Woodlane High School

achieving success in a nurturing environment

Subject Policy: Mathematics

Updated: September 2019

Next Update: September 2020

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Intent – *What is Woodlane aiming to achieve through its Maths curriculum?*

- Present an environment where all pupils can learn Maths to the best of their ability and where all pupils' needs are addressed positively and sensitively.
- Offer a variety of approaches to teaching and learning to engage and motivate pupils, encouraging their active participation in Maths.
- Provide pupils with techniques so that they can investigate and solve problems in school Maths and other curricular areas.
- Develop and extend a pupil's ability to express themselves clearly; to reason logically and to be able to generalise.
- Build a pupil's confidence in their own ability and develop mathematical skills for their usefulness and applicability in the real world.
- Develop mathematical knowledge and oral, written and practical skill that encourages confidence and enjoyment.
- Utilise pupils' interests and popular current events in the world to stimulate learning.
- Set realistic yet challenging targets, with high expectations for all pupils.
- To ensure all pupils leave Woodlane with a Maths qualification which reflects the best of their ability.

Implementation – *How is the Woodlane Maths curriculum delivered?*

Curriculum Delivery

- Pupils have full access to the Maths National Curriculum which is differentiated to meet pupils' learning needs and styles.
- The Maths curriculum is designed to be challenging, appropriate to each pupil's stage of development.
- The Maths Curriculum offers opportunities for cross-curricular learning, to ensure pupils make significant personal development, including:
    - ✓ Maths Theme days;
    - ✓ Maths parental engagement workshops;
    - ✓ SaLT strategies/Word Aware integrated in to teaching;
    - ✓ modelling and encouraging appropriate speaking and listening skills and encouraging pupils to interact with one another, extend and reflect on their responses;
    - ✓ encouraging focused questioning and discussion skills;
    - ✓ improving pupils' reasoning and problem solving skills;
    - ✓ use calculators and other ICT resources appropriately and effectively to solve problems;

- ✓ developing pupils' skills in handling information effectively and using the internet appropriately as a learning tool to find things out, develop ideas and exchange and share information.

- The KS3 Maths/Numeracy curriculum is taught through 3.61 hours (average) contact time per week (14% curriculum time).
- The KS4 Maths/Numeracy curriculum is taught through 2.92 hours (average) contact time per week (12% curriculum time).
- The Maths curriculum is designed to build and expand on previous skills and subject knowledge, over a 5 year period. It also plans for opportunities for repetition to embed knowledge, increasing the chance of information recall and to integrate new knowledge into larger ideas (view our Maths curriculum map in apprendix).
- We offer a wide range of qualifications in Maths, which are selected to appropriately challenge, based on each pupil's stage of development, including:
  - ✓ Maths (GCSE)
  - ✓ Maths (Entry Level)
  - ✓ Maths Functional Skills (NCFE Level 1 and 2)
  - ✓ Non-Qualification Maths Units for learners below Entry Level (AQA Unit Award Scheme)
- The love of learning is incredibly important to us, we therefore also run an annual Maths Theme Day, where pupils participate in fun and engaging activities throughout the day.
- We provide additional extra-curricular activities at lunch time, including:
  - ✓ GCSE Maths support
  - ✓ Opportunities for homework support

Teaching and Learning

- Our pupils are taught by transition teachers in Year 7 and subject specialists from Year 8 to Year 11.
- Our Maths Subject Leader is well qualified, possessing a PGCE in Secondary Maths, a BSc in Maths with Physics and is a SpLD specialist teacher.
- The Maths curriculum is differentiated broadly into 3 levels of challenge, 'all', 'most' and 'some'. Further differentiation and personalisation is implemented when required.
- Maths homework is provided on a standardised format and is differentiated to provide the appropriate level of challenge (click here for further details).
- In Maths we have a 3 tiered approach to supporting a pupil's learning, including:

  Universal – this is the teaching your child will receive from the Maths subject teacher and will include adaptations to match learning needs. All classes:

- ✓ are supported by a teaching assistant (TA);
- ✓ have a maximum of 10 pupils per class to ensure there is a high level of support available from the teacher and TA;
- ✓ are multi-sensory;
- ✓ are dyslexia friendly;
- ✓ integrate speech, language and communication support;
- ✓ are supported either directly or indirectly by speech and language therapists; and
- ✓ receive specialist streamed numeracy lessons at KS3, based on standardised testing.

