INTERMEDIATE 2 COURSE OUTLINE
2007/2008

NEW TIMETABLE

UNIT 1

1. Calculations involving percentages 1/2 weeks carry out calculations involving percentages in appropriate contexts: appreciation/depreciation 2. Volume of solids 2/3 weeks round calculations to a required number of significant figures find the volumes of spheres, cones and prisms	 Compound interest must be taught as an example of appreciation. Appreciation and depreciation will provide enough experience of percentages in context for pupils. Any rounding required will always be in context. Pupils should be encouraged to leave any rounding to the end of all calculations. When teaching volume of prisms, include cylinders. The volume of composite shapes should also be included. Formulae are given. 4 weeks exceeds the amount of time actually needed for these two blocks of work but classes will be regularly disrupted during the last four weeks of term. Since classes change significantly once results are known it is advisable to progress beyond this outcome.
TERM 5.1 1/2. Calculations involving percentages/Volumes of solids 1 week Revision of pre-summer work	Since there will be a significant number of new pupils in each class, revision of this work is essential – pupils who unexpectedly passed General/Int 1 and are joining an Intermediate 2 class will need extra support to get to grips with this first outcome. It will also be necessary for pupils who have not attained the entry requirements for Higher and have dropped back into Intermediate 2 to be brought up to speed.

3.	Linear relationships 2/3 weeks	
	find the gradient of a line between two points	the gradient formula is not required but should not be beyond the scope of many Int 2 pupils and may be taught
	know that in the equation $y = mx + c$ of a straight line, m represents the gradient and c represents the intercept on the y-axis and use this to sketch the line without drawing accurately	
	determine the equation of a straight line in the form $y = mx + c$ from its graph	
4.	Algebraic operations 2 weeks	a reminder of the basic rules of algebra may be required for some pupils.
	multiply algebraic expressions involving brackets	eg $x(x + 2y)$ $(3x + 5)(x - 1)$ $(x + 2)(x^2 - 3x + 1)$
	factorise algebraic expressions: common factor difference of two squares **with coefficients > 1**	eg $x^2 + 3x$ $x^2 - y^2$ $^4x^2 - 9y^2$
	factorise trinomial expressions	eg $x^2 + x - 6$ $2x^2 - 5x - 3$ $3x^4 + 5x^2 - 2$
5.	Properties of the circle 2/3 weeks	
	find the length of an arc of a circle	
	find the area of the sector of a circle	
	use the properties of circle:	
	relationship between tangent and radius	Revision of Pythagoras may be required for some pupils.
	angle in a semi-circle	
	the interdependence of the centre, bisector of chord and a perpendicular to a chord	

UNIT ASSESSMENT

As with all unit assessments, pupils should be given ample opportunity to attempt practice papers – two should be enough for most pupils. If possible, let pupils have the first of these before the end of September even though they will still have to complete some of the final outcome. Aim to have this unit completed before the October break.

Time allowed – Approximately 45 minutes. Some flexibility may be allowed to suit individual circumstances.

Re-sits – Where a pupil has not attained the standard necessary to pass a particular outcome or outcomes, they need only be reassessed on the outcomes failed. Only in exceptional circumstances will a second re-sit be allowed.

COURSE ASSESSMENT

A course assessment is available.

All pupils should sit this. It will allow pupils to appreciate the difference between the standard required in the final exam and that required for the unit assessment. The evidence generated by the course assessment can be used for appeals.

UNIT 2

TERM 5.2	
1. Trigonometry 3 weeks	
find the sine, cosine and tangent of angles other than acute angles	Revision of SOHCAHTOA may also be appropriate for some pupils at this stage.
find the area of a scalene triangle using area = ½ absinC	Pupils should be given the opportunity to experience as many problems in different contexts as possible.
solve scalene triangles by using sine rule/cosine rule	
use the cosine rule to find an angle given all three side	
2. Simultaneous linear equations 2 weeks	
construct formula to describe a linear relationship	Experience of problems in context is again essential.
know the significance of the point of intersection of two graphs: solve simultaneous linear equations in two variables graphically	
solve simultaneous linear equations in two variables algebraically	
3. Graphs, charts and tables 1/2 weeks	
extract and interpret data from bar graphs, line graphs, pie charts and stem-and-leaf diagrams	A significant amount of this outcome is revision of Int 1/general work. Teachers should use their professional judgement in deciding how much time needs to be spent on it.
construct bar graphs, line graphs and stem-and-leaf diagrams	
construct and interpret a scattergraph	
add a cumulative frequency column to an ungrouped frequency table	
find the median and quartiles from a data set or ungrouped frequency table	
construct and interpret boxplots and dotplots	
construct a pie chart	Some pupils may need to be reminded of how to use a protractor correctly.

