

Daffodil Grammar School for Girls

Curriculum Plan - Mathematics

Key Stage 3 and Key Stage 4 Scheme of Work

Key stage / year groups KS3-KS4 (Years 7-11)	Time allocation 5 x 50-minute periods weekly in Years 7-11.	Delivery model Discrete Mathematics lessons covering fluency, reasoning, problem-solving and GCSE preparation.	Grouping / pathway KS3 mixed ability; KS4 grouping informed by tier pathway, assessment data and pupil need.
Curriculum coverage Final subject scheme of work for the stated key stage(s).	Assessment cycle Regular formative checks, summative assessment and targeted intervention.	Review cycle Annual curriculum review, supported by termly assessment analysis.	Version 1.2
Intent Clear subject purpose with ambitious knowledge, skills, literacy and character development.	Implementation Cumulative sequencing across the key stage(s), with deliberate retrieval and careful modelling.	Assessment Response Regular formative checks, summative assessments and question-level analysis to guide intervention.	

1. Curriculum intent

Mathematics at Daffodil Grammar School for Girls is designed to help pupils build powerful knowledge, disciplined habits of thinking and confidence as independent learners.

- Become fluent in the fundamentals of mathematics, developing conceptual understanding and rapid, accurate recall.
- Develop reasoning by following lines of enquiry, conjecturing relationships and proving using mathematical language.
- Solve routine and non-routine problems by breaking them into smaller steps and persevering.
- Prepare thoroughly for GCSE Mathematics (9-1), further study and quantitative subjects.
- See mathematics as coherent and valuable, including Islamic contexts such as fairness, proportion, charity and financial literacy.
- Develop resilience and a growth mindset, seeing mistakes as part of learning.

2. Curriculum architecture and sequencing principles

Curriculum design principle	What this looks like in practice
Cumulative knowledge	Core ideas are revisited across years so pupils build secure schema rather than isolated topic knowledge.
Explicit teaching	Teachers model expert thinking, subject vocabulary, worked examples and high-quality responses before pupils practise independently.
Retrieval and retention	Do Now tasks, quizzes and review questions deliberately revisit prior learning to strengthen long-term memory.
Challenge with support	Pupils receive scaffolds, examples and modelling without reducing ambition; stretch tasks extend high attainers.
Assessment-led intervention	Assessment outcomes are analysed to identify misconceptions, plan re-teaching and target support.

Core principles across KS3

- Study and revisit Number, Algebra, Ratio/Proportion, Geometry/Measures, Statistics and Probability.
- Build strong number fluency and algebraic foundations for GCSE success.
- Practise both non-calculator and calculator skills regularly.
- Use investigations, modelling and non-routine problems in each year.
- Balance procedural fluency with conceptual explanation and mathematical proof.

3. KS3 scheme of work

Year 7 - Securing foundations

Overall intent: Bridge from KS2; secure number basics and introduce formal algebra with strong emphasis on reasoning.

Term	Main topics	Key knowledge and skills	Typical assessments
Autumn 1	Number and place value; four operations	Place value in integers and decimals; written methods; mental strategies; rounding and estimation.	Baseline assessment; place value/four operations test.
Autumn 2	Fractions, decimals and percentages	Equivalent fractions, simplifying, fraction of an amount, adding/subtracting fractions, FDP conversions.	FDP test: fluency and word problems.
Spring 1	Introduction to algebra	Algebraic notation; simplify expressions; expand single brackets; form and evaluate formulae.	Algebra basics test; short problem-solving task.
Spring 2	Geometry: angles and 2D shapes; perimeter and area	Angle facts; triangle/quadrilateral properties; perimeter and area of rectangles, triangles and compound shapes.	Geometry test.

Term	Main topics	Key knowledge and skills	Typical assessments
Summer 1	Integers, directed number and sequences	Negative numbers in context; arithmetic with negatives; term-to-term sequences; simple nth term.	Number and sequences test.
Summer 2	Statistics and probability intro	Bar charts, pie charts, line graphs; mean, median, mode, range; simple probability.	End-of-year exam.

Year 8 - Deepening understanding

Overall intent: Extend number and algebra, introduce more complex geometry and consolidate ratio/proportion.

Term	Main topics	Key knowledge and skills	Typical assessments
Autumn 1	Powers, Roots & Standard Index Form	Squares, cubes, roots; index laws for integer powers; introduction to standard form.	Indices and standard form test.
Autumn 2	Equations, Inequalities & Sequences	One-step and two-step equations; inequalities on number lines; more complex linear sequences.	Algebra test.
Spring 1	Ratio and proportion; percentages in context	Scale factors, maps, recipes; percentage increase/decrease; introductory reverse percentages.	Ratio and percentages assessment.
Spring 2	Transformations and construction	Reflections, rotations, translations, enlargement; perpendicular/angle bisectors.	Geometry test.
Summer 1	Area, surface area and volume	Area of parallelograms/trapezia; surface area/volume of cuboids and prisms; units and conversions.	Shapes and measures test.
Summer 2	Statistics and probability	Two-way tables, time series graphs, simple combined events and sample spaces.	End-of-year exam.

Year 9 - Bridging to GCSE

Overall intent: Consolidate KS3 knowledge, introduce GCSE-style topics and identify/close gaps.

Term	Main topics	Key knowledge and skills	Typical assessments
Autumn 1	Algebra: expressions, equations and graphs	Factorisation; form/solve equations; graphical simultaneous equations intro; linear graphs, gradient and intercept.	Algebra and graphs test.

