Maths Handbook

2025-2026

Our curriculum approach

At Aspire, we follow a high quality and ambitious curriculum that engineers success using a Teaching for Mastery approach. This enables all children to master the mathematics curriculum through careful curriculum sequencing and small-step progression so that children have the knowledge they need to achieve and thrive in later life. Time is available within the curriculum for revisiting content and dealing with gaps in knowledge and skills.

Our aim is to develop a positive mindset of mathematics and ensure depth of conceptual understanding through progressive mathematical fluency, problem-solving and reasoning skills for all children. This helps our children to know more, remember more and be able to do more. Our mathematics curriculum ensures children build knowledge and skills sequentially and cumulatively using the small step progression unit sequence from Oak National Academy Curriculum Plans for KS1 and KS2. Children learn to build networks of connections in mathematics by constructing understanding of mathematical ideas and awareness of the relationships between concrete experiences, language, pictures, and mathematical symbols (Haylock and Thangata 2007).

Children are taught in flexible groups within mixed attainment classes and are supported to reason deeply about the maths they explore, using the prompts *'What do you see? (How do you see it?) What do you notice? (Why is that happening?) What do you wonder? (How could you find that out?).* Scaffolding and modelling are used to ensure children extend and develop their ideas; they master the small steps of progression at roughly the same rate. All pupils are explicitly taught how to articulate ideas, develop understanding and engage with others. Collaborative learning and dialogic teaching strategies support the use of mathematical talk in an oracy rich classroom giving all children the opportunity to explore mathematical concepts, resolve mistakes and identify misconceptions with growing independence. Mistakes in maths are valued and celebrated. Unpicking misconceptions so that children evaluate their thinking, and make changes and adaptations to future work, is vital in scaffolding them towards greater independent learning.

Teachers have high expectations of all pupils, paying particular regard to disadvantaged pupils, those with SEND, those who are known or previously known to social care and those who may face other barriers to their learning and or well-being. They do not compromise on the requirement for overlearning and repetition to ensure automaticity. We strongly believe that all children can achieve in mathematics. Any gaps in pupils' knowledge or skills are prioritised and tackled in a timely manner using early and accurate assessment, both formative and summative, of the most important knowledge and concepts that pupils need to know. We use the DfE's non-statutory Maths Guidance: key stages 1 and 2, which sets out the essential 'ready to progress' core criteria for each year group to support this.

We use the information from the assessment to implement a continuous cycle of planning, actions and review in order to reduce barriers to pupils' learning, especially those who find learning maths hardest. Adaptive teaching strategies (before, during and after lessons) are used to ensure children start each new unit of learning 'lesson ready'. Effective and systematic use of assessment is a key component of our approach to ensure that we meet the needs of all pupils, and where possible children 'keep-up' reducing the need for 'catch-up' interventions. Diagnostic assessment tools, such as the Sandwell Early Numeracy Assessment and Aspire Diagnostic Tracker, are also used to ascertain the starting point for the small proportion of pupils progressing outside the age or stage related expectations of their year group, ensuring they have access to a suitable curriculum that builds on their knowledge and is adapted to their needs. Everyday high-quality inclusive teaching reduces the need for individual adaptions.

We understand that every child is unique and will join us in the Early Years with different experiences and at different stages of development. In the Early Years, we use 'Learning Trajectories' and the six key areas of early mathematics learning from the NCETM to provide a platform for everything children will encounter as they progress through their maths learning at primary school, and beyond. In Reception, children access their early maths curriculum through the NCETM Mastering Number programme, which aims to secure firm foundations in the development of good number sense, patterns in number, confidence and flexibility.

How our curriculum approach prepares children for the Key Stage 2 tests and Key Stage 3 curriculum

At Aspire, we aim to develop fluent, confident mathematicians. Our approach to the curriculum enables all children to understand that maths is an interconnected subject; that fluency in one area supports the development of another. Throughout Key Stage 2, all teachers play a part in building on the strong foundations which are secured in EYFS and Key Stage 1, and from Year 3 onwards, children are prepared not only for the Key Stage 2 tests but for their journey through Key Stage 3 and the world beyond.

How do we support our pupils in an evidence informed approach?

Teachers support children through a metacognitive approach, helping them understand themselves as learners and equipping them with diverse strategies to tackle tasks. A metacognitive approach involves supporting children in three ways:

- Understanding themselves as a learner – what are their strengths and weaknesses (Knowledge of *Self*)
- Understanding the task – knowing what the task requires and how difficult it might be (Knowledge of *Task*),
- Understanding when to use different problem-solving strategies and how effective each one is (Knowledge of *Strategies*)

We also build resilience through Metacognitive Regulation which is an active process, using the above metacognitive knowledge to direct thinking, involving:

- Planning – deciding on an approach to a task
- Monitoring – Checking progress, adapting as you work
- Evaluating – Assessing the outcome of your efforts.

This approach ensures that when children are faced with new problems in the Key Stage 2 tests, that they are equipped with the skills and resilience to solve them.

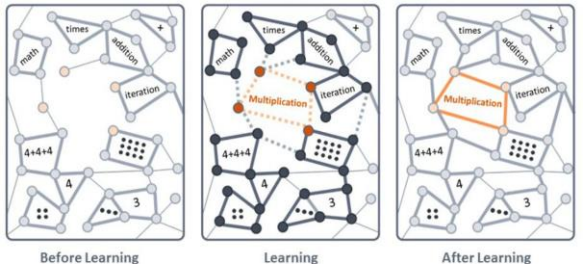
Conceptual understanding, fluency, stamina and resilience are built across the whole key stage. The curriculum scaffolds intentional practice of key skills, especially arithmetic, using careful modelling, manipulatives, and oracy strategies. Scaffolds are removed as children's confidence grows. By breaking learning into small, achievable steps, children develop speed, confidence, and fluency of known facts, preparing them for long-term success.

We equip children to be resilient learners with strong conceptual understanding and automaticity in arithmetic skills. We use a phonics approach to ensure all children can recall additive and multiplicative facts fluently and quickly, freeing working memory for the further challenges of the Year 5 and 6 curriculum. Careful tracking of facts ensures no child is left behind. We build speed and efficiency in arithmetic through regular, carefully designed time pressure practise. The progressive curriculum builds children's understanding of the interconnectedness within units (for example, Statistics and Measures are taught within Place Value).

We use regular, termly, timed practise tests to build resilience and ensure children are ready for the Key Stage 2 tests. Tests are carefully designed to both reflect the current year group content and that from prior years. All questions are based around the Maths Guidance: key stages 1 and 2. Tests are then analysed and gaps are identified and filled in a timely manner.

Our Core Principles, taken from Oak National Academy:

Teaching of a lesson's key learning points is underpinned by three evidence informed principles:



- **Connected**: new learning happens when explanation is linked to prior knowledge.
- **Chunked**: information should be provided in small steps to minimise cognitive load and maximise understanding and retention.
- **Clear**: clarity of language is essential in ensuring pupils understand and remember concepts.

Our lessons are structured around the Oak National Academy **learning cycles**. Each learning cycle covers several phases: **Explanation, Check, Practice and Feedback**. Each learning cycle teaches one small step in learning. In most lessons we will move through 2 learning cycles (small steps). They become part of our daily lesson structure.

Explanation Check Practice Feedback

Our Aspire golden 5: ‘Say what you see!’

- We think hard about what we see, what we notice and what we wonder.
- We always try to use precise vocabulary and gestures to explain our mathematical thinking to others.
- We always try to use full sentences to share our thinking through exploratory and presentational talk.
- We understand the power of ‘because’ and try to use this to explain our thinking to others.
- We give examples and non-examples to share our mathematical thinking.