Targeted – it may be appropriate to consider making additional short term special educational provision to remove or reduce any obstacles to your child's learning. This takes the form of a graduated four part approach of a) **assessing** your child's needs, b) **planning** the most effective and appropriate intervention, c) **providing** this intervention and d) **reviewing** the impact on your child's progress towards individual learning outcomes.

Interventions may include:

- ✓ specific targeted numeracy small group activities run outside the classroom. These will be limited to a number a weeks to minimise disruption to the regular curriculum;
- ✓ termly numeracy and SaLT targets;
- ✓ Maths parent-pupil workshops delivered every year to enable parents to best support their child and work in partnership with the school.

Specialist – it may be necessary to seek specialist advice and regular long term support from a specialist professional in order to plan for the best possible learning outcomes for your child.

- ✓ Maths parent-pupil workshops are delivered every year to enable parents to best support their child and work in partnership with the school.
- ✓ Maths homework is provided on a standardised format and is differentiated to provide the appropriate level of challenge.

Assessment

- Pupils collate Pupil Achievement Books, where they showcase their best work and progress over time in Maths.
- Our bespoke Flight Path is used to track the progress of pupils in Maths and determine expected outcomes from different starting points.

- Maths teachers use a range of formative and summative assessment procedures to assess progress and attainment, including:
    - ✓ daily marking (click here for teaching and learning policy);
    - ✓ self/peer assessment;
    - ✓ Maths (Hodder/MALT) age assessment;
    - ✓ Mathletics;
    - ✓ MyMaths;
    - ✓ informal/formal examinations; and
    - ✓ B-Squared etc.

Impact – ***What difference is the Woodlane Maths curriculum making on pupils?***

- The vast majority of pupils meet or exceed their expected progress in Maths.
- The very large majority of pupils meet or exceed their expected outcomes in Maths (external qualifications).
- The vast majority of pupils leave Woodlane with at least one formally recognised Maths qualification.
- Many pupils join mainstream colleges/sixth forms at post-16 where they study a range of different qualifications and subjects following excellent progress from their starting points in Maths and following successful completion of the Maths GCSE, Entry Level or Functional Skills qualifications.
- Pupils are well-prepared for the next stage of their education.
- Analysis of Maths outcomes and pupil progress indicates that there is little statistical significance between key groups. Where any small differences are identified strategies are implemented swiftly.
- Numeracy is embedded across the school and feeds into other subjects. Excellent progress in Maths has a significant benefit for pupils in other subjects.
- Although a small number of pupils enter the school functionally numerate, a high number move towards this throughout their time at Woodlane.
- Functional skills and life-skills are embedded in the Maths curriculum and are personalised for each pupil. This supports pupils to make the leap to post-16 provision and meets their needs when entering the world of work.

