Maths Foundation GCSE

Students sitting GCSE Foundation can be awarded grades 1 - 5. The exam includes some 'crossover' questions which also appear on the Higher tier. Mathematics is a skill based subject, and therefore the most effective way to revise is by practicing questions. The table below lists our recommended sources to find questions, and offers some guidance on how to use each one.

Name of Source, location or link	Description	Guidance for use
Sparx revision list	A full list of the topics that also appear on the Higher paper and are therefore aimed at grades 4-5.	Students can RAG rate each topic to show their strengths and areas to improve, and then use the Sparx codes to do independent practice of topics.
Sparx revision list	A full list of topics that only appear on the Foundation papers and are therefore aimed at grades 1-5.	Students can RAG rate each topic to show their strengths and areas to improve, and then use the Sparx codes to do independent practice of topics.
Sparx Maths	An online question generator which will mark students' answers for them.	Students are very familiar with using Sparx for homework from years 7-10. In year 11 they can search the codes from the revision lists in the independent learning tool and Sparx will give them questions to practice, offer videos for help if needed, and will mark their answers right or wrong immediately.
Doctor Frost Learning	An online question generator which will mark students' answers for them.	This is our homework tool for year 11. Students can also do independent learning by searching for a topic, or can choose to do a past paper online, and their answers will be marked immediately.
Maths Genie	Video explanations, practice questions & exam question booklets organised by grade, solutions provided.	Students should concentrate on topics from grades 1 - 5. These questions are best done on paper and can be self marked using the solutions.

Name of Source, location or link	Description	Guidance for use
Method Selection by Maths Genie	One page tests organised by grade on mixed topics for students to practice selecting the correct methods. Do the Foundation and Grade 5 mini tests	These questions are best done on paper and can be self marked using the solutions. There are 5 available at each grade range so could be saved for the weeks leading up to the exams.
Corbett Maths	Video explanations, practice questions, exam questions and solutions provided.	These questions are best done on paper and can be self marked using the solutions. We suggest using Control F to find topics quickly.
First Class Maths	Video explanations, practice questions & exam questions organised by grade.	These questions are best done on paper and can be self marked using the solutions. There are also percentages indicating how often each topic appears in the exam.
Past Papers	Links to past papers and markschemes.	These questions are best done on paper and can be self marked using the markschemes. You will be provided with some full printed papers over the course of year 11, but this link gives you access to lots more.
GCSE Foundation Sheet	The formula sheet that will be provided with your exam paper.	Refer to this when doing homework, revision and past papers.

Number

Topic	Topic code	R	A	G
Fractions	U224, U538, U793			
Factors, multiples and primes	U739, U250			
Percentage change	U671, U332, U988			
Standard form	U330, U534, U264, U290			
Error intervals	U657			

Algebra

Topic	Topic code	R	A	G
Linear equations	U325, U870, U599			
Linear inequalities	U759, U738, U145, U337			
Index laws	U662			
Linear simultaneous equations	U760, U757, U836, U137			
Linear graphs and coordinates	U315, U669, U477, U848, U377			
Quadratic graphs and equations	U989, U667, U228, U601			

Ratio and proportion

Topic	Topic code	R	A	G
Ratio	U687, U753, U176, U577, U921, U865			
Speed	U151			
Density and pressure	U910, U527			
Proportion	U721, U357, U610			

Geometry

Topic	Topic code	R	A	G
Area	U226, U343, U950			
Volume	U786, U174, U915			
Angles	U655, U826, U329, U427			
Pythagoras' theorem	U385			
Trigonometry	U605, U283, U545			
Transformations	U196, U799, U696, U519, U766			

Probability

Topic	Topic code	R	A	G
Calculating probabilities	U408, U510, U683, U580			
Expected outcomes	U166			
Tree diagrams	U558, U729			
Set notation	U748, U296			

Statistics

Topic	Topic code	R	A	G
Averages	U717, U569			
Averages with grouped data	U877			
Sampling	U162			
Scatter graphs	U199, U277, U128			
Frequency polygons	U840			

Number

Topic	Topic code	R	A	G
Ordering positive integers	U600			
Ordering decimals	U435			
Ordering negative numbers	U947			
Adding and subtracting positive integers	U417			
Multiplying and dividing positive integers	U127, U453			
Adding and subtracting negative numbers	U742			
Multiplying and dividing negative numbers	U548			
Adding and subtracting decimals	U478			
Multiplying and dividing with place value	U735			
Multiplying and dividing with decimals	U293, U868			
Order of operations	U976			
Prime numbers, prime factorisation	U236, U739			
Factors, multiples, HCF and LCM	U211, U751, U529			
Powers and roots	U851			
Using standard form	U330, U534			
Calculating with standard form	U264, U290, U161			
Equivalent fractions and simplifying fractions	U704, U646			
Mixed numbers and improper fractions	U692			
Ordering fractions	U746			
Addition and subtraction of fractions	U736, U793			
Multiplication and division of fractions	U475, U544			
Converting and ordering fractions, decimals and percentages	U888, U594			
Fractions of amounts	U881, U916			
Percentages of amounts	U554, U349			
Percentage change	U773, U671			
Reverse percentages	U286, U278			
Simple interest	U533			
Rounding	U480, U298			
Rounding to significant figures	U731, U965			
Estimating answers	U225			
Value for money	M681			

