JCSC KS3/KS4 Maths Grade Descriptors & Subject Content (a rough guide by level)

KS2 Scaled Score	GCSE	Grade Descriptors	Subject Content (a rough guide by level)			
			Number	**Shape**	**Algebra**	**Data**
	9	Exceptional performance award for the top students sitting the exam therefore the description is the same as Level 8.				
	8	Extensive ability to solve problems within mathematics and in other contexts ❖ Perform procedures accurately ❖ Interpret and communicate complex information accurately ❖ Make deductions and inferences and draw conclusions ❖ Construct substantial chains of reasoning, including convincing arguments and formal proofs ❖ Generate efficient strategies to solve complex mathematical and non-mathematical problems by translating them into a series of mathematical processes ❖ Make and use connections, which may not be immediately obvious, between different parts of mathematics ❖ Interpret results in the context of the given problem ❖ Critically evaluate methods, arguments, results and the assumptions made	Rationalising denominators, Indices (fractional negative powers) and percentage error	Proof in geometry, 3D trigonometry & mixed trig problems, vectors, and exact values of Trigonometric functions and equations of circles, rates of change & Area under the graphs.	Algebraic proof, completing the square, quadratic inequalities, quadratic simultaneous equations and transformations of graphs	Probability from Venn diagrams and interpreting histograms, conditional probability with algebra
	7	Extensive ability to reason, interpret and communicate mathematically ❖ Make deductions, inferences and draw conclusions from mathematical information ❖ Construct chains of reasoning to achieve a given result ❖ Interpret and communicate information accurately ❖ Present arguments and proofs ❖ Asses the validity of an argument and critically evaluate a given way of presenting information	Calculate with surds, direct & inverse proportion, Upper and Lower bounds, indices (fractional powers) and converting recurring decimals to fractions	Similar area and volume problems, sine and cosine rules, volume & surface area of cones & spheres	Velocity-time graphs, quadratic nth term, quadratic formula, Solve graphically max/mins, algebraic fractions and reciprocal & exponential graphs	Stratified sampling, drawing histograms and probability from tree diagrams
	6	Extensive ability to use and apply standard techniques ❖ Perform multi-step procedures effectively by applying terminology and using formulae ❖ Interpret and communicate information effectively ❖ Use strategies to solve mathematical and non-mathematical problems by translating them into mathematical processes, realising connections between different parts of mathematics and confidently combining skills to solve problems	indices (negative powers), simplify surds	Circle theorems, density, further trigonometry (area of a triangle), negative enlargements, dimension theory and similarity.	Equations with fractions, area and perimeter with algebra. Solving quadratics (using the quadratic formula, completing the square & factorising)	Make comparisons using cumulative frequency & box plots
	5	Students should be able to demonstrate fluency in lower grade mathematics and a developing ability to decision make and solve problems. ❖ Perform routine single and multi-step procedures effectively by recalling applying and interpreting notation, terminology, facts, definitions and formulae ❖ Interpret and communicate information effectively ❖ Make deductions, inferences and draw conclusions ❖ Construct chains of reasoning, including arguments ❖ Generate strategies to solve mathematical and non-mathematical problems by translating them into mathematical processes, realising connections between different parts of mathematics	Reverse percentages, standard form, indices (adding and subtracting powers), multiplying and dividing mixed numbers, worded ratio problems, compound interest	Basic trigonometry, Pythagoras' theorem and area & perimeter of circular shapes, congruent triangles, volume/surface area of cylinders and arcs & sectors of circles.	Simple simultaneous equations, factorising quadratics, sketching linear/quadratic/cubic/reciprocal graphs, rearranging equations, solving inequalities.	Averages from grouped frequency tables, construct a cumulative frequency chart.
	4	Increasing independence when solving problems within mathematics and in other contexts ❖ Translate problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes ❖ Make and use connections between different parts of mathematics ❖ Interpret results in the context of the given problem	Factor trees, dividing by a ratio, dividing decimals, LCM & HCM, simple interest.	Bearings, polygon angles, transformations of shapes, volume & surface area of prisms	Straight-line graphs, drawing quadratic graphs, nth term, real-life graphs and expanding more than 1 set of brackets,	Questionnaire, scatter graphs, draw Venn diagrams, averages from frequency tables and

A = always; B = usually; C = sometimes

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		❖ Evaluate methods used and results obtained ❖ Evaluate solutions to identify how they may have been affected by assumptions made.		and bisecting lines & angles.	expanding double brackets, trial & improvement.	experimental probability.
	3	Increasing confidence to reason, interpret and communicate mathematically ❖ Make deductions and from mathematical information ❖ Construct chains of reasoning ❖ Communicate information accurately ❖ Present proofs and argument and critically evaluate a given way of presenting information	Proportion, best buys, estimation, adding & comparing fractions and percentage increase/decrease.	Angles in parallel lines, area of trapezium/ parallelogram/ compound shapes, plans & elevations and area/circumference of a circle.	Expanding single brackets, solving 3 step equations, factorising, equations with brackets and generating sequences.	Stem & leaf diagrams, drawing pie charts and expectation
>115	**2**	Increasing ability to use and apply standard techniques. ❖ Recall and use notation, terminology, facts and definitions; perform routine procedures including some multi-step procedures ❖ Interpret and communicate basic information; make deductions and use reasoning to obtain results ❖ Solve problems by translating simple mathematical and non-mathematical problems into mathematical processes ❖ Provide basic evaluation of methods or results ❖ Interpret results in the context of the given problem	Percentages of amounts, multiplying fractions, simplify ratio, prime numbers, factors and multiples	Area of triangle/full turns/quadrilaterals, volume of cuboids, isometric drawing and reading timetables	Collecting like terms, 2 step equations, coordinates in 4 quadrants, conversion graphs and substitution	Two-way tables, reading pie charts and probabilities add up to 1.
>110	**1**	Students should be able to demonstrate fluency in Mathematics and a developing ability to decision make and solve problems. ❖ Accurately recall number facts, terminology and definitions ❖ Use and interpret notation correctly ❖ Accurately carry out routine procedures or set tasks requiring single step solutions	Fractions of amounts. BODMAS, multiplication, division and adding & subtracting negatives	Measuring angles, perimeter, area of rectangle, angles on a straight line and nets of 3d shapes	1 step equations, writing expressions in algebra and completing sequences	Averages, probability scale and tally charts.
>100	**Fa**	Students are able to carry out calculations involving the basic mathematical principles and are increasingly able to apply these principles to problem solving ❖ Carry out routine tasks requiring single step solutions: ❖ Recall basic number facts with increasing accuracy. ❖ Use notation correctly ❖ Communicate basic information	Place value, Rounding to nearest 10/100/1000, equivalent fractions, addition & subtraction in columns and square numbers	Classifying angles and symmetry	Coordinates & adding missing values in a calculation.	Draw and interpret pictograms, Bar Charts and the language of probability
100	**Fb**	Students show increasing confidence in their mathematical ability: ❖ Increasingly carry out routine tasks requiring single step solutions ❖ Identify basic number facts ❖ Identify notation and use with increasing confidence.				
<100	**Fc**	Students have an understanding of number and mathematics; however, their use within mathematical context is developing. ❖ Identify different values and relationships relating to size in mathematics. ❖ Identify numbers and begin to recognise facts relating to number ❖ Recognise differences in notation	Number bonds to 10, times tables (1-100)	Naming shapes, naming types of triangles.		Read bar charts and pictograms.

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