Appendix

Mathematics Curriculum Map – *What will the pupils learn and when?*

Year 7		Autumn A & B	Spring C	Spring D	Summer E & F
Content		Addition, Subtraction, Multiplication & Division Times tables Time Length, Mass & Capacity	Time Area & Perimeter Factors & Multiples Money	Money Tally Charts & Frequency Tables Bar Charts & Line Graphs Averages Fractions, Decimals, Percentages	Probability Tally Charts & Frequency Tables Bar Charts & Line Graphs Averages Addition, Subtraction, Multiplication & Division
Skills	**All**	- Add & subtract without exchanging - Recall 2,5,10 times-tables - Identify units of length - Read o'clock & half past times - Identify units of mass - Identify units of capacity	- Read o'clock & half past times - Identify units to measure length - Use symbols <, >, = - Order whole numbers up to 100 - Identify £ and p signs - Identify value of coins and notes - Add using £ and pence	- Identify £ and p signs - Identify value of coins and notes - Add using £ and pence - Create tally/frequency charts - Identify simple fractions ½, ¼, ¾ - Recognise fractions in practical work	- To use language of probability - Describe the chance of an event happening i.e. likely, certain, impossible - Create tally/ frequency charts - Add & subtract 1 digit number from a 2 digit number
	Most	- Identify place value - Add & subtract up to 100 - Long multiplication 3x1 digit - Recall times tables up to 10 - Draw & measure length with ruler - Read time in 5 min intervals - Convert between metric units of mass - Convert between metric units of capacity	- Read time including minutes past/to - Use a calendar correctly - Use, read and write metric units of length - Convert between mm, cm, m & km - Estimate length & measure/draw lines to nearest mm - Calculate the perimeter of a shape - Order whole numbers up to 1 million - Recognise first 10 multiples of 6, 7, 8, 9 - Add & subtract using £ and pence - Find totals and give change - Develop calculator skills	- Add/subtract using £ and pence - Find totals and give change - Develop calculator skills - Use ICT to create bar/line graphs - Interpret information from charts - Recognise equivalent fractions - Recognise percentage is 'out of 100' - Calculate percentages 10%, 20%, 50% - Calculate simple equivalences between fraction, decimal, percentage - Calculate simple fractions of quantities & measurements	- Use the probability scale from 0 to 1 - Calculate simple probabilities - Use ICT to create bar/line graphs - Interpret information from charts - Order whole numbers up to 1 million - Use written methods to solve long computation using the 4 operations
	Some	- Add & subtract all numbers - Long multiplication 2 x 2 digits - Long division by 1 digit - Convert between units of length - Identify imperial units of length - Read time in 1 min intervals - Convert to and from 24 hr clock - Understand relationship between imperial units of mass - Understand relationship between imperial units of capacity	- Solve word problems involving time - Extract information from timetables - Find the area by counting squares - Solve problems involving perimeter - Apply divisibility test for 2, 3, 5, 10, 100 - Identify factors of 2 digit numbers - Solve 1 & 2 step money word problems - Multiply and divide using £ and p	- Solve 1 & 2 step money word problems - Multiply and divide using £ and p - Conduct investigation and create graph - Interpret information - Find the mode of a small set of data - Find the range of a set of values - Change a simple improper fraction to a mixed number and vice versa - Convert between fractions, percentages and decimals	- Conduct investigation and create graph - Interpret information - Find the mode of a small set of data - Find the range of a set of values - Apply divisibility test for 2, 3, 5, 10, 100 - Use all 4 operations to solve multi-step word problems

Year 8		Autumn A	Autumn B	Spring C	Spring D	Summer E & F
Content		Bar Charts & Line Graphs Tally Charts & Frequency Tables Averages Number Properties	Angles Place Value 2D & 3D shapes	Number Properties Angles Length Metric & Imperial units	Rounding Coordinates Mass Capacity	Multiplication & Division Sequences Drawing to Scale
Skills	**All**	- Read bar charts - Understand mode - Read a tally chart/frequency table - Multiply numbers by 10, 100 & 1000 - To identify odd & even numbers	- Identify right angles - Identify 2D shapes - Identify 3D shapes - Multiply numbers by 10, 100 & 1000	- Recall 2, 5 & 10 times tables - Recall number bonds up to 20 - Round numbers to the nearest 10, 100 - Identify right angles - Suggest units to measure length - Draw lines to the nearest cm	- Round numbers to nearest 10, 100 - Use chart to recall times tables up to 10 - Plot coordinates on a grid (3,4) - Identify units to measure mass - Identify units to measure capacity	- Use chart to recall times tables up to 10 - Understand that division is the opposite of multiplying - Use counters to share equally - Recognise & extend number sequences in steps of constant size. - Complete patterns in shape - Complete simple scale drawings
	Most	- Create a tally chart/frequency table - Read and interpret bar & line charts - Understand mode and calculate range - Recall rule to multiply and divide whole numbers by 10, 100 & 1000 - To identify multiples of a given number	- Identify angles – acute, right, obtuse - Estimate & measure angles using a protractor - Identify quadrilaterals and their properties - Identify triangles and their properties - Recall rule to multiply and divide whole numbers by 10, 100 & 1000	- Recall times tables up to 10 - Identify multiples of given numbers - Use written methods to add and subtract 3 digit numbers - Round to the nearest 10, 100, 1000 - Identify angles – acute, right, obtuse - Estimate & measure angles using a protractor - Use, read & write metric units of length - Convert between mm, cm, m & km	- Round numbers to 1 decimal place - Recall times tables up to 10 - Workout TU x U - Write down the coordinates of a point in the first quadrant - Identify x and y axis - Convert between metric weights g, kg - Convert between ml & l - Reading scales in different contexts	- Recall times tables up to 10 - Begin to recall division facts - Solve function machines (1-2 steps) - Use a scale to complete a drawing
	Some	- Multiply 2 x 2 digits - Design a questionnaire and show results using ICT - Identify HCF & LCM for given numbers - Identify square numbers & square roots - Identify prime numbers - Identify cube numbers and cube roots - Identify prime factors	- Identify angles – acute, obtuse, reflex - Measure angles on a straight line and at a point - Solve problems involving interior and exterior angles of regular polygons	- Recall times tables up to 12 - Know & apply tests of divisibility of 2, 3, 4, 5,10 or 100 - Identify multiples & factors of up to 2 digit numbers - Use methods to add & subtract numbers with up to 3 decimal places - Identify angles – acute, obtuse, reflex - Measure angles on a straight line and at a point	- Round numbers up to 2 decimal places - Recall times and division facts to 12 - Workout HTU x U, TU x TU - up to 2 decimal places - Plotting coordinates in all 4 quadrants - Use & convert between imperial & metric lengths - Recognise imperial weights & capacity	- Recall times and division facts to 12 - Long division with/without remainder - Identify how a shape has increased or decreased in scale

