



FREE REVISION CHECKLIST

OCR MEI A Level Maths Revision Checklist

OCR A Level Mathematics B (MEI) (H640) · Pure, Statistics and Mechanics

PURE MATHS

STATISTICS

MECHANICS

EXAM BOARD	OCR A Level Mathematics B (MEI)
COURSE CODE	H640
GRADES	One course, graded A* to E
PAPERS	Paper 1 Pure and Mechanics · Paper 2 Pure and Statistics · Paper 3 Pure and Comprehension
TOPICS	66 topics in ten units (32 in Year 12, 34 in Year 13)
FORMULAE	A formulae booklet is provided in every paper, and a calculator is allowed

THE EXAM AT A GLANCE

Everything in this checklist is in the OCR A Level Mathematics B (MEI) (H640) specification (the official list of topics). Every student sits all three papers at the end of Year 13. Paper 3 includes a comprehension task: reading a maths article and answering questions.

PAPER 1	PAPER 2	PAPER 3
Pure and Mechanics 2h · 100 marks	Pure and Statistics 2h · 100 marks	Pure and Comprehension 2h · 75 marks

Papers 1 and 2 are each worth about 36% of the final grade, and Paper 3 about 27%. A formulae booklet is provided in every paper, and a calculator is allowed.

Year 12 The first half of the course, usually taught in Year 12. Topics marked Year 12 .	Year 13 The second half of the course. Every topic can come up in the exams at the end of Year 13.
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THE TEN UNITS

Proof and Algebra 10 topics · 3 in Year 13	Coordinate Geometry 3 topics · 1 in Year 13	Sequences and Series 4 topics · 3 in Year 13	Trigonometry 7 topics · 5 in Year 13	Exponentials and Logarithms 3 topics · 0 in Year 13
Differentiation 8 topics · 5 in Year 13	Integration 7 topics · 5 in Year 13	Numerical Methods and Vectors 5 topics · 4 in Year 13	Statistics 11 topics · 4 in Year 13	Mechanics 8 topics · 4 in Year 13

HOW TO USE THIS CHECKLIST

1 Tick One Box For each topic, tick Not Yet, Nearly or Confident. Be honest!	2 Start With Not Yet Revise the Not Yet topics first, then move on to the Nearly ones.	3 Year 12 First Year 12 topics come first in each unit. They are the foundation for Year 13.	4 Repeat Monthly Fill it in again every month and watch the Confident column grow.
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☐ Not Yet
☐ Nearly
☐ Confident
☐ Year 12 Usually taught in Year 12
☒ Year 13 Usually taught in Year 13

Year 12 and Year 13 labels show when topics are usually taught. Schools may teach some topics in a different order.

Proof and Algebra		10 topics · 3 in Year 13 · Papers 1, 2 and 3			
NO.	TOPIC AND WHAT IT INCLUDES	YEAR	NOT YET	NEARLY	CONFIDENT
1	Proof Proof by deduction, by exhaustion and disproof by counter-example	Year 12	☐	☐	☐
2	Indices and Surds Laws of indices and manipulating surds	Year 12	☐	☐	☐
3	Quadratics The discriminant, completing the square and quadratic graphs	Year 12	☐	☐	☐
4	Simultaneous Equations Linear and quadratic simultaneous equations	Year 12	☐	☐	☐
5	Inequalities Linear and quadratic inequalities, including regions on a graph	Year 12	☐	☐	☐
6	Polynomials Algebraic division and the factor theorem	Year 12	☐	☐	☐
7	Graphs and Transformations Cubic and reciprocal graphs and transformations of $y = f(x)$	Year 12	☐	☐	☐
8	Proof by Contradiction Including proofs of the irrationality of $\sqrt{2}$ and the infinity of primes	Year 13	☐	☐	☐
9	Partial Fractions Splitting rational expressions into partial fractions	Year 13	☐	☐	☐
10	Functions Domain, range, composite and inverse functions and the modulus function	Year 13	☐	☐	☐

Coordinate Geometry		3 topics · 1 in Year 13 · Papers 1, 2 and 3			
NO.	TOPIC AND WHAT IT INCLUDES	YEAR	NOT YET	NEARLY	CONFIDENT
11	Straight Lines Equations of lines, parallel and perpendicular lines	Year 12	☐	☐	☐
12	Circles Equations of circles, tangents and chords	Year 12	☐	☐	☐
13	Parametric Equations Converting between parametric and Cartesian forms and modelling with them	Year 13	☐	☐	☐

