14 - 19 Maths Offer

Intent: Our ambitious 14 – 19 Maths offer enables students to begin to / apply their maths skills & subsequent knowledge & understanding of mathematical concepts which further prepares them well for their next step/ stage. We aim that through our school offer, our students will continue to develop their realisation that many problems can be solved via Maths, formulate a model using mathematics & remembering/ applying previously learned responses (coping skills), therefore, becoming more fluid in the practical application of maths. Through their developing skills, knowledge& understanding of mathematical concepts, we will encourage students to solve everyday problems by breaking down the problem into a series of simpler steps to understand a situation & choose an approach to tackle the problem. Maths teaching will therefore, encourage students to learn from mistakes made & effectively problem solve, evaluating both the model they used & their approach.

Implementation: - Maths is delivered through each schools QoE offer with a school-based curriculum designed to meet the learning needs of the students; this offer is designed to enable students to practically apply skills learned; maths learning therefore becomes embedded. Students can study for more formal Maths qualifications/ accreditation modules where these hold value & meaning. A maths mastery approach underpins our offer; long term planning of Maths is designed by each school & embedded through three strands of the curriculum which provides students with practice/ rehearsal time within daily core skills sessions. Maths teaching within KS4 – Post 16 is part of preparing students for adulthood; as students move into Post 16 there is a further focus on the application of Maths skills to increasingly complex situations for those pupils who are not studying for formal qualifications.

Impact: - Students use/ generalise their acquired mathematical skills with greater confidence using such skills more appropriately through their retention of maths knowledge. Through developing skill acquisition, students demonstrate a greater ability to solve problems, use their mathematical language appropriately supporting the development of their life/ independence skills including where appropriate, within the world of work. When identified as adding value to learning / consideration of next steps students leave school having developed their maths skills to acquire formal qualifications/ accreditation outcomes. Data collection through our assessment systems will support teachers to ensure that students make expected or exceed expected progress from their starting point in this area of the school's curriculum.

L2L: - Students are encouraged to continue develop their pre-requisite maths skills via the Cognition & Learning strands identified through robust assessment & observational practice; these strands are delivered through the breadth of National Curriculum/ Post 16 areas they study. This vehicle enables equity within the provision of curriculum areas offered, & affords all L2L pupils planned/ structured opportunities to address personalised learning outcomes in full accordance to the DfE Engagement Model requirements. Through such practice our schools are secure that all student learning remains sequenced & informs next steps.

Maths OFFER KS4 – Post 16 (P16)

We recognise Maths is a key life skill essential in providing a foundation & framework for understanding the world around us & helping us to operate within it. Building upon the Maths work previously delivered, students within KS4 – P16 will study **functional Maths** which will encourage opportunities for them to apply their learned mathematical skills in increasingly wider contexts within the areas of number, measure (length, width, height, weight, comparisons, time), position, money, shape, sorting/ classifying objects. The term 'functional' is considered in the broadest sense of providing students with the skills & abilities they need to make to take an active & responsible role in their communities, everyday life, the workplace & educational setting encouraging them to be effective & involved as citizens, preparing them well for their next steps. Such skills will encourage/ enable them to operate with greater confidence in life using their mathematical skills with greater effect increasing their ability to understand & make sense of mathematical information using & processing that information in a meaningful way. Maths & the type of Maths studied is determined by each student's school offer which is formally identified through personalised learning determined by student need, progress data, EHCP outcomes (preparing for adulthood), student aspiration & post school destination. It is acknowledged that for some students we need to continue to address their developing understanding of very early Maths concepts identified within the Cognition & Learning strands which examines pupils' skills of engagement (pre-requisites to learning) addressed via our **L2L/ B2L** pathway/ school offer. The more 'formal' subject specific teaching/ learning which can also lead to students studying modules of accreditation (SPT accreditation policy) is achieved via our **R2L** strand offering a breadth/ depth within the Maths areas outlined via each school's LT planning (Yr10 – P16) & within daily core skills sessions. Students access to Maths delivered via their timetable offer, provides students with structured opportunities to use/ apply/ extend skills addressed, maths modules identified (three strands of our KS4 – Post 16 offer) enables students to address their core skills within Numeracy; assessment of progress over time is measured using SPT assessment (Adult B²). As our students are at such different stages of learning they continue to require highly differentiated teaching & learning approaches, therefore, differentiation within a whole class session is essential to our teaching delivery to ensure maths is meaningful, is ambitious in securing stretch & challenge & continues to focus upon developing students long term retention of knowledge when working towards identified 'end points'. The Trustees will measure the success of each school's Maths curriculum via reports received by the Head Teacher which includes the self-evaluation regarding the Quality of Education (evaluation of the delivery / teaching of the curriculum).

