Yr 8 Maths - Autumn Term

Knowledge and Understanding

- Number: square numbers; triangular numbers; prime numbers; multiples and factors
- Shapes: names of polygons; angles in polygons including regular shapes; types of quadrilateral; area and perimeter of triangles, rectangles and composite shapes; circle circumference and area
- Probability: calculating probabilities of combined events; listing outcomes; using sample spaces and other techniques for calculating probabilities for two or more events; exclusivity and exhaustivity, introduction to conditional probability

Transdisciplinary and Generic Skills developed

Students are encouraged to see Mathematics as more that an abstract and specialist discipline. Throughout the year they will be encouraged to communicate their ideas to other students as well as to the class teacher. This communication will be verbal and written, including the use of correct Mathematical notation. There will be great emphasis on the need to be precise and concise when communicating mathematical ideas.

Creative solutions to problems will be encouraged, and students will be actively encouraged to develop their thinking beyond what is presented to them in class. This will usually take the form of adapting their knowledge to other slightly different situations, through the use of "What if…?" questions. It is hoped that students will learn to appreciate the inherent beauty of Mathematics.

The inquiry-based approach to learning encourages students to work collaboratively as there will be no prescribed solution to the problem. Students will be expected to share the workload of collecting data when necessary, and to evaluate different possible strategies to tackling the problem at hand. In today's world, the best mathematicians need to be more than "human calculators".

An important trait for students to develop early on is that of resilience. Too often Mathematics is seen as something that either can be done, or can't, which leads to some students giving up too early when faced with a problem they cannot immediately solve. All students will, at some point, encounter something that they can't do, and the ability to know how to become "unstuck" is a key indicator of how well a student will progress in the long-term.

Assessment

Skills Test 1 - A series of short questions covering mental arithmetic and general number work. The test covers topics that students will already have seen and others that will be taught during Year 8 and so it is not expected that students will be able to complete all of the paper. Instead it will be used as a benchmark for the year ahead and we would expect to see an improvement as the year develops. The test will be in September with feedback soon after.

Shapes Assessment - an in-class assessment looking at students' knowledge of the properties of shapes, their ability to apply those properties to solve problems and their use of mathematical language to describe those properties correctly and concisely. This will be in November or December with feedback within two weeks of the assessment in most cases.

Challenge for All

Differentiation is primarily achieved through "Low Entry, High Ceiling" activities in the

classroom. Such tasks are accessible to all students at some level yet offer the opportunity to explore the concepts at a more sophisticated level for those who feel confident doing so. With regard to the Skills Tests, students are expected to identify the areas that they need to work on and to take the initiative to work on appropriate revision materials based on their personal needs.

Ways in which parents can support their children

With regard to the skills tests, parents can help by ensuring that students are working on these tasks regularly at home through the use of Myimaths, Manga High and other resources. Evidence suggests that students make the best progress if they practice "little and often" and so as well as the homework tasks that are set by the teachers students should complete short revision tasks two or three times a week if possible.

For other areas of the Mathematics curriculum there are plenty of freely available resources as detailed on the various ISLE courses for Year 8 Maths and also for the Maths curriculum in general. We particularly encourage students to work on nRich tasks as a way of developing their problem-solving ability and improving their mathematical fluency in general.

Yr 8 Maths Spring Term

Knowledge and Understanding

- Problem Solving: using letters to replace unknown values; developing and solving simple linear equations, using algebra to generalise a problem; manipulation of linear expression and equations
- Number Skills: building confidence in applying appropriate calculation techniques; developing familiarity with non-integer numbers and other non-decimal number systems; tests of divisibility; approximation and estimation; rounding; introduction to inequalities
- Statistics: discrete and continuous data; data collection tools including questionnaires; primary and secondary data; analysis of continuous data; grouping data for ease of analysis and presentation; using technology to analyse and present data; comparing data sets; Scatter Graphs, correlation and lines of best fit.

Transdisciplinary and Generic Skills developed

Students are encouraged to see Mathematics as more that an abstract and specialist discipline. Throughout the year they will be encouraged to communicate their ideas to other students as well as to the class teacher. This communication will be verbal and written, including the use of correct Mathematical notation. There will be great emphasis on the need to be precise and concise when communicating mathematical ideas.

Creative solutions to problems will be encouraged, and students will be actively encouraged to develop their thinking beyond what is presented to them in class. This will usually take the form of adapting their knowledge to other slightly different situations, through the use of "What if…?" questions. It is hoped that students will learn to appreciate the inherent beauty of Mathematics.

The inquiry-based approach to learning encourages students to work collaboratively as there will be no prescribed solution to the problem. Students will be expected to share the workload of collecting data when necessary, and to evaluate different possible strategies to tackling the problem at hand. In today's world, the best mathematicians need to be more than "human

calculators".

An important trait for students to develop early on is that of resilience. Too often Mathematics is seen as something that either can be done, or can't, which leads to some students giving up too early when faced with a problem they cannot immediately solve. All students will, at some point, encounter something that they can't do, and the ability to know how to become "unstuck" is a key indicator of how well a student will progress in the long-term.

