

Isaac Maths Resources

GCSE Book

 https://isaacphysics.org/books/maths_book_gcse

A-level Book

 https://isaacphysics.org/books/pre_uni_maths


Practise Maths

 https://isaacphysics.org/pages/maths_practice


Master Maths

 https://isaacphysics.org/pages/master_maths

Question finder

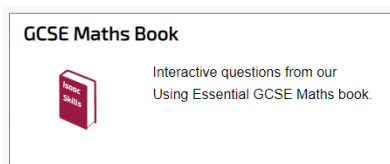
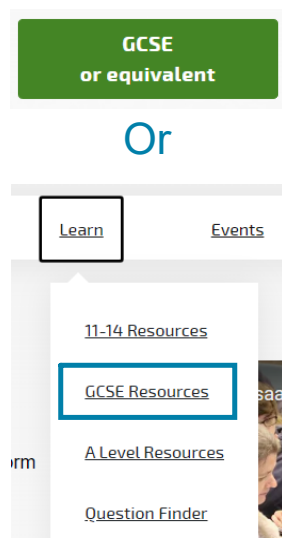
 <https://isaacphysics.org/gameboards>

Concepts

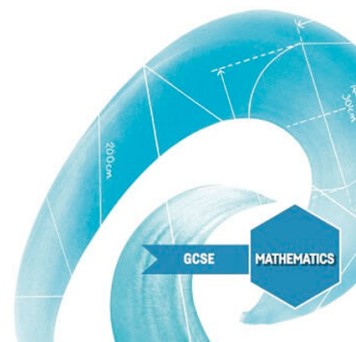
 <https://isaacphysics.org/concepts>

GCSE Book

https://isaacphysics.org/books/maths_book_gcse



USING ESSENTIAL GCSE
MATHEMATICS
Sally Waugh & Jonathan Waugh



Available for £1 in print, or online for free.

Buy the book

Printed copies, cost price £1 (plus p+p)

[Buy Isaac Books](#)

Teacher resources.

For Teachers

Specification Table - maps the book to your exam board.

Teacher's Manual - authors' notes for teachers.

Preparation for Sixth Form (pdf) - by the authors.

STEM Question Finder - table of problems that relate to STEM subjects.

Maths Skills for GCSE Science - table of assumed skills for GCSE science courses.

Covers all of GCSE Maths, with sections for Foundation or Higher.

Chapters:

1 Solving Maths Problems
(Section 1)

2 Skills
(Sections 2-11)

3 Algebra
(Sections 12-22)

4 Linear Functions
(Sections 23-25)

5 Quadratic Functions
(Sections 26-30)

6 Inequalities
(Sections 31-32)

7 Graphs
(Sections 33-37)

8 Geometry
(Sections 38-50)









9 Probability and Statistics
(Sections 51-57)

Questions in **gameboards** for each chapter.

Graphs

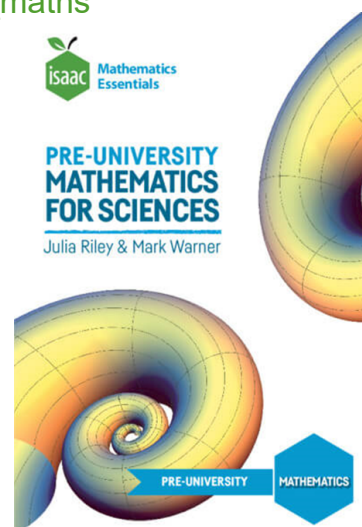
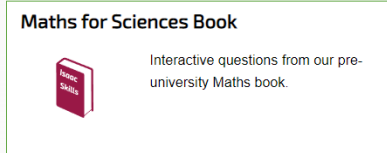
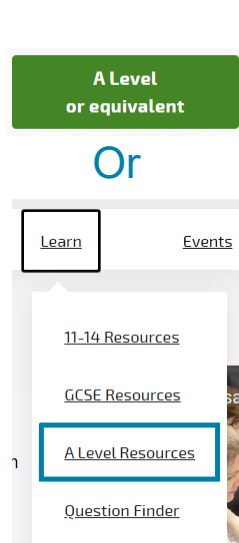
33F Standard Function Graphs Foundation View board Assign	33H Standard Function Graphs Higher View board Assign
34F Proportionality Foundation View board Assign	34H Proportionality Higher View board Assign
35H Transformations Higher View board Assign	36F Real-World Graphs Foundation View board Assign
36H Real-World Graphs Higher View board Assign	37H Numerical Methods Higher View board Assign

