

Junior Cycle

MATHEMATICS

Examcraft Formative question bank

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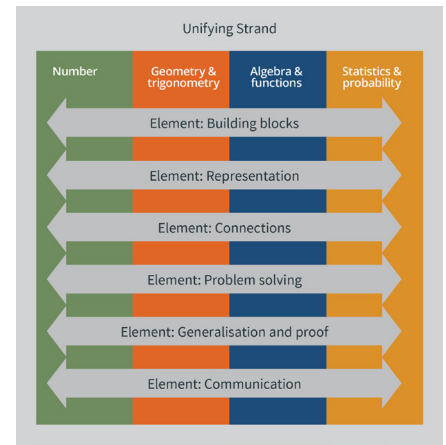
About the author

John O'Sullivan is a Chemistry, Maths, Science and ICT teacher at Hamilton High School in Bandon. He has 20 years' teaching experience and has taught Junior/Leaving Certificate Maths for each of those years. He has lots of experience with online education and has used it as a teaching tool for a number of years.

Junior Cycle Maths

The Examcraft Formative bank of questions was designed by our expert content creators and is divided according to the specification for Junior Cycle Mathematics. The specification focuses on developing students' ability to think logically, strategically, critically, and creatively through the Unifying strand and the four contextual strands: Number; Geometry and trigonometry; Algebra and functions; and Statistics and probability.

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1st Year

Topic 1 - Natural Numbers

Learning outcomes: Strand U.1, U.2, U.3, U.5, U.6, U.7, U.8, Strand N.1.a, N.1.b, N.1.d

Addition and subtraction of natural numbers	10 questions
Factors and multiples	10 questions
Multiplication and division of natural numbers	10 questions
Commutative, associative, and distributive properties of operations	10 questions
Topic quiz	10 questions
Extra questions	40 questions
Total number of questions in Topic 1	90 questions

Topic 2 - Integers

Learning outcomes: Strand U.1, U.2, U.3, U.6, U.7, U.8, Strand N.1.a, N.1.b, Strand AF.4.a, AF.4.c

Integers	10 questions
Addition and subtraction of integers	10 questions
Multiplication and division of integers	10 questions
Order of operations	10 questions
Topic quiz	10 questions
Extra questions	40 questions
Total number of questions in Topic 2	90 questions

Topic 3 - Decimals, fractions and percentages

Learning outcomes: Strand U.1, U.2, U.4, U.6, U.7, Strand N.1.b, N.1.e, Strand N.2.a, N.2.b, N.2.c, N.3.b, Strand AF.4.a

Relationship between decimals and fractions	10 questions
Decimals, fractions, and percentages	10 questions
Rounding, terminating, and recurring	10 questions
Percentage increase and decrease	10 questions
Problem solving	10 questions
Topic quiz	10 questions
Extra questions	50 questions
Total number of questions in Topic 3	110 questions

Topic 4 - Rational numbers

Learning outcomes: Strand U.1, U.2, U.6, U.7, U.8, Strand N.1.b, N.1.c, N.2.a, Strand AF.4.a, AF.4.c

Rational numbers of fractions	10 questions
Adding and subtracting fractions	10 questions
Multiplying fractions	10 questions
Dividing fractions	10 questions
Topic quiz	10 questions
Extra questions	40 questions
Total number of questions in Topic 4	90 questions

Topic 5 - Sets

Learning outcomes: Strand U.1, U.2, U.3, U.4, U.6, Strand N.5.a, N.5.b, N.5.c, N.5.d

Set notation	10 questions
Subsets	10 questions
Universal set	10 questions
Problem solving with sets	10 questions
Topic quiz	10 questions
Extra questions	30 questions
Total number of questions in Topic 5	80 questions

Topic 6 - Constructions

Element: Strand U.1, U.2, U.6, Strand GT.3.a

Construction equipment	10 questions
Constructions 1, 2, and 4	10 questions
Constructions 5, 6, and 8	10 questions
Practising constructions (not self-graded)	10 questions
Topic quiz	10 questions
Extra questions	30 questions
Total number of questions in Topic 6	80 questions

Topic 7 - Geometry

Element: Strand U.1, U.2, U.4, U.6, Strand GT.3.b.i, GT.3.c

Concepts and axioms	10 questions
Lines	10 questions
Angles	10 questions
Topic quiz	10 questions
Extra questions	30 questions
Total number of questions in Topic 7	70 questions

Topic 8 - Number patterns

Learning outcomes: Strand U.1, U.2, U.4, U.6, AF.1.a, AF.1.b, AF.1.c

Patterns	10 questions
Linear patterns	10 questions
Non-linear sequences	10 questions
Real-world patterns	10 questions
Topic quiz	10 questions
Extra questions	40 questions
Total number of questions in Topic 8	90 questions

Topic 9 - Algebra

Learning outcomes: Strand U.1, U.2, U.5, U.6, Strand N.1.a, N.1.b, N.1.c.v, N.1.e Strand AF.2.a, AF.2.b, AF.3.a.i