Autumn 1	w/b 01.09.25 Y1 counting assessments 3-19th *Recep/Y1 trackers* *Y2 additive trackers* Y3-Y6 multiplication trackers Y5/6 Assessments	w/b 08.09.25 Submit QLA by 12.09.25	w/b 15.09.25 *QLA reports for Y6 day 18.09.25*	w/b 22.09.25	w/b 29.09.25	w/b 06.10.25	w/b 13.10.25 Y6 SATs 2022	w/b 20.10.25
Autumn 2	w/b 03.11.25	w/b 10.11.25	w/b 17.11.25	w/b 24.11.25	w/b 01.12.25 Assessment week Y2-6 *Y6 SATs 2024 *MTC check-in	w/b 08.12.25 Submit QLA by 12.12.25	w/b 15.12.25 QLA reports	
Spring 1	w/b 05.01.26	w/b 12.01.26	w/b 19.01.25	w/b 26.01.25	w/b 02.02.26 Y6 SATs 2025	w/b 09.02.26		
Spring 2	w/b 23.02.26	w/b 02.03.26	w/b 09.03.26	w/b 16.03.26 Assessment week Y2-6 *Y6 SATs 2023 *MTC check-in	w/b 23.03.26 Submit QLA by 27.03.26			
Summer 1	w/b 13.04.26 QLA reports	w/b 20.04.26	w/b 27.04.26 Y6 SATs 2019 * to support revision only	w/b 04.05.26	w/b 11.05.26	w/b 18.05.26		
Summer 2	*w/b 01.06.26*	w/b 08.06.26	w/b 15.06.26 16.06.25 MSL day	w/b 22.06.26 Assessment week Y2-5	w/b 29.06.26 Submit QLA 03.07.26	w/b 06.07.26 QLA reports	w/b 13.07.26	w/b 20.07.26

Reception Baseline

KS2 Tests

Multiplication Tables Check

Phonics Screening

Trust Maths Assessments

Y6	Y5	Y4	Y3	Y2	Y1	
Unit 1 (10)	Unit 1 (5)	Unit 1 (15)	Unit 1 (10)	Unit 1 (10)	Unit 1 (15)	Autumn 1 8 weeks
	Unit 2 (5)	Unit 2 (5)	Unit 2 (10)	Unit 2 (5)	Unit 2 (10)	
Unit 2 (10)	Unit 3 (5)	Unit 3 (5)		Unit 3 (5)		
	Unit 4 (10)	Unit 4 (5)	Unit 3 (5)	Unit 4 (5)	Unit 3 (5)	
Unit 3 (10)	Unit 5 (10)	Unit 5 (5)	Unit 4 (10)	Unit 5 (10)	Unit 4 (5)	
Unit 4 (10)	Unit 6 (5)	Consolidation (5)	Unit 5 (5)	Consolidation (5)	Unit 5 (5)	
Unit 5 (5)	Unit 6 cont (5)	Unit 6 (10)	Unit 5 cont (10)	Unit 5 cont (5)	Unit 5 (10)	Autumn 2 7 weeks
Unit 6 (10)		Unit 7 (5)		Unit 6 (15)		
	Unit 7 (5)	Unit 8 (5)	Unit 6 (10)	Unit 7 (10)	Unit 6 (10)	
Unit 7 (5)	Unit 8 (15)	Unit 9 (5)				
Unit 8 (10)	Unit 9 (5)	Unit 10 (5)	Unit 7 (10)		Unit 7 (10)	
Unit 9 (5)	Consolidation (5)	Consolidation (5)	Consolidation (5)	Consolidation (5)	Consolidation (5)	
Unit 10 (15)	Unit 10 (10)	Unit 11 (10)	Unit 8 (10)	Unit 8 (10)	Unit 7 cont (5)	Spring 1 6 weeks
		Unit 12 (5)	Unit 9 (10)	Unit 9 (10)	Unit 8 (15)	
Unit 11 (10)	Unit 11 (10)	Unit 13 (5)		Unit 10 (5)		
Unit 12 (5)	Unit 12 (10)	Unit 14 (10)	Unit 10 (10)	Unit 11 (5)	Unit 9 (10)	
Unit 12 cont (5)	Unit 12 cont (5)	Unit 14 cont (5)	Unit 11 (15)	Unit 11 cont (5)	Unit 10 (10)	Spring 2 6 weeks
Unit 13 (5)	Unit 13 (5)					
Unit 14 (5)	Unit 14 (5)	Unit 15 (10)	Unit 12 (5)	Unit 12 (10)	Unit 11 (15)	
	Unit 15 (5)	Unit 16 (5)	Unit 13 (5)			
Unit 15 (10)	Unit 16 (5)	Unit 17 (5)		Unit 13 (10)		
	Consolidation (5)	Consolidation (5)	Consolidation (5)	Consolidation (5)	Consolidation (5)	
KS2 Tests	Unit 17 (5)	**Multiplication Tables Check**	Unit 13 cont (5)	Unit 13 cont (5)	Unit 12 cont (10)	Summer 1 5 weeks
		Unit 18 (5)	Unit 14 (5)	Unit 14 (5)		
	Unit 18 (5)	Unit 19 (5)	Unit 15 (5)	Unit 15 (10)	Unit 13 (10)	
	Unit 19 (10)	Unit 20 (5)	Unit 16 (5)		Unit 14 (5)	
Unit 16 (5)	Unit 20 (5)	Unit 21 (5)	Unit 17 (10)	Consolidation and **KS1 Tests** (5)		
Unit 17 (10)	Unit 20 cont (10)	Unit 22 (10)	Unit 18 (10)	Unit 16 (5)	Unit 14 cont (5)	Summer 2 7 weeks
Unit 18 (5)				Unit 17 (5)	Unit 15 (10)	
Unit 19 (10)	Unit 21 (10)	Unit 23 (10)	Unit 19 (10)	Unit 18 (15)	Unit 16 (5)	
Unit 20 (5)	Unit 22 (15)	Unit 24 (5)			Unit 17 (5)	
		Unit 25 (10)	Unit 20 (7)	Unit 19 (10)		
Unit 21 (5)					Unit 18 (10)	

	Autumn 1 8 weeks	Autumn 2 7 weeks	Spring 1 6 weeks	Spring 2 5 weeks	Summer 1 6 weeks	Summer 2 7 weeks
R	Baseline Week 1-5 Shape & Space	Patterns Week 6-10 Measures	Week 11-15 Shape and space	Week 16-20	Week 21-25 Patterns	Week 26-31 Measures
Y1	Counting Assessment Week 1-5 Assess and consolidate	Week 6-10 Assess and consolidate	Week 11-15 Assess and consolidate	Week 16-20	Week 21-25 Assess and consolidate	Week 26-31 Assess and consolidate
Y2	Week 1-5 Assess and consolidate	Week 6-10 Assess and consolidate	Week 11-15 Assess and consolidate	Week 16-20	Week 21-25 Assess and consolidate	Week 26-31 Assess and consolidate
Y3	**Block 1**, *Block 2 and Block 3* (34 lessons) Assess and consolidate	*Block 4 and Block 5* (33 lessons) Assess and consolidate	**Block 6** and **Block 7** (27 lessons) Assess and consolidate	**Block 8** (15 lessons) Assess and consolidate	Multiplicative factual fluency practice	Multiplicative factual fluency practice
	For pupils to make good progress through the Key Stage 2 mathematics curriculum, they need to have a secure understanding of the additive relationship and have secured addition and related subtraction facts within 20. In Y3, block 1, 6, 7 and 8 relate to the relevant ready-to-progress (RtP) criteria.				It is crucial children leave Y3 with fluency in multiplication and division facts within the x2, x4, x5, x8 and x10 to experience success in mathematics and a springboard into Y4.	
Y4	Assess Week 1-6	Week 7-12	Week 13-17	Week 18-21	Week 22-26	MTC Assess Week 27-30
Y5	Week 1-7	Week 8-14	Week 15-20	Week 21-24	Week 25-30	Additional Arithmetic

Year 4 Autumn Term														
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	Week 15
Review of column addition and subtraction **(15 lessons)**			Secure place value to 1000: apply to addition and subtraction: multiples of 100 **(5 lessons)**	Calculation and conversion of measures **(5 lessons)**	Comparing, ordering and rounding 4-digit numbers **(5 lessons)**	Column addition and subtraction with 4-digit numbers **(10 lessons)**		Perimeter **(10 lessons)**		Representing counting in threes and sixes as the 3 and 6 times tables **(5 lessons)**	Relationship between the 3 and 6 times tables and tests of divisibility **(5 lessons)**	Representing counting in nines as the 9 times table **(5 lessons)**	Relationship between the 3 and 9 times tables **(5 lessons)**	7 times table: odd and even patterns, square numbers and tests of divisibility **(10 lessons)**
										MNKS2	MNKS2	MNKS2	MNKS2	MNKS2

Year 4 Spring Term											
Week 16	Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26	Week 27
7 times table: odd and even patterns, square numbers and tests of divisibility **(10 lessons)**	Understand and represent multiplicative structures **(10 lessons)**		Apply the distributive law to multiplication **(5 lessons)**	Understand what happens when a number is multiplied or divided by 10 and 100 **(15 lessons)**			Coordinates **(10 lessons)**		Review of fractions **(5 lessons)**	Composition of fractions greater than one **(5 lessons)**	Compare and order mixed numbers and position on a number line **(5 lessons)**
MNKS2											

Year 4 Summer Term											
Week 28	Week 29	Week 30	Week 31	Week 32	Week 33	Week 34	Week 35	Week 36	Week 37	Week 38	Week 39
Addition and subtraction of fractions and mixed numbers (within a whole) **(5 lessons)**	Convert improper fractions to mixed numbers and vice versa **(5 lessons)**	Efficient strategies for adding and subtracting mixed numbers (crossing a whole) **(5 lessons)**	Properties of 2D and 3D shapes and symmetry **(10 lessons)**		**Money: apply efficient strategies when calculating with money (10 lessons)**		Time: Convert between 12 and 24 hour clocks: analogue and digital **(5 lessons)**	Division with remainders **(10 lessons)**			

Some of the concepts from the Y4 Oak National Academy curriculum are taught within KS2 Mastering Number.

