



The Castle Maths Curriculum

A guide for parents and carers, staff and
visitors

Maths

Maths can be found in every part of day-to-day life, and is a fundamental skill for our pupils to develop in preparation for the future. We strive to make maths relevant, engaging and fun, in order to prepare pupils to handle different everyday maths situations with confidence.

Subject Intent

At Castle School Cambridge, we use Maths to build problem-solving, reasoning and confidence that empower learners in real-life contexts. From early pattern awareness to functional money, time, and measurement, Maths supports communication, independence and preparation for adulthood.

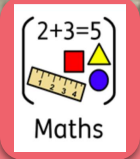




Maths

Pre-formal

reactive and pro-active



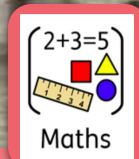
Aims:

- explore the pre-requisites of mathematical awareness
- develop contingency awareness, positional awareness, vision, handling objects, object permanence, and awareness of time, sequence and routine.

Delivery:

- embedded holistically throughout the day
- Explore through Attention Autism approach

Semi-formal



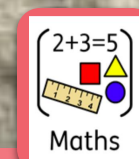
Aims:

- focus on practical skills and confidence in early number skills
- explore shape and number.
- experience shape and number in the wider community, environment and real-life experiences.

Delivery:

- focused sessions on the daily timetable
- long term planning by subject specialists, delivered and adapted by class teachers
- embedded practical skills
- explore through Attention Autism approach

Formal



Aims:

- build fluency, reasoning and problem-solving skills
- build deep understanding of key mathematical concepts for mastering maths

Delivery:

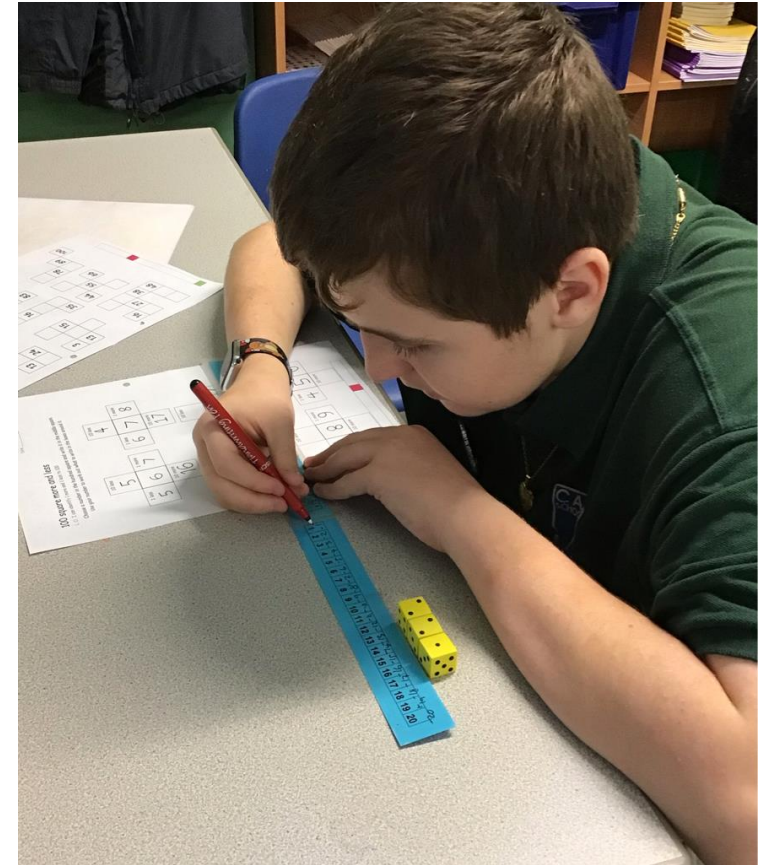
- focused sessions on the daily timetable
- long term planning by subject specialists, delivered and adapted by class teachers
- maths in the community via life skills and enterprise

Pre-formal students work on their understanding of the world. Maths can involve using cause and effect toys, independently exploring objects and textures, using their senses to listen, look, smell and taste and anticipating familiar routines within repeated sequences. Maths is incorporated using the Attention Autism approach.

Semi-formal students are taught through a termly topic.

Maths skills can be learnt through stories, mastering number, Attention Autism and real life situations. The experience is practical and brings a sense of enjoyment and curiosity about the subject. Pupils learn Maths skills through the experiences of Concrete, Pictorial and Abstract understanding.

Formal secondary students have discrete timetabled Maths lessons. Lessons are very practical with a strong focus on problem solving, fluency and life skills.



Assessment and accreditation

Assessment is an ongoing process and is an integral part of our teaching and learning. It allows us to identify what pupils already know and can do and helps us to plan the next steps in learning. It also helps us to identify any barriers to learning and then put in the necessary support.

We have designed our own bespoke assessment frameworks, adapted to the needs of our pupils.

Our pre-formal learners use the early rainbow framework where appropriate.



Our semi-formal and formal learners move through the Castle Rainbows and Castle Gemstones assessments. This leads to OCR life and living skills accreditation, OCR Entry Level Mathematics, functional skills qualification and financial education framework.



Specific taught curriculum based on National Curriculum programmes of study

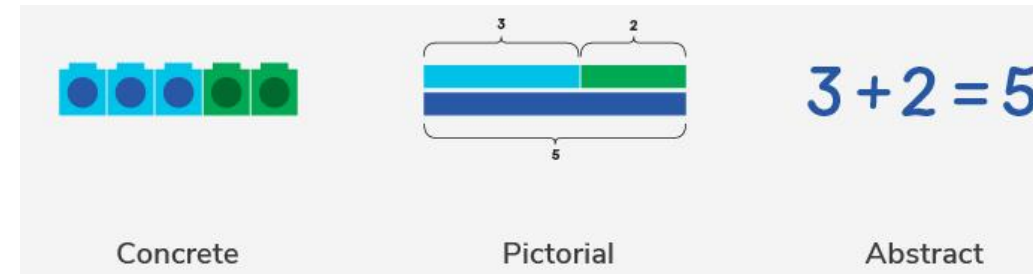
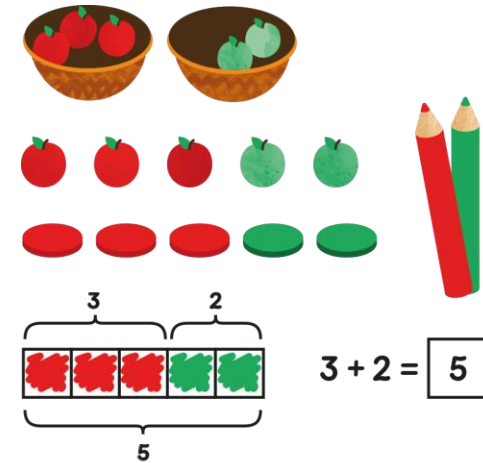
We have adapted the national curriculum to better suit our pupils needs. We aim to ensure that there is a clear progression through the school starting from Rainbow levels (adapted from birth to 5 matters, Early Years Foundation Stage) progressing through Gemstones Levels (adapted from national curriculum levels) and into accreditation and exams. Our curriculum is aligned with the national expectations and follows the NCETM Progression Maps guidance.