Algebra

Topic	Topic code	R	A	G
Algebraic expressions	U613			
Collecting like terms	U105			
Substitution	U201, U585, U144			
Expanding brackets	U179, U768			
Factorising expressions	U365			
Index laws	U235, U694, U662, U103			
Changing the subject	U556			
Coordinates	U789, U889			
Midpoints	U933			
Plotting straight line graphs	U741			
Equations of straight line graphs	U315, U669			
Parallel lines	U377			
Distance-time graphs	U403, U914, U462, U966			
Quadratic graphs	U989, U667			
Linear equations	U755, U325, U870, U505, U599			
Quadratic expressions and equations	U178, U228			
Linear sequences	U213, U530, U498, U978			
Other sequences	U958, U680			

Ratio and proportion

Topic	Topic code	R	A	G
Simplifying ratios	U687			
Sharing amounts in a ratio	U753, U577			
Converting between ratios, fractions and percentages	U176			
Direct proportion	U721, U640			
Inverse proportion	U357, U364			
Proportion graphs	U238			
Units of measure: Length, Mass and Capacity	U102, U388			
Units of measure: Time	U902			
Units of measure: Area	U248			
Currency conversion	U610			
Conversion graphs	U652, U638, U862			
Compound units: Speed	U151			

Geometry

Topic	Topic code	R	A	G
Properties of 2D shapes	U121, U849			
Properties of 3D shapes	U719			
Nets of 3D shapes	U761			
Angles: Measuring, Drawing and Estimating	U447			
Angle on a line and about a point	U390			
Vertically opposite angles	U730			
Angles on parallel lines	U826			
Angles in a triangle	U628			
Combining angle facts	U655			
Angles in a quadrilateral	U732, U329			
Angles in polygons	U427			
Bearings	U525, U107			
Translations	U196			
Reflections	U799			
Enlargements	U519			
Rotations	U696			
Congruence	U790, U866			
Area and perimeter of simple shapes	U993, U970, U351, U226			
Area of triangles, parallelograms and trapeziums	U945, U575, U424, U265, U343			
Circles	U767			
Circumference	U604, U221			
Circle area	U950, U373			
Surface area	U929, U259, U871			
Volume of cuboids	U786			
Volume of prisms and cylinders	U174, U915			
Similar shapes	U551, U578			
Scale diagrams	U257			

Probability

Topic	Topic code	R	A	G
Probability scale	U803			
Probability of single events	U408, U510, U683			
Experimental probability	U580			
Expected outcomes	U166			
Listing elements in a set	U748, U296			
Probability from Venn diagrams	U476			
Frequency trees	U280			
Sample space diagrams	U104			
Tree diagrams	U558, U729			

Statistics

Topic	Topic code	R	A	G
Collecting data, frequency tables	U322, U120			
Two-way tables	U981			
Bar charts	U363, U557			
Pictograms	U506			
Pie charts	U508, U172			
Stem and leaf diagrams	U200, U909			
Mode	U260			
Mean	U291			
Median	U456			
Range	U526			
Choosing averages	U717			
Scatter graphs	U199, U277, U128			

Perimeter, area and volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:
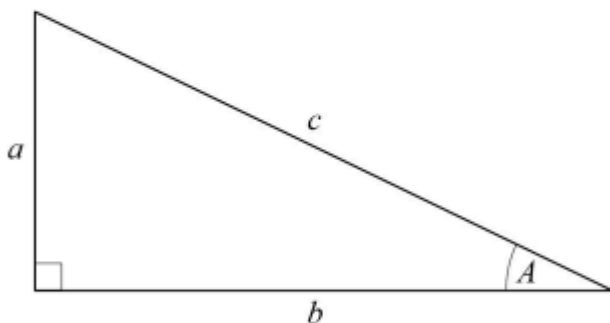
$$\text{Area of a trapezium} = \frac{1}{2}(a+b)h$$

Volume of a prism = area of cross section × length

Where r is the radius and d is the diameter:

$$\text{Circumference of a circle} = 2\pi r = \pi d$$

$$\text{Area of a circle} = \pi r^2$$

Pythagoras' Theorem and Trigonometry

In any right-angled triangle where a, b and c are the length of the sides and c is the hypotenuse:

$$a^2 + b^2 = c^2$$

In any right-angled triangle ABC where a, b and c are the length of the sides and c is the hypotenuse:

$$\sin A = \frac{a}{c} \qquad \cos A = \frac{b}{c} \qquad \tan A = \frac{a}{b}$$

Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

$$\text{Total accrued} = P\left(1 + \frac{r}{100}\right)^n$$

Probability

Where $P(A)$ is the probability of outcome A and $P(B)$ is the probability of outcome B:

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$