INTENT:	IMPACT
To enable students to develop/ further develop their skills & conceptual understanding of contexts for number, measure, shape, space, handling data we will encourage our students to: • become more fluent in the pre-requisites found within Cognition & Learning (fundamental of early mathematics) • develop/ apply functional problem solving/ learned numeracy skills/ mathematical language to a wide variety of practical, real life contexts within school/ local community • break down problems into a series of simpler steps/ understand a situation & use their mathematic skills with increasing confidence to tackle tasks/ problems to provide answers; choose an approach to tackle the problem • make mistakes, effectively problem solve further developing such skills evaluating the model used & their approach • apply & adapt such experiences in other situations as they arise • further develop the capacity to identify & understand the role that Numeracy plays in their world to enable them to function as effective citizens • continue to develop their realisation that many problems can be solved via Maths, formulating a model using mathematics • remembers previously learned responses (coping skills)/ reason mathematically • pursue modules of accreditation that holds meaning & promotes progress within learning • develop their knowledge & understanding of the world around them which enables them to make a contribution to it; secure outstanding outcomes	**The curriculum will:** • Ensure all learning remains relevant & meets the diverse needs of the KS4 – Post 16 population • Improve student outcomes; student progress in Maths is above/ in accordance with SPT benchmarks • Enable students to retain their knowledge in long term memory which enables them to use/ generalise mathematical knowledge & understanding with further confidence within their day to day lives • Enable students to progress well from their different starting points within the key skills of mathematics; learning remains sequential • Ensure student progress builds upon prior knowledge & understanding (their current skills/abilities in accordance with mastery principles) & prepares them well for their next stage; next steps secure challenge within all learning which may include formal qualifications • Students enjoy their learning & engage well

IMPLEMENTATION:

Each school's curriculum will secure the delivery of the main principles outlined below; the curriculum will:

- Secure a breadth of study & relevance in what is studied
- Identify within long term planning the teaching duration of each maths area
- Identify & outline end points (WALTs); what the school intends the students will study (key concepts/ skills) within each Maths area at each key stage
- The maths curriculum remains sequenced
- Ensure a process for the baseline/ previous assessment outcomes in each Maths area informs future 'student friendly' targets (ensuring stretch & challenge); targets identified enables students to work towards the specified end points (ensuring learning remains part of a well-planned sequence)
- Enable student targets to be addressed over the period of time specified for each maths area
- Secure assessment of student progress towards targets will take place each session (formative)
- Enable students' cumulative knowledge (progress) towards the specified end points to be identified at the end of the teaching sequence (summative) which may include qualifications
- Demonstrate that the progress towards specified end points recorded are reported to parents (annual report to parents)

<u>Previous delivery</u> of the Maths offer:

Our school has ensured there has been a clear journey for maths as pupils move through our school; previous maths learning secured the sequenced **intent** of our ambitious Maths offer which has encouraged all students to reach their fullest potential during their course of study (**impact**).

We recognise it is essential that the **implementation** of Maths via our 14 – 19 curriculum offer continues to work towards clearly defined 'end points at this stage of each students' school career which will shape our provision; this will ensure all students in our KS4 – Post 16 classes are prepared well for their next stage/ steps & the school remains responsive to their differing needs.

The Maths offer will continue to be informed by students' interests/ aspirations particularly as students & their families consider post school destinations using such information to further inform practice which examines students functional use & application of Maths skills (retained knowledge in long term memory).

Assessment of students learning & the progress they make will additionally inform modules of accreditation which will enhance students learning, providing meaning & relevance in what they will study & hold value to qualifications obtained. Our Maths curriculum will provide students with a breadth & depth of study with sufficient challenge in learning content which ensures no student is disadvantaged by their Maths offer. The implementation of Maths will ensure learning in each class has considered prior learning to secure it remains part of a well-planned sequence & continues to be informed via summative assessment outcomes published for all students using this to inform planning/ guide practice.