How we sequence learning and plan for progression

- At the early stages of development pupils explore maths skills through a variety of ways, for example: stories and themes experiencing learning through play, number songs, rhymes and games.
- Learning is developed by using the **maths mastery** approach.
- Lessons are sequenced to develop mathematical fluency and problem solving skills.

We aim for pupils to acquire a deep, long-term, secure and adaptable understanding of the subject.



next

How we organise learning – Taught Curriculum

The sequence teaching has been devised to promote learning, progression and a deep understanding of key concepts that are fundamental to future independence.

We divide the learning into 6 areas that are repeated annually, each area has a scheme of work which supports Teacher planning and ensures consistency across the school

Autumn 1: number, place value, addition and subtraction.

Autumn 2: number, multiplication, division, fractions and decimals.

Spring 1: measurements.

Spring 2: time, money.

Summer 1: spatial awareness, geometry

Summer 2: statistics



An example of our planning

NUMBER COUNTING AND READ / WRITE NUMERALS

Counting: I can React to changes of amount when those amounts are significant (more than double): Red. (R1)

Cardinality: I can be aware of number names through enjoyment of action rhymes and songs that relate to numbers: Orange. (R2)

Cardinality: I can look for things which have moved out of sight. Orange (R2)

Counting: I can say some counting words (and mark make). Yellow (R3)

CORE COUNTING PRINCIPLES

Counting Sequence: There is an ordered sequence of number names. Counting involves using the same sequence each time, starting with one. Extending the counting sequence is accomplished by repeating certain aspects of the previously used numbers in a structured way (according to our base-ten number system).

One-to-One Correspondence: Exactly one number from the counting sequence is assigned to each object in the collection.

Cardinality: The last number assigned to an object in counting the collection indicates the total quantity of objects in the collection.

Key Vocabulary:

Count one more/ one less; Share: First, Second, Last, Same as; One, two, three, four, five, a lot, a few, How many? Altogether, add/ take away, Different/Same

RESOURCES and ideas for each session

Positive Relationships (What adults might do) Enabling Environment (what adults might provide) PROGRESSION STEPS FOR LEARNING COUNTING & CARDINALITY NCETM:

1. Saying Number Words in Sequence: Students need to know number names, initially to five, then ten, and extending to larger numbers, including crossing boundaries 19/20 and 29/30. Counting back is a useful skill, but young students will find this harder because of the demand it places on the working memory.

Take opportunities to sing relevant number rhymes and counting songs that focus on counting forwards and encourage the children to join in with the actions e.g. Peter hammers with one hammer when a student is hammering or Two little eyes, pointing to their eyes, one by one. ; '1, 2, 3, 4, 5, Once I Caught a Fish Alive'; 'Two Little Dicky Birds Sitting On a Wall'

- During personal care routines make a point of using numbers e.g. Let's put one arm through here and one arm through here.
- Singing number rhymes with actions, related to routines, e.g. Three in the bed.
- Engaging families in sharing number rhymes, including those in home languages, e.g. Count with me (Bangladeshi), and from home cultures, e.g. Three crows.
- counting things of different sizes this helps children to focus on the numerosity of the count.
- counting things that can't be seen, such as sounds, actions, words Peekaboo.
- counting things that cannot be moved, such as pictures on a screen, birds at the bird table, faces on a shape.

2. Counting: tagging each object with one number word Children need lots of opportunities to count things in irregular arrangements. For example, how many play people are in the sandpit? How many cars have we got in the garage? These opportunities can also include counting things that cannot be seen, touched or moved.

Counting things of different sizes – this helps children to focus on the numerosity of the count: • counting things that can't be seen, such as sounds, actions, words • counting things that cannot be moved, such as pictures on a screen, birds at the bird table, faces on a shape.