Where this happens, if assessments show that children already have a deep understanding of the concept you may not need to reteach these as full, separate maths lessons.

This approach will provide additional time for consolidation lessons throughout the year.

Year 5 Autumn Term														
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	Week 15
Understand tenths as part of a whole, represent and calculate mentally **(5 lessons)**	Compose and calculate with decimals including column addition and subtraction **(5 lessons)**	Understand hundredths as parts of a whole and represent **(5 lessons)**	Use knowledge of decimals to solve problems in different contexts: length **(10 lessons)**		Negative numbers **(10 lessons)**		Multiplication by partitioning leading to short multiplication (2 by 1-digit) **(10 lessons)**		Multiplication by partitioning leading to short multiplication (3 by 1-digit) **(5 lessons)**	Division by partitioning leading to short division (2 and 3-digits by 1-digit) **(15 lessons)**			Understand and the concept of area **(5 lessons)**	

Year 5 Spring Term												
Week 16	Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26	Week 27
Link area of rectangles to multiplication **(10 lessons**		Compare and describe measurements using knowledge of multiplication and division **(10 lessons)**		Calculating with decimal fractions **(15 lessons)**			Understand the concept of volume **(5 lessons)**	Multiply 3 or more numbers (commutative and associative laws) **(5 lessons)**	Understand and use the concept of factorisation (square and prime numbers) **(5 lessons)**	Use common factors and multiples to solve calculations efficiently **(5 lessons)**	
Lessons 1-4 covered by MN				Merge lessons 6+7 9+10 MN				Covered by MN	Covered by MN	Covered by MN	

Year 5 Summer Term											
Week 28	Week 29	Week 30	Week 31	Week 32	Week 33	Week 34	Week 35	Week 36	Week 37	Week 38	Week 39
Multiply a proper fraction by a whole number **(5 lessons)**	Multiply improper fractions and mixed numbers by a whole number **(5 lessons)**	Find unit and non-unit fractions of whole numbers exploring parts and wholes **(10 lessons)**		Comparing fractions using equivalence and decimals **(15 lessons)**			Converting units **(10 lessons)**		Angles: compare, name, estimate and measure angles **(15 lessons)**		
Check MN coverage	Check MN coverage	Check MN coverage									

Some of the concepts from the Y5 Oak National Academy curriculum are taught within KS2 Mastering Number.

Where this happens, if assessments show that children already have a deep understanding of the concept you may not need to reteach these as full, separate maths lessons.

This approach will provide additional time for consolidation lessons throughout the year.

Building strong foundations in the Early Years

We understand that every child is unique and will join us in the Early Years with different experiences and at different stages of development.

The curriculum clearly identifies and prioritises the foundational knowledge and skills pupils need for later learning; strong foundations lead to later success. Staff engage pupils in high-quality interactions to develop their knowledge and vocabulary across all areas of learning in maths through play, practical exploration and real-world opportunities in practice to prepare the children to move into Reception and beyond. They help pupils to articulate what they know and understand by scaffolding, modelling, extending and developing their ideas and provide enough teaching and practice for all pupils to become fluent in number facts and to be able to count and calculate, and describe time, size and shape using correct mathematical terminology. In addition, staff provide enough teaching and practice for pupils to ensure that pupils have sufficient foundational knowledge to complete tasks; they provide additional teaching and practice for those who need it. Teachers prioritise 'keeping up' in the early years and quickly deal with any identified gaps in pupils' knowledge as they arise.

We believe that picture books can be an opportunity to develop children's maths and reading skills at the same time. Many storybooks have pictures and storylines that feature important early maths concepts, such as numbers, shapes, patterns, and measurement. Talking about the maths found in picture books can support children's curiosity and enjoyment of math. Using the guidance from **Improving Mathematics in Early Years and Key Stage 1** , teachers use daily story time to identifying opportunities to revisit and deepen children's mathematical knowledge and skills with a focus on mathematical talk and problem-solving during reading using storybook guides from Dreme as examples.

Nursery guidance

At Aspire, we believe that in order for children to be enthusiastic and confident learners in mathematics, we need to provide a solid foundation to build upon which begins in nursery. Our carefully planned curriculums must build progressively on the guidance from Development Matters or Birth to 5 Matters.

It is vital that EYFS practitioners have a range of tools in their toolkit to support children throughout the day, in routines and the enabled environment to experience:

- a planned adult led activity
- high-quality adult interactions, which may be small group or 1:1
- opportunities to model and experience sustained shared thinking focusing on developing mathematical vocabulary and language
- mathematical opportunities through the daily routines e.g. snack time

In addition, practitioners may use a range of high quality materials to support their curriculum development. Master the Curriculum provides a sequenced, weekly curriculum overview and supporting materials. This provides a detailed overview of a progressive maths curriculum which sequences the essential small steps needed in order to be ready to move into Reception. When using any high-quality material, we recommend that, where possible children experience the learning in a practical and engaging way using a range of hands on, everyday resources with limited screen time e.g. PowerPoints.

We believe that picture books, songs and rhymes can be an opportunity to develop children's maths and reading skills at the same time. Many storybooks have pictures and storylines that feature important early math concepts, such as numbers, shapes, patterns, and measurement. Talking about the maths found in picture books can support children's curiosity and enjoyment of maths. There are range of online resources to further support practitioners including DREME Family Maths . Further guidance can be found at EEF Improving Mathematics in Early Years and Key Stage 1 Learning Trajectories. and The NCETM Early Years .

Assessment and tracking in the Early Years

Early and accurate assessment in EYFS and Key Stage 1 helps teachers form a picture of what children can and can not do; it allows them to identify misconceptions early and to build firm foundations for future learning, ensuring no child is left behind.

'As early mathematical concepts take time to develop, observing a child demonstrating a mathematical skill does not necessarily mean that understanding is secure. It often takes time to consolidate learning and transfer that learning to different contexts, so practitioners should ensure they check what children know in a variety of contexts.' EEF: Improving Maths in the Early Years and Key Stage One Guidance Report, p27

How we do what we do:

Assessment in EYFS and at Year 1 needs to be age appropriate. It is not appropriate at this stage to set timed, written tests. For this reason, we use a continuous assessment model: 'The Reception/Year 1 Tracker'. The tracker allows teachers to continually assess key skills, ensuring they are deeply learnt before children move on. Teachers use this tool to observe, record, monitor and plan for future support in a variety of contexts and over a period of time to ensure learning is deep and embedded. Assessment will happen at the point of teaching, in the moment and later on to ensure a concept is embedded and remembered.

'A variety of methods should be used to assess children's mathematical understanding. This may include observation of children while engaged in activities, setting specific tasks to reveal understanding and discussions with children about mathematics and their reasoning.' EEF: Improving Maths in the Early Years and Key Stage One Guidance Report, p27

Teachers design tasks which reveal understanding by making use of open-ended questions and careful observations. Assessment will take place in many different contexts where children have the opportunity to apply what they have learnt independently. For example, teachers may assess counting (see below) in the construction area, or in the sand play, and on each occasion will focus on children's responses rather than looking for a set answer to a question. These responses may be physical as well as verbal. Teachers also need a good understanding both of the five principles of counting and of typical learning trajectories, using them as a guide to inform next steps. If there are any early indications that our youngest children are in need of additional support, they seek advice from the school and/or Trust SENDCO and EYFS Lead.

The Five Principles of Counting:

One-to-One Correspondence: This principle states that each object being counted must be assigned one and only one number name, and each number name must be assigned to one and only one object.

Stable Order: This principle emphasizes that number names must be said in a specific, consistent order when counting (e.g., "one, two, three, four...").

Cardinality: This principle highlights that the last number name said when counting a set represents the total number of objects in that set.

Abstraction: This principle states that the counting process can be applied to any set of objects, regardless of their type or characteristics (e.g., you can count apples, oranges, or even sounds).

Order Irrelevance: This principle means that the order in which objects are counted does not affect the final count, as long as each object is counted once and only once.