Sequences and Series		4 topics · 3 in Year 13 · Papers 1, 2 and 3			
NO.	TOPIC AND WHAT IT INCLUDES	YEAR	NOT YET	NEARLY	CONFIDENT
14	Binomial Expansion Expanding $(a + b)^n$ for positive whole numbers n	Year 12	☐	☐	☐

NO.	TOPIC AND WHAT IT INCLUDES	YEAR	NOT YET	NEARLY	CONFIDENT
15	Arithmetic and Geometric Sequences nth terms, sums, sum to infinity and sigma notation	Year 13	☐	☐	☐
16	Recurrence Relations Sequences defined by recurrence, including increasing, decreasing and periodic sequences	Year 13	☐	☐	☐
17	General Binomial Expansion Expanding $(1 + x)^n$ for any rational n , and its validity	Year 13	☐	☐	☐

Trigonometry		7 topics · 5 in Year 13 · Papers 1, 2 and 3			
NO.	TOPIC AND WHAT IT INCLUDES	YEAR	NOT YET	NEARLY	CONFIDENT
18	Sine Rule, Cosine Rule and Area Solving any triangle and finding its area	Year 12	☐	☐	☐
19	Trigonometric Graphs and Equations Graphs, identities such as $\sin^2\theta + \cos^2\theta = 1$, and solving equations	Year 12	☐	☐	☐
20	Radians Radian measure, arc length, sector area and small-angle approximations	Year 13	☐	☐	☐
21	Reciprocal and Inverse Trigonometric Functions sec, cosec, cot, arcsin, arccos and arctan	Year 13	☐	☐	☐
22	Compound and Double Angle Formulae Using the addition and double angle formulae	Year 13	☐	☐	☐
23	R cos($\theta \pm \alpha$) Form Writing $a \cos \theta + b \sin \theta$ in a single form	Year 13	☐	☐	☐
24	Trigonometric Proof and Modelling Proving identities and solving harder equations	Year 13	☐	☐	☐

Exponentials and Logarithms		3 topics · 0 in Year 13 · Papers 1, 2 and 3			
NO.	TOPIC AND WHAT IT INCLUDES	YEAR	NOT YET	NEARLY	CONFIDENT
25	Exponential Functions Graphs of $y = a^x$ and $y = e^x$	Year 12	☐	☐	☐
26	Laws of Logarithms Using the laws of logs and solving equations such as $a^x = b$	Year 12	☐	☐	☐
27	Exponential Modelling Growth and decay models and using logs to find straight-line forms	Year 12	☐	☐	☐

Differentiation

8 topics · 5 in Year 13 · Papers 1, 2 and 3

NO.	TOPIC AND WHAT IT INCLUDES	YEAR	NOT YET	NEARLY	CONFIDENT
28	Differentiation From First Principles Understanding the derivative as a limit	Year 12	☐	☐	☐
29	Differentiating Powers of x Gradients, tangents and normals	Year 12	☐	☐	☐
30	Stationary Points Maximum and minimum points, increasing and decreasing functions	Year 12	☐	☐	☐
31	Second Derivatives Points of inflection and concavity	Year 13	☐	☐	☐
32	Chain, Product and Quotient Rules Differentiating composite functions, products and quotients	Year 13	☐	☐	☐
33	Differentiating Exponentials, Logs and Trig Derivatives of e^{kx} , a^{kx} , $\ln x$, $\sin x$, $\cos x$ and $\tan x$	Year 13	☐	☐	☐
34	Implicit and Parametric Differentiation Differentiating curves defined implicitly or parametrically	Year 13	☐	☐	☐
35	Connected Rates of Change Forming and using rates of change	Year 13	☐	☐	☐

Integration

7 topics · 5 in Year 13 · Papers 1, 2 and 3

NO.	TOPIC AND WHAT IT INCLUDES	YEAR	NOT YET	NEARLY	CONFIDENT
36	Integrating Powers of x Indefinite and definite integrals	Year 12	☐	☐	☐
37	Area Under a Curve Using definite integrals to find areas	Year 12	☐	☐	☐
38	Integrating Standard Functions Integrating e^x , $1/x$, $\sin x$ and $\cos x$	Year 13	☐	☐	☐
39	Integration by Substitution and by Parts Choosing and using the right method	Year 13	☐	☐	☐
40	Integration Using Partial Fractions Integrating rational functions	Year 13	☐	☐	☐
41	Areas Between Curves Areas between two curves, or a curve and a line	Year 13	☐	☐	☐
42	Differential Equations Forming and solving first-order separable differential equations	Year 13	☐	☐	☐