Number

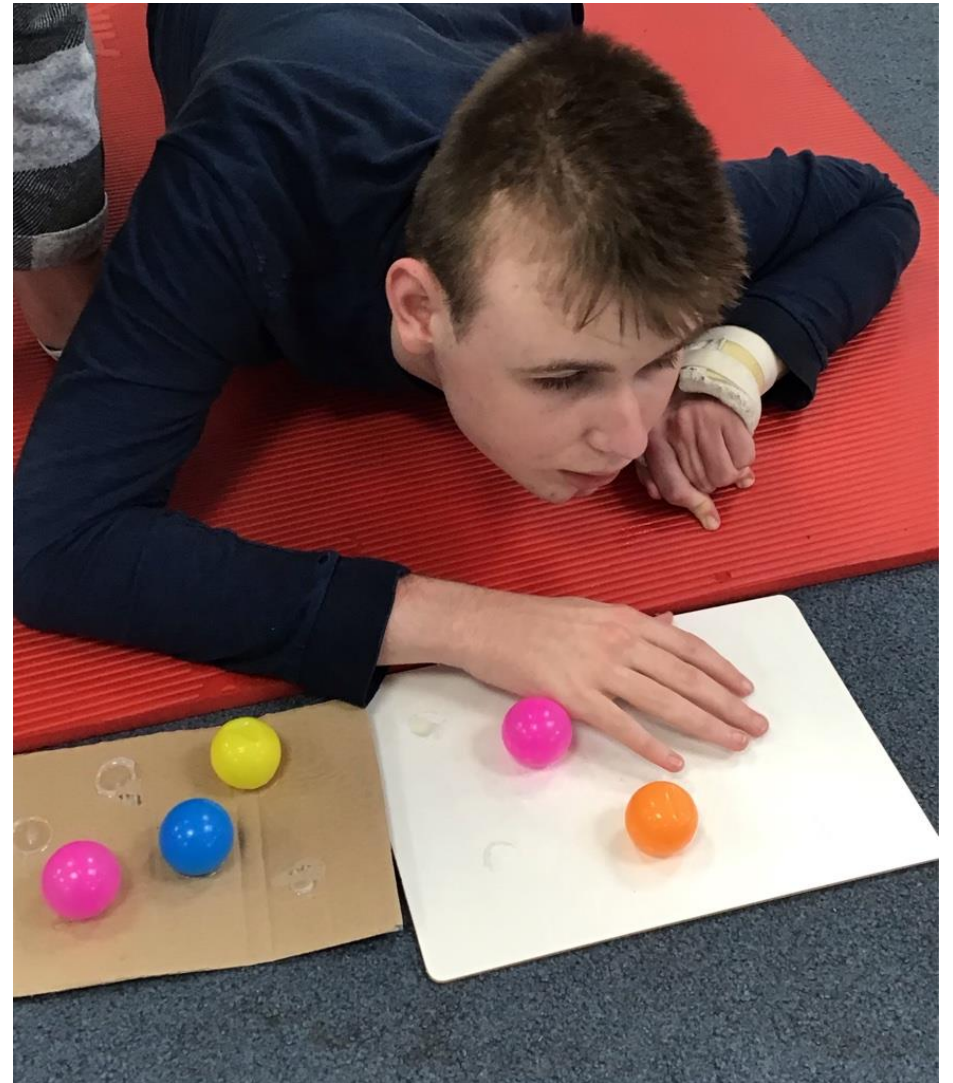
Place value addition and subtraction

Pupils begin to explore number through play and learn the relationship between numbers, objects and then the number system.



Matching and sorting

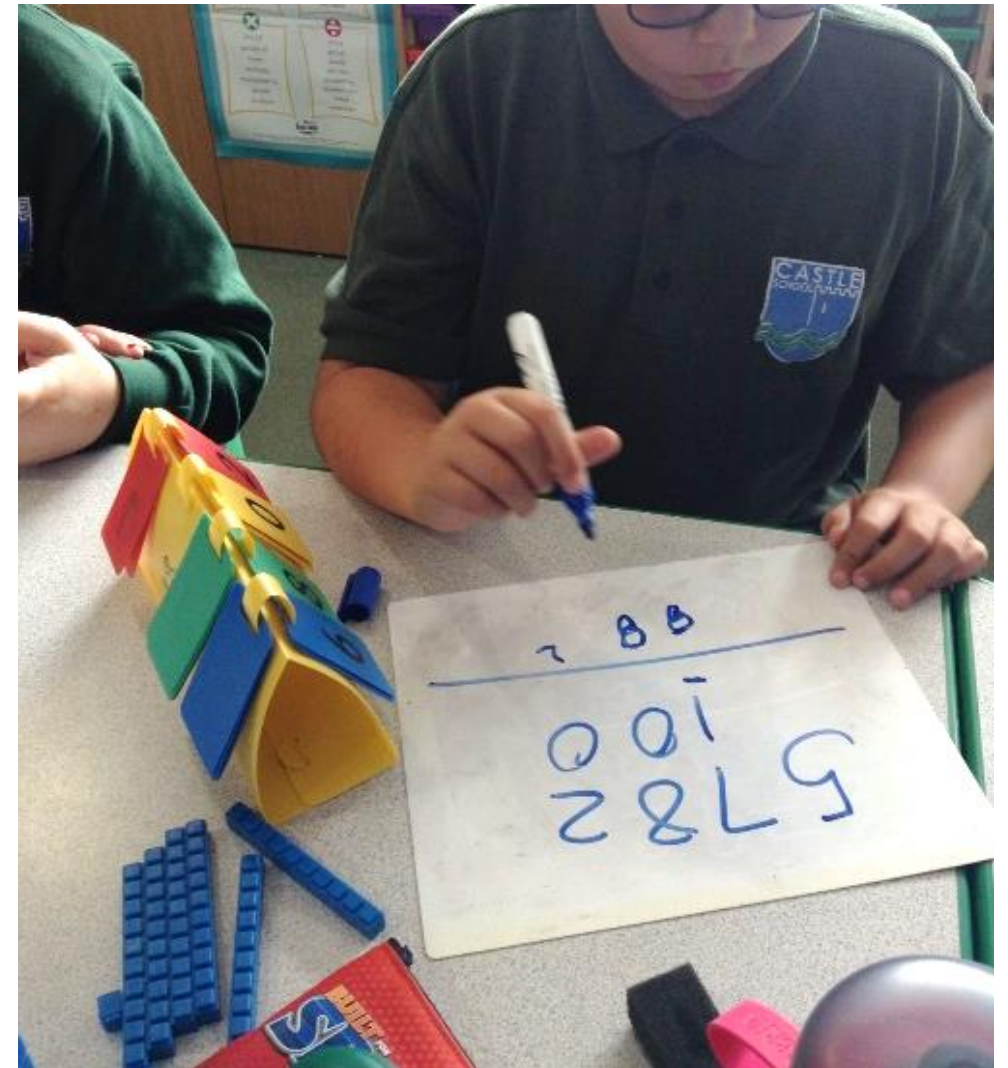
Matching and sorting involves finding things that are the same, or alike, and grouping them by specific traits.



Multiplication and division

As pupils develop their understanding of the number system they learn calculation methods.

From concrete to pictorial and then to abstract understanding.