It is important to observe what children do and say when assessing what they know and understand. Teachers should note strategies, as well as answers. For example, does the child use their fingers? Do they subitise? Do they touch count or count with their eyes? Do they sort before counting? Teachers will discuss the maths with the children to find out more about what they understand and identify and intervene when they notice misconceptions. During these discussions, teachers listen carefully to children's responses and explanations, They ask open ended questions such as 'How did you know?' and 'What did you do first?'

When do we use our tracker?

Securing firm foundations leads to later success. The Reception/Year 1 tracker is used from the beginning of Reception, through Year 1 and may be continued into Year 2 and beyond, depending on when a child secures all key learning. It is important that teachers view the tracker as a working document, which is regularly updated. Teachers will not only assess new learning, but will be reviewing prior learning, ensuring children are given time to develop key skills such as counting, comparing and subitising. It is recommended that teachers select *one key point* from the tracker each week to assess, and don't attempt to assess all at once.

Teachers should be mindful of the key area of focus during the week and **notice** children behaving mathematically:

'There are many opportunities throughout the day to observe what children do and say that reveals their mathematical knowledge and understanding. For example, noticing the way a child engages in block play, plays a game, or counts objects will give an indication of their developing mathematical knowledge.' EEF: Improving Maths in the Early Years and Key Stage One Guidance Report, p27

As the tracker is a working document, there is not formal assessment week at the end of each term as there is with the assessments in Y2 – Y6. Assessments are ongoing. There are many opportunities throughout the day, the week and the term to assess. Teachers may use the following times to plan for assessment opportunities:

- Use the assess and consolidation weeks during the Mastering Number sessions
- Use the daily teacher-led session, observing children's responses during initial wave one teaching.
- Make use of small group work to assess and question more deeply
- Plan for 1:1 observation in the Continuous Provision through the day.
- In Y1 use the 5th day each week to 'assess and consolidate'.
- Use the Trust Assessment Weeks, even though there are not formal written tests, teachers should use this time to collate assessments and review the tracker; what has been done, what needs to be done, which children need further support?

Assessment

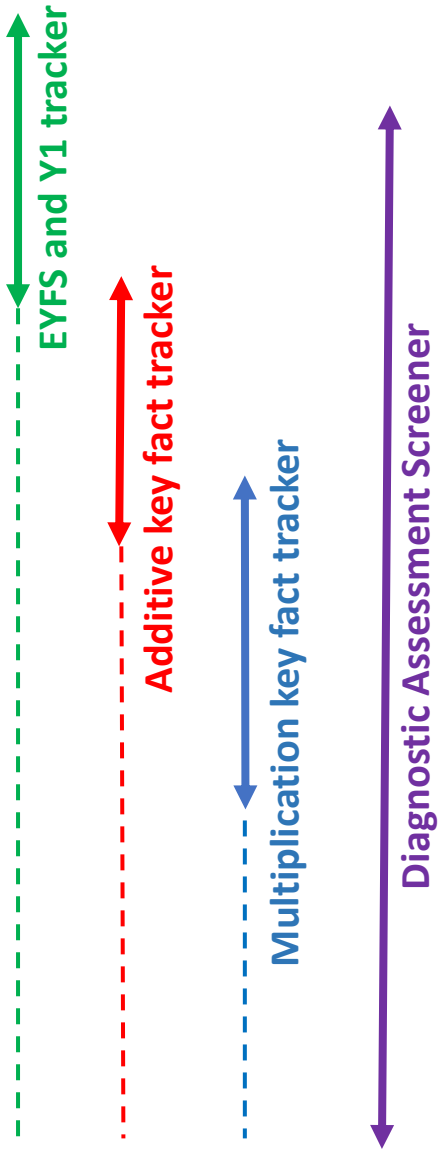
At Aspire Educational Trust, we have a robust approach to tracking and assessment for mathematics (see following slide) to ensure teachers identify and tackle any gaps in learning and address them as soon as possible using adaptive teaching strategies and flexible and timely '**keep-up**' interventions, including pre-teach, to ensure all children are lesson ready. This help pupils embed key concepts, use knowledge fluently and develop their understanding.

Formative assessment:

As we prioritise retrieval practice, all lessons start with '**Connect**', using the starter quiz, where children have the opportunity to bridge-back to previous concepts, teachers use the 'check' slides to ensure all children are 'keeping-up' in the lesson and to provide feedback during the lesson. At the end of the lesson/day, children complete the exit quiz questions as a formative post-assessment. This will be used to provide pupils with information about their performance, with the goal of helping them to improve their learning and as an opportunity for teachers to find out what a child *can and cannot do* or *does and does not know* as a tool to inform essential and flexible '**keep-up**' interventions.

Summative assessment:

At the end of every term, children from Y2 to Y6 complete a summative Trust assessment based on the content taught that term and from previous years. As a Trust Maths Team, we will support schools to identify any gaps in learning for individual children, classes and year groups (see notes). Teachers use a range of adaptive teaching strategies to ensure that all children secure strong foundations to access the curriculum. If a key outcome from the 'areas to consolidate' will not be revisited in the year, teachers plan for 1:1, small group and whole class intervention – this could be early morning work or arithmetic practice.



	September	End of Autumn	End of Spring	End of Summer
Nursery	EYFS – Y1 Key Skills tracker			
Reception	Reception Baseline Assessments	EYFS – Y1 Key Skills tracker		EYFS Profile
Y1	5 principles of counting practical assessment	EYFS – Y1 Key Skills tracker		
Y2	NA	1 reasoning test 1 arithmetic test	1 reasoning test 1 arithmetic test	1 reasoning test 1 arithmetic test
Y3	NA	1 reasoning test 1 arithmetic test	1 reasoning test 1 arithmetic test	1 reasoning test 1 arithmetic test
Y4	NA	1 reasoning test 1 arithmetic test	1 reasoning test 1 arithmetic test	1 reasoning test 1 arithmetic test Multiplication Tables Check
Y5	1 reasoning test 1 arithmetic test	1 reasoning test 1 arithmetic test	1 reasoning test 1 arithmetic test	1 reasoning test 1 arithmetic test
Y6	1 reasoning test (Trust) 1 arithmetic test (Trust)	2 reasoning tests (SATs) 1 arithmetic test (SATs)	2 reasoning tests (SATs) 1 arithmetic test (SATs) (spring 1 & 2)	KS2 Tests

Why we use a Multiplication Tracker for the 36 core Multiplication facts

Having secure, fluent and fast knowledge of the multiplicative facts to 12 x 12 is important if children are to be successful in maths through key stage 2 and beyond. Capacity of working memory is precious and limited. If capacity is taken up by skip counting, children's ability to fluently calculate with larger numbers will be hampered. When children have to focus on times tables, they do not *notice* the strategies which build understanding and fluency in more complex problems. Much of the Year 5 and Year 6 maths curriculum is based on multiplication. From long multiplication and short division to fractions, percentages, ratio and area, most units require fluency in multiplication. To be successful in the Key Stage 2 tests, in Key Stage 3 and beyond, children need to be secure in their times tables.

We use a phonics approach when it comes to tracking the core multiplication facts. We ensure all children can recall multiplication facts fluently and quickly, freeing working memory to work on more complex problems. Careful tracking of facts ensures no child is left behind. Teachers know which multiplication facts each child knows and which they don't. They know which facts they need to work on as a class, and which ones individuals need to secure – in the same way as KS1 phonics is assessed and taught.

We use the Year 4 and 5 Mastering Number to plan, teach and embed times tables. Children are assessed with the MTC at the end of Year 4, however, Year 5 and Year 6 teachers must also continue to practise and secure these facts. We assess multiplication facts beginning in Year 3, and continue into Year 4 and beyond, until individuals have secured all 36 key facts.

In Year 4 and 5 Mastering Number, children are encouraged to say the smallest factor first. This builds understanding of commutativity and reduces the number of individual facts they need to learn.

