**IGCSE Mathematics 0580 Intensive Lesson Plan (16-Week Framework)**

**Total Duration**: 16 weeks (can be compressed to 12 weeks with 5-6 hours daily)
**Target**: Extended tier (Papers 2 & 4) - Grades A*-E
**Weekly Structure**: 4-5 theory lessons + 1 skills practice + 1 past paper review

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**Topic Weightings & Time Allocation**

| Topic Area | Weighting (Extended) | Weeks Allocated |
|---|---|---|
| Algebra & Graphs | 35-40% | 5 weeks |
| Shape & Space (Geometry, Mensuration, Trig) | 30-35% | 4 weeks |
| Number | 15-20% | 2.5 weeks |
| Probability & Statistics | 10-15% | 2 weeks |
| Revision & Mock Exams | - | 2.5 weeks |

**WEEK 1-2: NUMBER SYSTEMS & CALCULATION SKILLS**

**Week 1: Number Operations & Indices**

- Day 1: Place value, fractions, decimals, percentages, ratio & proportion
- Day 2: Standard form, upper/lower bounds, significant figures
- Day 3: Indices rules, simplifying expressions
- Day 4: **Calculator skills** (Paper 4) + **Non-calculator techniques** (Paper 2)
- Day 5: Past paper practice: Number questions (Paper 2 & 4)
- Day 6: **Skills workshop**: Efficient calculation methods, estimation, rounding

**Week 2: Financial Mathematics & Number Applications**

- Day 1: Simple & compound interest, depreciation
- Day 2: Reverse percentages, profit/loss, currency conversion
- Day 3: Time, distance, speed, direct & inverse proportion
- Day 4: Past paper practice: Applied number problems
- Day 5: **Calculator mastery**: Using scientific calculator functions effectively
- Day 6: Past paper review: Common number pitfalls

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**WEEK 3-7: ALGEBRA & GRAPHS (35-40% of syllabus)**

**Week 3: Algebraic Manipulation**

- Day 1: Expanding brackets, factorizing (linear & quadratic)
- Day 2: Algebraic fractions, simplifying expressions
- Day 3: Rearranging formulas, solving linear equations
- Day 4: Past paper practice: Algebraic techniques (Paper 2)
- Day 5: **Skills workshop**: Factorizing quadratics (a=1 and a>1)
- Day 6: Past paper review: Algebraic errors & misconceptions

**Week 4: Equations & Inequalities**

- Day 1: Solving quadratic equations (factorizing, formula, completing square)
- Day 2: Linear inequalities, quadratic inequalities
- Day 3: Simultaneous equations (linear & linear/quadratic)
- Day 4: Past paper practice: Equation-solving extended questions
- Day 5: **Non-calculator focus**: Solving without technology
- Day 6: Past paper review: Multi-step equation problems

**Week 5: Functions & Graphs**

- Day 1: Function notation, domain/range, composite & inverse functions
- Day 2: Linear graphs, gradients, intercepts, parallel/perpendicular lines
- Day 3: Quadratic graphs, completing tables, sketching curves
- Day 4: Past paper practice: Graph interpretation and plotting
- Day 5: **Graph skills**: Using calculators for curve analysis
- Day 6: Past paper review: Finding maxima/minima from graphs

**Week 6: Advanced Algebra & Sequences**

- Day 1: Exponential & reciprocal graphs, transformations (f(x)+a, f(x+a), af(x))
- Day 2: Arithmetic & geometric sequences, nth term, sum of series
- Day 3: Linear programming (inequalities, feasible region, optimization)

- Day 4: Past paper practice: Mixed algebra & sequences
- Day 5: **Problem-solving**: Modeling real-world scenarios with algebra
- Day 6: **Full Paper 2 practice** (non-calculator, 2 hours)

**Week 7: Coordinate Geometry**

- Day 1: Distance formula, midpoint, gradient between two points
- Day 2: Equation of a line (y=mx+c), finding equations from points
- Day 3: Parallel & perpendicular lines, solving coordinate problems
- Day 4: Past paper practice: Coordinate geometry extended questions
- Day 5: **Calculator techniques**: Verifying algebraic solutions
- Day 6: Past paper review: Common coordinate geometry mistakes

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**WEEK 8-11: SHAPE & SPACE (30-35%)**

