



HIAS Maths

@MathsHias

Hampshire Local Authority's (HIAS) Mathematics Team. We work with schools to provide in school support, bespoke professional development and training.

📅 Joined January 2019



Briefing for Headteachers of Special School Mathematics Autumn (1) 2022



The HIAS Maths Team

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Questions to consider

What does a high quality, inclusive, mathematics curriculum look like in a special school setting ?

In what way is the pedagogy the same or different to mainstream ?

How do we add value to learners' mathematical understanding and application?



The Special Mathematics Curriculum Offer

Access and Success for All

Mathematics can sometimes seem abstract and unattainable for some learners.

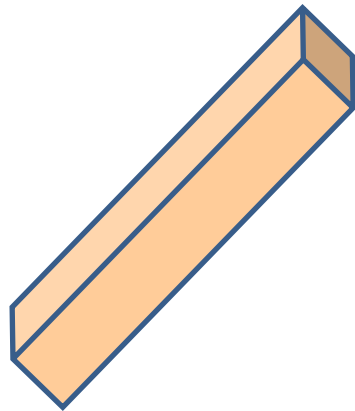


Why is maths so difficult for some learners ?

Vocabulary – many maths terms mean something different in everyday life.

For example ‘remote’ , ‘volume’ , and ‘prime’ could be associated with the TV

How about ‘take-away’ , ‘operation’ and ‘mean’ and later on ‘factor’ , ‘product’ and ‘improper’ ?



What about similar sounding words ?

‘Today, we are going to learn about prisms’

‘Miss, my dad’s been in one of those’



Why is maths so difficult for some learners ?

Sentence structure.

Learners can struggle with comprehension of complex sentences such as:

- ‘A number that is not a multiple of ten’
- ‘How many more students in the survey chose football as their favourite sport than chose rugby?’



Why is maths so difficult for some learners ?

Everyday Conversations

Some learners may suffer from a lack of regular exposure to conversations other than those about events in the here and now.

The level of abstraction involved in learning maths can be a challenge, particularly when it moves beyond manipulatives into a world of disembodied symbols



Why is maths so difficult for some learners ?

Working memory

Some learners may have a restricted working memory capacity than others.

This can mean that:

- they are less likely to be able to transfer new learning into the long-term memory
- they may struggle to hold numbers in their heads when doing multi-step calculation problems (Gilmore et al, 2018)
- they may have mental organisational problems with the working memory demands of multi-step word problems such as **‘In William’s desk drawer there are 6 yellow pens. There are 12 more red pens than yellow pens and there are 3 more blue pens than red pens. How many pens are there in William’s desk drawer altogether?’**



Why is maths so difficult for some learners ?

Literacy

Some learners may have dual difficulties with maths and literacy.
A great deal of maths work involves reading.

The words on the page, and the required comprehension, can be a stumbling block to accessing the maths.

What about: 'Write an expression using a variable that shows how much 3 pairs of jeans will cost if you do not know the price of the jeans. Assume each pair costs the same amount' ?



Why is maths so difficult for some learners ?

Key factors affecting progress and attainment

- Maths and its language
- The abstraction of the subject
- Memory difficulties
- Reading comprehension
- Confidence and motivation

Consider:

What should the maths curriculum look like in a special school setting to ensure access and success for all learners ?

We know that all learners and their needs are different

Teachers need to be flexible and adjust approaches, strategies and resources in response to the needs of their students



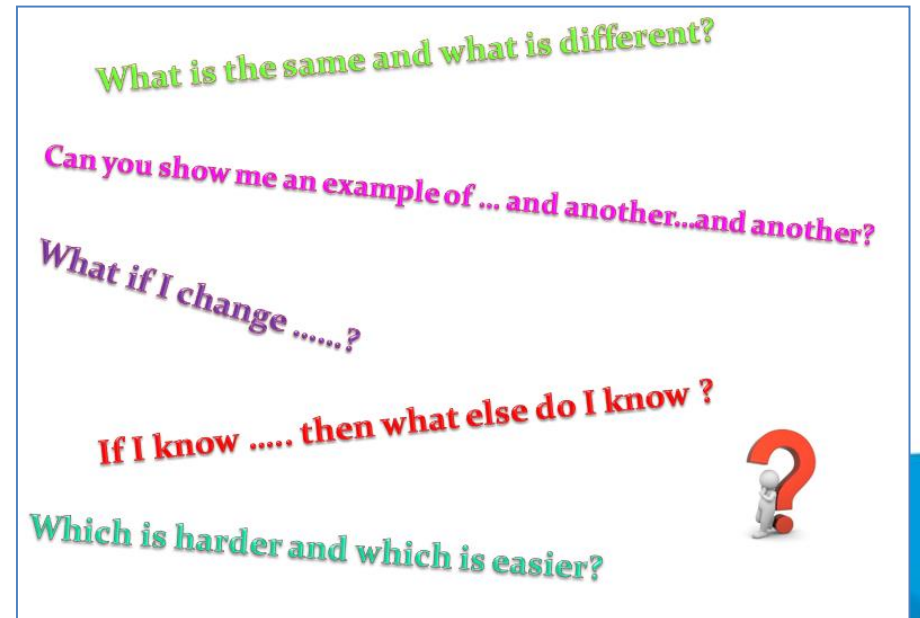
Access and success for all Curriculum and pedagogical considerations

- **Maths and its language**

A focus on spoken language in the classroom such as **dialogic teaching**

Research suggests that more purposeful talk in classrooms closes the attainment gap for learners with SEND

Dialogic teaching is when a learner's solution is used as a starting point for a dialogue.
This links to the use of **key questions**

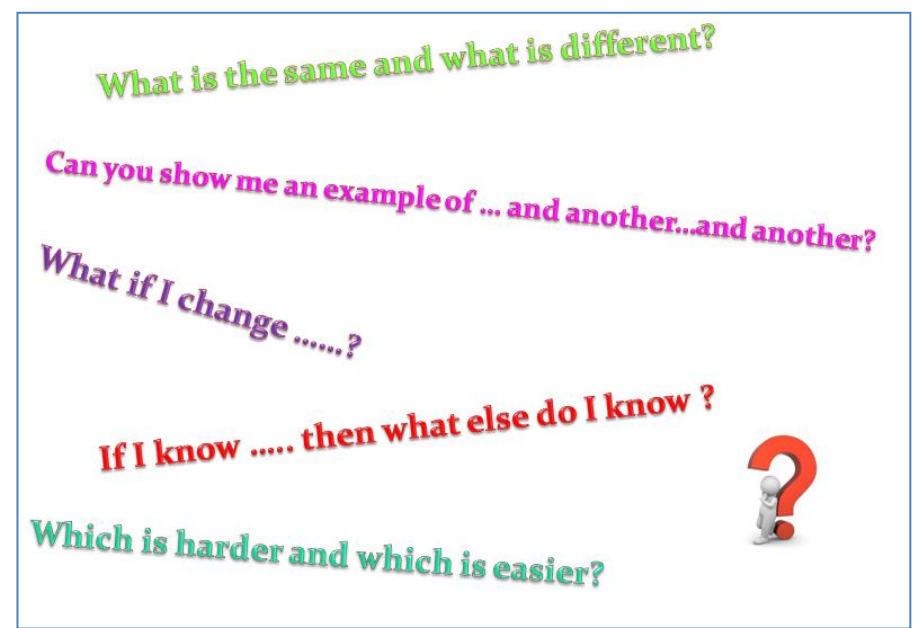


Access and success for all Curriculum and pedagogical considerations

- **Maths and its language**

Other strategies to draw on:

- Provide a running commentary on what the learner is doing: ‘It looks as though you are expanding those brackets / putting those numbers in ascending order...’
- Reflecting back on what the learner has said in correct, expanded language: Student: ‘My shape has three corners’ / Teacher: ‘Yes, it has three vertices’
- Focussing on key vocabulary , the ‘Goldilocks’ words (just right). Exploring these words in some depth, using them throughout the topic in sentences etc.








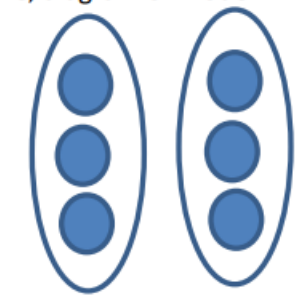

Maths and its language : The 'Goldilocks' words : Key topic vocabulary.