Year 9		Autumn A	Autumn B	Spring C	Spring D	Summer E & F
Content		Fractions Area & Perimeter Multiplication	Fractions & Decimals Multiplication 2D Shapes Isometric Drawings	Fractions, Decimals & Percentages Function Machines Solving Equations 2D shapes	Fractions, Decimals & Percentages Angles 2D Shapes Multiplication & Division	Number Properties Averages Charts & Graphs Construction
Skills	**All**	- Identify basic fractions ½, ¼ - Illustrate fractions through shading - Find the perimeter of a simple shape - Find area of shapes - counting squares - Understand that multiplication is repeated addition - Begin to recall times tables up to 10	- Identify basic fractions ½, ¼, - Illustrate fractions through shading - Add and subtract decimals w/o carrying - Identify 2D & 3D shapes - Understand that multiplication is repeated addition - Begin to recall times tables up to 10	- Identify basic fractions ½, ¼, - Illustrate fractions through shading - Solve function machines (1 step) - Identify triangles and their properties - Identify lines of symmetry	- Identify right, acute & obtuse angles - Give directions including 4 main compass points - Add & subtract up to 2 digit numbers - Use chart to recall times tables up to 12 - Identify lines of symmetry - Identify triangles their properties - Identify basic fractions ½, ¼, - Illustrate fractions through shading	- Extract information from graphs - Construct pictograms, bar charts & frequency tables using ICT - Find the mode from a set of data - Use chart to recall times tables up to 12 - Read and write whole numbers in figures and words to 20 - Identify properties of numbers - Odd, even and square numbers - To identify the properties of a triangle - Construct scalene, right angle triangles
	Most	- Identify equivalent fractions - Convert between basic fractions, decimals & percentages - Convert mixed numbers to improper fractions and vice versa - Calculate simple fractions of an amount - Find the perimeter of a given shape - Use formula to find the area of shapes made up of rectangles and triangles - Recall times tables up to 10 - Understand and use a formal method of multiplication for at least TU X TU - Solve word problems using multiplication including decimals	- Identify equivalent fractions - Convert between basic fractions, decimals & percentages - Convert mixed numbers to improper fractions and vice versa - Calculate simple fractions of amounts - Identify 2D & 3D shapes and their properties - Find the volume of a given shape by counting cubes - Use formal methods for adding & subtracting decimals with carrying	- Identify equivalent fractions - Convert between basic fractions, decimals & percentages - Convert mixed numbers to improper fractions and vice versa - Calculate simple fractions of amounts - Solve function machines (1-2 steps) - Use letters for numbers - Identify properties of different triangles - Identify lines & order of symmetry	- Know 8 main points on compass - Measure angles accurately - Draw right, acute & obtuse angles - Extend written methods to HTU × U - Long multiplication 2 x 2 digits - Identify properties of different triangles - Convert between basic fractions, decimals & percentages	- Interpret information from graphs - Construct a pie chart - Read time tables - Find the mode and range - Read and write whole numbers in figures and words to 1000 - Double and halve 2 digit numbers - Recall times tables up to 12 and derive corresponding division facts - To identify different triangles - To construct equilateral and isosceles triangles
	Some	- Know equivalent fractions, decimals & percentages - Solve word problems involving fractions, decimals & percentages - Find the surface area of cuboids and prisms.	- Know equivalent fractions, decimals & percentages - Solve word problems involving fractions, decimals & percentages - Solve word problems involving decimal - Solve a range of problems involving volume - Draw cubes/cuboids on isometric paper	- Know equivalent fractions, decimals & percentages - Solve word problems involving fractions, decimals & percentages - Solve equations using like terms - Identify and draw triangles explaining properties - Understand congruence and line/rotational symmetry	- Draw acute, obtuse & reflex angles - Identify angles inside a triangle - Calculating opposite angles, angles on a straight line & around a point - Extend & review written methods of addition, subtraction, multiplication & division including HTU × TU, HTU ÷ TU - Solve word problems involving fractions, decimals & percentages	- Plan a trip using a time table - Find the mode, range and median - Read and write whole numbers in figures and words to 1,000,000 - To construct all triangles – SAS, ASA

