

Al Jazeera Academy Maths Department: Programme of Study (14 Nov – 22 Dec 2011)

<u>Year Group</u>	<u>Topics Covered</u>	<u>Knowledge and content</u>	<u>Key skills taught</u>	<u>Useful Websites / Resources</u>	<u>What will we test?</u>	<u>How can we help?</u>
Year 7	Measures Area & Perimeter Plan & Elevations Co-ordinates Angles and Angle rules Quadrilaterals Frequency Tables Averages	Converting between imperial and metric Area and perimeter of 2D shapes Recognise 3D shapes for different elevations Describe quadrilaterals and their properties Mean, median, mode and range	Mental maths will be focused on making sure pupils are familiar and confident with timetables and number bonds	www.mymaths.co.uk www.bbc.co.uk/schools/ks3bitesize/maths	Pupils have now been given their levels and targets. Lessons will constantly refer to NC levels and pupils will assess their targets. End of Term tests will provide pupils with their progress after 1 term	Classroom support. Differentiated lessons and exercises. Use textbooks, mymaths website for self-study. Monitor pupil progress via website
Year 8	Angles and Lines Construction Measures Area & Perimeter Probability Experimental probability	Angle rules Drawing triangles accurately Converting between imperial and metric Area and perimeter of 2D shapes Describe events using probability scales. Compare the theoretical and experimental probability of an event.	Mental maths will be focused on making sure pupils are familiar and confident with timetables and number bonds	www.mymaths.co.uk www.bbc.co.uk/schools/ks3bitesize/maths	Pupils have now been given their levels and targets. Lessons will constantly refer to NC levels and pupils will assess their targets. End of Term tests will provide pupils with their progress after 1 term	Classroom support. Differentiated lessons and exercises. Use textbooks, mymaths website for self-study. Monitor pupil progress via website
Year 9	Substitution Equations Expanding and Factorising Angles Construction Collecting Data Interpreting Data Representing Data	Substituting values in an equation Solving simple equations as well as unknown on both sides Expand and factorise expressions and equations Angle rules Drawing triangles accurately Surveys Questionnaires Comparing data using averages Bar Charts, Pie Charts, Scatter diagrams	Mental maths will be focused on making sure pupils are familiar and confident with timetables and number bonds	www.mymaths.co.uk www.bbc.co.uk/schools/ks3bitesize/maths	Pupils have now been given their levels and targets. Lessons will constantly refer to NC levels and pupils will assess their targets. End of Term tests will provide pupils with their progress after 1 term	Classroom support. Differentiated lessons and exercises. Use textbooks, mymaths website for self-study. Monitor pupil progress via website
Year 10 Foundation	Measures 2-D Shapes Graphical representation of data	Choosing and using appropriate metric units of measure Making sensible estimate of lengths, capacities and weights Interpreting scales and dials on a range of measuring instruments Telling the time from digital and analogue clocks Converting between times, and calculating time intervals in 12-hour and 24-hour clocks, for example reading timetables Understanding and using the relationship between average speed, distance and time Estimating the size of an angle in degrees Recognising and naming acute, obtuse, reflex and right angles Recognising and giving the names of different types of polygon (including triangles, quadrilaterals, pentagons, hexagons, octagons) Understanding congruence as meaning the same shape and size. Recognising line symmetry and rotational symmetry Identifying and drawing lines of symmetry for a 2-D shape Using pie charts to calculate the fraction, percentage or decimal of the total represented by each and the number of items represented by each sector		www.mymaths.co.uk Mathswatch CD		Small group of pupils. Time will be used effectively to adequately support this group and their specific needs. Mymaths website will also be used to motivate and monitor the pupils
Year 10 higher	Averages speed Construction	Understanding and using the relationship between average speed, distance and time Constructing triangles and other 2-D shapes using a ruler, protractor and compasses		www.mymaths.co.uk Mathswatch CD	Initial assessment to specify groupings of higher and foundation pupils.	Assessment of work covered Past paper questions to be used as starters and plenaries