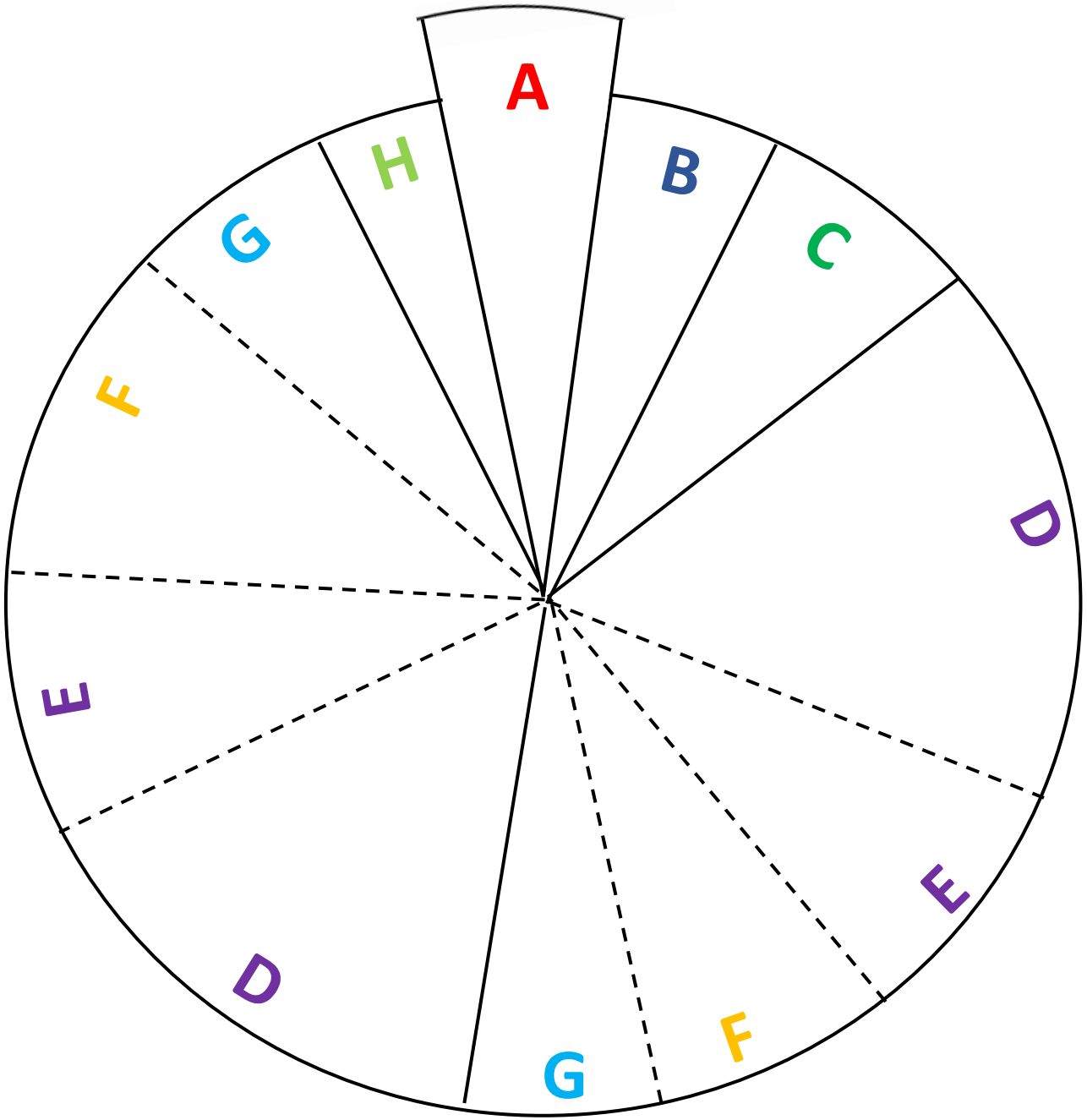
As the tracker is complete, teachers identify gaps and support children to fill the gaps. Cards similar to those in the Year 4 Mastering Number Going for Gold section are a useful resource for this purpose, building automaticity. Teachers should select just one or two key facts to assess intensively across the week, not every fact at once.
Other strategies include:

- Going for gold cards and games to motivate pupils and to use as both practice and informal assessment tools
- Short classroom games and low-stakes quizzes for frequent formative checks; use the tracker to log who needs targeted support.
- Use timed retrieval tasks regularly

Completing the tracker

There are different trackers for each group of times tables starting in Y3. If you are using the Trust tracker, use the timed PowerPoint with individuals. Check children's responses to each question. Remember, children might say or write the correct answer, but if they have used a strategy such as counting on their fingers, they are not secure in that fact.
Use one recording sheet for the whole class.

Highlight each expression with the child's response:
Green – This is a known fact; the child did not need to use a strategy and knew the answer quickly.
Orange – This fact is emerging. The child said the correct answer but used a strategy, or they took longer than 6 seconds to calculate.
Pink – This fact the child does not know. They may offer the wrong answer or no answer at all. Note these on the tracker. Patterns may emerge which will support your teaching. Are they adding rather than multiplying? **Be curious**.



Aspire lesson structure

A – Connections and Patterns (Mastering Number)