Adding and subtracting terms	10 questions
Multiplying terms	10 questions
Writing expressions	10 questions
Multiplying terms with brackets	10 questions
Evaluating expressions	10 questions
Topic quiz	10 questions
Extra questions	50 questions
Total number of questions in Topic 9	110 questions

Topic 10 - Probability

Learning outcomes: Strand U.1, U.2, U.4, U.5, U.6, Strand N.2.a, Strand SP1.a, SP1.b, SP2.a, SP2.b, SP2.c

Listing outcomes	10 questions
The fundamental principle of counting	10 questions
The probability scale	10 questions
Relative frequency	10 questions
Expected frequency	10 questions
Theoretical probability	10 questions
Independent events	10 questions
Topic quiz	10 questions
Extra questions	70 questions
Total number of questions in Topic 10	150 questions

2nd Year

Topic 11 - Applied arithmetic

Learning outcomes: Strand U.1, U.2, U.4, U.6, Strand N.2.c, N.3.a, N.3.b

Distance, speed and time 1	10 questions
Distance, speed and time 2	10 questions
Profit and loss	10 questions
VAT	10 questions
Currency exchange	10 questions
Compound interest	10 questions
Ratio and proportion	10 questions
Income tax	10 questions
Household bills	10 questions
Topic quiz 1	10 questions
Topic quiz 2	10 questions
Total number of questions in Topic 11	110 questions

Topic 12 - Applied Measure

Learning outcomes: Strand U.1, U.2, Strand GT.1, GT.2.b, GT.2.c, GT.2.e

Units of measurement	10 questions
Perimeter and area of squares and rectangles	10 questions
Nets of rectangular solids	10 questions
Surface area of rectangular solids	10 questions
Problem solving	10 questions
Topic quiz	10 questions
Total number of questions in Topic 12	60 questions

Topic 13 - Statistics

Learning outcomes: Strand U.1, U.2, U.5, Strand SP3.a, SP3.b, SP3.c, SP3.d, SP3.e, SP3.f, SP3.g

Types of data	10 questions
Collecting data	10 questions
Frequency tables	10 questions
Line plots	10 questions
Bar charts	10 questions
Pie charts	10 questions
Stem and leaf plots	10 questions
Histograms	10 questions
Line plots	10 questions
Displaying data and misuse of statistics	10 questions
Measures of central tendency (mode and medium)	10 questions
Measures of central tendency (mean)	10 questions
Measure of spread	10 questions
Topic Test 1	10 questions
Topic Test 2	10 questions
Total number of questions in Topic 13	150 questions

Topic 14 - Algebra 2

Learning outcomes: Strand U.1, U.2, U.5, Strand SP3.a, SP3.b, SP3.c, SP3.d, SP3.e, SP3.f, SP3.g

Linear equations 1	10 questions
Linear equations 2	10 questions
Solving equations with brackets	10 questions
Solving word problems	10 questions
Linear equations topic quiz	10 questions
Solving linear inequalities	10 questions
Solving linear inequalities - sign change	10 questions
Inequalities with brackets	10 questions
Graphing inequalities	10 questions
Linear inequalities topic quiz	10 questions
Verifying solutions of simultaneous equations	10 questions
Solving simultaneous equations using algebra	10 questions
Simultaneous equations with graphs	10 questions
Solving word problems using simultaneous equations	10 questions
Simultaneous equations topic quiz	10 questions
Highest common factor and difference of two squares quadratic equations	10 questions
Quadratic trinomials	10 questions
Word problems	10 questions
Quadratic equations topic quiz	10 questions
Total number of questions in Topic 14	190 questions

Topic 15 - Coordinate Geometry

Learning outcomes: Strand U.1, U.2, U.4, U.5, Strand GT.5.a, GT.5.b, GT.5.c

The cartesian plane	10 questions
Midpoint of a line segment	10 questions
Slope of a line	10 questions
Distance between 2 points	10 questions
Equations of a line 1	10 questions
Equations of a line 2	10 questions
Graphing lines	10 questions
Topic quiz	10 questions
Total number of questions in Topic 15	80 questions

3rd Year

Topic 16 - Functions

Learning outcomes: Strand U.1, U.2, U.4, U.5, U.6, Strand AF.7.a, AF.7.b, AF.7.c, AF.7.d

Introduction	10 questions
Function Notation	10 questions
Linear Functions	10 questions
Graphing Linear Functions	10 questions
Quadratic Functions	10 questions
Graphing Quadratic Functions	10 questions
Exponential Functions	10 questions
Intersecting Graphs and Inequalities	10 questions
Problem Solving	10 questions
Topic quiz	10 questions

Total number of questions in Topic 16

100 questions

Topic 17 - Number Patterns 2

Learning outcomes: Strand U.1, U.2, U.6 Strand AF.1.a, AF.1.b, AF.1.c

Linear Patterns	10 questions
Non-Linear Patterns	10 questions
General terms of a quadratic pattern	10 questions
Problem solving	10 questions
Topic quiz	10 questions