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	Geometry Graphical representation of data	Using three-figure bearings to specify direction Using scale drawings to solve problems Using straight edge and compasses to construct the perpendicular bisector of a line segment the bisector of an angle Using parallel lines, alternate angles and corresponding angles Calculate angles in polygons including triangles and quadrilaterals. Calculating and using the sums of the interior and exterior angles of polygons			Secondary assessment to determine target grades for IGCSE	
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Year 11 Foundation	Shape and Space Angles and Triangles Polygons Symmetry Construction Circle properties	Angles at a point, vertically opposite angles, alternate angles, corresponding angles To include parallelogram, rectangle, square, rhombus, trapezium, kite, pentagon, hexagon and octagon Name a quadrilateral with no lines of symmetry and order of rotational symmetry of 2	Exam techniques How to achieve as many marks as possible in higher level questions	www.mymaths.co.uk Mathswatch CD	Assessments after every couple of modules	Past paper booklets Providing pupils with their target grades and supporting them to achieve this with specific feedback
Year 11 Higher	Statistical Measures Graph Probability Ratio and proportion	Students should label axes of pictograms and bar charts, and sectors of pie charts The need for accurate drawing skills, particularly for pie charts, should be Emphasised Students often understand techniques used to find mean, median and mode but confuse the three names It should be emphasised that the range is a single value Students sometimes identify the modal class by the frequency instead of the class Description Some concept of 'chance' and the likelihood of an event occurring and recognition that some events are more likely to occur than others	Exam techniques How to achieve as many marks as possible in higher level questions	www.mymaths.co.uk Mathswatch CD	Assessments after every couple of modules	Past paper booklets Providing pupils with their target grades and supporting them to achieve this with specific feedback
Year 12 (AS- C1)	Sequences and series Differentiation Integration	Understand arithmetic series Find the sum to n of an arithmetic series Use the Σ notation See that the derivative of $f(x)$ as the gradient of the tangent to the graph $y=f(x)$ Find the formula for the gradient of x^n Find the gradient formula of simple functions Finding the equation of the tangent and normal to a curve at a point Integrate x^n Integrate simple expressions Use the integral sign Simplify expressions before integrating Find the constant of integration		www.mymaths.co.uk http://www.mathspapers.co.uk/edexcel.html www.xtremepapers.com	Students will be assessed on differentiation, integration and series. They will also set their C1 mock exam on the 14 th of December.	Provide past papers booklets. Exam techniques How to achieve as many marks as possible in an exam questions

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Year 12 (AS- M1)	Kinematics of a particle	Motion in a straight line with constant acceleration Vertical motion under gravity Speed-time graphs	www.myimaths.co.uk http://www.mathspapers.co.uk/dexcel.html www.xtremepapers.com	Assessment 1 Kinematics	Past papers practice How to achieve as many marks as possible in an exam questions
Year 12 (AS- S1)	Representation & summary of data – measures of dispersion	Understand Range, quartiles and Percentiles Work out the Standard deviation and variance for discrete data Find Variance and standard deviation for a frequency table and grouped distribution Understand Coding Stem & leaf diagrams Find Outliers and analyse Skewness Use box plots to compare sets of data Represent data on a histogram Compare the distribution of data sets	www.myimaths.co.uk http://www.mathspapers.co.uk/edexcel.html www.xtremepapers.com	Assessment 1 on the module completed	Past papers practice How to achieve as many marks as possible in an exam questions
Year13 (IBDP) Higher	Vectors Differentiation Integration Project	Angles in space: Angle between a line and a plane. Angle between two planes. Intersection of two or more planes. Derivatives of exponential and logarithmic functions. Derivatives of circular functions and related rates. Fundamental theorem of calculus Integration by substitution Integration of circular functions Definite integrals Type II	www.mymaths.co.uk	Assessment 1 –Vectors Revision assessment : differentiation Assessment 2 – Differentiation Revision assessment : Exponential and logarithms	Provide past papers booklets.
<u>Year Group</u>			<u>Useful Websites / Resources</u>	<u>What will we test?</u>	<u>What will we test?</u>
Year13 (IBDP) SL	Matrices Vectors Differentiation 2 2nd Project	Use a matrix to store data Add, subtract and multiply matrices Recognise identity and zero matrices Calculate the determinant and inverse of a 2x2 and 3x3 matrix using GDC and by hand Find the inverse of a 3x3 matrix on the GDC Solve simultaneous equations using inverse matrices Write vectors in different forms Understand the algebraic and geometrical approaches to : Magnitude of a vector Multiplication by a scalar Unit and position vectors Use the formula relating the scalar product and the angle between two vectors Find the point of intersection between two lines in vector form. Derivatives of Sin x, Cos x and tan x Population trend in China	www.Myimaths.com www.ibo.org	Assessment on Matrices Assessment on Vectors Assessment on Differentiation calculus.	Provide past papers booklets.
Year13 (IBDP) Studies	Sets Logic Probability Project (20h)	Basic concepts of set theory: subsets; intersection; union; complement. Basic concepts of symbolic logic: definition of a proposition; symbolic notation of propositions. Laws of probability. Stats.	www.mymaths.co.uk	Assessment 1 Stats Assessment 2 Logic	Provide past papers booklets.