Numerical Methods and Vectors

5 topics · 4 in Year 13 · Papers 1, 2 and 3

NO.	TOPIC AND WHAT IT INCLUDES	YEAR	NOT YET	NEARLY	CONFIDENT
43	Vectors in Two Dimensions Magnitude, direction, position vectors and geometric problems	Year 12	☐	☐	☐
44	Vectors in Three Dimensions Using vectors in 3D	Year 13	☐	☐	☐
45	Locating Roots Using a change of sign to find an interval containing a root	Year 13	☐	☐	☐
46	Iteration and Newton-Raphson Finding approximate roots and knowing when methods fail	Year 13	☐	☐	☐
47	The Trapezium Rule Estimating areas under curves	Year 13	☐	☐	☐

Statistics

11 topics · 4 in Year 13 · Paper 2

NO.	TOPIC AND WHAT IT INCLUDES	YEAR	NOT YET	NEARLY	CONFIDENT
48	Sampling Populations, samples and sampling methods	Year 12	☐	☐	☐
49	Data Presentation and Interpretation Histograms, box plots, cumulative frequency, outliers and correlation	Year 12	☐	☐	☐
50	Measures of Location and Spread Mean, median, variance, standard deviation and coding	Year 12	☐	☐	☐
51	The Large Data Set Getting to know your exam board's Large Data Set: real data published in advance, which exam questions expect students to know	Year 12	☐	☐	☐
52	Probability Venn diagrams, mutually exclusive and independent events	Year 12	☐	☐	☐
53	The Binomial Distribution Modelling with the binomial distribution and calculating probabilities	Year 12	☐	☐	☐
54	Hypothesis Testing With the Binomial One-tailed and two-tailed tests and critical regions	Year 12	☐	☐	☐
55	Conditional Probability Using Venn diagrams, tree diagrams and two-way tables	Year 13	☐	☐	☐
56	The Normal Distribution Calculating probabilities and using it as an approximation to the binomial	Year 13	☐	☐	☐
57	Hypothesis Testing With the Normal Testing the mean of a normal distribution	Year 13	☐	☐	☐
58	Correlation Hypothesis Tests Testing for correlation using the product moment correlation coefficient	Year 13	☐	☐	☐

Mechanics

8 topics · 4 in Year 13 · Paper 1

NO.	TOPIC AND WHAT IT INCLUDES	YEAR	NOT YET	NEARLY	CONFIDENT
59	Quantities, Units and Modelling SI units and modelling assumptions	Year 12	☐	☐	☐
60	Kinematics With Constant Acceleration Motion graphs and the suvat equations, including vertical motion under gravity	Year 12	☐	☐	☐
61	Kinematics With Calculus Variable acceleration using differentiation and integration	Year 12	☐	☐	☐
62	Forces and Newton's Laws Resultant forces, connected particles and pulleys	Year 12	☐	☐	☐
63	Moments Moments of forces, including rigid bodies in equilibrium	Year 13	☐	☐	☐
64	Resolving Forces and Friction Forces at angles, inclined planes and the friction model $F \leq \mu R$	Year 13	☐	☐	☐
65	Projectiles Motion of a projectile under gravity	Year 13	☐	☐	☐
66	Kinematics in Two Dimensions Using vectors and calculus for motion in a plane	Year 13	☐	☐	☐



TRACK YOUR PROGRESS

MY PROGRESS SUMMARY

Count your ticks for each unit and write them in. Fill this in again every month to see how far you've come.

UNIT	TOPICS	NOT YET	NEARLY	CONFIDENT
● Proof and Algebra	10			
● Coordinate Geometry	3			
● Sequences and Series	4			
● Trigonometry	7			
● Exponentials and Logarithms	3			
● Differentiation	8			
● Integration	7			
● Numerical Methods and Vectors	5			
● Statistics	11			
● Mechanics	8			
Total	66			

REVISION TIPS THAT WORK

Little and Often

20 to 30 minutes of maths on most days beats one long session at the weekend.

Practise, Don't Just Read

Do exam-style questions. Reading notes feels useful, but solving questions is what builds marks.

Learn From Mistakes

Keep a list of questions you got wrong and try them again a week later.

Know Your Formulae Booklet

Learn what is in the booklet and what is not, so you never waste time looking in the exam.

Want a Plan Built Around This Checklist?

Book a free 90-minute lesson. I'll find exactly where your child is and write a personal plan for every topic they need.

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