

## Cambridge IGCSE Mathematics International (0607) Syllabus Breakdown & Weekly Lesson Plan

### Assessment Structure :

- **Paper 1:** Core (non-calculator), 1h, 40 marks
- **Paper 2:** Core (calculator), 1h 30m, 80 marks
- **Paper 3:** Extended (non-calculator), 1h 30m, 80 marks
- **Paper 4:** Extended (calculator), 2h, 120 marks
- **Paper 5:** Investigation (Core/Extended), 1h, 40 marks
- **Paper 6:** Modeling (Core/Extended), 1h 30m, 60 marks

### Assessment Objectives :

- **AO1 Knowledge & Understanding:** 45-55%
- **AO2 Problem Solving & Communication:** 45-55%

### Topic Weightings & Time Allocation (Extended)

Topic Area	Estimated Weighting	Weeks Allocated
<b>Algebra &amp; Functions (Algebra, Functions, Graphs)</b>	30-35%	5 weeks
<b>Geometry &amp; Trigonometry (Geometry, Mensuration, Trigonometry)</b>	25-30%	4 weeks
<b>Number &amp; Sequences</b>	15-18%	2.5 weeks
<b>Statistics &amp; Probability</b>	12-15%	2 weeks
<b>Coordinate Geometry &amp; Vectors</b>	8-10%	1.5 weeks
<b>Investigation &amp; Modeling Skills</b>	Integrated	1 week
<b>Revision &amp; Exam Practice</b>	-	2 weeks

### Detailed 16-Week Lesson Plan

#### WEEK 1-2: NUMBER & ALGEBRA FOUNDATIONS (15-18%)

##### Week 1: Number Operations & Indices (Core & Extended)

- Day 1: Number sets (N, Z, Q, R), bounds, standard form, significant figures
- Day 2: Indices rules, rational exponents, simplifying expressions
- Day 3: Ratio, proportion, percentages (compound interest, reverse percentages)
- Day 4: Past paper practice: Number questions (Paper 3/4)

- Day 5: **Non-calculator focus**: Exact values, irrational numbers
- Day 6: Past paper review: Common rounding and bounds errors

### **Week 2: Sequences, Series & Financial Math**

- Day 1: Arithmetic sequences, nth term, sum of series
- Day 2: Geometric sequences, sum to n terms, infinite series ( $|r| < 1$ )
- Day 3: Financial mathematics (simple/compound interest, depreciation)
- Day 4: Past paper practice: Sequence and financial problems
- Day 5: **Calculator skills**: Financial functions, verifying series sums
- Day 6: Past paper review: Distinguishing sequence types

## **WEEK 3-7: ALGEBRA & FUNCTIONS (30-35%)**

### **Week 3: Algebraic Manipulation & Equations**

- Day 1: Expanding, factorizing (quadratics, cubics), algebraic fractions
- Day 2: Simultaneous equations (linear & quadratic), elimination/substitution
- Day 3: Linear inequalities, quadratic inequalities, graphical solutions
- Day 4: Past paper practice: Algebra and equation solving (Paper 3)
- Day 5: **Non-calculator**: Completing square, exact solutions
- Day 6: Past paper review: Algebraic fraction errors

### **Week 4: Functions & Graphs (Core Concepts)**

- Day 1: Function notation, domain, range, composite functions
- Day 2: Inverse functions, modulus functions, graphing  $y = |f(x)|$
- Day 3: Graphing linear, quadratic, cubic functions, transformations
- Day 4: Past paper practice: Functions and graph interpretation
- Day 5: **Graphical analysis**: Sketching without calculator
- Day 6: Past paper review: Domain/range identification mistakes

### **Week 5: Advanced Functions & Graphing**

- Day 1: Exponential and logarithmic functions, graphing
- Day 2: Trigonometric functions (sin, cos, tan) and their graphs

- Day 3: Transformations (translation, reflection, stretch, enlargement)
- Day 4: Past paper practice: Combined transformation problems
- Day 5: **Calculator focus:** Using graphing to verify transformations
- Day 6: Past paper review: Transformation description errors

### **Week 6: Functions & Modeling Applications**

- Day 1: Real-life modeling with functions (exponential growth, periodic)
- Day 2: Intersection of graphs, solving  $f(x)=g(x)$  graphically
- Day 3: Gradients of curves, tangents, rates of change
- Day 4: Past paper practice: Modeling and intersection problems
- Day 5: **Problem-solving:** Converting word problems to functions
- Day 6: Past paper review: Modeling interpretation errors

### **Week 7: Algebra Consolidation & Assessment**

- Day 1: Mixed algebra problems (all types)
- Day 2: **Full Paper 3 mock** (non-calculator, 1h 30m)
- Day 3: **Full Paper 4 mock** (calculator, 2h)
- Day 4: Detailed review of mocks, identify weak areas
- Day 5: Targeted revision on weakest algebra topics
- Day 6: Formula and technique consolidation

## **WEEK 8-11: GEOMETRY & TRIGONOMETRY (25-30%)**

### **Week 8: Geometry & Mensuration**

- Day 1: Properties of triangles, quadrilaterals, polygons, symmetry
- Day 2: Circle theorems (angles, tangents, chords, cyclic quadrilaterals)
- Day 3: Perimeter, area, surface area, volume (prisms, pyramids, spheres)
- Day 4: Past paper practice: Geometry proof and calculation
- Day 5: **Practical geometry:** Using instruments accurately
- Day 6: Past paper review: Circle theorem application errors