The Frayer Model

Word	Example
Picture, diagram or model	Non-example



Maths and its language : The 'Goldilocks' words : Key topic vocabulary. The Frayer Model

Word:	Example:						
pr (nu							
Picture, diagram or r							
1 							
Word:	Example:						
capacit	ten						
Picture, diagram or model:							
2 							
Word:	Example:						
Picture, diagram or model:							
<table border="1"> <tr> <td>H</td> <td>T</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td>3</td> </tr> </table>	H	T				3	
H	T						
							
	3						
Word:	Example:						
Groups of	2 groups of 3 is the same as 6.						
Picture, diagram or model:	Non-example:						
							

Access and success for all

Curriculum and pedagogical considerations

- **The abstraction of the subject**

Dealing with abstraction: Concrete examples and situations

Teacher: 'Mentally calculate the difference between 20 and 0.36'

Learner : ??????

Teacher: 'I have £20 and spend 36p , how much money do I have left ?'

Learner: '64p makes £1 , so £19.64'

Use counting on , on a number line , or coins



Why is maths so difficult for some children ?

Key factors affecting progress and attainment

- The abstraction of the subject

Dealing with abstraction: **Concrete** , **pictorial** , **abstract**.

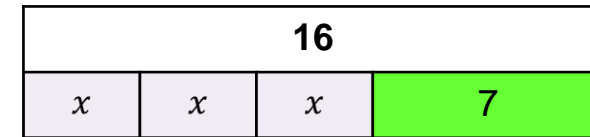
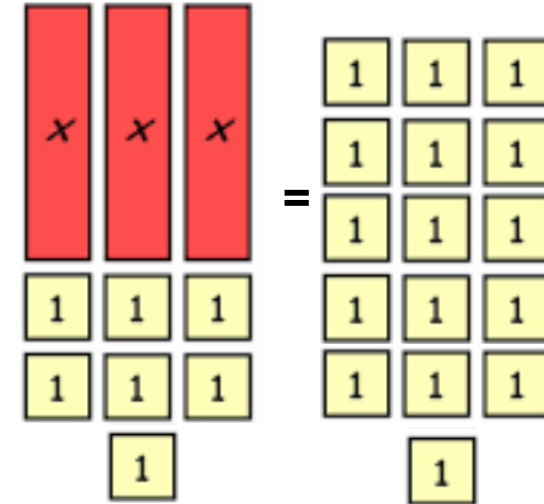
Teacher: 'Solve the equation $3x + 7 = 16$

Student : ??????

Teacher: 'Can you say it, make it , draw it , write it ?'

Student: 'Three ex plus seven is the same as sixteen'

$$\begin{aligned} 3x + 7 &= 16 & (-7) \\ 3x &= 9 & (\div 3) \\ x &= 3 \end{aligned}$$



Access and success for all

Curriculum and pedagogical considerations

- **Memory difficulties**

Working memory (short-term memory)

The ability to hold information in your mind while you manipulate it

Highly important in solving arithmetic and other maths problems

It is helpful to develop ‘automaticity’ with key facts

Reduce the memory load by securing additive and multiplicative facts (number bonds and times tables)

HOW ?



- **Memory difficulties**

Reduce the memory load by securing additive and multiplicative facts (number bonds and times tables)

- Focus on basic facts before teaching more complex areas
- Provide prompt sheets or grids to support recall (learners only look if they need to)
- Use knowledge organisers (not too busy !)
- Use tutor time or start/end of lesson to focus on practising key facts
- Use models and images to help learners (e.g. a number line, or an array)
- Use connections to help learners derive the facts they need
- Use mnemonics (e.g. All graphs need **SALT** – **S**cale , **A**xes , **L**abels , **T**itle)
- Make flash cards
- Regular retrieval practice such as challenge grids and low stakes quizzes



Memory difficulties

One Ten, Five.... Derive !

Use connections to help learners derive the facts they need

e.g. **‘one, ten , five , derive’**

			3
			6
			9
			12
			15

Teacher says ‘The size of the group is 3’

Learners use a number line or track to place 3 , 30 and then 15 (‘one, ten , five’)

Now **‘derive’**

Learners add, subtract , double and half multiples of 3 to generate the 3x table facts

3	6	9	12	15	18	21	24	27	30
1x	2x	3x	4x	5x	6x	7x	8x	9x	10x



Access and success for all

Curriculum and pedagogical considerations

- **Reading comprehension**
WORD PROBLEMS

Use small group work **guided reading** for readers at a similar stage:

- Use maths word problems as the text
- Develop comprehension-based strategies
- No 'maths answer' required. This is all about the reading.



Guided reading teaching sequence:

Before reading

- identify and activate prior experience of similar word problems
- clarify any challenging or technical vocabulary
- set one or two key questions to assist comprehension
 - What do we think this problem is going to be about?
 - What type of operation might be involved?
 - What clues can I find in a text to help me?

Learners see and hear the way in which an expert reader automatically monitors their understanding 'in the moment of reading'



Learners see and hear the way in which an expert reader automatically monitors their understanding 'in the moment of reading'

Guided reading teaching sequence:

During reading

- model reading the text aloud
- look for clues as to the mathematical operations involved
- underline key words and phrases
- annotate text and raise questions
 - Does the problem remind me of anything else I have seen?
 - What part of the text is confusing and why?
 - Do I need to go back and re-read?
- think out loud about any 'clues' to signpost



- **Reading comprehension**

Learners see and hear the way in which an expert reader automatically monitors their understanding 'in the moment of reading'

After reading

- lead a discussion , returning to key questions identified before and during reading
- help learners revisit clues and questions that have arisen
- support learners to summarise the word problem and identify the mathematical strategies they need to solve it
- encourage learners to represent their thinking visually where possible to develop higher levels of comprehension
 - Can I draw a diagram or model to help me 'see' this better?



What does the HIAS maths team offer to support you with delivering a high quality curriculum for your learners that enables access and success for all?

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Core Provision structures 2022/23

(Primary subject leaders network meetings- district based)

Maths

Summer 1: 2022

HT/MM Briefing: July 2022

Autumn 1: 2022

Autumn 2: 2022

HT/MM Briefing: December 2022

Spring 1: 2023

MM Conferences: March 2023

An opportunity to network with other primary maths managers in your local area, attendees include mainstream, specials and education centres



Secondary Head of Department Network meetings 2022/23

County-wide group

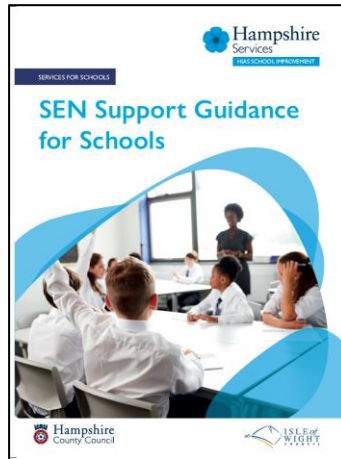
Hampshire HoDs: Date schedule
All meetings start at 1315 with approximate finish of 1600

Date	Term	Format
05-07-22	Sum2	Webinar via MS Teams
12-10-22	Aut1	Face to face @ The Village, Eastleigh
06-12-22	Aut2	Face to face @ Holiday Inn, Eastleigh
09-02-23	Spr1	Webinar via MS Teams
21-03-23	Spr2	Webinar via MS Teams
27-04-23	Sum1	Face to face @ Holiday Inn, Eastleigh
26-06-23	Sum2	Webinar via MS Teams

An opportunity to network with other HoDs, attendees included mainstream, specials and education centres



Focus for English and Maths Core Provision 2022-23, SEN Support



‘Access for every CYP to suitable, high-quality provision, which meets diverse need and diminishes barriers to participation and engagement’

‘A strong commitment to early intervention and prevention to tackle, diminish or avert potential barriers to success’

from The Hampshire and Isle of Wight principles of inclusion which underpin these guidelines

‘The class teacher is the leader of provision for SEND at the point of delivery in the classroom and so occupies a pivotal – perhaps the most pivotal - role. Trained, skilful teachers who have a repertoire of teaching methods, strategies and resources, coupled with strong assessment practices and a responsive curriculum offer are therefore paramount to the success of provision and outcomes for CYP with SEND.’ p21



What has been happening in mainstream primaries with provision for SEND ?

