Maximising Achievement in Mathematics

INFORMATION FOR PARENTS – YEAR 9

14th November 2017

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COMMITTED TO
investors in excellence

Tudor Grange
Solihull

National
Teaching
School

WHERE ARE STUDENTS NOW?

Year 9

- Transition from key stage 3 mathematics to GCSE mathematics.
- There is a new national GCSE mathematics curriculum. Along with the government agenda for education at the moment, it contains more challenging content and a focus on **fluency, reasoning and problem-solving.** We have been working hard to ensure that our students are well-equipped to deal with these changes.
- All assessments are in the style of the new GCSE and are now graded 1-9 using new GCSE criteria.
- Breadth of topic areas studied:

➢ Number, Ratio and Proportion, Algebra, Geometry, Statistics, Probability

GROWING MATHEMATICIANS

What are we, as the mathematics department, doing to help grow mathematicians equipped to face the new challenging GCSE?

How can you help at home?

GROWING MATHEMATICIANS

A ‘MASTERY CURRICULUM’

Recently, there has been a lot of national research into ‘mastery’ and the success of this approach in other countries.

The essential idea behind ‘mastery’ is that ***all children*** need a ***deep understanding of the mathematics*** they are learning.

GROWING MATHEMATICIANS

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 9	Number 1 - Integers Key focus: Indices and Surds → can recap integers, fractions, algebra and irrational numbers through links	Number 2 - FDPR Key focus: Decimals, Fractions, Bounds, estimation, approximation → can recap place value, FDP through links	Algebra 1 – Expressions and Equations Key focus: Sim equations and graphs → can recap expressions and linear through links	Shape 1 – 2D/3D Shapes and Angles Key focus: Pythagoras and Trigonometry → can recap 2D and 3D shapes and angles through links	Shape 2 - 2D/3D Shapes and Angles Key focus: Transformations and Similarity → can recap 2D and 3D shapes through links	Shape 3 – Circles and Angles Key focus: Circles and Circle Theorems → can recap shape and angles through links

The scheme of work for Year 9

- Gives time to delve deeper and to understand the 'how' and the 'why'.
- Gives all students the opportunity to meet and understand each topic covered.
- Allows greater links to be made across topic area.

Promoting a 'Growth Mindset'

- All students cover exactly the same topics, just to a level that is appropriate for them.
- The new national mathematics GCSE has been designed to be more challenging.
- The questions assess problem-solving skills and resilience. They are deliberately designed so that they will not be straightforward for any student.

Features of growth mindset

- Ability is not fixed, but we can build our abilities.
- Focus on the importance of learning and the process – effort is the way to grow.
- Understanding that setbacks are a part of growth (display resilience).
- Research shows that students with a growth mindset progress better over time than those with a fixed mindset.