B – Connect

C – Explore

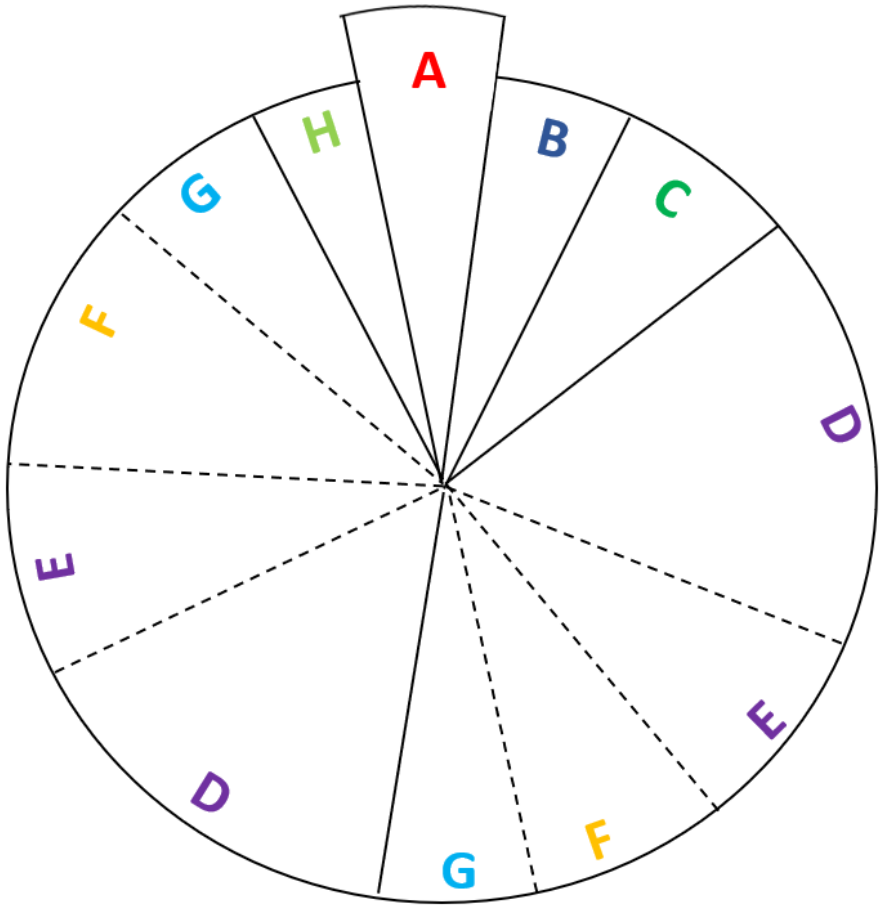
D – Explain

E – Check

F – Practice

G – Feedback

H – Debrief



A – Connections and Patterns

B – Connect

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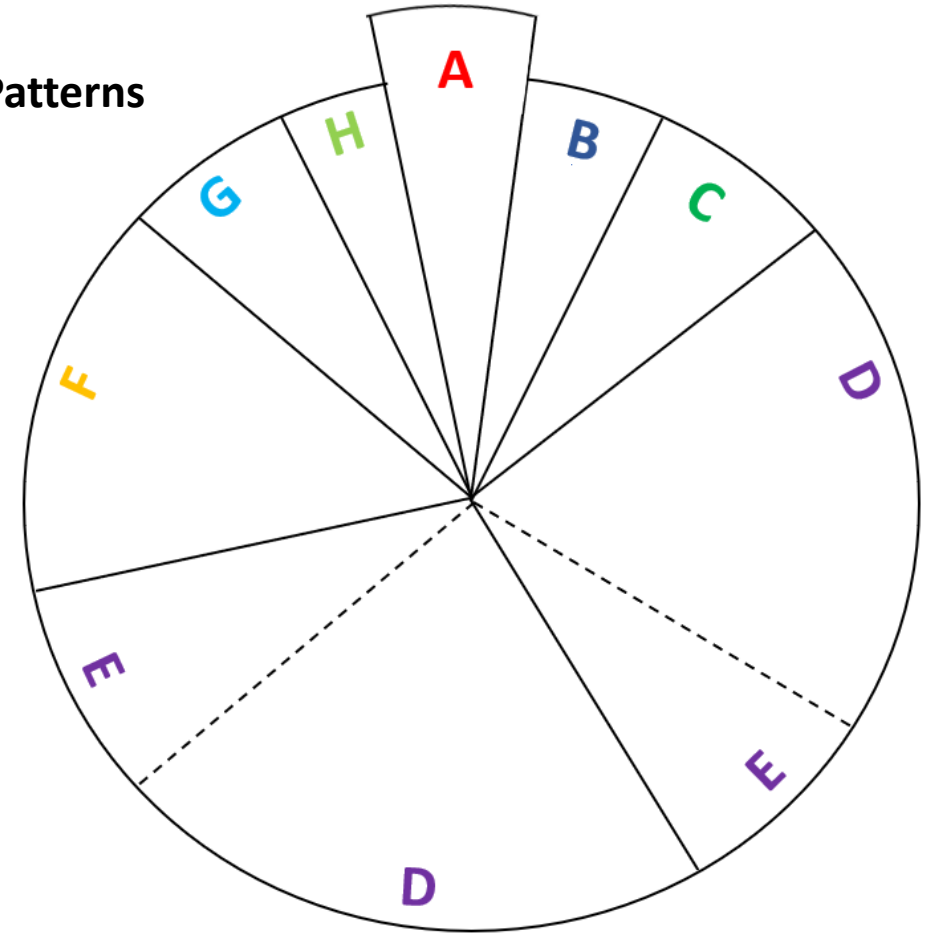
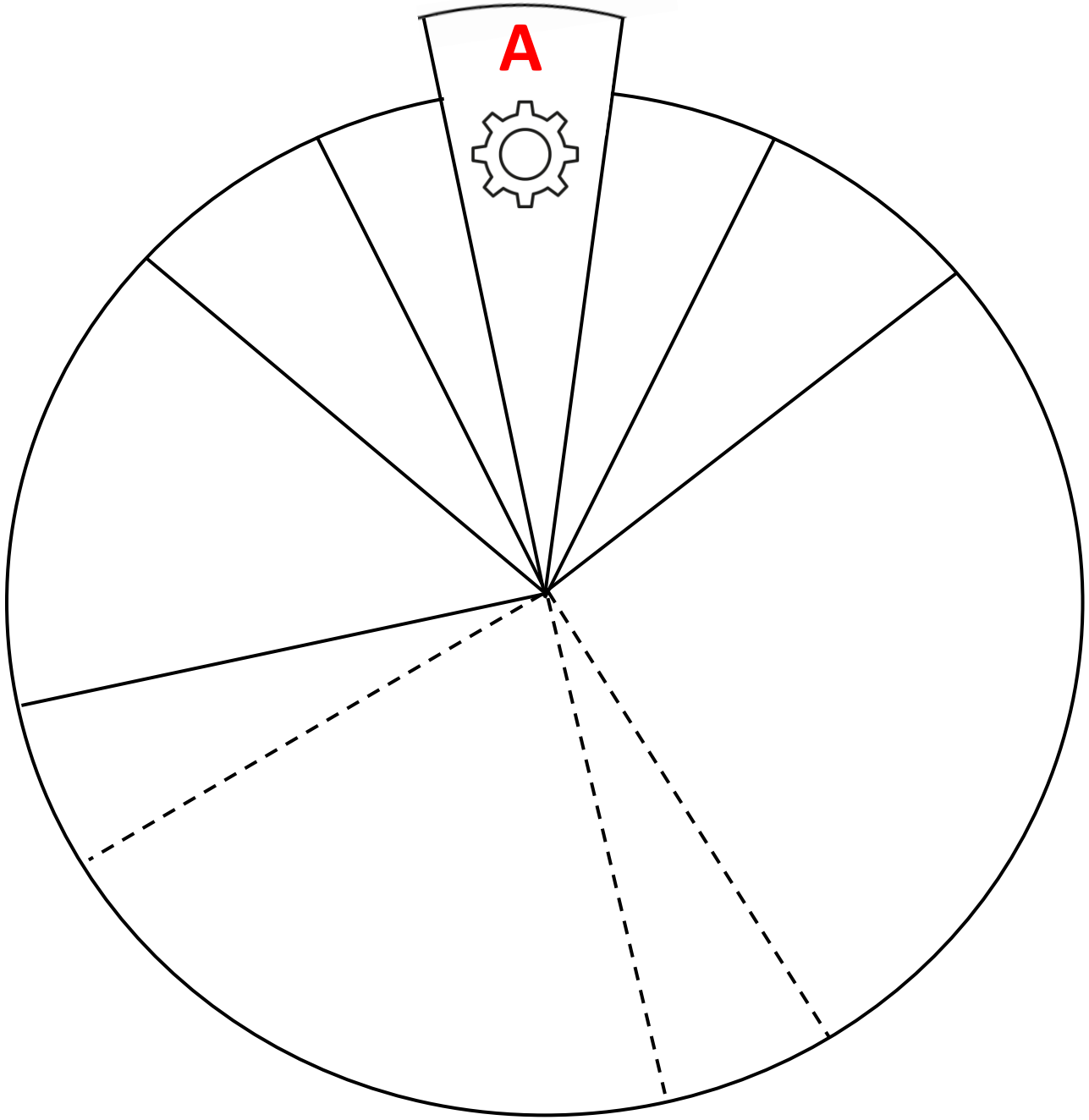
H – Debrief



You may do the independent practice (F) and feedback (G) at the end of each cycle. Or in some lessons, you made leave the independent practice (F) and feedback (G) until the end of the lesson.



A – Mastering Number in Reception

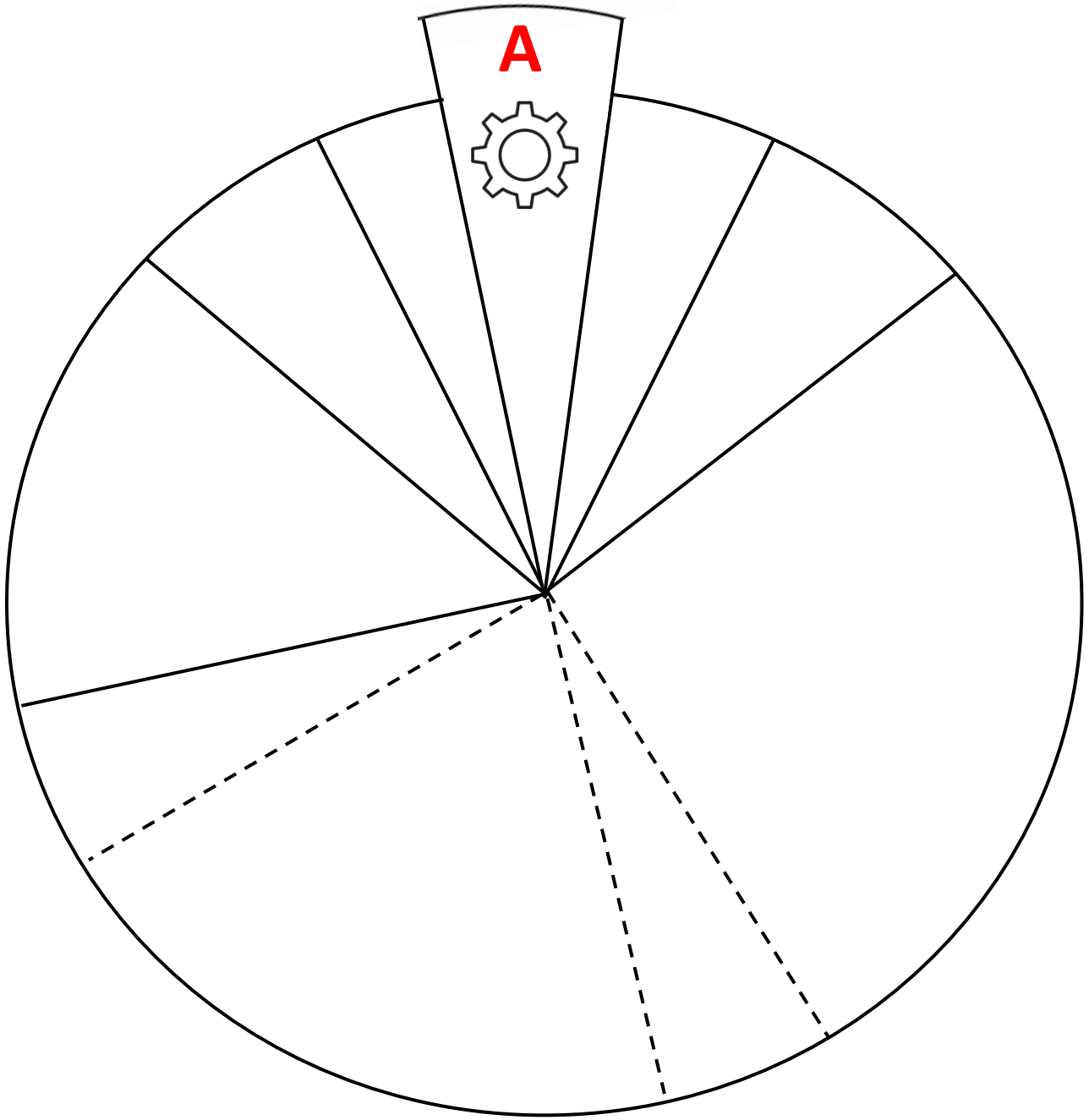
Purpose: To secure firm foundations in the development of good number sense in additive facts for all children in Reception.