Year 10		Autumn A	Autumn B	Spring C	Spring D	Summer E & F
Content		Algebra Bearings Scatter Graphs	Powers Volume Transformations	Transformations Number Properties Algebra	Fractions Probability	Probability Area & Perimeter Ratio & Proportion
Skills	**All**	- To know what a bearing is - Plot points on a scatter graph - To expand bracket a single bracket	- Know the terms power, index, base - Find value of number raised to a power - Write numbers using index notation - Find volume of shape - counting cubes - Identify the 4 types of transformations - Identify rotation as a turn about a point	- Identify the 4 types of transformations - Identify rotation as a turn about a point - Substitute values of x into a quadratic function to find values of y - Identify next terms in simple patterns - Add and subtract 2 digit numbers	- Identify simple fractions ½, ¼, 1/3 - Understand fractions as part of a whole - Use language of probability – certain, likely, even chance, unlikely, impossible - Use a probability scale to show how likely an event will happen.	- Use language of probability – certain, likely, even chance, unlikely, impossible - Use a probability scale to show how likely an event will happen. - Find the perimeter of a simple shape - Find area of shape - counting squares - Add and subtract one digit number from a 2 digit number. - Understand what ratio is
	Most	- Bearings are written as 3 figures - Bearings are measured from north in a clockwise direction - Interpret scatter graphs - Draw a line of best fit	- Use the index rules to simplify algebraic expressions - Use formulae for the volume of cuboids, cylinders & prisms - Enlarge shapes by positive scale factors - Understand translation to shift a shape horizontally and vertically	- Enlarge shapes by positive scale factors - Use a origin to rotate a shape to given instructions - Draw graphs of quadratic functions - Use all 4 signs to solve 1-2 step word problems - Solve simple problems using BIDMAS	- Visualise a fraction diagrammatically - Identify equivalent fractions - Write a fraction in its simplest form. - Write an improper fraction as a mixed fraction and vice versa - Convert a fraction to a decimal and vice versa - Use the language of probability to describe the likelihood of an event - Represent and compare probabilities on a number scale - List outcomes for single mutually exclusive events and identify their probability	- Use the language of probability to describe the likelihood of an event - Represent and compare probabilities on a number scale - List outcomes for single mutually exclusive events and identify their probability - Find the perimeter of a given shape - Use written methods to solve long computation using all 4 operations - Solve a problem using a simple ratio - Share a quantity with a given ratio
	Some	- To solve problems involving bearings - Be able to distinguish between positive, negative and zero correlation - To understand what expanding brackets means - To multiply out brackets correctly - To recall that any negative signs belong to the term on the right -To expand brackets with negative values	- Use brackets to expand and simplify algebraic expressions - Convert between units of volume - Distinguish properties that are preserved under transformations	- Distinguish properties that are preserved under transformations - Find a point of origin and describe how shape was rotated - Draw graphs of quadratic functions - Use quadratic graphs to solve quadratic equations - Use all 4 signs to solve multi step word problems - Solve complex problems using BIDMAS	- Add and subtract fractions using a common denominator - Multiply and divide fractions - Multiply and divide a number with a fraction - Record all the possible outcomes of an experiment in a sample space diagram	- Use four signs to solve multi step word problems - Record all the possible outcomes of an experiment in a sample space diagram - Use formula to find the area of shapes made up of rectangles and triangles - Find the surface area of cuboids and prisms - Solve problems involving area - Understand and use direct proportion