### **Week 9: Trigonometry - Core Concepts**

- Day 1: Right-angled triangles, SOHCAHTOA, exact values ( $30^\circ$ ,  $45^\circ$ ,  $60^\circ$ )
- Day 2: Sine rule, cosine rule, area formula ( $\frac{1}{2}ab\sin C$ )
- Day 3: 3D trigonometry, angles between lines and planes
- Day 4: Past paper practice: Trigonometry mixed problems
- Day 5: **Non-calculator trig**: Using exact values and identities
- Day 6: Past paper review: 3D trigonometry visualization

#### **Week 10: Transformations & Vectors**

- Day 1: Translations, reflections, rotations, enlargements (including negative scale factors)
- Day 2: Vector notation, addition, subtraction, scalar multiplication
- Day 3: Magnitude of vectors, position vectors, vector geometry
- Day 4: Past paper practice: Combined transformation questions
- Day 5: **Vectors in geometry**: Proving parallel/collinear points
- Day 6: Past paper review: Vector magnitude calculation errors

#### **Week 11: Advanced Trigonometry & Geometry**

- Day 1: Bearings, scale drawings, similarity, congruence
- Day 2: Advanced circle problems, angle bisectors, perpendicular bisectors
- Day 3: Geometric modeling and problem-solving
- Day 4: Past paper practice: Extended geometry problems
- Day 5: **Calculator focus**: Complex mensuration calculations
- Day 6: Past paper review: Common geometry misconceptions

### **WEEK 12-13: STATISTICS & PROBABILITY (12-15%)**

#### **Week 12: Statistics**

- Day 1: Data collection, representation (histograms, cumulative frequency, box plots)
- Day 2: Measures of central tendency and dispersion (mean, median, mode, IQR, standard deviation)
- Day 3: Scatter diagrams, correlation, line of best fit
- Day 4: Past paper practice: Statistical analysis and interpretation

- Day 5: **Calculator skills:** Statistical functions, standard deviation
- Day 6: Past paper review: Interpreting statistical diagrams

### **Week 13: Probability**

- Day 1: Basic probability, relative frequency, expected outcomes
  - Day 2: Combined events (addition & multiplication rules), tree diagrams
  - Day 3: Conditional probability, Venn diagrams
  - Day 4: Past paper practice: Probability extended questions
  - Day 5: **Problem-solving:** Real-life probability scenarios
  - Day 6: Past paper review: Probability tree diagram errors
- 

## **WEEK 14: INVESTIGATION & MODELING SKILLS**

### **Week 14: Paper 5 & 6 Preparation**

- Day 1: Investigation techniques (pattern recognition, hypothesis testing)
  - Day 2: Modeling real-world situations (functions, graphs, optimization)
  - Day 3: Writing mathematical reports, justifying conclusions
  - Day 4: **Paper 5 practice:** Full investigation under timed conditions
  - Day 5: **Paper 6 practice:** Full modeling problem under timed conditions
  - Day 6: Review of investigation/modeling criteria and mark schemes
- 

## **WEEK 15-16: REVISION & FINAL PREPARATION**

### **Week 15: Mock Exams & Targeted Revision**

- Day 1: **Full Paper 4 mock** (Extended calculator, 2h)
- Day 2: **Full Paper 5 mock** (Investigation, 1h)
- Day 3: **Full Paper 6 mock** (Modeling, 1h 30m)
- Day 4: Detailed analysis of mocks, identify gaps
- Day 5: Targeted revision on weakest topics
- Day 6: Mixed past paper practice by topic

### **Week 16: Final Preparation**

- Day 1: Command words workshop (calculate, explain, justify, show)
  - Day 2: Calculator checklist & non-calculator strategy session
  - Day 3: Time management: 1.5 min per mark for calculator papers
  - Day 4: **Final Paper 3 & 4 mocks** (exam conditions)
  - Day 5: Review of final mocks, confidence building
  - Day 6: Exam day preparation, last-minute Q&A
- 

### **Past Paper Integration Strategy**

1. **Topic-wise practice:** After each sub-topic, assign 3-5 questions from past papers
2. **Weekly mixed practice:** Every week includes one full paper section
3. **Progressive difficulty:** Start with Core (P1/P2) then Extended (P3/P4)
4. **Investigation/Modeling:** Dedicate one day per week to Papers 5 & 6 skills
5. **Cumulative testing:** Every 2 weeks, review questions from all topics covered

### **Key Resources:**

- **Syllabus:** Official 0607 syllabus for 2025-2027
- **Past papers:** 2019-2024 series from Cambridge International
- **Formula lists:** Provided in exam (see syllabus Appendix)
- **Calculator:** Graphics calculator required for Papers 2, 4, and 6

### **Exam Tips:**

- **Graphics calculator:** Master all functions early (graphing, statistics, solving)
- **Paper 5 & 6:** These are unique to 0607 - practice writing mathematical justifications
- **Modeling:** Focus on translating real-world scenarios to mathematics
- **Investigation:** Look for patterns, make conjectures, test hypotheses