36. Real-World Graphs Higher

	Notes Real-World Graphs	>
	Essential GCSE Maths 36.3 Maths > Functions > Graph Sketching	<div>GCSE</div> <div>C C C</div> <div>A Level</div> <div>P P P</div>
	Essential GCSE Maths 36.4 Maths > Functions > Graph Sketching	<div>GCSE</div> <div>C C C</div> <div>A Level</div> <div>P P P</div>
	Essential GCSE Maths 36.5 Maths > Functions > Graph Sketching	<div>GCSE</div> <div>P P P</div> <div>A Level</div> <div>P P P</div>
	Essential GCSE Maths 36.6 Maths > Functions > Graph Sketching	<div>GCSE</div> <div>P P P</div> <div>A Level</div> <div>P P P</div>
	Essential GCSE Maths 36.8 Maths > Functions > Graph Sketching	<div>GCSE</div> <div>C C C</div> <div>A Level</div> <div>P P P</div>
	Essential GCSE Maths 36.9 Maths > Functions > Graph Sketching	<div>GCSE</div> <div>P P P</div> <div>A Level</div> <div>P P P</div>
	Essential GCSE Maths 36.10	<div>GCSE</div> <div>P P P</div> <div>A Level</div> <div>P P P</div>

A-level Book

https://isaacphysics.org/books/pre_uni_maths



Available for £1 in print, or online for free.

Buy the book

Printed copies, cost price £1 (plus p+p)

Buy Isaac Books

Specification table for teachers

For Teachers

Specification Table - maps the book to your exam board.

Covers pure content for A-level Maths, and some of Further Maths.
Focuses on mathematical methods used in the sciences.

Chapters:

1 Level 1	2 Level 2
3 Level 3	4 Level 4
5 Level 5	6 Level 6
7 Level 7	

Questions in gameboards for each chapter.

Level 4

4.1

Trigonometry

[View board](#) | [Assign](#)

4.2

Functions

[View board](#) | [Assign](#)

4.3

Series

[View board](#) | [Assign](#)

4.4

Differentiation

[View board](#) | [Assign](#)

4.5

Integration

[View board](#) | [Assign](#)

4.6

Graph Sketching

[View board](#) | [Assign](#)