Decimals and Fractions

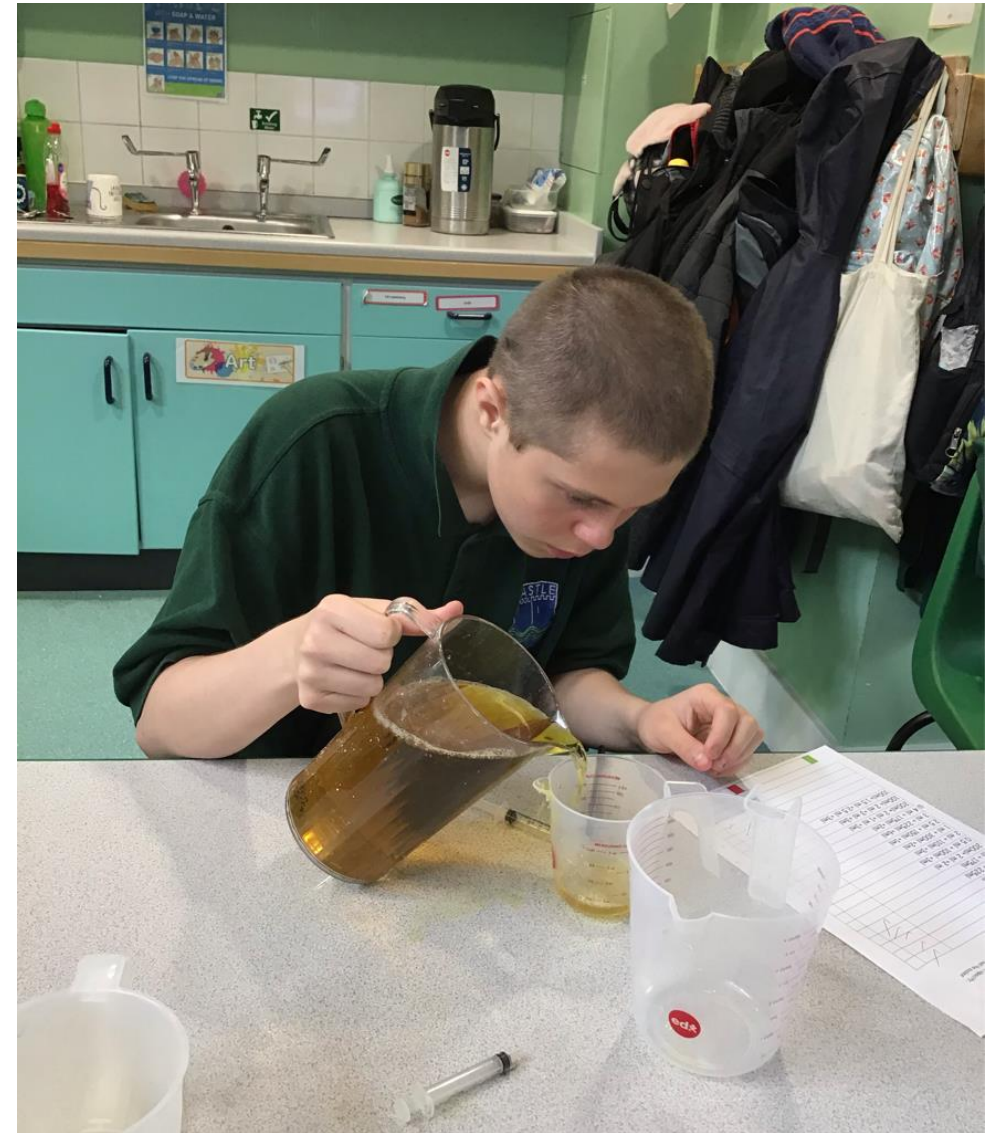
Pupils learn and use decimal and fractions in different contexts such as games, shapes, numbers and real-life contexts.



Measures

Pupils learn to compare and measure objects using different measuring tools in practical situations.

They use non-standard and standard units to measure.



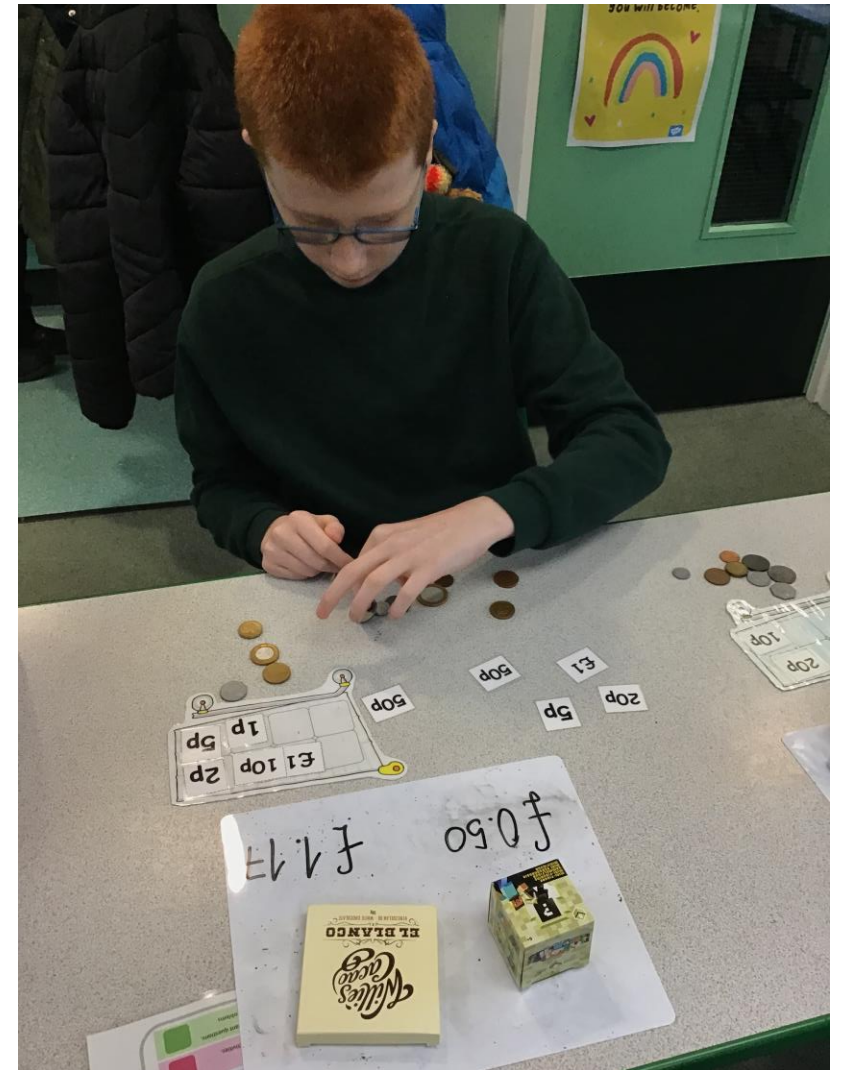
Time and money

We teach time skills and management to aid preparation for adulthood.

We order and sequence events and tell the time using digital and analogue clocks.

We introduce money concepts early to build a strong foundation.

We explain why money is essential, its role in daily life, and the concept of earning, saving and spending.