IMPLEMENTATION AT KEYSTAGE 4 → Post 16:

The implementation at Key Stage 4 will focus upon an application of a functional maths offer identified within KS4 & which will continue to be delivered within Post 16; this implementation fully considers the **Functional skills framework (Entry → Level2)** which is designed to enable students' the opportunity to apply their learned mathematical skills in a variety of contexts within the areas of number, measure (length, width, height, weight, comparisons, time), position, money, shape, sorting/ classifying objects, following a period of practice/ rehearsal within core skills sessions. To ensure such areas hold meaning our schools have determined the key skills which will need to be practically applied to increasingly complex situations. Functional numeracy will therefore encourage students to demonstrate how they:

- apply functional problem solving/ learned numeracy skills to a wide variety of practical, real life contexts within school/ local community
- understand a situation & use their mathematic skills to tackle tasks/ problems to provide answers; choose an approach to tackle the problem
- make mistakes, effectively problem solve further developing such skills evaluating the model used & their approach
- apply & adapt such experiences in other situations as they arise
- further develop the capacity to identify & understand the role that Numeracy plays in their world to enable them to function as effective citizens
- continue to develop their realisation that many problems can be solved via Maths, formulating a model using mathematics
- remembers previously learned responses (coping skills)
- pursue modules of accreditation that holds meaning & promotes progress within learning
- secure outstanding outcomes
- develop their knowledge & understanding of the world around them which enables them to make a contribution to it

Functional skills:

Our school recognises that the term 'functional' should be considered in the broad sense of providing students with the skills & abilities they need to make to take an active & responsible role in their communities, everyday life, the workplace & educational setting. Functional mathematics requires learners to use mathematics in ways to make them ***effective & involved as citizens, to operate confidently in life, & to work in a wide range of contexts.***

FUNCTIONAL SKILLS (Functional Skills standards)/ Levels & level differentiation (Entry 1 – Level 2): FS Levels relate to the complexity of the situation, the difficulty & range of mathematical techniques required to make sense of it, & the analysis & communication of findings. Levels are differentiated by the following:

- **Complexity –** Real life situations as they arise identifying the mathematics needed to tackle a situation & the steps needed to solve a problem (*e.g. – 6 students want a drink; therefore, I need to count & collect 6 cups from the cupboard*)
- **Familiarity** – Relate skills & understanding developed in other contexts & transferring these adapting or extending their knowledge in order to tackle the problem effectively (*e.g. – counting 5 cubes in the classroom, 5 oranges in the supermarket, 5 coffee cups in the college cafeteria*)
- **Technical demand** – The range of knowledge, skills & techniques that an individual is required to draw on to tackle a problem (*e.g. – how many pieces do I need to cut this pizza into to enable each person to have a slice each?)*
- **Independence** – The level of autonomy that learners apply to tacking a problem at each stage (*e.g. – apply problem solving skills*)

<table>
<tr><th colspan="3">Functional skills levels:</th></tr>
<tr><th>ENTRY</th><th>LEVEL 1</th><th>LEVEL 2</th></tr>
<tr><td>The context is very familiar & accessible to the learner. The mathematics demanded by the situation or problem are simple, clear & routine. The techniques & procedures required are specific to the situation or problem. Guidance & direction are provided.</td><td>The context may be less familiar than at Entry Level but is accessible to the learner. The mathematics demanded is clear but with some non-routine aspects to the situation or problem. Methods & procedures may require selection & an organised approach. Models need to be selected & adapted. Guidance is provided but autonomous decisions are required to find solutions.</td><td>In some respects, the context is unfamiliar to the learner & the situation or problem needs to be identified. The mathematics demanded may not be obvious in all situations & there will be non-routine aspects to the situation or problem. Methods may involve several steps & require identification of underlying mathematical structures & ways of describing them. Guidance may be provided but choices are independently made & evaluated.</td></tr>
<tr><th colspan="3">Functional skills – core areas – Context of number, measure, shape & space, handling data:</th></tr>
<tr><td>The essentials skills of context of number will encourage our students to continue to develop their knowledge, understanding & realisation in the need to apply learned skills to:
Understand & use whole numbers, fractions, decimals, percentages & place value & count reliably within practical & functional activities
Understand & use addition/ subtraction in practical situations
Understand & use division/multiplication in practical situations where necessary using repeated addition to calculate
Develop a confidence in reasoning, problem solving abilities by using number in everyday life through functional & practical activities across the 14 – 19 curriculum</td><td>The essentials skills of measure, shape & space will encourage our students to continue to develop their knowledge, understanding & realisation in the need to apply learned skills to:
Understand, estimate, measure & compare length, capacity, weight & temperature within functional & practical learning
Use metric & imperial units in everyday situations e.g. cooking
Complete simple mental calculations involving measure
Uses coins & notes & begins to calculate change within community-based learning environments
Add & subtract using three-digit numbers (money)
Complete simple mental calculations involving money
Understand names, recognition of 2D & 3D shapes & their properties to solve problems & apply to practical situations in everyday life & WRL</td><td>Through the teaching of handling data our students will further their ability to:
Extract information from lists, tables, simple diagrams & bar charts
Extract information & make numerical comparisons from bar charts
Sort & classify objects using two criteria
Collect simple numerical information
Make observations & record information through tally
Represent information so that it makes sense to others</td></tr>
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Breadth of Study:

It is acknowledged that the Maths offer provides our students with a breadth of learning opportunities with identified 'end points' with structured opportunities to secure a depth/ mastery in the concepts, skills & knowledge they acquire. This depth will be achieved via robust assessment practices particularly in sessions where students are applying learned skills therefore further reinforcing the Mastery approach within all teaching & learning. This approach continues to provide plenty of opportunity for teachers to plan sessions where students are able to apply their learned sequences using/ extending their acquired mathematical concepts, their reasoning & problem-solving skills (a practical application of their skills outside of the class/ school environment). We achieve this by encouraging students to build their competencies in number, measure, shape, space & data weaving such methods through the breadth of our Maths offer. Through such means we will encourage our students to develop/ continue to develop the skills to not only 'work mathematically' (formally assessed from Progression Steps 9) but to develop efficient methods/ coping strategies/ functional skills to solve problems efficiently & effectively.

Mathematical Areas KS4 – Post 16		
Context of number • Place value • Counting • Calculation – addition/subtraction, multiplication/division • Fractions (including decimals & percentages)	**Measure, shape & space** • Common measure – Time, money, weight, length, capacity/volume, temperature • Shape & space – 2D/ 3D shapes	**Handling data** • Data
Assessment: Adult B_2 - Adult Curriculum		
Context for number **M1a** • Encounter experiences • Respond with reflex **M1b – M3b** • Engage with objects & environment **M4 – E1** • Whole numbers **E2 – E3** • Whole numbers • Fractions, decimals & Percentages	**Measure, shape & space** **M4 – E3** • Common measures • Shape & space	**Handling data** **M4 – E3** • Data
**It is acknowledged that some pupils may well be working towards GCSE routes; the examination body will outline the key principles of assessment/ moderation/ verification required when examinations are taken*		

Functional skills/ Numeracy accreditation modules available: ASDAN Life Skills Challenge, Short Courses & ASDAN Personal Progress Entry 1

EMNSE1 - Early mathematics: developing number skills	EMME1 - Early mathematics: measure	EMPE1 - Early mathematics: position	EMSOE1 - Early mathematics: sequencing & sorting
EMSHE1 - Early mathematics: shape	TREE1 - Recognising time through regular events	UMFE1 - Understanding what money is used for	**ASDAN Personal & Social Development Entry 1 & 2** MOME 1, 2 - Managing own Money