How: Use the Mastering Number at Reception materials for the whole direct teaching session during day 1-4 (5 weeks per half-term) plus ideas for additional small group work, the continuous provision and routines. Note: in reception, **day 5 and any additional weeks, focus on teaching pattern, shape & space and measures** and assessing and consolidating learning using the tracker.

When: 4 days a week, 5 weeks per half-term as the main direct teaching session.

What will we see and hear:

- All children participate and engage in the session, which is taught by the class teacher. They explain the connections and patterns they see and notice when exploring the mathematical concepts and ask 'I wonder…' questions.
- Teachers guide the children to focus on what they want the children to notice using **stem sentences and gestures** e.g. the position of dots when subitising, 'What do you see? How do you see it?'



A – Mastering Number in Y1 and Y2

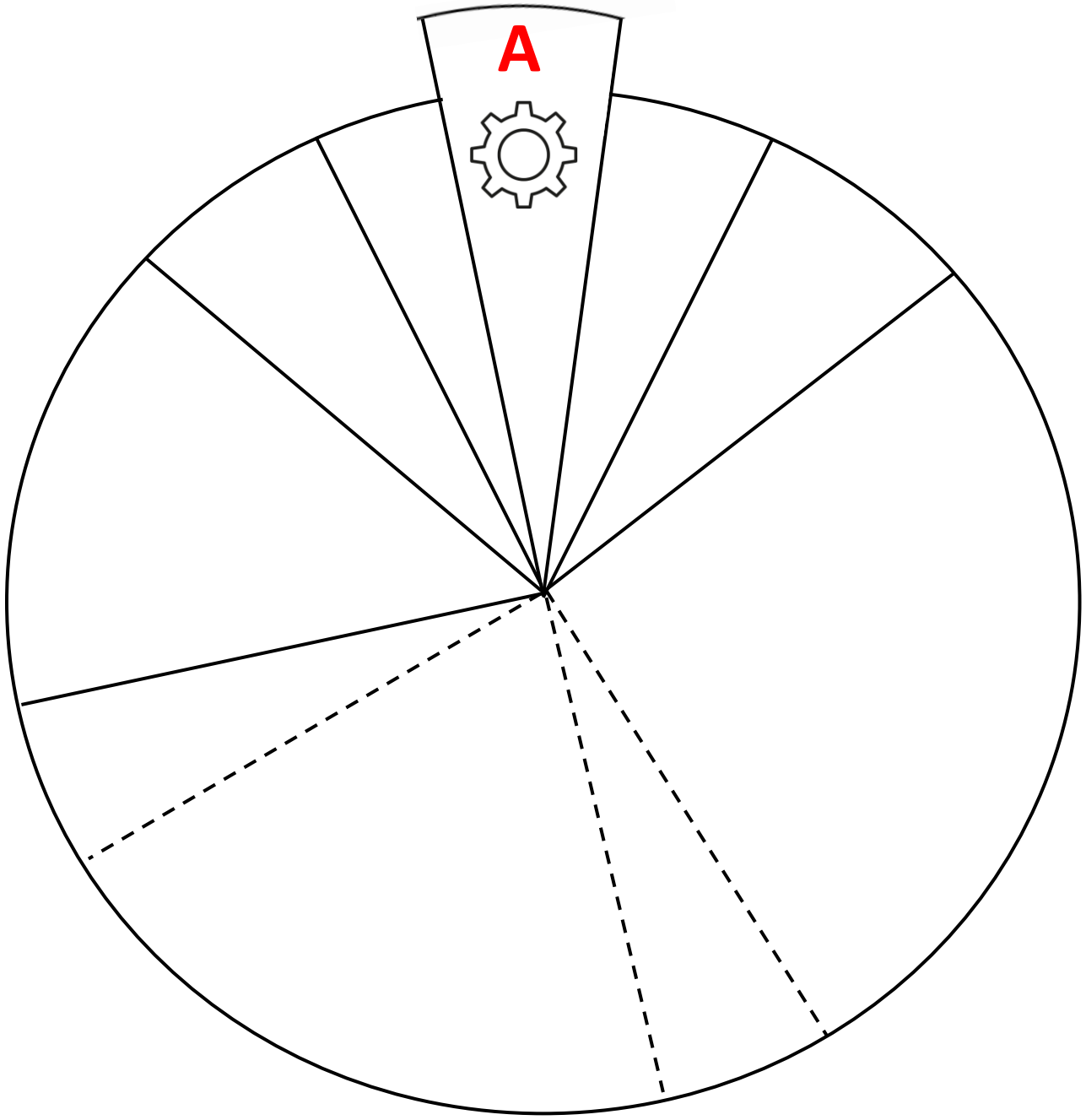
Purpose: To secure firm foundations in the development of good number sense in additive facts for all children.

How: Use the Mastering Number KS1 and KS2 materials.

When: 4 days a week, **outside** of the maths lesson for 10-15 minutes. Note: in Y1-2, on day 5 and any additional weeks, focus on and assessing and consolidating learning using the tracker.

What will we see and hear:

- All children participate and engage in the lesson, which is taught by the class teacher. They explain the connections and patterns they see and notice when exploring the mathematical concepts and ask 'I wonder…' questions.
- Teachers guide the children to focus on what they want the children to notice e.g. the 5 and a bit structure of 7 when using rekenreks.



A – Mastering Number in Y3

Purpose: To embed and further secure number sense in additive facts to ensure all children have strong foundations.

How: In Y3 there are 8 teaching blocks**.** Block 1, 6, 7 and 8 relate to the relevant Y3 ready-to-progress (3AS-3 and 3NF-1) criteria. These blocks should be used with the **whole class**.
Blocks 2 , 3, 4 and 5 relate to ready-to-progress criteria from Year 2, teachers should use the materials with those pupils who have not yet secured the relevant criterion. **Teachers and maths leads will need to make informed decisions about theses blocks, based on assessment.** This will be supported by the Trust additive tracker.

When: 4/5 days a week in, **outside** of the maths lesson for 10-15 minutes. Once the relevant blocks are complete, teachers can begin to introduce the multiplication core facts tracker and use this alongside the additive tracker **until all children have secured firm foundations in additive facts.**

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What will we see and hear:

- All children participate and engage in the lesson, which is taught by the class teacher. They explain the connections and patterns they see and notice when exploring the mathematical concepts and ask ‘I wonder…’ questions.
- Teachers guide the children to focus on what they want the children to notice e.g. the 5 and a bit structure of 7 when using rekenreks.

Addition and subtraction facts

The full set of addition calculations that pupils need to be able to solve with automaticity are shown in the table below. Pupils must also be able to solve the corresponding subtraction calculations with automaticity.

Pupils must be fluent in these facts by the end of year 2, and should continue with regular practice through year 3 to secure and maintain fluency. It is essential that pupils have automatic recall of these facts before they learn the formal written methods of columnar addition and subtraction.