Spatial awareness

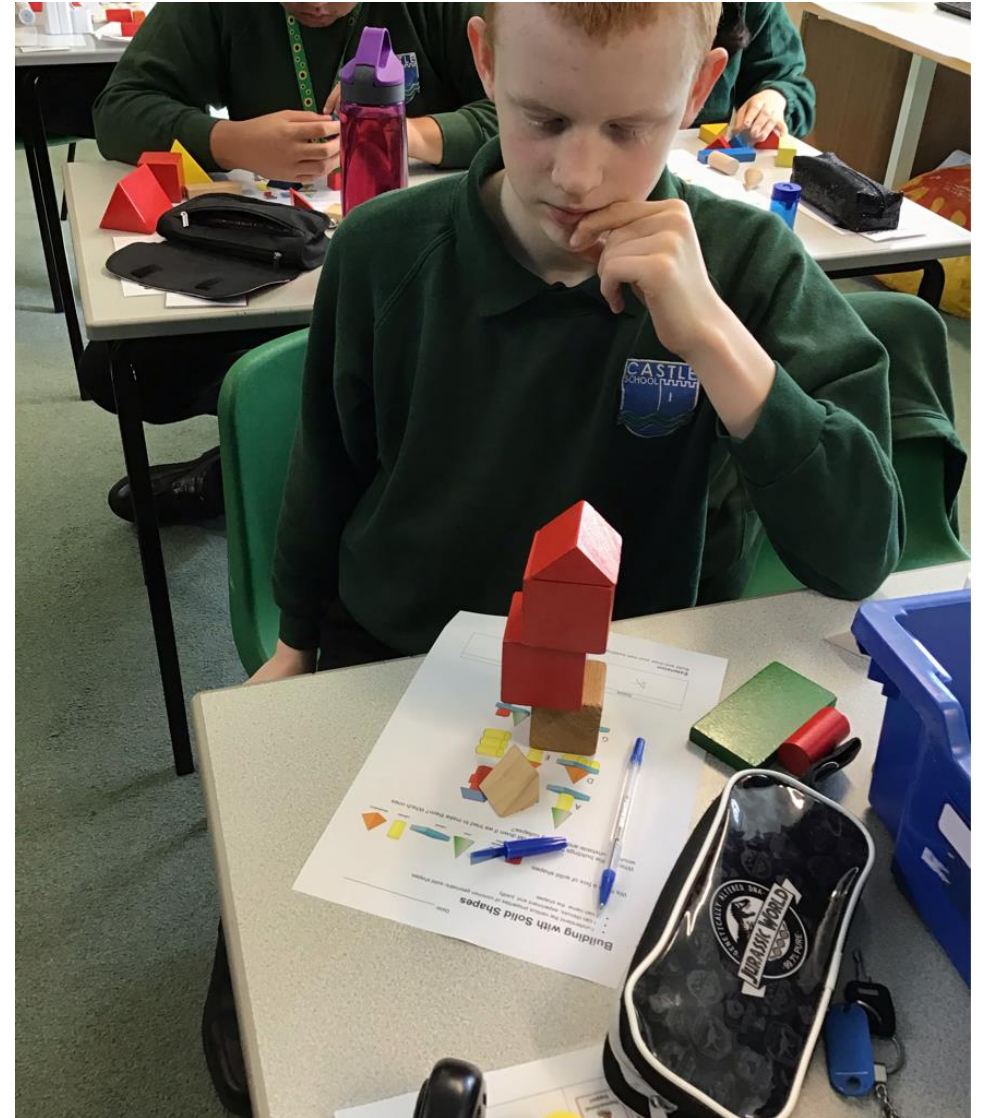
Pupils learn how objects relate to one another. They learn how to manipulate objects and place them in different positions in relation to each other. They also learn positional language and use this to describe and solve problems.



Geometry

Properties of shapes
Position and direction

Pupils learn how to use everyday language to describe properties of 2D and 3D shapes and use mathematical names. They also learn how these relate to each other and can use this knowledge to inform practical activities.



Statistics

Pupils engage in practical activities to collect data.

They develop effective ways to communicate their findings by using tables, graphs, pictograms, etc.