Action Research and Case Studies developed at primary core provision network meetings
Maths and English subject leaders working with a colleague to produce case study about a child needing SEN support **not** in their class in the spring term.

- use known assessment information and undertake diagnostic assessment and to identify precise learning needs for pupil in colleague's class
- Identify how HQT strategies will be enhanced to support pupil's learning and progress
- Set review dates to check impact and consider tweaks
- Identify strategy for working closely with SENCo
- Consider how all staff will be informed and involved over time.
- Collate information about process and strategies used for sharing at next Core Provision meeting

Case Studies currently being reviewed and collated into one document for sharing with colleagues in schools to improve provision and outcomes for learners with SEND

HIAS Maths Moodle

Open resources

▶ Primary

- ▶ NCETM Resources
- ▶ Assessment Documents Archive from Primary National Strategy 2010
- ▶ End of Key Stage Assessment Materials
- ▶ Hampshire Maths Team progression documents
- ▶ Key Stage 1 and 2 SATs
- ▶ Planning Templates and Guidance
- ▶ Puzzle corner

▶ Secondary

- ▶ Leadership
- ▶ Assessment
- ▶ Curriculum
- ▶ SEN
- ▶ Vulnerable/disadvantaged
- ▶ Maximising outcomes
- ▶ Literacy
- ▶ Adaptive teaching
- ▶ Subject specific pedagogy

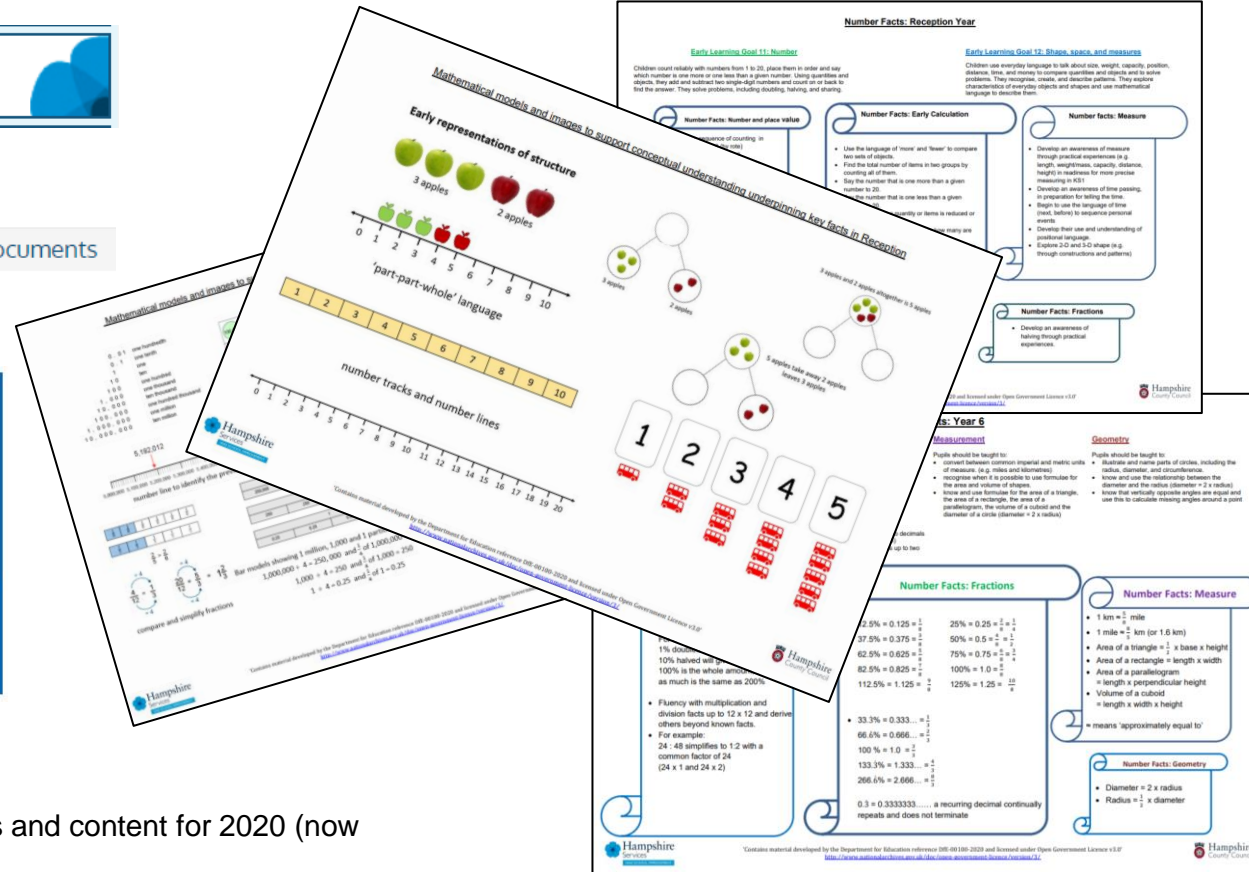
Primary Number Facts Posters updated and renewed

Open resources

► Primary

► Hampshire Maths Team progression documents

Progression in Number Facts Year R - Year 6



The collage features several educational posters:

- Number Facts: Reception Year**: Includes 'Early Learning Goal 11: Number' and 'Early Learning Goal 12: Shape, space, and measure'. It covers topics like 'Number Facts: Number and place value', 'Number Facts: Early Calculation', and 'Number Facts: Measure'.
- Mathematical models and images to support conceptual understanding underpinning key facts in Reception**: Shows 'Early representations of structure' with 3 green and 2 red apples, and 'part-part-whole' language with a number track from 0 to 10.
- Number Facts: Fractions**: Lists various fraction equivalents such as $2.5\% = 0.125 = \frac{1}{8}$, $37.5\% = 0.375 = \frac{3}{8}$, $50\% = 0.5 = \frac{1}{2}$, $75\% = 0.75 = \frac{3}{4}$, $82.5\% = 0.825 = \frac{33}{40}$, $100\% = 1 = \frac{100}{100}$, $112.5\% = 1.125 = \frac{9}{8}$, $125\% = 1.25 = \frac{5}{4}$, $33.3\% = 0.333... = \frac{1}{3}$, $66.6\% = 0.666... = \frac{2}{3}$, $100\% = 1 = \frac{100}{100}$, $133.3\% = 1.333... = \frac{4}{3}$, and $266.6\% = 2.666... = \frac{8}{3}$. It also notes that $0.3 = 0.333333...$ is a recurring decimal.
- Number Facts: Measure**: Lists units like 1 km = $\frac{1}{2}$ mile and 1 mile = $\frac{5}{8}$ km, and formulas for area and volume.
- Number Facts: Geometry**: States Diameter = 2 x radius and Radius = $\frac{1}{2}$ x diameter.

Updated with new models, images and content for 2020 (now including YR to Y6)

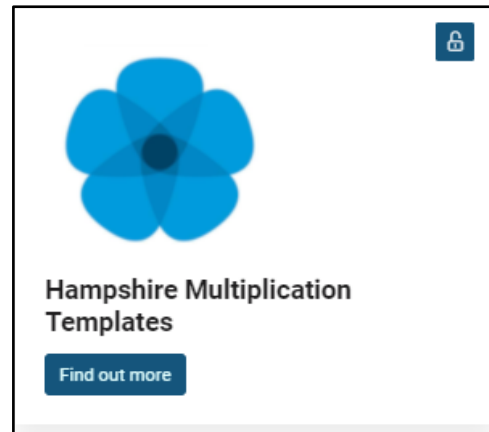
[Online Training - Course: Progression in Number Facts Year R - Year 6 \(hants.gov.uk\)](https://www.hants.gov.uk)

Times Tables

Open resources

▸ Primary

▸ Hampshire Maths Team progression documents



Templates for teaching all tables in Y2 to Y6:

- Using representations: arrays, number lines
- Making links between facts and between tables
- Division linked to tables
- Links with fractions and decimals (Y6 SATs)

Suggested whole school progression document for teaching and learning tables facts