Assessment

Skills Test 2 - A series of short questions covering mental arithmetic and general number work. The test will be in January with feedback soon after. We would expect students to have worked on the areas of weakness that they identified after the first test and so to have improved in those areas. The test will usually be in January with feedback soon after.

Problem Solving Assessment - an in-class assessment requiring students to generalise situations and use algebraic symbols and notation in order to find missing information. Unlike in Year 7 there is no an expectation that students will be using more formal algebraic approaches however there will still be a requirement for them to show that they understand how the algebra relates to the problem that has been set. This assessment will usually be in March (subject to the timing of the Lunar New Year and Easter holidays) and feedback should be given within two weeks of the assessment in most cases.

Challenge for All

Differentiation is primarily achieved through "Low Entry, High Ceiling" activities in the classroom. Such tasks are accessible to all students at some level yet offer the opportunity to explore the concepts at a more sophisticated level for those who feel confident doing so. With regard to the Skills Tests, students are expected to identify the areas that they need to work on and to take the initiative to work on appropriate revision materials based on their personal needs.

Ways in which parents can support their children

With regard to the Skills Tests, parents can help by ensuring that students are working on these tasks regularly at home through the use of Myimaths, Manga High and other resources. Evidence suggests that students make the best progress if they practice "little and often" and so as well as the homework tasks that are set by the teachers students should complete short revision tasks two or three times a week if possible.

For other areas of the Mathematics curriculum there are plenty of freely available resources as detailed on the various ISLE courses for Year 8 Maths and also for the Maths curriculum in general. We particularly encourage students to work on nRich tasks as a way of developing their problem-solving ability and improving their mathematical fluency in general.

Yr 8 Maths Summer Term

Knowledge and Understanding
Bullet points that list what you expect students to be able to understand, know and do by the end of the Autumn Term

- Three Dimensions: cubes, cuboids, prisms, cylinders, pyramids, cones, spheres; two dimensional representations of three-dimensional shapes; volume and surface area; nets; symmetry and cross-sections

- Straight Lines: the Cartesian coordinate system; linear relationships; properties of straight line graphs; gradient; y=mx+c; perpendicular and parallel lines; application to real-life graphs including speed/distance/time graphs.

Transdisciplinary and Generic Skills developed

Students are encouraged to see Mathematics as more that an abstract and specialist discipline. Throughout the year they will be encouraged to communicate their ideas to other students as well as to the class teacher. This communication will be verbal and written, including the use of correct Mathematical notation. There will be great emphasis on the need to be precise and concise when communicating mathematical ideas.

Creative solutions to problems will be encouraged, and students will be actively encouraged to develop their thinking beyond what is presented to them in class. This will usually take the form of adapting their knowledge to other slightly different situations, through the use of "What if…?" questions. It is hoped that students will learn to appreciate the inherent beauty of Mathematics.

The inquiry-based approach to learning encourages students to work collaboratively as there will be no prescribed solution to the problem. Students will be expected to share the workload of collecting data when necessary, and to evaluate different possible strategies to tackling the problem at hand. In today's world, the best mathematicians need to be more than "human calculators".

An important trait for students to develop early on is that of resilience. Too often Mathematics is seen as something that either can be done, or can't, which leads to some students giving up too early when faced with a problem they cannot immediately solve. All students will, at some point, encounter something that they can't do, and the ability to know how to become "unstuck" is a key indicator of how well a student will progress in the long-term.

Assessment
What kinds of assessment tasks will be set during the term and roughly when the outcomes will be made available to parents.

Statistics Assessment - an in-class assessment looking at students understanding of statistical techniques and how they can be applied to analyse a data set. The focus in Year 8 is on comparing two sets of data and students will be expected to collect, analyse and interpret data, using calculations and graphs to draw conclusions. This assessment will usually be in April and feedback should be given within two weeks of the assessment in most cases.

Skills Test 3 - A series of short questions covering mental arithmetic and general number work. As the final Skills Test of Year 8 it is expected that students will have made substantial progress since the start of the year and should now be familiar with most if not all of the topics covered in the test. Any gaps in their knowledge should be made a priority for the start of Year 9. The test will be in late May or early June with feedback soon after.

Challenge for All

Differentiation is primarily achieved through "Low Entry, High Ceiling" activities in the classroom. Such tasks are accessible to all students at some level yet offer the opportunity to explore the concepts at a more sophisticated level for those who feel confident doing so. With regard to the Skills Tests, students are expected to identify the areas that they need to work

on and to take the initiative to work on appropriate revision materials based on their personal needs.
Ways in which parents can support their children
With regard to the Skills Tests, parents can help by ensuring that students are working on these tasks regularly at home through the use of Myimaths, Manga High and other resources. Evidence suggests that students make the best progress if they practice "little and often" and so as well as the homework tasks that are set by the teachers students should complete short revision tasks two or three times a week if possible. For other areas of the Mathematics curriculum there are plenty of freely available resources as detailed on the various ISLE courses for Year 8 Maths and also for the Maths curriculum in general. We particularly encourage students to work on nRich tasks as a way of developing their problem-solving ability and improving their mathematical fluency in general.