Total number of questions in Topic 17

50 questions

Topic 18 - Sets 2

Learning outcomes: Strand U.1, U.2, Strand N.5.c, N.5.e, N.5.d

Commutative and associative properties	10 questions
Three Sets	10 questions
Three Set Problems	10 questions
Exam Type Questions	10 questions

Total number of questions in Topic 18

40 questions

Topic 19 - Probability 2

Learning outcomes: Strand U.1, U.2, Strand SP1.a, SP2.b, SP2.c

Exam Type Questions 1	10 questions
Exam Type Questions 2	10 questions

Total number of questions in Topic 19

20 questions

Topic 20 - Statistics 2

Learning outcomes: Strand U.1, U.2, U.5, Strand SP3.a, SP3.b, SP3.c, SP3.d, SP3.e

Statistics 1 Revision	10 questions
Back-to-back Stem and Leaf Plots	10 questions
Interquartile Range	10 questions
Grouped Frequency Tables	10 questions
Exam Type Questions	10 questions

Total number of questions in Topic 20

50 questions

Topic 21 - Applied Arithmetic 2

Learning outcomes: Strand U.2, U.4, U.6, Strand N.3.b, N.2.c, Strand AF.7.d

Applied Arithmetic 1 Revision	10 questions
Distance Speed Time Graphs	10 questions
Exam Type Questions	10 questions
Total number of questions in Topic 21	30 questions

Topic 22 - Number Systems

Learning outcomes: Strand U.1, U.2, U.5, Strand N.1.b, N.1.c.I, N.2.a, Strand GT.2.c, Strand AF.2.b

Irrational Numbers	10 questions
Laws of Surds - Adding, Subtracting and Reducing	10 questions
Laws of Surds - Multiplying, Dividing and Rationalising Denominator	10 questions
Topic Quiz	10 questions
Total number of questions in Topic 22	40 questions

Topic 23 - Applied Measure 2

Learning outcomes: Strand U.1, U.2, U.6, Strand GT.2.c, GT.2.d

Perimeter and Area of Triangles	10 questions
Perimeter and Area of Circles	10 questions
Perimeter and Area of Combinations	10 questions
Volume of Rectangular Solids	10 questions
Volume and surface area of prisms	10 questions
Volume of Cylinders	10 questions
Volume of spheres and hemispheres	10 questions
Topic Quiz	10 questions
Exam Type Questions	10 questions
Total number of questions in Topic 23	90 questions

Topic 24 - Constructions 2

Learning outcomes: Strand U.1, U.2, Strand GT.3.a

Constructions 10 - 15	10 questions
Total number of questions in Topic 24	10 questions

Topic 25 - Indices and Reciprocals

Learning outcomes: Strand U.2, U.5, U.6, U.13, Strand N.c.1.I, N.1.c.II, N.1.c.III, N.1.f, Strand GT.5.a

Scientific Notation	10 questions
Reciprocals	10 questions
Indices	10 questions
Rules of Indices	10 questions
Topic Quiz	10 questions
Total number of questions in Topic 25	50 questions

Topic 26 - Trigonometry

Learning outcomes: Strand U.1, U.2, U.5, U.6, Strand GT.3.e, GT.4, Strand N.3.b

Pythagoras Theorem	10 questions
Trigonometric Ratios	10 questions
Trigonometric Problem Solving	10 questions
Topic Quiz	10 questions
Total number of questions in Topic 26	40 questions

Topic 27 - Transformational Geometry

Learning outcomes: x

Translations	10 questions
Symmetry	10 questions
Rotations	10 questions
Topic Quiz	10 questions
Total number of questions in Topic 27	40 questions

Topic 28 - Algebra 3

Learning outcomes: Strand U.2, U.5, U.6, U.7, Strand GT.2.e, GT.2.d, GT.3.e, GT.4, Strand AF.2.b, AF.3.a.I, AF.3.a.III, AF.4.c, AF.4.d

Manipulation of Formulae	10 questions
Inequalities	10 questions
Algebraic Fractions	10 questions
Problem Solving	10 questions
Topic Quiz	10 questions
Total number of questions in Topic 28	50 questions

Topic 29 - Coordinate Geometry

Learning outcomes: Strand U.1, U.2, U.5, U.7, Strand GT.5.a, GT.5.b, GT.5.c, Strand AF.4.c

Parallel and Perpendicular Lines	10 questions
Points of Intersection	10 questions
Exam Type Questions	10 questions
Topic Quiz	10 questions
Total number of questions in Topic 29	40 questions

Topic 30 - Coordinate Geometry

Learning outcomes: Strand U.1, U.2, Strand GT.3.a

Vertically Opposite Angles	10 questions
Alternate and Corresponding Angles	10 questions
Triangles	10 questions
Similar Triangles	10 questions
Congruent Triangles	10 questions
Pythagoras Theorem	10 questions
Circles	10 questions
Quadrilaterals	10 questions
Theorems	10 questions
Topic Quiz	10 questions
Total number of questions in Topic 30	100 questions