Moodle+

PRIMARY

[Maths Moodle: All courses \(hants.gov.uk\)](https://hants.gov.uk)



Paired Examples

[Find out more](#)



Hampshire Assessment Model

[Find out more](#)



Connect4Maths - Primary

[Find out more](#)



Primary Vocabulary Cards

[Find out more](#)



Hampshire Schemes of Learning Updated 2021

[Find out more](#)



Year 2 Assessment Guidance - Spring and Summer 2022

[Find out more](#)



Planning Templates

[Find out more](#)



Primary Moodle+ Articles and CPD

[Find out more](#)



Year 6 SATs Preparation Resources - 2022

[Find out more](#)



Primary Transition and Catch-up Plans for Mathematics

[Find out more](#)



Primary Number Facts: Matching cards to support recall and retrieval

[Find out more](#)



Primary Mental Fluency Check and Progression Documents

[Find out more](#)



Primary TASC Resources

[Find out more](#)



Moodle+

[Maths Moodle: All courses \(hants.gov.uk\)](https://hants.gov.uk)

SECONDARY



Secondary - Entry and Exit Tickets

[Find out more](#)



Secondary Paired Examples

[Find out more](#)



Secondary Hampshire Schemes of Learning Updated 2021

[Find out more](#)



Connect4Maths - Secondary

[Find out more](#)



Secondary Variation

[Find out more](#)



Secondary Vocabulary Cards

[Find out more](#)



Hampshire Maths Scheme of Learning Year 1 to Year 9

[Course: Hampshire Schemes of Learning Updated 2021 \(hants.gov.uk\)](https://hants.gov.uk)



Moodle+

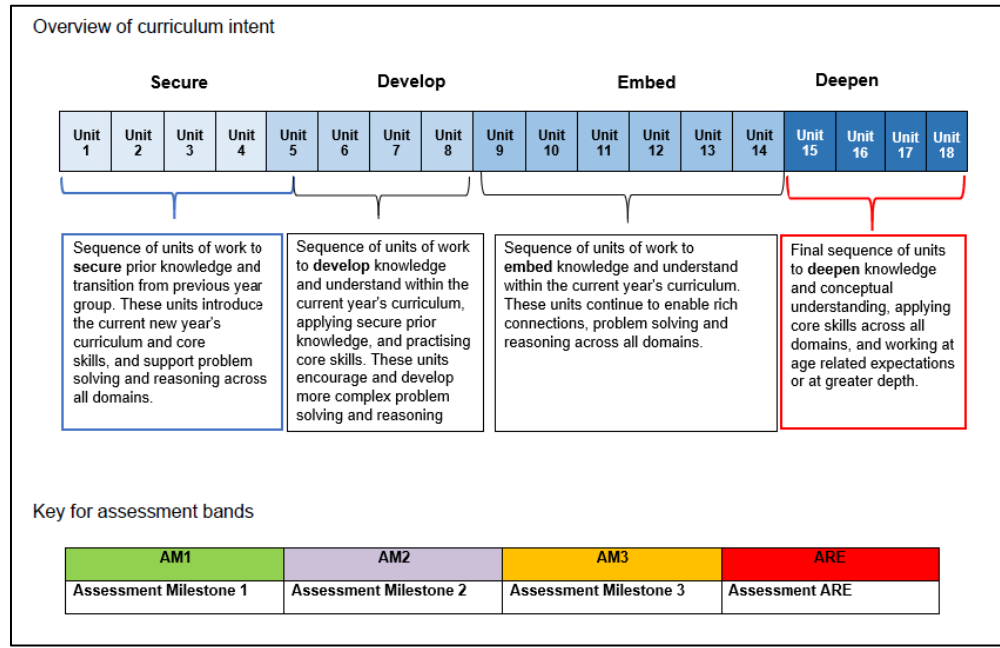
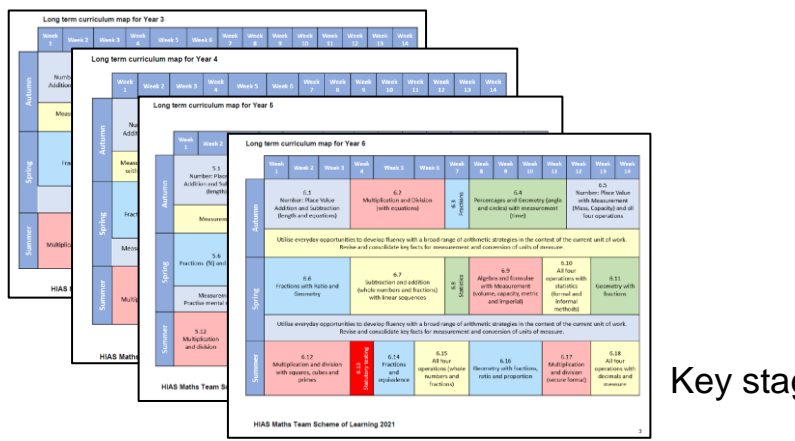
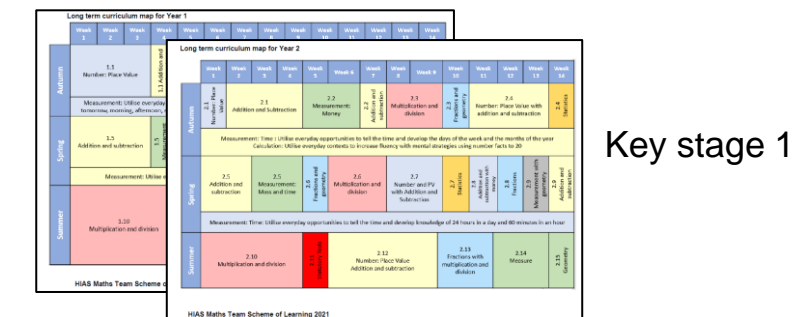
Combinations of domains in units of 2/3/4 week blocks revisiting the whole curriculum 3x with 'red zone' in summer term

- Long term plans (including mixed age plans)
- Medium term plans: units of work with NC objectives identified
- Learning journey outlines
- DfE 'Ready- to –progress' criteria linked to plans

Any problem solving resources or textbook schemes can be used alongside these plans



Updates: Hampshire Scheme of Learning: Y1 – Y9



Long, medium and unit plans

Long term curriculum map for Year 4

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	
Autumn	4.1 Number: Place Value Addition and Subtraction			4.2 Addition and subtraction with Measurement (Money, Length)		4.3 Multiplication and Division		4.4 Fractions and Geometry			4.5 Number: Place Value with Measurement (Length, Mass, Time)				
	Measurement: Time: Utilise everyday opportunities to tell the time from an analogue clock and a 24-hour clock. Estimate and read time with increasing accuracy to the nearest minute. Convert from hours to minutes, minutes to seconds, years to months, weeks to days.														
Spring	4.6 Fractions and Geometry			4.7 Subtraction and addition		4.8 Measurement: Time		4.9 Multiplication and Division with Fractions (To include times tables)			4.10 Subtraction and addition with statistics Measurement (volume, capacity and scales)				
	Measurement: Time: Utilise everyday opportunities to tell the time, including on a clock face with Roman numerals. Convert to 12-hour and 24-hour time. Read Roman numerals to 100 [C]. Practise counting in multiples of 25 and 1000 from zero														
Summer	4.11 Multiplication and division			4.12 Geometry		4.13 Addition and subtraction with statistics		4.14 Multiplication and Division with fractions			4.15 Measurement (Money, Time)		4.16 Measurement (Length)		
	HIAS Maths Team Scheme of Learning 2021														

YEAR 4 Autumn Term

Measurement: Find everyday opportunities to measure accuracy to the nearest centimetre. Subsequent units should continue to be made across the year.