4.4 Differentiation

Q

Differentiating Trig Functions 1

Maths > Calculus > Differentiation

A Level

Further A

P

P

P

P

P

P

Q

Differentiating Trig Functions 2

Maths > Calculus > Differentiation

A Level

Further A

P

P

P

P

P

P

Q

Differentiating Trig Functions 3

Maths > Calculus > Differentiation

A Level

Further A

C

C

C

P

P

P

Q

Differentiating Exponentials 1

Maths > Calculus > Differentiation

A Level

Further A

P

P

P

P

P

P

Q

Differentiating Exponentials 2

Maths > Calculus > Differentiation

A Level

Further A

P

P

P

P

P

P

Q

Powers Using Chain Rule 1

Maths > Calculus > Differentiation

A Level

Further A

P

P

P

P

P

P

Q

Powers Using Chain Rule 2

A Level

Further A

P

P

P

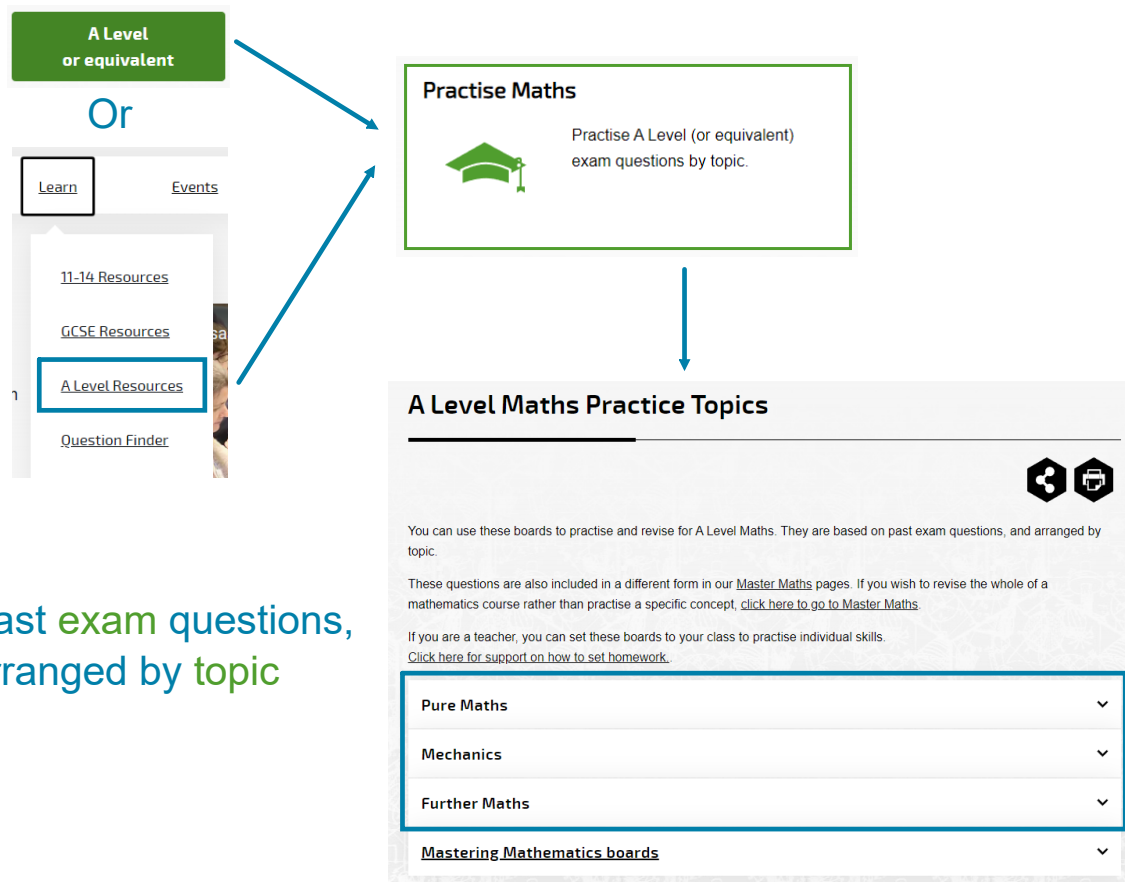
P

P

P

Practise Maths

https://isaacphysics.org/pages/maths_practice



Past exam questions,
arranged by topic

Stage 2 (Year 13)

Field	Topic	Board
Algebra and functions	Algebraic Division	Link
	Curve Sketching and Combined Transformations	Link
	Functions and Algebra	Link
	Functions: Graphs and Inverse Functions	Link
	Modulus	Link
	Partial Fractions	Link
	Graphs and roots in context	Link
Coordinate geometry	Parametric equations	Link
Differentiation	Constructing Differential Equations	Link
	Differentiation and Gradients: Beyond Polynomials	Link
	Differentiation: Chain Rule	Link
	Differentiation: Implicit	Link
	Differentiation: Products	Link
	Differentiation: Quotients	Link
	Differentiation: Synoptic Problems	Link
Integration	Area Between Two Curves	Link
	Integration by Parts	Link
	Integration by Substitution	Link
	Integration by substitution (trig)	Link
	Integration: General	Link

Master Maths

https://isaacphysics.org/pages/master_maths

A Level or equivalent

Or

Learn

Events

11-14 Resources

GCSE Resources

A Level Resources

Question Finder

Practise Maths

Practise A Level (or equivalent) exam questions by topic.

A Level Maths Practice Topics

Pure Maths

Mechanics

Further Maths

Mastering Mathematics boards

Over 1000 past exam questions
Linked to easier questions
Ideal for revision

Each board spans the syllabus

	Stage 1 (Year 12)	Stage 2 (Year 13)
Core Pure Maths	C	C
Mechanics	M	M
Further Pure Maths	F	

Maths Stage 1 - Revision & Practice

Significant Figures

Finding Roots

Circles and Geometry

Curves and Integration

Quadratics and Inequalities

Exponentials and Logs

Calculus

Trigonometry: Solving Equations

Each question part links to an easier question on the same topic

Easier question?