**Week 8: Geometry & Mensuration Fundamentals**

- Day 1: Angles (parallel lines, polygons, bearings)
- Day 2: Circle theorems (tangents, chords, cyclic quadrilaterals)
- Day 3: Area & perimeter of 2D shapes (triangles, quadrilaterals, circles)
- Day 4: Past paper practice: Geometry proofs & angle calculations
- Day 5: **Skills workshop**: Using geometrical instruments accurately
- Day 6: Past paper review: Geometry problem-solving strategies

**Week 9: 3D Geometry & Volume**

- Day 1: Surface area & volume of prisms, cylinders, pyramids, cones, spheres
- Day 2: Conversion between units, density, mass, volume relationships
- Day 3: Plans & elevations, nets of 3D shapes
- Day 4: Past paper practice: Mensuration word problems
- Day 5: **Calculator focus**: Complex volume calculations
- Day 6: Past paper review: Common mensuration errors

**Week 10: Trigonometry**

- Day 1: Right-angled triangles (SOHCAHTOA), finding missing sides/angles
- Day 2: Exact trig values (30°, 45°, 60°), 3D trigonometry
- Day 3: Sine rule, cosine rule, area of triangle (½absinC)
- Day 4: Past paper practice: Trigonometry extended questions
- Day 5: **Non-calculator trig**: Using exact values and problem-solving
- Day 6: Past paper review: 3D trigonometry applications

**Week 11: Vectors & Transformations**

- Day 1: Vector notation, magnitude, direction, addition/subtraction
- Day 2: Position vectors, vector geometry (parallel, collinear points)
- Day 3: Transformations (reflection, rotation, translation, enlargement)
- Day 4: Past paper practice: Vector & transformation problems
- Day 5: **Calculator verification**: Using technology to check vector calculations
- Day 6: **Full Paper 4 practice** (calculator, 2 hours)

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**WEEK 12-13: PROBABILITY & STATISTICS (10-15%)**

**Week 12: Probability**

- Day 1: Basic probability, sample space diagrams, tree diagrams
- Day 2: Combined events, independent/dependent probability
- Day 3: Conditional probability, Venn diagrams
- Day 4: Past paper practice: Probability extended questions
- Day 5: **Skills workshop**: Drawing accurate tree diagrams
- Day 6: Past paper review: Probability misconceptions

**Week 13: Statistics**

- Day 1: Mean, median, mode, range, quartiles, interquartile range
- Day 2: Frequency tables, grouped data, estimated mean

- Day 3: Cumulative frequency graphs, box plots, histograms
- Day 4: Past paper practice: Statistical calculations & interpretations
- Day 5: **Calculator focus**: Statistical functions on scientific calculators
- Day 6: Past paper review: Drawing and interpreting statistical diagrams

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**WEEK 14: CONSOLIDATION & MIXED PRACTICE**

**Week 14: Mixed Topic Review**

- Day 1: Algebra & Number mixed problems
- Day 2: Shape & Space mixed problems
- Day 3: Probability & Statistics mixed problems
- Day 4: **Full Paper 2 mock** (non-calculator) + marking review
- Day 5: **Full Paper 4 mock** (calculator) + marking review
- Day 6: Error analysis: Identify personal weak areas

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**WEEK 15-16: INTENSIVE PAST PAPER PRACTICE & REVISION**

**Week 15: Targeted Revision & Exam Technique**

- Day 1: Command words workshop (calculate, show, prove, explain)
- Day 2: Formula memorization & derivation session
- Day 3: Graph skills masterclass (plotting, gradients, areas under curves)
- Day 4: Time management: 1.2 min per mark for Paper 4, 1 min per mark for Paper 2
- Day 5: **Mixed past paper booklet**: 10 questions from each topic
- Day 6: Review of all common misconceptions

**Week 16: Final Preparation**

- Day 1: **Final Paper 2 mock** (full exam conditions)
- Day 2: **Final Paper 4 mock** (full exam conditions)
- Day 3: Detailed review of both mocks with mark schemes
- Day 4: Focus on weakest topics identified from mocks
- Day 5: Calculator checklist & non-calculator strategy session

- Day 6: Light review, confidence building, exam day preparation

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## Past Paper Integration Strategy

1. **Daily practice**: 3-5 questions after each sub-topic
2. **Weekly full paper sections**: Every Saturday dedicated to timed practice
3. **Calculator vs Non-calculator**: Alternate practice between Paper 2 and Paper 4 style
4. **Topic booklets**: Create compilation questions from 2019-2024 past papers
5. **Cumulative testing**: Bi-weekly tests covering all topics taught to date

**Key Resources**: Cambridge official past papers, SaveMyExams topic questions, DrFrostMaths for interactive practice.