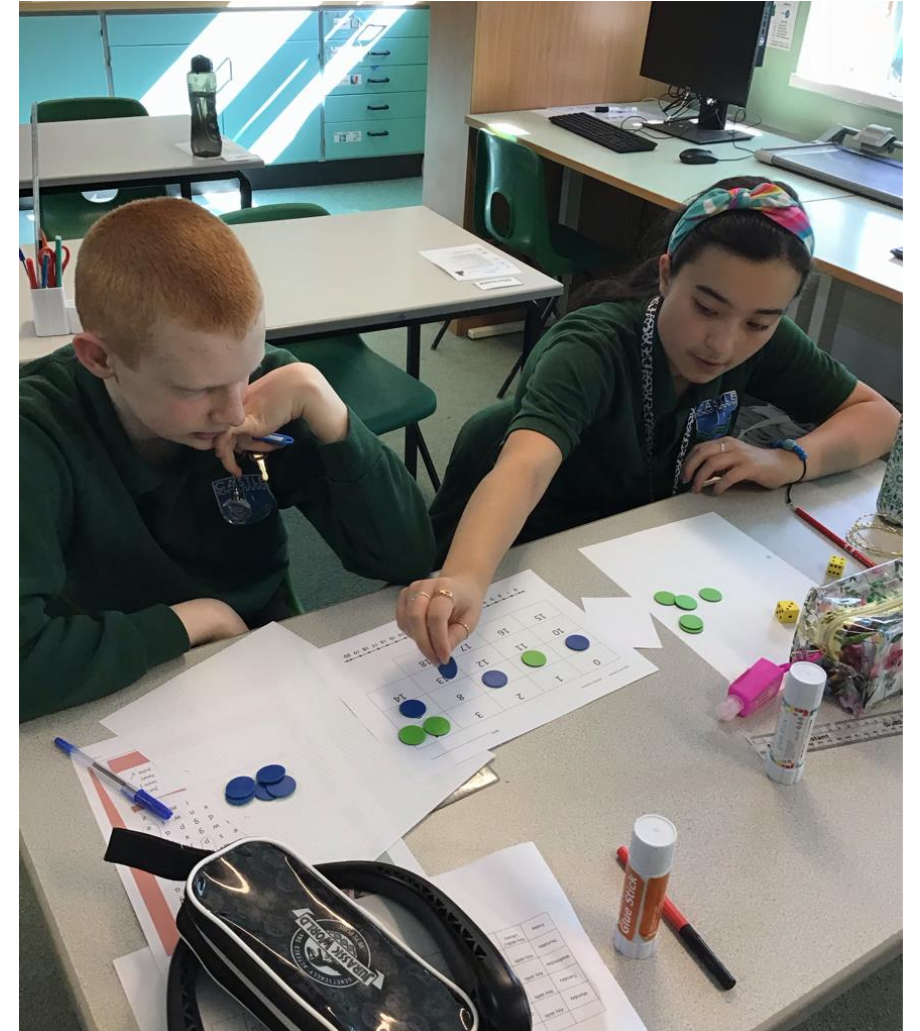
Surveys and Research

It is important that the pupils of Castle school experience Maths in the context of the real world. Part of this is getting 'out and about'. Research and surveys are a great way to explore the importance of Maths while building independence and social skills.



Problem Solving

Pupils are encouraged to communicate with others to solve practical problems.



Financial Education

Pupils are guided on key areas of financial knowledge, skills and attitudes, across four core themes:

- how to manage money;
- becoming a critical consumer;
- managing risks and emotions associated with money;
- understanding the important role money plays in our lives

In our KS4 and KS5 curriculum we have incorporated the Financial Education Framework.



Thematic and cross curricular learning

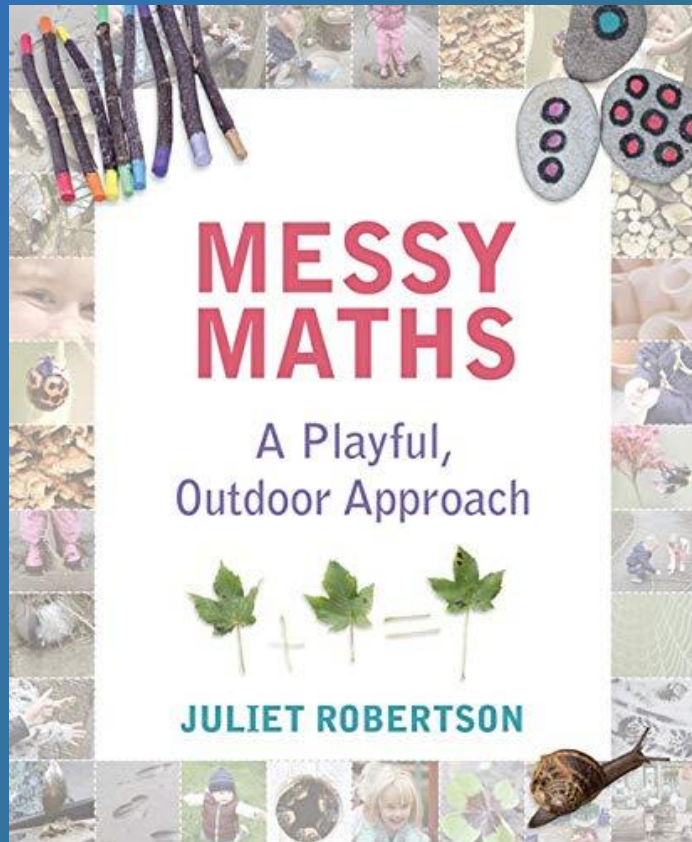
- We bring maths alive, using approaches such as through play, Messy Maths, Maths in Stories, going out into the community, and sensory activities.
- Pupils are exposed to the use of mathematical language and problem skills throughout the day. Teachers link pupils' daily routines and activities to key maths skills encouraging pupils to develop their mental arithmetic and to use the correct mathematical vocabulary. This has resulted in pupils gaining the confidence to express themselves, make connections and talk about their work.
- Across school and pathways, a range of resources is used to support the teaching and learning of Mathematics, including interactive programs, practical activities, games, and different ways of recording and presenting maths work.
- Our formal learners embed and generalise their maths skills by working on cross-curricular projects, such as enterprise and catering and developing the Maths Mastery skills.



Links to the Four Preparation for Adulthood Areas

Preparation for Adulthood Area	How Maths Contributes
Employment	Develops problem-solving, attention to detail, and practical numeracy for work-related tasks.
Independent Living	Builds functional skills in money, time, measurement, and planning for everyday life.
Friends, Relationships & Community	Enables participation in shared tasks, turn-taking, and fairness in games and activities.
Good Health	Supports routines, sequencing, and self-regulation through predictable structures and steps.

Messy maths



Maths in stories

Maths can be taught through stories, an approach that has proved highly successful by putting learning into context, resulting in highly motivated learners.

This approach involves looking at the stories we use through a mathematical lens and then linking this to the developmental stage of each pupil.

It is fascinating to see how much maths can be found in any text.

Here is an example of our planning for each text:



Literacy

Delivered through play-based learning, interwoven through different activities throughout the day, including circle time, snack, lunch, individual programmes, and various interventions. Literacy themed continuous provision tuff spot available each day.

Reading & comprehension

Exploring a range of texts through our daily reading sessions. Also, sharing stories with each other through small group sessions. Enjoying stories in different forms – a sensory story based on our focus text 'Handa's Surprise', video version of different stories, stories through songs, and story creating games. Activities based on our focus text that are incorporated into our morning English activities. These activities will be designed to improve comprehension of the story and the message behind it.

Writing & communication

Focus: Hand to hand coordination
Opportunities for mark making to improve letter formation and tool manipulation – morning tuff trays, art, and messy play.
Social games to aid coordination – tum taking games (connect 4), stage 3 bucket and teamwork games (building towers and role play).
Morning activities to improve letter formation through tracing and copying.

Phonics:

Focus: Phase 1 and 2
Daily sessions concentrating on matching letters to their sounds and being able to use words with the sounds in context.
Throughout the rest of the day exposure to phase 1 sounds through themed tuff trays and sound modelling. Incorporation of sounds throughout all activities.

Community Engagement**Text: Handa's Surprise****PSHE****Healthy eating**

Opportunities to explore healthy and new foods through sessions like touch and taste, snack and lunch. Provides opportunities to experience different textures and tastes.

Emotions

Openly talking about our emotions during whole class sessions like circle time. Modelling the names of emotions and matching them their facial expressions. Being supported through challenging emotions using different interventions.

