Foundation Tier: Content for Paper 1F, 2F and 3F

All links are to www.mathsgenie.co.uk except for those shaded which are from www.corbetmaths.com
Answers to the questions can be found on the same websites.

Number

Topic & Skill		Paper 1	Paper 2	Paper 3	Videos	Questions
Arithmetic	Money	Y	Y		calculation problems	Grade 2 calculation problems
	Four Operations			Y		
	Negative number	Y	Y	Y	negative numbers	Grade 1 negative numbers
	Order fractions, decimals, percentages	Y			FDP	Grade 2 fractions decimals and percentages
	Fraction of an amount	Y		Y	fraction of amount	Grade 2 fractions of an amount
	One amount as a fraction of another			Y	writing fractions	Grade 2 writing simplifying and ordering fractions
	Fraction arithmetic	Y	Y		fractions	Grade 3 fractions
	Equivalent fractions			Y	writing fractions	Grade 2 writing simplifying and ordering fractions
	Order fractions		Y			
Properties of Number	Place value	Y			place-value	Grade 1 place value
	Order integers		Y		corbettmaths ordering-numbers	corbettmaths ordering numbers
	Multiples		Y		factors-multiples-and-primes	Grade 1 factors multiples and primes
	Factors			Y		
	Lowest Common Multiple			Y	HCF & LCM	Grade 4 HCF and LCM
	Product of prime factors	Y				
Powers and Roots	Square roots			Y	squares-cubes-and-roots	Grade 1 powers and roots
Standard Form	Conversion	Y			standard-form.	Grade 5 standard form
	Calculation	Y				
Approximation and Estimation	Rounding		Y	Y	rounding	Grade 1 rounding
	Estimation	Y			estimating	Grade 3 estimation
	Error interval		Y		error-intervals	Grade 3 error intervals
Other	Mathematical Symbols		Y			
	Calculator use			Y	use-of-calculator	Grade 2 using a calculator

Algebra

Topic & Skill		Paper 1	Paper 2	Paper 3	Videos	Questions
Manipulation	Simplification	Y	Y	Y	simplifying algebra	Grade 2 simplifying algebra
	Expansion of bracket		Y	Y	expanding-and-factorising	Grade 4 expanding and factorising
	Factorisation		Y	Y		
	Substitute values	Y		Y	substitution	Grade 3 substitution
	Change subject of a formula			Y	changing-the-subject 1	Grade 5 changing the subject
	Forming an expression			Y	writing-an-expression	Grade 2 writing an expression
	Laws of indices		Y		indices	Grade 4 indices
Equations and inequalities	Linear equation			Y	solving-one-step-equations solving-equations	Grade 3 solving one step equations Grade 3 solving equations
	Linear inequality	Y			inequalities	Grade 4 inequalities
	Linear simultaneous equations		Y		Algebraic Method: simultaneous equations Using Graphs: simultaneous equations graphically	Algebraic Method: Grade 5 simultaneous equations Using Graphs: Grade 5 solving simultaneous equations graphically
	Form an equation			Y	forming-and-solving-equations	Grade 4 forming and solving equations
	Quadratic equation	Y			Factorising Double Brackets: expanding-and-factorising-quadratics Solving Quadratic Equations: solving-quadratics	Grade 5 solving quadratics by factorising
Graphs	Coordinates		Y		coordinates	Grade 1 coordinates
	Straight line graph		Y		linear graphs	Grade 3 linear graphs
	Quadratic graph	Y			quadratic-graphs	Grade 5 quadratic graphs
Functions	Number machines		Y		function-machines	Grade 2 function machines
Sequences	Linear sequence	Y		Y	sequences	Grade 4 sequences

Ratio, proportion and rates of change

Topic & Skill		Paper 1	Paper 2	Paper 3	Videos	Questions
Conversion	Length	Y			conversions-and-units	Grade 3 conversions and units
	Mass		Y			
	Time		Y	Y	time	Grade 1 time
	Area		Y		conversions-and-units	Grade 3 conversions and units
	Compound units			Y		
	Scale drawing		Y	Y	scale-drawing	grade 3 scale drawings
Percentages	Percentage to fraction			Y	FDP	Grade 2 fractions, decimals and percentages
	Decimal to percentage		Y			
	Percentage of an amount	Y			percentages	Grade 3 percentages
	Percentage increase/decrease	Y		Y		
	Percentage profit		Y		percentage-change	https://www.mathsgenie.co.uk/resources/3-percentage-change-ws.pdf
	One quantity as a percentage of another			Y	expressing-one-quantity-as-a-percentage-of-another	corbettmaths expressing-as-a-percentage
	Depreciation		Y		compound-interest	Grade 4 compound interest
	Reverse percentage			Y	reverse-percentages	Grade 5 reverse percentages
Ratio	Write as a ratio	Y	Y	Y	writing-simplifying-ratio.	Grade 3 writing and simplifying ratio
	Share in a ratio	Y			ratio	Grade 3 sharing ratio
	Use of ratio		Y			
	1 : n form			Y	writing-simplifying-ratio.	Grade 3 writing and simplifying ratio
Proportion	Direct proportion	Y	Y	Y	Proportion: Recipes proportion	Grade 3 proportion: ingredients Grade 5 direct and inverse proportion
	Currency conversion		Y		exchange-rates	Grade 3 exchange rates
Compound Measures	Speed	Y			speed-and-density	Grade 5 compound measures
	Average speed			Y		
	Density	Y				