TOPIC GUIDANCE EACH HALF TERM

Year 9 Minimum Expected Standard Autumn 1 Integers:
Including Indices and Surds

Themes	Objectives (TG 1-9)	Learning Checks	Interventions - Mathswatch video and worksheet
Integers and Indices	- *Apply the four operations, including formal written methods, to integers, both positive and negative* - *Understand what is meant by commutative and apply order of operations (BIDMAS)* - *Define, identify, order and find numbers which are: Integers, irrational, factors, multiples, cube, square, roots, prime, and reciprocal* - *Giving a counter-example to a simple number statement* - *Use positive integer powers and roots, recognise powers of 2, 3, 4, 5* - *Substituting numbers into an expression with conditions on types of numbers* - *Express a number as a product of its prime factors* - *Find the LCM and HCF including solving problems in context involving these.* - *Use product of prime factors to find HCF and LCM* - *Recognise when, how and why to apply the laws of indices.* - *Simplifying expressions with like terms through addition, subtraction, multiplication, division and raising to the power.* - *Multi-step problems using the laws of indices.* - *Finding negative and fractional powers (including use of index laws)* - *Solve exponential equations* - *Convert numbers to and from standard form* - *Calculate with standard form* - *Finding fractional indices of standard form*	**Learning Check 1: Types of numbers** **Homework 1: Powers, roots, product of prime factors and LCM and HCF** **Learning Check 2: Using and understanding laws of indices** **Homework 2: Standard form**	17 Adding Integers and Decimals 18 Subtracting Integers and Decimals 19 Multiplying Integers 20 Dividing Integers 28 Factors, Multiples and Primes 29 Introduction to Powers/Indices 75 BODMAS/BIDMAS 66 Multiplying Decimals 67 Dividing Decimals 68a Negatives - Adding and Subtracting 68b Negatives - Multiplying and Dividing 78 Product of Primes 79 Highest Common Factor (HCF) 80 Lowest Common Multiple (LCM) 81 Squares, Cubes and Roots 82 Working with Indices 83 Standard Form 154 Negative Indices 131 Index Notation 188 Fractional Indices 207a Introduction to Surds 207b Surd Expressions 207c Surds - Rationalising the Denominator
Surds	- *Understand a square root has two possible solutions* - *Estimate square roots of numbers that are not square* - *Work out the root of a number from its prime factors* - *Simplify and manipulate algebraic expressions (including those involving surds)* - *Collecting like terms, multiplying a single term over a bracket, taking out common factors, expanding double brackets involving surds* - *Rationalising the denominator* - *Calculations involving surds* - *Simplify surds* - *Writing complex surd calculations in a given form*	**Learning Check 3: Calculating with surds**	

ASSESSMENTS

- There will be formative assessments every half term which are not graded. These assessments allow the students and teacher to identify strengths in understanding as well as areas to address. The timing of these assessments allow for this refocus work to be done before the end of the half term.
- Termly there will be a summative assessment. These will assess topics taught cumulatively to that date. They will take place in Autumn 2, Spring 2 and Summer 2. The date for the Autumn 2 assessment is Wednesday 22nd November. Students will receive a detailed feedback sheet as a result of this (next slide)

Common Assessment Report

Tudor Grange Academy Solihull

Question Paper Year 11 – CA 3 – Jan / Feb – HIGHER

Name:

Subject Maths

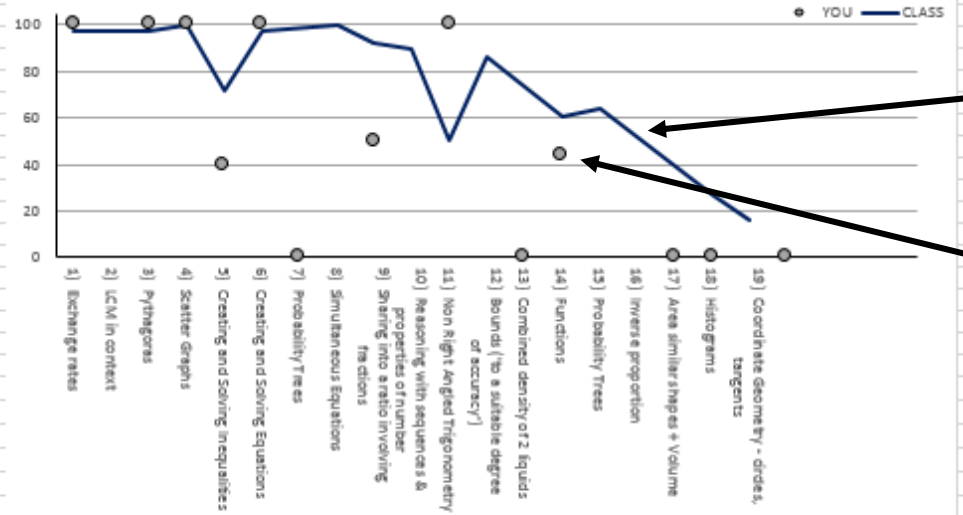
Term:	1	2	3	4	5	6
Date:	October 2017					

75%

Marks	45

Percentage	75%

PAPER 2 - Calculator 1



ATTITUDE TO LEARNING:

(please circle)

I revised as much as I could for this test.