A.M	Unit	Hours	Domain
	4.1	5	Number & Place Value
		10	Addition and Subtraction

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A.M	Unit	Hours	Domain	Y4 objectives
	4.2	5	Addition and subtraction with Measurement (money)	<ul style="list-style-type: none"> Add and subtract amounts of money to give change using both £ and p to solve problems. Use known and derived facts to work out change from £1 (100p): £1 - 39p = 61p; £1 - 2 x 50p = 1p; 10 x 10p = £1; 5 x 20p = £1; 20 x 5p = £1; relate to multiplication facts (repeated addition in the context of money). Record addition and subtraction money calculations using pictorial representations such as a number line and bar-models. Estimate, compare and calculate money in £ and p. Convert between units (£ and p). Measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m. Convert between units (km-m, m-cm, cm-mm (x) and vice versa (+)) Know 1000m = 1km; 1000g = 1kg; 1000m = 1km; 750m = ¾ km and 1000g = 1kg Solve problems involving all of the above. Order and compare numbers beyond 1000 (represent on number lines)
Half term				
	4.3	10	Multiplication and division	<ul style="list-style-type: none"> Use place value, known and derived facts to multiply and divide mentally. Y22: Recall and use multiplication and division facts for the 2,3,4,6,8,10 multiplication tables. Represent multiplication and division facts as arrays using a grid (rather than dots) and a number line. Count in multiples of 3 and 4 from zero. Derive, recall, and use multiplication and division facts for 8x and 12x multiplication tables. Solve problems including missing number problems involving multiplication and division, recording solutions with a range of representations to include number-lines, bar-models and arrays. Solve problems involving multiplying and adding (partitioning and recombinng). E.g. $37 \times 8 = (30 \times 8) + (7 \times 8)$.

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YEAR 4 UNIT 4.1: NUMBER AND PLACE VALUE; ADDITION AND SUBTRACTION

Formative assessment questions: key questions to support pupil reasoning and teacher feedback and assessment:

- What is the same and what is different?
- What if change...?
- Can you give me a...?
- Which is harder and why?
- If I know this then I know...

Resources to support plan:

- NCEM Exemplification
- NCEM Professional Learning
- HIAS Number Facts
- The NCEM Mastery Online Training - Colour

Learning journey outline map

NC objectives addressed in this unit in bold

1-5 Solve number problems and practical problems involving:

- Recognise the place value of each digit in a 4-digit number (thousands, hundreds, tens, and ones) up to 10,000
- Represent, estimate and compare numbers using different representations

Key tasks in a suggested sequence

Provide practical experiences of using a range of concrete resources to model 3-digit numbers. E.g. Dienes, arrow cards, place value counters. Combine this with recording the number using number sentences, missing box number sentences, part-part-whole. Gattegno chart, place value grid alongside numbers.

Revise composition of 1000: Addition/subtraction families of facts using multiples of 50 eg 1000-150= 850

Additional subtraction families of facts using part-part-whole diagrams


Partition numbers flexibly e.g. 570= 400 + 170; 500=70 using part-part-whole diagrams

Partition numbers using Dienes and physically add/take 10s and 100 from a number. Record 3-digit numbers using Dienes and compare numbers show where 3-digit numbers lie compared to 2-digit numbers. Relate to making numbers with Dienes. Record 350 = 100+200

Compare numbers to position and 1000 more or less. Relate to making numbers with Dienes. Record 340 = 300 + 40. Record 340 = 300 + 40. Record 340 = 300 + 40. Record 340 = 300 + 40.

Identifying ¼, 2/4, ¾ and 1/10 of 1000

Visual coding: key representations



Verbal coding: Language and technical vocabulary to use and understand

The digit in the hundreds place is 3. It has a value of 300.

The previous multiple of 100 is 200.

The next multiple of 100 is 400.

The next multiple of 10 is 350.

Building fluency: important elements to practise

- Recall and use key facts to 100, 1000 signs.
- Compare and order numbers using <, >, = and related facts, inverse commutativity

DE: Ready-to-progress criteria

3NPV-1	3NF-1	3AS-1
3NPV-2		3AS-2
3NPV-3		

Notional time: 15 sessions

HIAS Maths Scheme of Learning

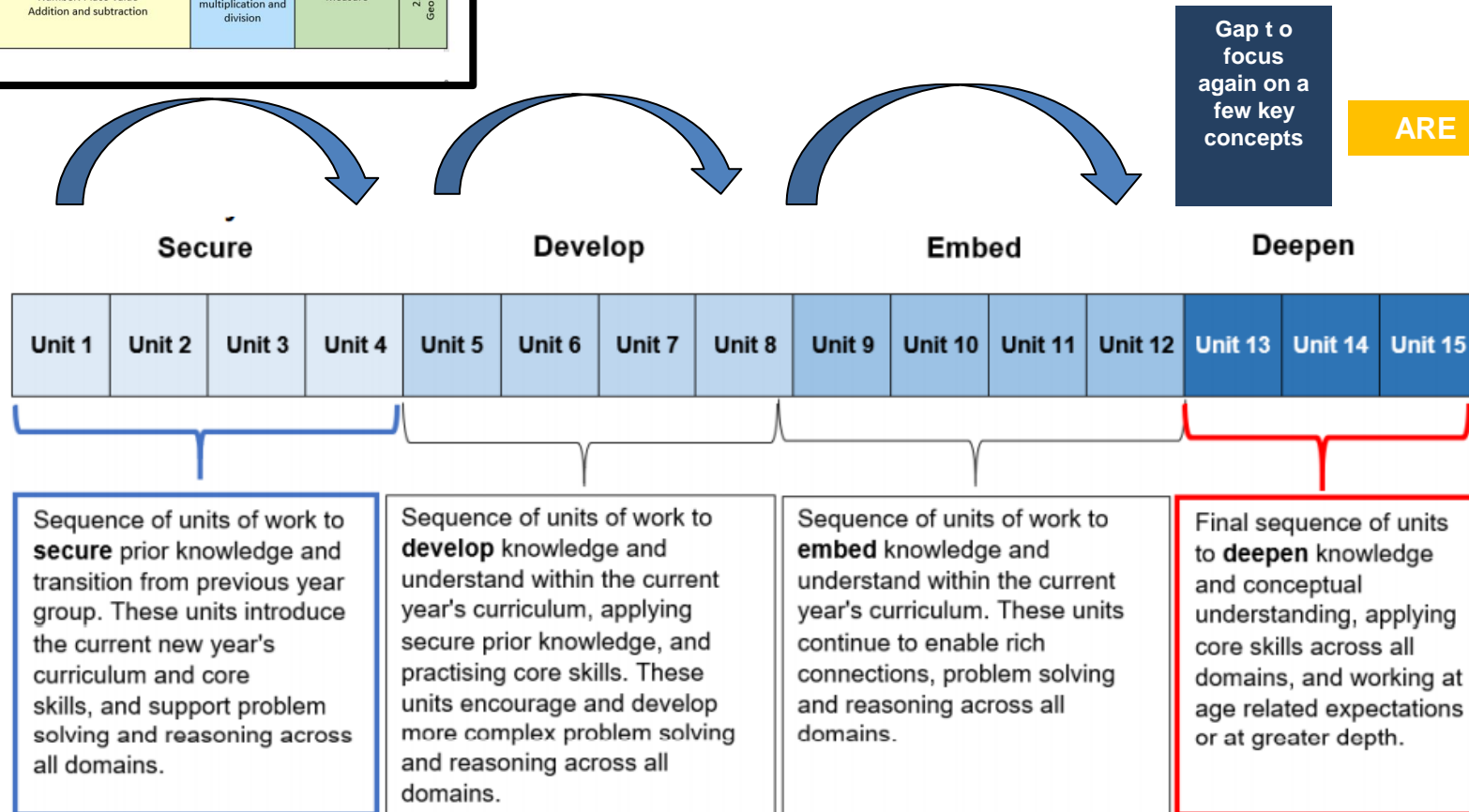
Long term curriculum map for Year 2

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Autumn	2.1 Number: Place Value	2.1 Addition and Subtraction			2.2 Measurement: Money			2.2 Addition and subtraction	2.3 Multiplication and division	2.3 Fractions and geometry	2.4 Number: Place Value with addition and subtraction			2.4 Statistics
	Measurement: Time : Utilise everyday opportunities to tell the time and develop the days of the week and the months of the year Calculation: Utilise everyday contexts to increase fluency with mental strategies using number facts to 20													
Spring	2.5 Addition and subtraction		2.5 Measurement: Mass and time		2.6 Fractions and geometry	2.6 Multiplication and division		2.7 Number and PV with Addition and Subtraction		2.7 Statistics	2.8 Addition and subtraction with money	2.8 Fractions	2.9 Measurement with geometry	2.9 Addition and subtraction
	Measurement: Time: Utilise everyday opportunities to tell the time and develop knowledge of 24 hours in a day and 60 minutes in an hour													
Summer	2.10 Multiplication and division		2.11 Statutory tests	2.12 Number: Place Value Addition and subtraction			2.13 Fractions with multiplication and division		2.14 Measure		2.15 Geometry			

HIAS Maths Team Scheme of Learning 2021

Hampshire Scheme of Learning

A recursive spiral curriculum model- revisit, review , embed



SEND Planning Tool – Maths and English

The planning tool supports teachers to identify an appropriate starting point and plan aspirational expectations of progress over time. It is intended that the tool is used for individual pupils with the expectation this is integrated into whole class teaching - removing barriers and enabling participation in whole class learning.