School based Maths planning/ delivery: *Schools will publish long term planning for this area of the curriculum*	
Key Stage 4: 2-year programme of work	**Post 16: 3-year programme of work**
Within KS4 students' study will **continue to address the development of Numeracy skills (number, measure, shape & space, handling data)** identified via their B2 assessment outcomes ensuring learning remains sequenced & builds long term memory previously delivered within KS3 via: • **maths registers/ personalised targets** woven through the school day/ week • **core skills sessions** delivered through the school week aimed at building upon key skills learned securing stretch/ challenge in the next step identified evidenced via personalised learning outcomes which may lead to higher achievement (accreditation route/ formal qualifications) • **core skills sessions** aimed at practicing/ rehearsing key skills which will be addressed over the school week Within KS4 students will have opportunity **to use & apply their Numeracy skills** in a functional way enabling them to develop a confidence in using & applying key skills learned within increasingly complex situations/ wider learning environments. This will be achieved by their access to the three strands of the Post 16 which becomes part of their school offer/ curriculum which prepares them well for their next stage. Functional numeracy will therefore feature across the curriculum and within: • WRL • Independent living skills • Health, well-being & relationships	**Within P16** students **will continue to be encouraged to use current skills/ knowledge obtained** widening opportunities to encourage them to use/ embed such skills confidently which helps them become more independent in their daily adult lives (work experiences/ community engagement etc); this aspect will further prepare them for life post school. Through their structured timetable students will have opportunity to practice/ rehearse key skills which can be applied through their school day/ week assessing such application of their functional maths accordingly. Students will therefore be provided with: • maths registers (personalised targets woven through the school day/ week) • core skills sessions aimed at practicing/ rehearsing key skills which will be addressed over the school week • daily opportunity to use/ apply their numeracy skills within timetabled sessions applying learned skills practically to solve increasingly complex problems • personalised learning outcomes which may lead to higher achievement (accreditation route/ formal qualifications) Through such means we will enable them to: • makes sense of/ understands a situation & choose an approach to tackle the problem (use mathematical procedures) • formulate a model using mathematics • use mathematics to provide answers • interpret & check the results • evaluate the model & approach • explain the analysis & results • apply & adapt this experience in other situations as they arise • demonstrate a level of autonomy applied to tackle a problem at each stage (apply problem solving skills)

Organisation:

- All R2L 14 – 19 students will study Maths which will feature within class timetables (core skills sessions) demonstrating equity in the Maths learning we offer and throughout the curriculum offer
- The application/ generalization of Maths skills will be delivered via the 3 strands of the 14 – 19 offer (WRL, Life skills & independence, & healthy & well-being); units will identify maths links
- Each area will be identified within the school's Long-Term Planning framework to ensure breadth/ depth of study
- Maths delivery will ensure the Maths Mastery principles are adopted & implemented within all structured teaching/ learning sessions
- Medium Term Planning for each area of Maths will identify the WALT ('end point' – all learning remains part of a well-planned sequence)
- Differentiation of learning outcomes designed for each pupil (pupil end points) will enable pupils to work towards personalised learning outcomes (WILF) based upon their skills, knowledge & understanding of what they can already do
- Learning outcomes will be designed using formative assessment outcomes securing a sequence within learning planned/ addressed (all learning remains part of a well-planned sequence) leading to cumulative knowledge (knowledge becomes embedded)
- Workbooks/ sheets will only be used when these hold value to the learning being addressed

Breadth of offer (long term planning)

Our school will continue to reflect upon the breadth of Maths offered as detailed via our 14 – 19 long-term planning frameworks which specifies the duration of teaching blocks identified recognizing that Maths is planned to be applied as students move through the school.

Class teachers will be responsive to student assessment outcomes & the principles associated with the Maths mastery approach which guides their teaching/ learning sessions adjusting the depth of offer in accordance to the information obtained – e.g. – extending the length of study within context for Number/ Handling data etc where assessment demonstrates further study is required a students are not necessarily applying their obtained skills. There is an expectation that teachers will ensure their planning acknowledges the breadth of study & will formally deliver all maths aspects over the term/ academic year the Maths offer via core skills sessions/ through the three strands of the Post 16 offer.

Maths Core Skills Scheme of Work – Year 10 – Year 14

**pupil/ class assessment outcomes will determine duration (depth) of study within each maths aspect, breadth of study will be achieved across each academic year*

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Context for number	Measure, shape & space	Handling data	Context for number	Measure, shape & space	Handling data	Context for number	Measure, shape & space	Handling data	Context for number	Measure, shape & space	Handling data
Spring	Context for number	Measure, shape & space	Handling data	Context for number	Measure, shape & space	Handling data	Context for number	Measure, shape & space	Handling data	Context for number	Measure, shape & space	Handling data
Summer	Context for number	Measure, shape & space	Handling data	Context for number	Measure, shape & space	Handling data	Context for number	Measure, shape & space	Handling data	Context for number	Measure, shape & space	Handling data