Term	Main topics	Key knowledge and skills	Typical assessments
Autumn 2	Number and proportion	Standard form problems; introductory surds; speed, density, pressure and unit conversions.	Number and proportion test.
Spring 1	Angles, polygons and Pythagoras	Parallel line angle rules; interior/exterior angles; Pythagoras in 2D.	Geometry test.
Spring 2	Quadratics and further graphs	Expand double brackets; factorise simple quadratics; plot quadratic and recognise basic graphs.	Quadratics test; mini GCSE non-calculator paper.
Summer 1	Probability and statistics: GCSE-style	Frequency trees, Venn diagrams intro; averages from grouped data; comparing distributions.	Statistics and probability test.
Summer 2	GCSE bridging and mixed problem-solving	Mixed-topic reasoning tasks and GCSE-style questions across strands.	End-of-Year 9 GCSE-style exam.

4. KS4 scheme of work

Year 10 - Complete coverage of core content

Overall intent: Teach all major strands with plenty of exam-style practice.

Term	Main focus	Detail	Typical assessments
Autumn 1	Number and algebra foundations	FDP at GCSE depth; indices, powers, roots, standard form; expanding, factorising and rearranging formulae.	GCSE-style topic test.
Autumn 2	Equations, inequalities and graphs	Linear and simultaneous equations; inequalities; linear functions, parallel and perpendicular lines.	Calculator and non-calculator test.
Spring 1	Ratio, proportion and rates of change	Direct/inverse proportion; compound measures; percentages, growth and decay.	Ratio/proportion GCSE-style assessment.
Spring 2	Geometry: congruence, similarity, trigonometry and advanced geometry	Congruent triangles; similar shapes; Pythagoras and trigonometry; perimeter, area, volume and surface area; Higher-tier extension including circle theorems, vectors and geometric proof.	Geometry and trigonometry progress test, including advanced geometry for Higher-tier pupils.

Term	Main focus	Detail	Typical assessments
Summer 1	Quadratics, sequences and graphs	Expand/factorise/solve quadratics; quadratic and special sequences; quadratic, reciprocal and exponential graphs for Higher.	Algebra test.
Summer 2	Statistics and probability	Histograms, cumulative frequency, box plots, averages and spread; tree diagrams, Venn diagrams, set notation, conditional probability and advanced probability problems for Higher tier.	Year 10 mixed exam with statistics and probability strand analysis.

Year 11 - Consolidation, depth and exam technique

Overall intent: Fill gaps, deepen understanding and focus on GCSE-style problem-solving.

Term	Main focus	Detail	Typical assessments
Autumn 1	Review and PPEs	Diagnostics and revision of Year 10 content; full GCSE-style mock set.	PPEs: 3 papers with QLA.
Autumn 2	Targeted re-teach and extension	Targeted re-teach and extension in weaker areas, including algebraic fractions, complex ratio, circle theorems, vectors, advanced probability, conditional probability and non-right-angled trigonometry for Higher tier.	Topic tests and mini-mocks focused on identified weaknesses.
Spring 1	Exam technique and mixed practice	Timed mixed-topic exam questions; method marks, checking and differentiated Foundation/Higher tasks.	Practice exams with feedback.
Spring 2	Final revision programme	Personalised tracking, walking-talking mocks, past papers, common traps and calculator skills.	Final targeted internal mocks.
Summer 1	Public examinations	GCSE Mathematics exams as timetabled.	External GCSE papers.

5. Assessment, feedback and intervention

Area	School expectation
KS3 assessment	At least one significant summative assessment per term, supported by low-stakes retrieval and teacher assessment of key pieces. End-of-year examinations are cumulative and increasingly GCSE-style by Year 9.

Area	School expectation
KS4 assessment	Half-termly exam-style assessment, Year 10 internal exams and Year 11 PPEs. Question-level analysis informs re-teaching, intervention and homework priorities.
Feedback response	Pupils complete improvement tasks after assessment, including corrections, refining, misconception practice and targeted retrieval.
Intervention	Support is planned from assessment evidence: small-group intervention, guided practice, targeted homework and stretch pathways.

6. Inclusion, SEND and EAL

- Scaffolds such as sentence starters, writing frames, worked examples, visual prompts and chunked tasks are used where appropriate.
- Questioning and tasks are tiered so all pupils can access the core learning while high attainers are stretched.
- Vocabulary is explicitly taught, modelled and revisited; key words and command words are highlighted in lessons and assessments.
- Pupils with SEND receive appropriate support without diluting curriculum ambition.
- EAL pupils are supported through glossaries, visual models, paired talk, model answers and explicit Standard English / academic language.

7. Subject-specific enrichment, homework and wider links

Tier decisions

Foundation/Higher decisions are based on prior attainment, mock performance, teacher judgement, confidence and maximising strong-pass outcomes.

Fluency, reasoning and problem-solving

Do Now retrieval, times tables and mental arithmetic; explain why/convince me tasks; spot-the-mistake and always/sometimes/never; multi-step problems in real-life and mathematical contexts.

ICT and enrichment

Graphing tools/dynamic geometry where available; links to science, geography, business and ICT; UKMT-style problems, in-school challenges and careers in engineering, finance, data, medicine and technology.

Homework and independent study

- Weekly homework consolidates current learning and includes spaced retrieval from previous units.
- KS4 homework includes exam-style questions, structured revision and independent improvement tasks.
- Pupils are encouraged to maintain organised revision materials, including key knowledge, worked examples and reflections on feedback.

8. Quality assurance checklist

QA focus	Evidence to review	Frequency
Curriculum coverage	Schemes of work, lesson sequences, assessment calendar and pupil books.	Termly
Standards of work	Book looks focused on presentation, challenge, feedback response and progression over time.	Half-termly
Assessment quality	Moderation of assessments, mark schemes and question-level analysis.	After each assessment window
Inclusion and support	SEND/EAL adaptations, intervention records and pupil progress evidence.	Termly
Teacher development	Planning review, lesson visits, CPD priorities and shared exemplars.	Ongoing