Each set contains four booklets:

Pre-Y1 to Y1; Y1; Y2; Y3.

Set 1 – Reading

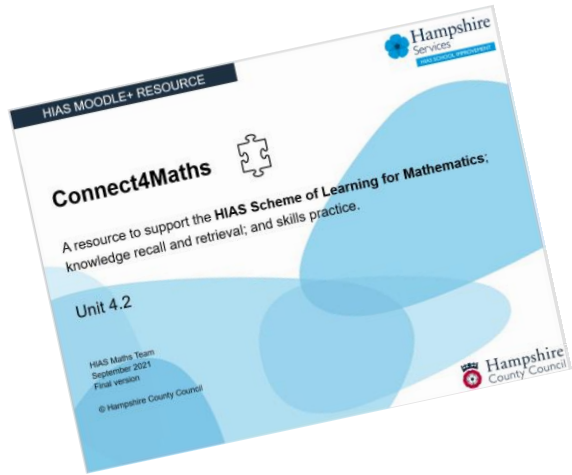
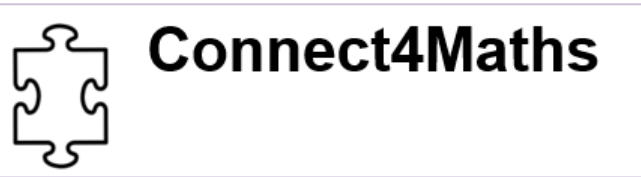
Set 2 – Writing

Set 3 – Mathematics



[Hampshire Planning Tool for Pupils with SEND.pdf \(hants.gov.uk\)](https://www.hants.gov.uk)





Year 1 to Year 9
Links to Hampshire scheme of learning

Moodle Plus

[Course: Connect4Maths - Primary \(hants.gov.uk\)](https://hants.gov.uk)



Links to Cognitive Psychology strategies

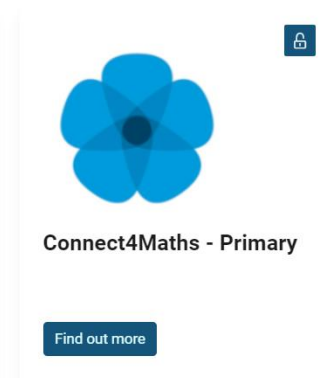
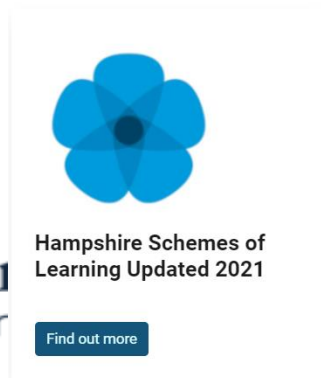


Overview:

- This document contains a set of connected low stakes questions to support knowledge recall and retrieval.

Points to consider when using this resource

- Teachers should review current learning within a unit of work and construct or adapt sets of questions that are relevant to the pupils.
- Connect4Maths is intended to be a daily, or regular, strategy that enables pupils to see connections across different areas of maths and to practise a range of skills, recalling known facts and using prior knowledge and understanding.
- Questions can be completed independently or collaboratively.
- Teachers should model solutions as appropriate and use pupil responses to inform next steps in their teaching

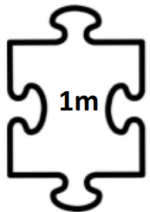


Connect4Maths



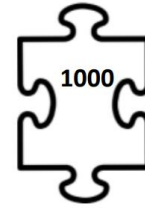
	<table border="1"> <tr><td colspan="2">7</td></tr> <tr><td>1</td><td></td></tr> </table>	7		1	
7					
1					
<p>$7 = \square + \square$</p>	<p>$2 + \square = 7$</p>				

Y1 – linked to Unit 1.2 'Number bonds for 7'



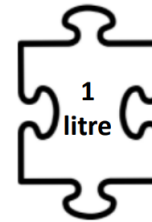
<p>How centimetres are there in one metre?</p>	<table border="1"> <tr><td colspan="2">1m</td></tr> <tr><td></td><td></td></tr> </table> <p>Complete.</p>	1m							
1m									
<table border="1"> <tr><td colspan="4">25cm</td></tr> <tr><td></td><td></td><td></td><td></td></tr> </table> <p>Complete.</p>	25cm								<p>A length of rope is 1m in length and $\frac{3}{4}$ of it is cut off. How much rope is left? How do you know?</p>
25cm									

Y3- linked to Unit 3.5 'Complements to 100 in context of length.'



<table border="1"> <tr><td colspan="4">1000g = 1 kilogramme</td></tr> <tr><td></td><td>g</td><td></td><td>g</td></tr> <tr><td>g</td><td>g</td><td>g</td><td>g</td></tr> </table>	1000g = 1 kilogramme					g		g	g	g	g	g	<p>$10 \times \square = 1000 \text{ m}$</p> <p>$5 \times \square = 1000 \text{ m}$</p>
1000g = 1 kilogramme													
	g		g										
g	g	g	g										
<p>Fill in the amounts</p>													
<p>250ml of orange juice was poured from a litre carton.</p> <p>What fraction was left? How many millilitres is that?</p>	<p>How much poured from a litre?</p>												

Y4 – linked to Unit 4.5 'measurement and reading scale'



<p>1 litre = <input type="text"/> millilitres</p>	<p>$\frac{1}{4}$ of a litre =</p>
<p>400ml = <input type="text"/> litres</p>	<p>How much water is in the jug?</p>

Y5 – linked to Unit 5.5 – Measurement



Year 2 – Yearly Overview | Hampshire Services | **HIAS MOODLE+ RESOURCE**

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Autumn	2.1 Number: What	2.1 Addition and Subtraction	2.2 Measurement: Money	2.2 Addition and subtraction	2.3 Multiplication and division	2.3 Fractions and geometry	2.4 Number: Place Value with addition and subtraction	2.4 Statistics							
Measurement: Time: Utilise everyday opportunities to tell the time and develop the days of the week and the months of the year Calculation: Utilise everyday contexts to increase fluency with mental strategies using number facts to 20															
AM	Unit	Hours	Domain	Y2 objectives											
3.2	5		Addition and subtraction with Measurement (money)	<ul style="list-style-type: none"> Add and subtract amounts of money to give change using both £ and p in practical contexts Use known and derived facts to work out change from £1 (100p) Find different combinations of coins that equal the same amounts of money Know $100p = £1$, $2 \times 50p = £1$, $10 \times 10p = £1$, $5 \times 20p = £1$, $20 \times 5p = £1$, $50 \times 2p = £1$; relate to multiplication facts/ repeated addition in the context of money Record addition and subtraction money calculations using pictorial representations such as a number-line and bar-models Measure, compare, add and subtract length (m / cm) Measure the perimeter of simple 2-D shapes 											
3.3	10		Multiplication and division	<ul style="list-style-type: none"> Recall and use multiplication and division 10 multiplication tables Represent multiplication and division facts as a number-line and a number-line Count in multiples of 3 and 4 from zero Derive, recall and use multiplication and division multiplication tables Write and calculate mathematical statements using the multiplication tables that mental strategies Solve problems including missing number multiplication and division, recording solutions representations to include number-lines, bar-models 											

YEAR 4 UNIT 4.3: NUMBER AND PLACE VALUE, ADDITION AND SUBTRACTION

This unit is about developing understanding of number and place value and addition and subtraction. It is important to ensure that pupils have deep understanding of 3-digit numbers and are able to represent numbers using concrete resources and a range of mathematical diagrams and representations. The number line is a key model in securing pupils' conceptual understanding of comparing and ordering numbers and to support mental calculation for addition and subtraction. Revisiting key facts about 100 and making links to related key facts for 1000 builds foundations for working with numbers beyond 1000 by the end of the year. Knowing these key facts supports pupils' accuracy when estimating and checking (approximations of answers).