Year 11		Autumn A	Autumn B	Spring C	Spring D	Summer E & F
Content		Sequences Mensuration of a Circle Algebra Number Properties	Powers Volume Transformations	Transformations Number Properties Algebra	Fractions, Decimals & Percentages Applications of Percentages Ratio Number Properties	Volume Ratio & Proportion Powers Construction
Skills	**All**	- Label main properties of a circle (circumference, radius & diameter) - Use a compass to draw circles - Identify rule of a given sequence - Complete a sequence from a given rule - To identify multiples of a number - To identify factors of a number	- Know terms power, index, base - Find value of number raised to a power - Write numbers using index notation - Find volume of shapes - counting cubes - Identify the 4 types of transformations - Identify rotation as a turn about a point	- Identify the 4 types of transformations - Identify rotation as a clockwise turn about a point - Substitute values of x into a quadratic function to find the values of y - Identify next terms in simple patterns - Add and subtract 2 digit numbers	- Know equivalent fractions, percentages and decimals for 100%, 50%, 25%, 10% - Convert between basic fractions, percentages and decimals - Work out basic ratios	- Find volumes of shapes by counting cubes - Understand what ratio is - Work out basic ratios
	Most	- Draw circles to given radius or diameter - Label main properties of a circle - Calculate the circumference of a circle given the diameter - Workout rule for nth term - Find the value of a term in a sequence - Identify square numbers & square roots - Identify prime numbers	- Understand and use the index rules to simplify algebraic expressions - Use formulae for the volume of cuboids, cylinders & prisms - Enlarge shapes by positive scale factors - Understand translation to shift a shape horizontally and vertically	- Enlarge shapes by positive scale factors - Use a origin to rotate a shape to given instructions - Draw graphs of quadratic functions - Use all 4 signs to solve 1-2 step word problems - Solve simple problems using BIDMAS	- Convert between percentages, fractions and decimals - Find a percentage of a quantity - Write a ratio in its simplest form - Share a quantity into a given ratio - Solve simple problems using BIDMAS	- Use formulae for the volume of cuboids, cylinders & prisms - Write a ratio in its simplest form - Share a quantity into a given ratio - Know terms power, index, base - Find value of number raised to a power - Write numbers using index notation
	Some	- Label all properties of a circle - Find circumference and area of a circle - Use formulas to solve word problems involving circles - Use a formula to find the value of a term in a sequence - Identify cube numbers and cube roots - Identify prime factors - To calculate the HCF & LCM for given numbers	- Use brackets to expand and simplify algebraic expressions - Solve a range of problems involving formula - Convert between units of volume - Distinguish properties that are preserved under transformations	- Distinguish properties that are preserved under transformations - Find a point of origin and describe how shape was rotated - Draw graphs of quadratic functions - Use quadratic graphs to solve quadratic equations - Use all 4 signs to solve multi step word problems - Solve complex problems using BIDMAS	- Work out percentage increase or decrease of given amount - Use percentages in real life problems - Use all 4 signs to solve multi step word problems - Solve complex problems using BIDMAS	- Solve a range of problems involving formula - Convert between units of volume - Solve problems using direct proportion - Use rules of indices to simplify expressions - Use brackets to expand and simplify algebraic expressions - Use compass to complete constructions