Check my answer

Maths Stage 1 - Revision & Practice

Trigonometry: Identities and Equations Practice

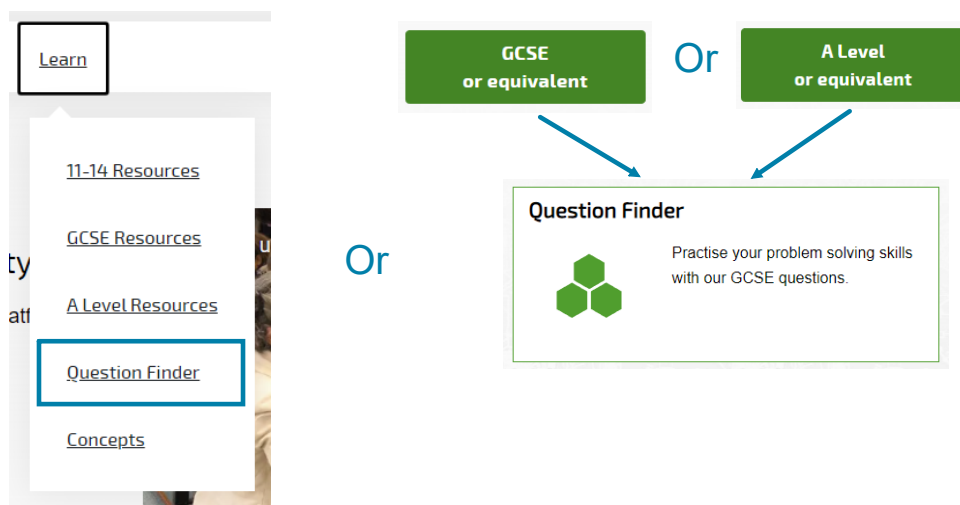
Trigonometry: Identities and Equations 4ii

Part A Solving $2 \sin^2 x = 1 + \cos x$

Solve $2 \sin^2 x = 1 + \cos x$ in the region $-180^\circ \leq x \leq 180^\circ$. Give the largest value within this range as your answer to 3 significant figures.

Question Finder

<https://isaacphysics.org/gameboards>



Search for questions by stage, topic or difficulty.

Choose your Questions

Help

Topics: Maths Geometry Trigonometry

Scroll to questions...

Click these buttons to choose your question gameboard

I am interested in stage... A Level

I would like questions for... Practice Challenge

Topics: Physics Maths Chemistry Number Algebra Geometry Functions Calculus Statistics Shapes Trigonometry Vectors Planes

Go to Questions...

Shuffle Questions

Select stage

Select difficulty

Select topic

Generate a new set of questions

Trigonometry

Save to My Gameboards

Addition of Forces 2
Maths > Geometry > Trigonometry

Circles and Arcs 2
Maths > Geometry > Trigonometry

Radians to Degrees 1
Maths > Geometry > Trigonometry

Oscillating Mass
Maths > Geometry > Trigonometry

Circles and Arcs 1
Maths > Geometry > Trigonometry

A Level

A Level

A Level

A Level

A Level

Save board of questions

Concept Pages

<https://isaacphysics.org/concepts>



The screenshot shows the Isaac Physics website. On the left, a navigation menu is visible with links for 'Learn', 'Events', '11-14 Resources', 'GCSE Resources', 'A Level Resources', 'Question Finder', and 'Concepts'. The 'Concepts' link is highlighted with a blue box. An arrow points from this box to the main content area on the right. The main content area features a 'Search bar' and a 'Subject filter' (Physics, Maths, Chemistry). Below these is a 'Search Results' section listing various concepts with brief descriptions and expandable arrows.

Concepts pages explain a concept in detail.

Matrices - Definition

All Stages ▾



Matrices have many applications in Mathematics, Physics, Chemistry and Computer Science. They can be used to represent systems of simultaneous equations, stress and strain in materials, geometrical transformations of objects as well as having many uses in statistics, quantum mechanics, graph theory and artificial intelligence.

A matrix is an array of elements set out in a pair of brackets and arranged in rows and columns. We can describe the size of a matrix using the number of rows and columns, $m \times n$.

$$\begin{array}{ccc}
 \begin{pmatrix} a & b \\ c & d \end{pmatrix} & \begin{pmatrix} 4 \\ 1 \\ -2 \end{pmatrix} & \begin{pmatrix} 0 & 0 & -3 \\ -2 & 2 & k^2 \end{pmatrix} & \begin{pmatrix} a_{11} & a_{12} & a_{13} & \dots & a_{1n} \\ a_{21} & a_{22} & a_{23} & \dots & a_{2n} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ a_{m1} & a_{m2} & a_{m3} & \dots & a_{mn} \end{pmatrix} \\
 2 \times 2 \text{ matrix} & 3 \times 1 \text{ matrix} & 2 \times 3 \text{ matrix} & m \times n \text{ matrix}
 \end{array}$$






Further A Special types of matrix ▾

Further A Matrix addition and subtraction ▾

Further A Scalar multiplication ▾

Question Types

There are many different types of questions available on Isaac Physics. Here are some examples of different types.

Numeric	 https://isaacphysics.org/questions/gcse_maths_ch2_11_q1
Symbolic	 https://isaacphysics.org/questions/algebra_level2_ineq_5
Graph sketcher	 https://isaacphysics.org/questions/sketch_reciprocal_trig
Cloze text	 https://isaacphysics.org/questions/proof_surface_areas
Reorder	 https://isaacphysics.org/questions/combined_transformations