvert a \rvert$	Speed	Zero vector **0**

Unit 13: Integration

Area under curve	Finite	Integration	Reverse
Bounded by …	Function	Interval	Substitute
Constant	Gradient function	Limits	Summation
Definite integral	Indefinite integral	Polynomial	With respect to dx
Evaluate	Integrate	Region	$\int f(x)\,dx$

Unit 14: Exponentials and logarithms

$\log_a b$	Decrease	Index	Power
a^x	Exact solution	Inverse function	Reflection in $y = x$
e^x	Exponential	Log laws	Sketch
Asymptote	Gradient function	Logarithm	Solve
Base	Growth	Natural logarithm ln	Straighten the curve
Decay	Increase	Non-linear data	Transformation

Year 12 Mathematics – Key vocabulary list

Appendix 1: Term 4

Statistics Unit 1: Data collection

Bias	Lower class boundary	Qualitative	Strata
Census	Midpoint	Quantitative	Stratified sample
Class boundaries	Mutually exclusive	Quota sampling	Survey
Class width	Observation	Random	Systematic sample
Continuous	Opportunity sampling	Representative	Upper class boundary
Discrete	Ordered list	Sample	Variable
Grouped frequency table	Population	Sampling frame	
Large data set	Proportional representation	Sampling unit	

Statistics Unit 2: Measures of location and spread

S_{xx}	Frequency	Median	Standard deviation σ
Central tendency	Interpercentile range	Modal class	Sum of x^2 $\sum x^2$
Coded data	Interpolation	Mode	Sum of x $\sum x$
Coding	Interquartile range	Original data	Summary statistic
Continuous data	Location	Percentile	Upper quartile Q_3
Discrete data	Lower quartile Q_1	Quartile	Variance
Dispersion	Mean $\bar{x}$	Range	Variation
Estimate	Measure	Spread	

Statistics Unit 3: Representations of data

Anomaly	Cleaning data	Interquartile range	Median Q_2
Area	Cumulative frequency	Interval	Minimum
Box plot	Frequency density	Lower quartile Q_1	Outlier
Class width	Histogram	Maximum	Upper quartile Q_3

Statistics Unit 4: Correlation

Bivariate data	Correlation	Interpolation	Positive
Causal relationship	Dependent variable	Least squares regression line	Predict
Causation	Explanatory variable	Line of best fit	Regression line
Coefficients	Extrapolation	Linear relationship	Response variable
Context	Independent variable	Negative	Scatter diagram

Statistics Unit 5: Probability

AND ∩	Event	Intersection ∩	Sample space
Complement P(not A)	Experiment	Mutually exclusive	Tree diagram
Conditional	Frequency	OR ∪	Union ∪
Dependent	Given that …	Outcome	Venn diagram
Equally likely	Independent	Probability	

Mechanics Unit 8: Modelling in mechanics

Acceleration	Friction	Normal reaction	Tension
Air resistance	Gravity	Particle	Thrust
Assumption	i and j notation	Peg	Time s
Bead	Inextensible	Rate of change	Uniform
Buoyancy	Lamina	Rod	Vector
Centre of mass	Length m	Rough	Velocity
Compression	Light	Scalar	Weight
Displacement	Magnitude	SI units	Wire
Distance	Mass kg	Smooth	
Force diagram	Model	Speed	

Mechanics Unit 9: Constant acceleration

Acceleration a	Deceleration	Force of gravity	suvat formulae
Acceleration due to gravity g	Displacement	Gradient	Time t
Area	Distance s	Initial velocity u	Velocity
Average speed	Distance-time graph	Kinematics	Velocity-time graph
Average velocity	Final velocity v	Rate of change	

Mechanics Unit 10: Forces and motion

Acceleration	Exert	Magnitude	Resultant force
Bearing	Force	Mass m	Smooth
Components	Force diagram	Newton's first law	Vector
Connected particles	Friction force	Newton's second law F = ma	Weight mg
Direction	Gravity	Newton's third law	
Equation of motion	i and j notation	Pully	

Year 12 Mathematics – Key vocabulary list

Appendix 1: Term 5

Statistics Unit 6: Statistical distributions

$B(n, p)$	Discrete probability distribution	Parameter	Trial
Binomial distribution	Discrete uniform distribution	Probability mass function	Uniform
Critical value	Independent	Random	Variable
Cumulative probability	Index	Random variable X	
Cumulative probability function	Outcomes	Sample space	

Statistics Unit 7: Hypothesis testing

Acceptance region	Critical value	Less	Probability distribution
Actual significance level	Cumulative probability	Null hypothesis H_0	Reject
Alternative hypothesis H_1	Expected outcome np	Observation	Significance level
Binomial $B(n, p)$	Fewer	One-tailed test	Test statistic
Critical region	Hypothesis	Population parameter	Two-tailed test

Mechanics Unit 11: Variable acceleration

Acceleration	Initial velocity	Rate of change	$s = \int v\,dt$
Differentiate	Instantaneous at rest	suvat	$v = \int a\,dt$
Displacement	Integrate	Variable acceleration	$v = \frac{ds}{dt}$
Distance	Maximum	Velocity	
Function of time	Minimum	$a = \frac{dv}{dt} = \frac{d^2s}{dt^2}$	

Year 12 Mathematics – Key vocabulary list

Appendix 1: Term 6

P2 Unit 1: Algebraic methods

Assumption	Divisor	Irrational	Quadratic factor
Constant	Factor	Linear factor	Quotient
Contradict	Factorise	Partial fractions	Rational
Degree of polynomial	Identity	Proof by contradiction	Remainder
Denominator	Improper	Prove	

P2 Unit 2: Functions and graphs

$f(x + a)$	Distinct	Modulus function |f(x)|	Scale factor
$f(x) + a$	Domain	One-to-one	Self-inverse
$-f(x)$	Function	Output	Solve
$f(-x)$	Input	Piecewise-defined	Stretch
$af(x)$	Inverse function $f^{-1}(x)$	Range	Transformations
$f(ax)$	Many-to-many	Reflect	Translation
Argument	Many-to-one	Reflection	
Composite function	Mapping	Restrict	

P2 Unit 3: Sequences and series

Arithmetic	First term a	Order of the sequence	Sigma notation
Common ratio r	Geometric	Period	Sum to infinity S_∞
Consecutive	Increasing	Periodic	Sum to n S_n
Constant difference d	Last term l	Previous term	Summation
Convergent	Limits	Recurrence relation	Term
Decreasing	Multiply	Sequence	U_{n+1}
Divergent	Number of terms n	Series	U_n

P2 Unit 4: Binomial expansion

Binomial expansion	Expand	Infinite	Rational constant
Coefficient	Expansion	Partial fraction	Valid
Convergent	Factorial	Range of values	Validity