

## Advance Information for Summer 2022

### A Level

### Mathematics B (MEI)

### H640

We have produced this advance information to support teachers and students with revision for the Summer 2022 examinations.

#### Information

- This notice covers all examined components.
- There are no restrictions on who can use this notice.
- You are **not** permitted to take this notice into the exam.
- This document has **4** pages.

#### Advice

- Students and teachers can discuss this advance information.
- It is advised that teaching and learning should still cover the entire subject content in the specification.
- The information is presented in specification order by the main topic of each question and not in question order.
- Topics not explicitly given in the list may appear in low tariff items or via synoptic questions.

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## **H640/01 – Pure Mathematics and Mechanics**

### **Pure Mathematics**

- Proof by contradiction
- Partial fractions
- Parametric equations, motion in 2 dimensions
- Binomial expansions for any rational power
- Trigonometric functions and graphs; solving trigonometric equations
- Exponentials and logarithms
- Rates of change, solution of triangles
- Definite integral, proportion

### **Mechanics**

- Kinematics graphs
- Calculus in kinematics, 2 dimensions using vectors
- Projectiles, position vector and range
- Vector treatment of forces
- Connected particles, inclined plane, equation of motion
- Rigid bodies in equilibrium

## H640/02 – Pure Mathematics and Statistics

### Pure Mathematics

- Proof
- Parametric equations
- Sum to infinity
- Compound angles, equivalent form for  $a\cos\theta \pm b\sin\theta$
- Exponentials and logarithms
- Stationary points and curve sketching
- Area under curve as sum of rectangle areas

### Statistics

- Data presentation, histogram
- Data presentation, cumulative frequency diagram
- Data presentation, scatter diagram
- Probability of 2 or more events
- Discrete probability distributions
- Normal distribution curve
- Modelling with the Normal distribution
- Hypothesis test
- Hypothesis testing for a mean using the Normal distribution

## H640/03 – Pure Mathematics and Comprehension

### Pure Mathematics

- Inverse proportion graph
- Language of functions
- Coordinate geometry of straight lines and circles
- Binomial expansion; area under a curve
- Sequences from formulas
- Trigonometric equations
- Implicit differentiation; stationary points
- Differential equations

### Comprehension

- Investigation involving graphs of functions which may involve using fundamental skills of algebra, trigonometry or differentiation.

**END OF ADVANCE INFORMATION**

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