Check and Refresh: Pupils will need to know:

- Counting forwards and backwards in multiples of 10 crossing 100s boundary
- Check place value knowledge of 2- and 3-digit numbers

Key Facts: Important pieces of information learners should take away from the unit:

- Number bonds to 1000 and 10,000 related to number bonds to 10, 100, 1000
- 1, 11 and 111 of 1000 compared to 10, 100, 111 and 1111 of 10,000 = 1000
- For example: $1 \text{ of } 1000 = 1000$, $11 \text{ of } 10,000 = 11,000$

Visual coding: key representations

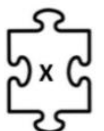



Hampshire Planning Scheme

- Long term map showing sequence of units, revisiting all domains in different combinations several times
- Medium term objectives for each unit
- Unit Plans for each unit with outline learning journey

HIAS MOODLE+ RESOURCE | Hampshire Services | **HIAS SCHOOL IMPROVEMENT**

Connect4Maths



<p>True or false</p> <p>$4 + 4 + 4 = 4 \times 4 - 4$</p> <p>Explain why</p>	<p>How many ways can you solve this?</p> <p>$20 = \square \times \square$</p>
<p>I know that</p> <p>$4 \times 8 = 32$</p> <p>Use this to work out</p> <p>8×8</p>	 <p>$\square = \square \times \square$</p>

Y4 – linked to Unit 4.3 'Multiplication and division.'

Connect4Maths

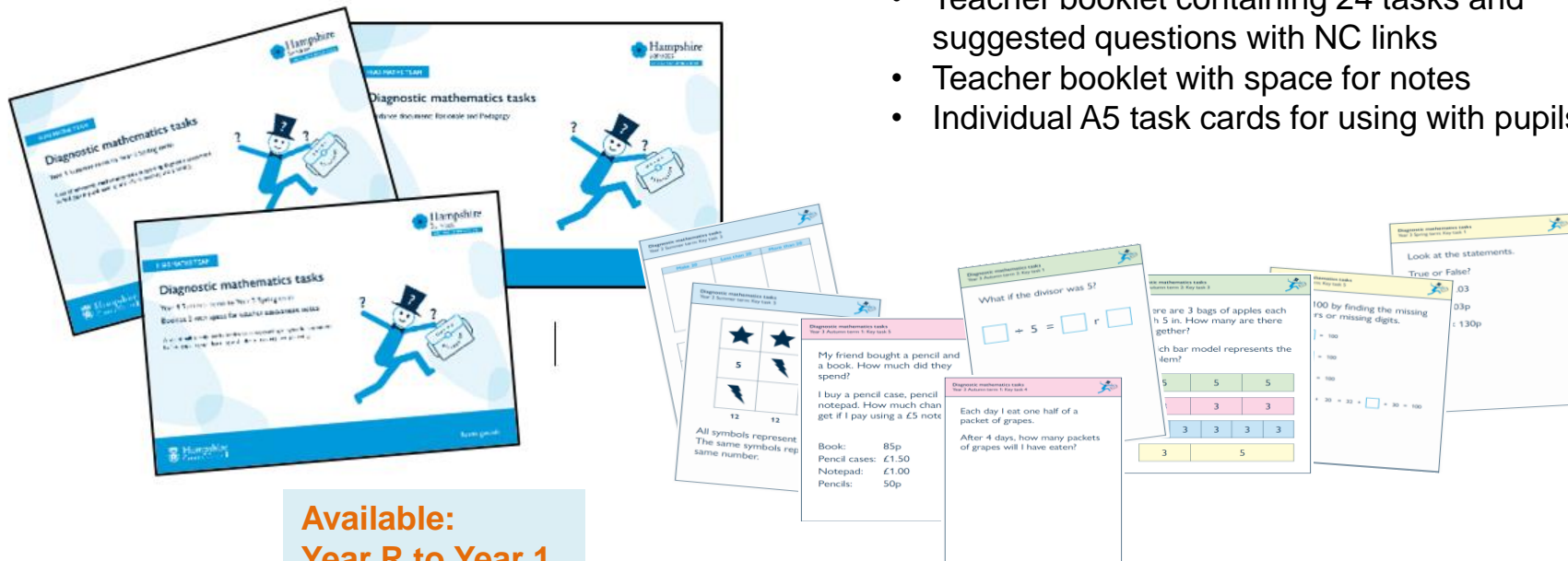
- Linked to each unit
- Also used as a 'stand alone resource'



HIAS Products and resources

Maths products

Diagnostic Mathematics Tasks Key Stage 1 and 2 , 3 and 4



Each pack contains:

- Introductory rationale and principles booklet
- Teacher booklet containing 24 tasks and suggested questions with NC links
- Teacher booklet with space for notes
- Individual A5 task cards for using with pupils

Available:

Year R to Year 1
Year 1 to Year 2
Year 2 to Year 3
Year 3 to Year 4
Year 4 to Year 5
Year 5 to Year 6
KS3
KS4

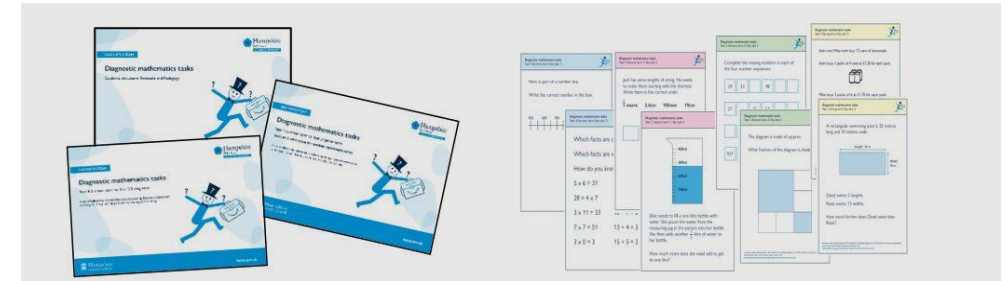
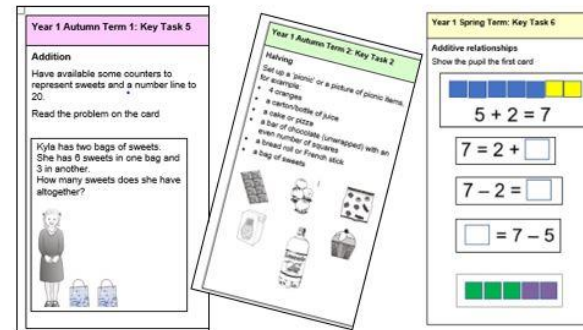
£45 per individual set

£40 per set when purchasing two or more sets

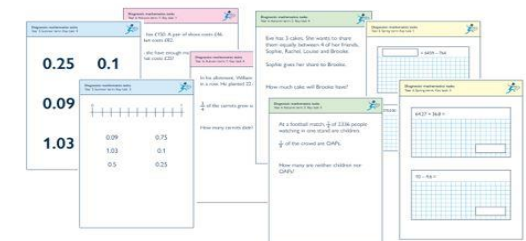
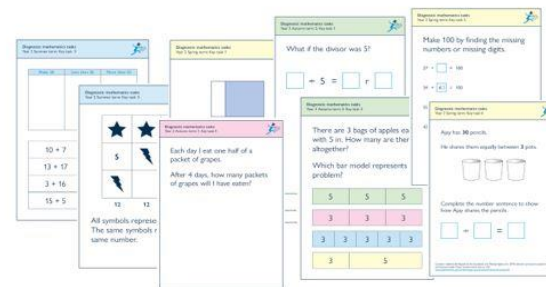


Diagnostic Mathematics Tasks Packs

A set of half-termly mathematics tasks supporting diagnostic assessment to find gaps in pupil learning and inform teaching and planning.