4.	Use of simple statistics 2/3 weeks	
	calculate the mean, mode and range of a data set or an ungrouped frequency table	"Data set" denotes data as it was collected.
	calculate the semi-interquartile range from a data set or ungrouped frequency table	At this level it can be assumed that all data is a random sample from a population.
	calculate the standard deviation of a data set	Both forms of the formula for the sample standard deviation will be given. It is relatively easy for pupils to obtain the standard deviation using the "stat" mode on their scientific calculator. They should be reminded that this can only be used as a check and that all appropriate working must be shown. Teachers should emphasise that standard deviation is a measure of spread.
	determine the equation of a best-fitting straight line on a scattergraph and use it to estimate a y-value given the x-value	Correlation should be strong positive or negative.
	know that probability is a measure of chance between 0 and 1	Probability should be found from (experimental) data or from knowledge of the situation (eg drawing a card from a pack – teachers should ensure that pupils know how many cards are in a pack, numbers on a standard die, months in a year etc). Pupils should be aware that probability obtained from experimental data is an estimate.
	find probability defined as: $\frac{\text{no. of favourable outcomes}}{\text{total no. of possible outcomes}}$ where all outcomes are equally likely	

TERM 5.3

UNIT ASSESSMENT

As with all unit assessments, pupils should be given ample opportunity to attempt practice papers. One should be enough for most pupils.

Aim to have the unit assessment no later than the end of January.

Time allowed – Approximately 45 minutes. Some flexibility may be allowed to suit individual circumstances.

Re-sits – Where a pupil has not attained the standard necessary to pass a particular outcome or outcomes, they need only be reassessed on the outcomes failed. Only in exceptional circumstances will a second re-sit be allowed.

COURSE ASSESSMENT

A course assessment is available, but since the prelim exam is scheduled for the period following the INSET days in February, the course assessment should be done only if time permits.

PRELIM

The prelim will be based on Units 1 and 2 only. None of Unit 3 will be included unless the work has been covered by all classes and class teachers have been informed well in advance.

UNIT 3

TERM 5.3	
1. Algebraic operations 2/3 weeks	Classes are unlikely to complete this outcome before the prelim but should aim to have done algebraic fractions and change of subject at the very least
reduce an algebraic fraction to its simplest form	
apply the four rules to algebraic fractions change the subject of formulae simplify surds	An extensive list of exemplars is given in the arrangement. Teachers can access the up-to-date arrangements on the SQA website. The use of conjugate surds is not specified in the arrangements but should be taught, if time permits, to pupils aiming for A/B grades.
express with a rational denominator	
simplify expressions using the laws of indices	**Include examples where the use of more than one law is required.**
2. Quadratic functions 2/3 weeks	
recognise quadratics of the form $y = kx^2$ and $y = (x + a)^2 + b$	Pupils should not be expected to complete the square themselves.
identify the nature and coordinates of the turning point and the equation of the axis of symmetry of a quadratic of the form $y = k(x + a)^2 + b$, $k = \pm 1$	Include the case where a + 0
know the meaning of the term "roots of a quadratic equation"	
solve quadratic equations graphically	
solve quadratic equations by factorisation and by using the quadratic formula (**Including examples where the coefficient of x2 ≠ 1**)	Pupils must experience problems in context which give rise to quadratic equations.

3.	Further Trigonometry 2/3 weeks recognise the graphs of the sine, cosine and tangent functions sketch and identify trigonometric functions involving: a multiple angle **a phase angle** solve simple trigonometric equations in degrees define the period of a trigonometric function either from its graph or form its equation **simplify expressions using $\sin^2 A + \cos^2 A = 1$ and $\tan A = \sin A / \cos A$**	 eg $f(x) = 2\sin 3x$ eg $f(x) = \cos(x + 30)$ eg $2\sin x + 1 = 0$, $0 \leq x \leq 360$

TERM 5.4

UNIT ASSESSMENT

As with all unit assessments, pupils should be given ample opportunity to attempt practice papers. One should be enough for most pupils.

Aim to have the unit assessment as soon after the Spring break as possible.

Time allowed – Approximately 45 minutes. Some flexibility may be allowed to suit individual circumstances.

Re-sits – Where a pupil has not attained the standard necessary to pass a particular outcome or outcomes, they need only be reassessed on the outcomes failed. Only in exceptional circumstances will a second re-sit be allowed.

COURSE ASSESSMENT

A course assessment is available and **must** be taken by all pupils. This assessment will usually provide the only evidence for Unit 3 in an appeal.