Geometry and Measures

Topic & Skill		Paper 1	Paper 2	Paper 3	Videos	Questions
Shape	Triangle properties			Y		
	Quadrilaterals			Y	corbettmaths names-of-quadrilaterals	corbettmaths quadrilaterals
	Polygons		Y		corbettmaths names-of-2d-shapes	corbettmaths 2d-shapes
	Triangular prism			Y		
	Circles		Y		corbettmaths parts-of-the-circle	corbettmaths parts of the circle
	Parallel and perpendicular lines		Y		corbettmaths parallel-lines-definition corbettmaths perpendicular-lines	corbettmaths parallel and perpendicular lines
	Reflection	Y			transformations	Grade 3 reflections
	Transformations		Y			Grade 3 rotations Grade 3 enlargements Grade 3 translations
	Plans and elevations	Y			plans-and-elevations	Grade 4 plans and elevations
Angles	Angles in a triangle		Y	Y	angles	Grade 2 angles
	Vertically opposite angles		Y	Y		
	Angle properties of parallel lines			Y	angles-parallel	Grade 4 angles in parallel lines
	Angles in a polygon	Y			angles-polygons	Grade 4 angles in polygons
	Bearings			Y	bearings	Grade 4 bearings
Length, area and volume	Area of a rectangle		Y		area-perimeter compound-shapes	Grade 2 area and perimeter Grade 3 area of compound shapes
	Area of a triangle			Y		
	Area of a trapezium			Y		
	Volume of a cube	Y			volume	grade 4 volume of a prism
	Volume of a cylinder	Y			cylinders	Grade 4 surface area
Pythagoras's Theorem and Trigonometry	Pythagoras's Theorem			Y	pythagoras	Grade 4-pythagoras
	Exact trigonometric values	Y			exact-trig-values	Grade 5 exact trig values

Probability

Topic & Skill		Paper 1	Paper 2	Paper 3	Videos	Questions
Probability	Probability scale			Y	probability	Grade 2 writing probability and the probability scale
	Probability	Y		Y		
	Frequency tree	Y			frequency-trees	Grade 3 frequency trees
	Tree diagram		Y		probability-trees	Grade 5 probability trees
	Combined events		Y			

Statistics

Topic & Skill		Paper 1	Paper 2	Paper 3	Videos	Questions
Diagrams	Pictogram	Y			pictograms	Grade 1 pictograms
	Bar chart	Y			bar-charts	Grade 2 bar charts
	Interpret graph		Y			
	Two-way table		Y		two-way-tables	Grade 3 two way tables
	Frequency table		Y			
	Stem and leaf diagram	Y			stem-and-leaf	Grade 2 stem and leaf diagrams
	Frequency polygon			Y	frequency-polygons	grade 2 frequency polygons
Measures	Mode		Y		averages mean-tables	Grade 2 averages Grade 4 averages from frequency tables
	Median		Y	Y		
	Mean		Y			
	Range			Y		
Population	Comparison of distributions			Y		

Foundation Tier Formulae Sheet

Perimeter, area and volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

Area of a trapezium $= \frac{1}{2}(a + b)\,h$

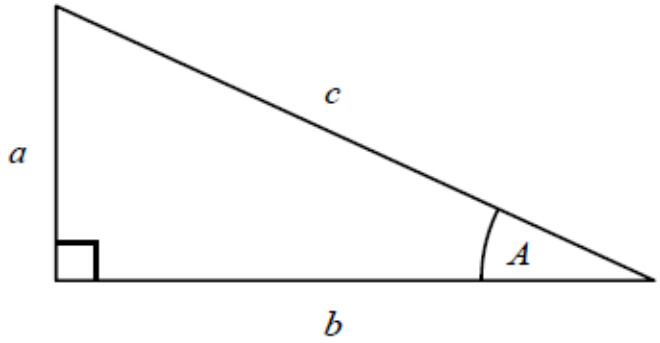
Volume of a prism = area of cross section × length

Where r is the radius and d is the diameter:

Circumference of a circle $= 2\pi r = \pi d$

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:

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

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:

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 or B) = P (A) + P (B) – P (A and B)