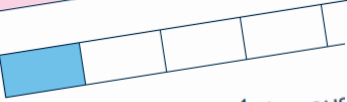
[Course: Diagnostic Mathematics Tasks \(hants.gov.uk\)](https://hants.gov.uk)



Diagnostic Mathematics Tasks

2x half day course on Learning Zone


Diagnostic mathematics tasks
Year 3 Autumn term 1: Key task 3



This image shows $\frac{1}{4}$ because
coloured and 4 are not.

True or false?

Diagnostic mathematics tasks
Year 4 Autumn term 1: Key task 2



Look at the bar model above.

What fraction of the bar does each section represent?

How will the bar model help you to solve the following problem?

Gemma has £1 in ten pence pieces. She spends 70p on a comic.

What fraction of her money has she spent?

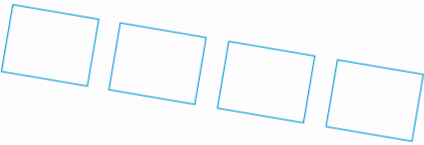
What fraction of her money is left?

How much money does she have left?

Diagnostic mathematics tasks
Year 5 Autumn term 1: Key task 3

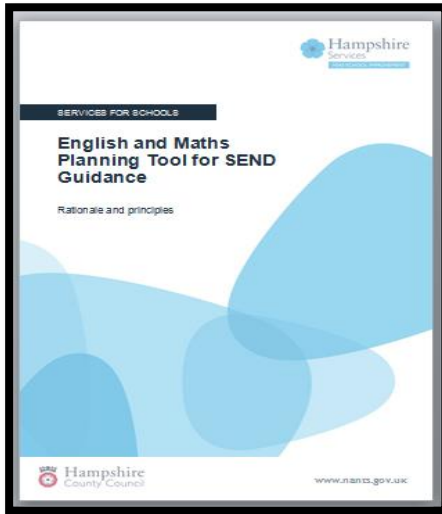
Jack has some lengths of string. He wants to order them starting with the shortest. Write them in the correct order.

$\frac{1}{4}$ metre 3.4cm 105mm 19cm



Hampshire Mathematics planning tools for pupils with SEND

Maths products



Training through:

- 2x half day course
- Staff meeting twilights
- Inset sessions



Primary SEND Tool kits:

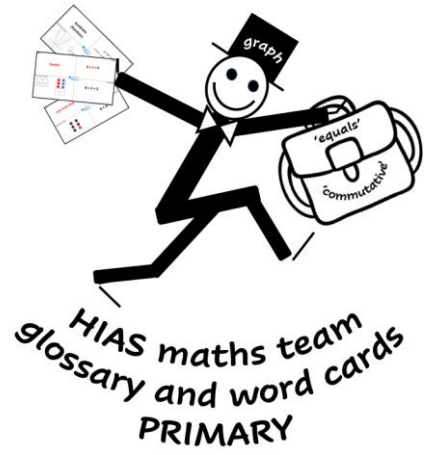
- Pre Year 1 to Year 1
- Year 1
- Year 2
- Year 3



Key Stage 1-4 Glossary and Word Cards:

A comprehensive resource to support accurate use of mathematical vocabulary

Primary resource from maths resources catalogue



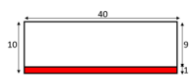
HAMPSHIRE MATHEMATICS TEAM
HIAS GLOSSARY FOR MATHEMATICS: LOWER KS 2

denominator	fractions	3	In the notation of common fractions, the number written below the line. i.e. The divisor. It 'names' the fraction by defining how many equal parts there are.	$\frac{1}{3}$ Three is the denominator , the whole is divided into three equal parts.
digital (clock)	measurement	4	A clock that displays the time as hours and minutes passed, usually since midnight.	Four thirty in the afternoon is displayed as
dimension	measurement	4	A measurement of length in one direction (could be on a polygon or polyhedron) such as length, width or height.	This square has length, and width
discrete data	statistics	4	Data resulting from situations involving discrete variables i.e. Things that can be counted with no interim values possible	The number of Red = 4 Green = 1 Blue = 2
dissect	geometry-properties of shapes	4	To cut into parts	
distributive law	multiplication and division	4	The distributive property lets you multiply a sum by multiplying each addend separately and then adding the two products. This is linked to the order of operations and to partitioning.	$3 \times 8 = 3 \times 8$ $3 \times (2 + 6) = 3 \times 2 + 3 \times 6 = 6 + 18$ $6 + 18 = 24$ $24 = 3 \times 8$

estimate

$9 \times 40 \approx 10 \times 40 = 400$

$9 \times 40 = 360$



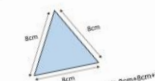
factor pairs

3	3	12
4	3	3
4	4	4

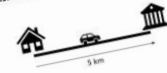
$3 + 4 = 7$

perimeter

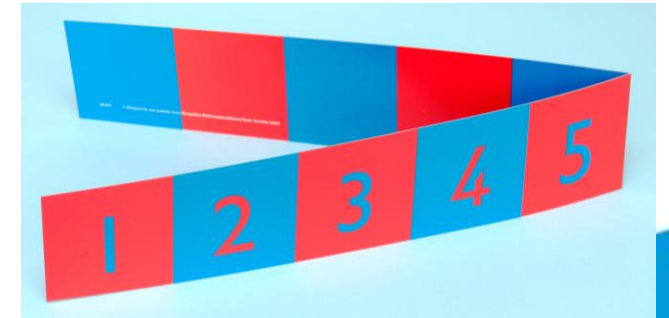
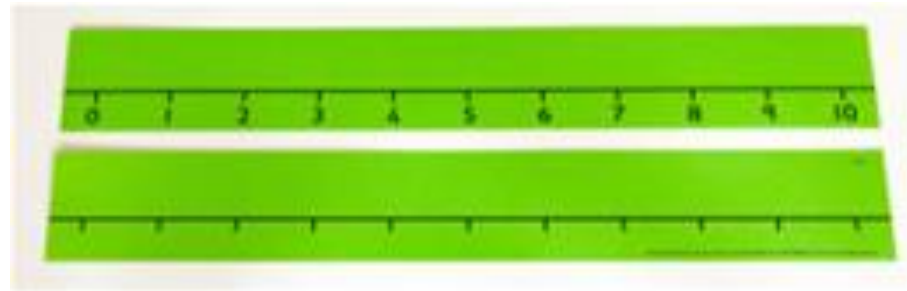
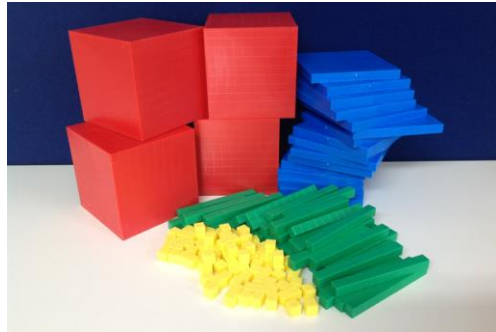
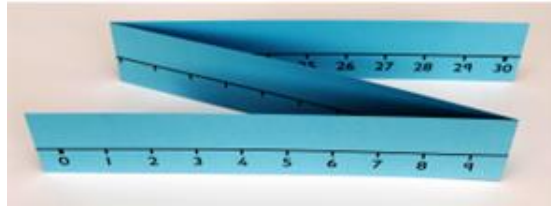
The perimeter of the equilateral triangle is $8cm + 8cm + 8cm = 24cm$



The distance from my house to the library is 5 kilometres



Secondary resource from open resources on moodle



Maths Resources

- Number Lines
- Dice
- Counters
- Number Cards
- Dienes
- Bead Strings
- Money and Number Grids

School subscription service to Hampshire Curriculum Resource Centres

Schools can subscribe to our HIAS curriculum centres. [Curriculum Resource Centres A5 leaflet 2019 \(hants.gov.uk\)](#)

All Maths Resources are available to all Subscribing Schools via our Catalogue [maths-centre-catalogue.pdf \(hants.gov.uk\)](#)

The Mathematical Association

themathematicalassociation@m-a.org.uk



Success Across all Settings

SAS - Who Cares Wins!

25TH NOVEMBER 2022
LONDON



Realising
potential in mathematics
for all



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Your feedback matters



Please scan the QR code to complete our online training evaluation form

Or access the form using the URL below

<https://forms.office.com/r/QE21XtDJ2r>

Thank you!