Sense of self

Sessions to help understand ourselves and our bodies – Touch and Groove, and sensory circuits. Opportunities to express likes and dislikes.

Building relationships

Sharing songs in music and choir – sharing instruments. Participating in whole class sessions throughout the week and sharing spaces with each other.

Communication

Delivered through all activities and interaction throughout each day.

Attention building activities:

- Items to go in the bucket:**
Rinsing sensory ball, ribbon on string, wind up chattering teeth, noisy pig, hand clappers.
- Attention builders:**
Orange tree. Splattering orange paint on a tree. Fruit pattern. Dipping fruit halves in paint and making patterns with them.
- Attention Shifter:**
Throwing fruit in the basket, raining leaves, jumping bean, and see saw.

Interventions

Touch and Groove, role play (picnic food and puppets) and intensive interaction.

Makaton

Signs to go with the daily schedule and key vocab from the story (fruit). Singing and signing songs.

Communication boards/PECS

Encourage choices and requests (during circle time, snack & lunch time and within activities) Focus on core vocab (more, help, hello, goodbye, like, don't like). Song choices.

Circle time

Say hello/goodbye, 1:1 engagement with adult, noticing others in the class, and making choices.

Creativity

Incorporated into different sessions throughout the week. Focus on mark making and block printing with paint through our focus story and self-expression.

Art

Experimenting with primary and secondary colours and mixing them. Using different mediums to paint fruits from our story, fruit printing, creating a tree by collaging etc.

Music

Exploring different sounds, keeping a beat, singing together and intensive interaction through a musical approach.

Choir

Listening and singing different songs from choir. Dancing along alone or together, copying actions and making choices in what song to sing next.

STEM/Our World

Physical development focusing on health, self-care, and living things being delivered through play, personal experiences, experience of a diverse world, and widening vocabulary.

Forest School

A child led approach where pupils can explore their environment and have the independence to take risks as they explore. Scavenger hunt to explore the living things we have in forest school.

Sensory trays

Morning trays provide opportunities to explore liquids, solids, cold and warm. Child led with adults modelling how to interact with the tray. Can use fruit from our story and leaves from outside.

Physical**Gross Motor:**

Swimming – increasing water confidence, developing swimming skills (kicking, splashing and floating), putting faces in the water and holding onto the side.

PE (basketball) – developing hand eye coordination through throwing, catching, bouncing, and pushing.

Fine Motor:

Clever fingers – fishing using tongs, transferring water using pipettes, pegs on a board, cutting up fruit, and putting pegs on a washing line.

Mathematics

Math through stories delivered through play-based learning, interwoven through different activities throughout the day, including circle time, snack, lunch, individual programmes and various interventions. Numeracy themed continuous provision tuff spot available each day.

Number cardinality and counting

Count number of children in the class.
Count plates for snack and lunch.
Counting songs: 5 little speckled frogs, 5 little ducks and the ant goes marching.
Taking all opportunities to count with the pupils and showing 1:1 correspondence. For example, counting steps, jumping on the trampoline, counting fruits during touch and taste, and counting fruit in a bowl.

Incorporating counting in attention building. Showing how numbers can be represented differently. Counting how many times the toy is wound up, how many paint splats there are, and how many jumps on the trampoline. Providing number representations in addition to verbally counting. Focusing on numbers to 5 and then slowly increasing to 10.

Reading/writing numbers

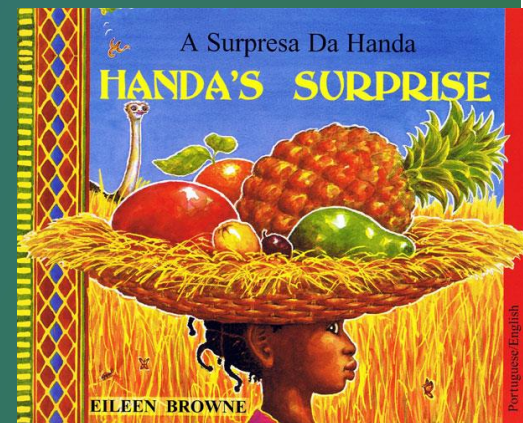
Providing opportunities for pupils to experience numbers and to write them.
Morning activities focus on pupils practicing writing numbers.
Adults modelling writing numbers during messy play, and role play games.
Providing number to correspondence for objects to expose pupils the written version of the numbers.

Number bonds

Introduction to the concept of addition and subtraction through nursery rhymes, stories, and play.

Comparison

Comparing quantities and identifying which has 'more' and 'less'. Discussions about which basket has 'more' fruit in.



Attention Autism

Maths can be taught using the structure, rhythm and pace of the Attention Autism approach. In Early Maths key concepts are taught using activities/props/toys designed to capture and hold the child's attention. It helps children develop the ability to focus and participate in activities led by an adult enabling them to learn key Maths concepts.

The structure of the approach uses 4 key stages beginning with capturing the child's attention, and then progresses to sustained attention, turn taking and then moving on to an independent task.

Updated Autumn 2025



Everyday maths

Maths inside and out
Maths across the curriculum
Maths at home
Through play

Updated Autumn 2025

how many

How many cars have you got altogether?

direction

My car is going over / under / around the bridge.

size

Which do you think is the biggest / smallest car? Why do you think that?

size & shape

Can we make a car park / garage to fit these cars?

EARLY CHILDHOOD MATHS GROUP



website

Watch your child playing • See what they enjoy doing • Join in and use these ideas when they seem ready

Cross-curricular maths

Maths inside and out
Maths across the curriculum
Maths in different areas of school

STATISTICS: SORT, CLASSIFY, CONSTRUCT REPRESENTATIONS, CRITERIA, INTERPRET

Sorting objects by colour / size / shape
Sort biggest/smallest
Finding objects with the same properties

TIME: PASSING, TELL AND WRITE THE TIME, ANALOGUE, DIGITAL

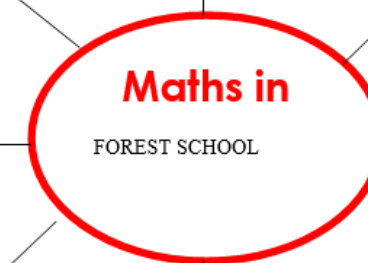
Sand timers for each activity
Looking at the position of the sun, shadows
Now and next for session
Estimate time
Start and finish times

WEIGHTS AND MEASURES: COMPARE, DESCRIBE & SOLVE PRACTICAL PROBLEMS FOR... TO RECORD ...

