ISEB
Independent Schools Examinations Board

GUIDANCE FOR SUMMER CE/CASE 2022

MATHEMATICS

V2.0

MATHEMATICS

13+ CE ESSENTIAL INFORMATION

For the Mental Arithmetic Test, the calculator and non-calculator papers, there is no change to the published dates for the examinations.

In recognition of the challenges associated with preparing pupils for this summer's examinations, the following information is suggested as the focus of revision for the Summer 2022 Mathematics examinations only.

This information covers the calculator and non-calculator papers at each of the three levels (indicated in the table as L1, L2 and L3).

Please note, this is not an exhaustive list and is only intended to give general guidance. Not all topics listed will necessarily be tested in the papers, and topics will be tested at the appropriate level for the different papers.

Referring to previous papers is recommended.

Topics to be covered at the indicated level

NUMBER

	L1	L2	L3	
Arithmetic	■	■	■	Money
	■	■	■	Four operations with integers and decimals
	■	■	■	Order of operations
	■	■	■	Inverse operations
	■	■	■	Negative number
Fractions	■	■	■	Change fraction to decimal
	■	■	■	Order fractions, decimals, percentages
	■	■	■	Fraction of a quantity
		■	■	One quantity as a fraction of another
	■	■	■	Fraction arithmetic - no mixed numbers
			■	Fraction arithmetic - including mixed numbers
	■	■	■	Equivalent fractions
Properties of numbers	■	■	■	Place value
	■	■	■	Multiples, factors, primes
	■	■	■	Product of prime factors
Powers and roots		■	■	Square and square root
			■	Cube and cube root
			■	HCF and LCM
Standard Form			■	Conversion to/from standard form
Approximation and estimation	■	■	■	Rounding to nearest 10, 100 etc; decimal places
	■	■	■	Estimation
Other	■	■	■	Investigation of number patterns
	■	■	■	Calculator use

CONT'D

ALGEBRA

	L1	L2	L3	
Expressions	■	■	■	Simplification
	■	■	■	Expansion of bracket
	■	■	■	Factorisation
			■	Factorisation – may include an algebraic term
	■	■	■	Substitute values into an expression
			■	Substitute values – find an element of a formula
	■	■	■	Forming an expression
Equations and inequalities	■	■	■	Linear equations
			■	Simple quadratic equation
			■	Linear inequality
	■	■	■	Form and solve an equation
			■	Form and solve linear simultaneous equations
Graphs	■	■	■	Coordinates
	■	■	■	Straight line graph $y = \pm c$, $x = \pm c$, $y = \pm x$
		■	■	Straight line graph of linear function $y = mx + c$
			■	Quadratic graph
	■	■	■	Conversion graph
Sequences	■	■	■	Linear sequence
	■	■	■	Sequence with other simple numerical pattern
			■	n th term

CONT'D

RATIO, PROPORTION AND RATES OF CHANGE

	L1	L2	L3	
Conversion	■	■	■	Length, mass, time
		■	■	Speed e.g. m/s and km/h
	■	■	■	Scale drawing – scale in form e.g. 1 cm to 2 km
			■	Scale drawing – scale in form e.g. 1 : 10 000
			■	
Percentages	■	■	■	Change decimal to percentage
		■	■	Change percentage to fraction
	■	■	■	Percentage of a quantity
	■	■	■	One quantity as a percentage of another
	■	■	■	Percentage increase/decrease
			■	Reverse percentage
Ratio	■	■	■	Reduce a ratio to simplest form
	■	■	■	Ratio calculations – ratio with 2 parts
		■	■	Ratio calculations – ratio with 3 parts
Compound Measures	■	■	■	Speed, distance, time calculations
			■	Average speed of multi-stage journey

PROBABILITY

	L1	L2	L3	
Probability	■	■	■	Probability scale
	■	■	■	Probability
		■	■	Combined events – table of outcomes

STATISTICS

	L1	L2	L3	
Measures	■	■	■	Mode, median, mean, range

CONT'D

GEOMETRY AND MEASURES

	L1	L2	L3	
Shape	■	■	■	Properties of triangles and quadrilaterals
	■	■	■	Polygons
	■	■	■	2-D representation of a cuboid
	■	■	■	Parallel and perpendicular lines
	■	■	■	Transformations – reflection, rotation, translation
	■	■	■	Enlargement – integer scale factor
			■	Enlargement – fractional scale factor
	■	■	■	Area scale factor
Constructions		■	■	Perpendicular bisector of a line, bisect an angle
Angles	■	■	■	Angles in a triangle
	■	■	■	Vertically opposite angles
	■	■	■	Angles at a point, angles on a straight line
	■	■	■	Angle properties of parallel lines
	■	■	■	Angles in a regular polygon, including calculation of number of sides
	■	■		Bearings – scale diagram will not require compasses
			■	Bearings – scale diagram will require compasses
Length, area and volume	■	■	■	Area of a rectangle
	■	■	■	Area of a triangle
	■	■	■	Area and circumference of a circle
			■	Reverse area and circumference of a circle
	■	■	■	Area of a sector
		■	■	Perimeter of a sector
	■	■	■	Volume of a cube/cuboid
		■	■	Surface area of a cube/cuboid
Pythagoras' Theorem			■	Pythagoras' Theorem problems

CONT'D

PROBABILITY

	L1	L2	L3	
Probability	■	■	■	Probability scale
	■	■	■	Probability
		■	■	Combined events – table of outcomes

STATISTICS

	L1	L2	L3	
Measures	■	■	■	Mode, median, mean, range

LEVEL OF ENTRY

Under the circumstances, if appropriate and in consultation with senior schools, we advise considering entering more pupils for Level 1 instead of Level 2, and for Level 2 instead of Level 3.

The benefit of this could be that borderline candidates at each level are able to demonstrate what they can do and to succeed. This positive experience and sense of achievement might lead to greater future progress in the subject, with firmer foundations. Again, this may be more relevant to those this year with greater anxiety and lost learning.

CASE

Given the intentions of scholarship examinations and the skills-focused nature of the questions, we recommend that scholars cover the full range of topics and skills specified within the published syllabus for Mathematics.

At ISEB, we welcome feedback about our support for schools, teachers and pupils, so please do not hesitate to contact us at enquiries@iseb.co.uk with your views.