I revised some topics for this test

I did not try hard to perpare for this test.

What I did to prepare for this test:	After-School / Period 6 Revision	Practise exam questions	Use online videos	Revision guides	Use your own notes or learning journal
	Other: (please specify)				(please circle)

WHAT WENT WELL: The topic areas you scored best on...

C1-15) Probability Trees - 100%

C1-12) Bounds ('to a suitable degree of accuracy') - 100%

C1-10) Reasoning with sequences & properties of number - 100%

EVEN BETTER IF: The topic areas you need to improve...

C1-19) Coordinate Geometry - circles, tangents - 0%

C1-5) Creating and Solving Inequalities - 40%

C1-18) Histograms - 50%

Class average for each question for comparison

Their performance

Reflection space for effort and preparatio

WWWs and EBIs for actions

Learning Checks and homework

Review Reflect Refocus

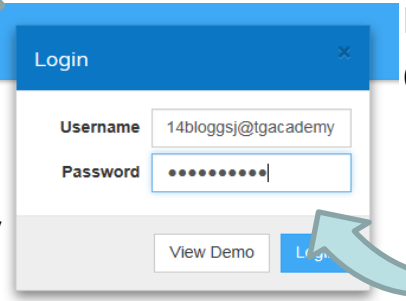
Reflect and progress can you do it now? hallenge chim

Can you d
Process
Product

Common Summative Assessment 22nd November 21st March

Need more help? Use MES to see what mathswatch clip it is

https://vle.mathswatch.co.uk/vle/
Username: 15BloggsJ@tgacademy
Password: mathswatch



YEARS 10 AND 11

- Students continue to study the breadth and depth of GCSE mathematics, gradually working towards their target grade by the end of year 11.
- Mathematics is a cumulative subject – students need to draw on prior knowledge at all levels in order to be able to understand the next concept.
- The GCSE examinations are taken at the end of Year 11.

TIER OF ENTRY

- Two tiers of entry:
  Higher (grades 9-4)
  Foundation (grades 5-1)
- Students will be entered for the tier that gives them the best possible chance of achieving their potential based on their target and ability.
- All students follow the same SoW but will go into the topic in varying depth.
- The decision for tier of entry will be made in Year 11.
- For some students, studying for foundation tier is the best way to ensure that they can achieve a grade 4 or 5 in mathematics – grade 5 is the likely benchmark that will be needed by many further education providers and employers, and can still be accessed on the foundation tier.

WHAT EXTRA SUPPORT WILL STUDENTS RECEIVE?

• Students can request a **study support** with their teacher if they feel that they need extra help.

• Designated teachers to support underachieving pupils (**SASMs, mathematics mentor**).

•Orange **student mapping document** (see next slide) half termly with minimum expected standards details and exemplar questions along with independent intervention details.

•**Login for mathswatch website -** videos and worksheets to support learning and homework.

• Extensive **revision** programme for final examinations.

• **Other resources** are available to support independent revision such as revision guides and workbooks. These are available on parent pay.

HOW CAN YOU HELP?

- Ensure that homework is attempted.
- Encourage your child to have a growth mindset and positive approach towards their mathematics work, even though it is challenging!
- Ensure that your child has and uses all of the mathematical equipment they need (calculator, ruler, compass, protractor).
- Encourage your child to make use of all of the resources available and work independently on mathematics at home.

•vle.mathswatch.com - videos and worksheets at different grades
username: 14 followed by the surname and first initial @tgacademy i.e 14BloggsJ@tgacademy
password: mathswatch

•http://corbettmaths.com/ - 5-a-day questions, online tutorials and practice

•http://www.mathedup.co.uk/gcse-maths-takeaway/ - videos, questions by topics and answers