Mud kitchen with opportunities to count and measure (cardinal and ordinal number) including scales, bun-trays, cake tins, varied shapes and sizes of pots, pans and containers etc
Bean bags, tyres and large buckets and bins for throwing and counting games
Measuring tools such as timers, balance scales, measuring tapes and height charts
Weigh/ measure ingredients for mud kitchen, empty/fill container
Compare using different containers, objects

GEOMETRY PROPERTIES OF SHAPE/ POSITION & DIRECTION/ SPATIAL AWARENESS

Making shapes/ numbers/maths symbols out of natural objects
Moving things - behind, in front, next to, above, on top of etc.



NUMBER & PLACE VALUE; FRACTIONS; DECIMALS, 4 OPERATIONS (+ - = ÷)

Matching objects to numbers
Add one more
Take two away etc.
How many?
Take away half?
Writing numbers in mud using finger or brush

CONCEPTS/ VOCABULARY

Sorting, grouping, filling, pairing, measure, weigh, counting add, minus, on top, underneath, behind etc.

STEM STATEMENTS / QUESTIONS

Positional language when organising objects found can you find the ... and put it in next to the ...? etc.
How many?
Which is the biggest / smallest?
Can you write {1,2,3}? In the mud?

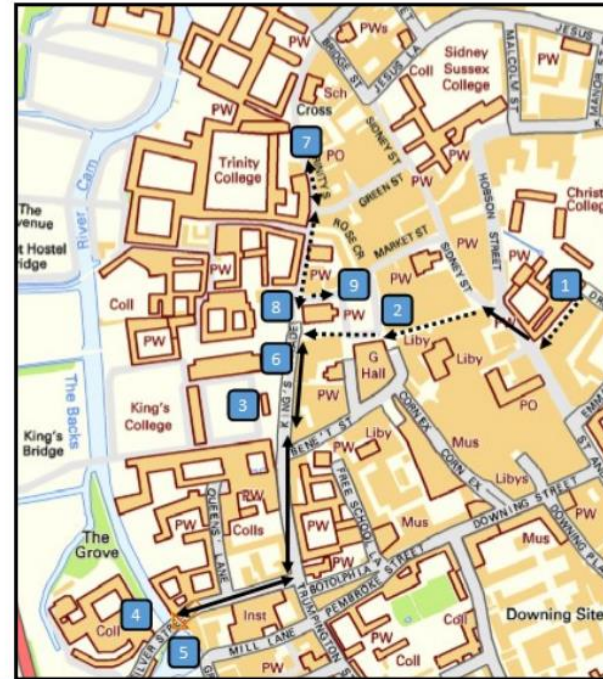
Maths in the community

Cambridge Maths Trail: Blue Trail

Name(s): _____

Date: _____

- 1. Drummer Street Bus Station** - Look at the electronic timetable. Calculate the difference in time between the first bus and last bus arriving.
- 2. Guildhall/Snowy Farr statue** - Can you write and solve a mathematical question about the Snowy Farr statue?
- 3. King's College Gateway** - Look at the clock face and estimate the size of the angles created by the hour hand and minute hand.
- 4. The Mathematical Bridge** - Look at the bridge and the surrounding buildings. What shapes can you see? Make a list of 2D and 3D shapes.
- 5. Silver Street** - Count the number of large and small punt boats. If one large punt boat can hold 12 passengers and one small punt can hold 6 passengers, how many passengers could take a punt in total?
- 6. King's College Chapel** - What would be a quick and effective way of estimating the number of small rectangular glass panes used to create the large stained glass window?
- 7. Trinity College Great Gate** - Can you find an object or shape that has both reflective symmetry and rotational symmetry? Sketch the shape(s) that you find.
- 8. St Mary the Great church** - Find the scale model. Use the scale to estimate the height of the church tower, in metres.
- 9. Market Square** - Standing on the corner, next to the phone boxes, look at the market stalls and calculate what fraction of the stalls (that you can see) sell food.



Extra challenge: On your trail you will pass several clock faces. Each time you see a clock, record the time and calculate how much time has passed since you recorded the last time.

Core vocabulary

We have a Core Vocabulary sheet for each half term. This ensures consistency of language, signs and symbols used across school.

It is accessed by logging into Widget online: > Shared Folder > Maths Vocabulary

Maths Autumn 2 : Vocabulary							
123 number	group	\times multiply	share	\div divide	$\frac{7}{10}$ fraction	part	whole
0.4 decimal	$+$ add	$=$ equal	\times times	$3 \times 2 =$ product	factors	array	$4 \div 2 =$ division
$6 \div 2 = 3$ quotient	remainder	$4 \div 2 =$ dividend (1st no)	divisor	$13 \rightarrow 10$ $16 \rightarrow 20$ nearest ten	$8.3 \rightarrow 8.3$ $9.38 \rightarrow 9.4$ round to	closest to	estimate
approximate	equal to	$\frac{7}{10}$ numerator	$\frac{7}{10}$ denominator	$\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$ equivalent fraction	$\frac{10}{10}$ tenths	100 hundredths	0.4 decimal point
half	$\frac{1}{2}$ half	quarter	$\frac{1}{4}$ quarter	third	$\frac{1}{3}$ third	compare	same
different	solve	?! problem	$>$ more than	$<$ less than	$=$ equivalent to	$+$ \times $-$ \div reverse operation	calculate

Number: Multiplication : Division : Fraction : Decimal



Maths Week

Maths week is celebrated every Autumn half term.

The focus is on enhancing particular maths skills.

We invite community engagement experiences so that Maths skills are used in context and in real life.



Extended opportunities and partners

We develop our Maths teaching and learning by using the National Centre of Excellence for the Teaching of Mathematics progression materials and professional development.



We have strong links with Cambridge Maths hub and teachers regularly attend training they offer.



Currently we are collaborating with the NCETM's Maths SEND forum with the aim to devise a SEND Maths Curriculum.



Useful links and resources:

Early Childhood Maths Group

BBC I Player Numberblocks

NRICH

Early Years Number Activities

Open Up to Outdoor Mathematics

Maths Frame

Top marks

BBC bitesize

Oxford Owl

IXL ICT Games

Splash Learn

Crickweb