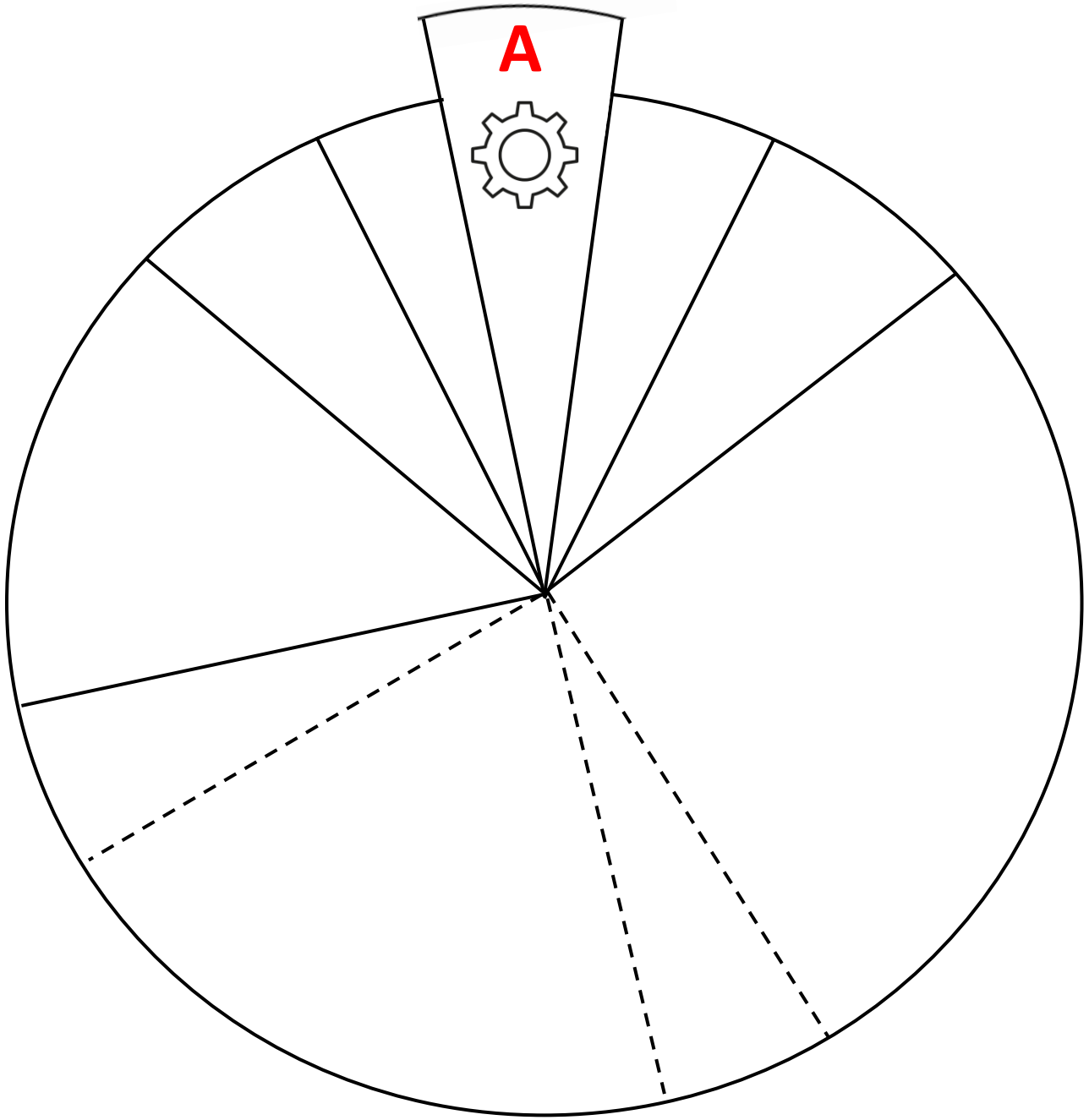
+	0	1	2	3	4	5	6	7	8	9	10
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9	0+10
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9	2+10
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9	3+10
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9	4+10
5	5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9	5+10
6	6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9	6+10
7	7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9	7+10
8	8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9	8+10
9	9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9	9+10
10	10+0	10+1	10+2	10+3	10+4	10+5	10+6	10+7	10+8	10+9	10+10

Addition and subtraction facts

The full set of addition calculations that pupils need to be able to solve with automaticity are shown in the table below. Pupils must also be able to solve the corresponding subtraction calculations with automaticity.

Pupils must be fluent in these facts by the end of year 2, and should continue with regular practice through year 3 to secure and maintain fluency. It is essential that pupils have automatic recall of these facts before they learn the formal written methods of columnar addition and subtraction.

Y1 facts (87 in total)								Y2 facts (34 in total)		
Adding 1	Double nos to 5	Adding 2	Number bonds to 10	Adding 10	Adding 0	Near doubles (3+4, 4+5	No family (5+3, 6+3)	Doubles of nos to 10 (4 facts)	Near doubles (8 facts)	Bridging & Compensating (22 facts)
1+1	2+2	3+2, 2+3	0+10, 10+0	10+1, 1+10	0+0	3+4, 4+3	5+3, 3+5	6+6	5+6, 6+5	3+8, 8+3
1+2, 2+1	3+3	4+2, 2+4	3+7, 7+3	10+2, 2+10	1+0, 0+1	4+5, 5+4	6+3, 3+6	7+7	6+7, 7+6	3+9, 9+3
1+3, 3+1	4+4	5+2, 2+5	4+6, 6+4	10+3, 3+10	2+0, 0+2			8+8	7+8, 8+7	4+7, 7+4
1+4, 4+1	5+5	6+2, 2+6		10+4, 4+10	3+0, 0+3			9+9	8+9, 9+8	4+8, 8+4
1+5, 5+1		7+2, 2+7		10+5, 5+10	4+0, 0+4					4+9, 9+4
1+6, 6+1		8+2, 2+8		10+6, 6+10	5+0, 0+5					5+7, 7+5
1+7, 7+1		9+2, 2+9		10+7, 7+10	6+0, 0+6					5+8, 8+5
1+8, 8+1				10+8, 8+10	7+0, 0+7					5+9, 9+5
1+9, 9+1				10+9, 9+10	8+0, 0+8					6+8, 8+6
				10+10	9+0, 0+9					6+9, 9+6
										7+9, 9+7



A – Mastering Number in Y4 and Y5

Purpose: To secure firm foundations in the development of good number sense in multiplicative facts for all children.

How: Use the Mastering Number KS1 and KS2 materials.

When: 5 days a week, **outside** of the maths lesson for 10-15 minutes

.

What will we see and hear:

- All children participate and engage in the lesson, which is taught by the class teacher. They explain the connections and patterns they see and notice when exploring the mathematical concepts and ask 'I wonder…' questions.
- Teachers guide the children to focus on what they want the children to notice e.g. the 5 and a bit structure of 7 when using rekenreks.

Multiplication and division facts

The full set of multiplication calculations that pupils need to be able to solve by automatic recall are shown in the table below. Pupils must also have automatic recall of the corresponding division facts. Pupils must be fluent in these facts by the end of year 4, and this is assessed in the multiplication tables check. Pupils should continue with regular practice through year 5 to secure and maintain fluency.

The 36 most important facts are highlighted in the table. Fluency in these facts should be prioritised because, when coupled with an understanding of commutativity and fluency in the formal written method for multiplication, they enable pupils to multiply any pair of numbers.

1 × 1	1 × 2	1 × 3	1 × 4	1 × 5	1 × 6	1 × 7	1 × 8	1 × 9	1 × 10	1 × 11	1 × 12
2 × 1	2 × 2	2 × 3	2 × 4	2 × 5	2 × 6	2 × 7	2 × 8	2 × 9	2 × 10	2 × 11	2 × 12
3 × 1	3 × 2	3 × 3	3 × 4	3 × 5	3 × 6	3 × 7	3 × 8	3 × 9	3 × 10	3 × 11	3 × 12
4 × 1	4 × 2	4 × 3	4 × 4	4 × 5	4 × 6	4 × 7	4 × 8	4 × 9	4 × 10	4 × 11	4 × 12
5 × 1	5 × 2	5 × 3	5 × 4	5 × 5	5 × 6	5 × 7	5 × 8	5 × 9	5 × 10	5 × 11	5 × 12
6 × 1	6 × 2	6 × 3	6 × 4	6 × 5	6 × 6	6 × 7	6 × 8	6 × 9	6 × 10	6 × 11	6 × 12
7 × 1	7 × 2	7 × 3	7 × 4	7 × 5	7 × 6	7 × 7	7 × 8	7 × 9	7 × 10	7 × 11	7 × 12
8 × 1	8 × 2	8 × 3	8 × 4	8 × 5	8 × 6	8 × 7	8 × 8	8 × 9	8 × 10	8 × 11	8 × 12
9 × 1	9 × 2	9 × 3	9 × 4	9 × 5	9 × 6	9 × 7	9 × 8	9 × 9	9 × 10	9 × 11	9 × 12
10 × 1	10 × 2	10 × 3	10 × 4	10 × 5	10 × 6	10 × 7	10 × 8	10 × 9	10 × 10	10 × 11	10 × 12
11 × 1	11 × 2	11 × 3	11 × 4	11 × 5	11 × 6	11 × 7	11 × 8	11 × 9	11 × 10	11 × 11	11 × 12
12 × 1	12 × 2	12 × 3	12 × 4	12 × 5	12 × 6	12 × 7	12 × 8	12 × 9	12 × 10	12 × 11	12 × 12

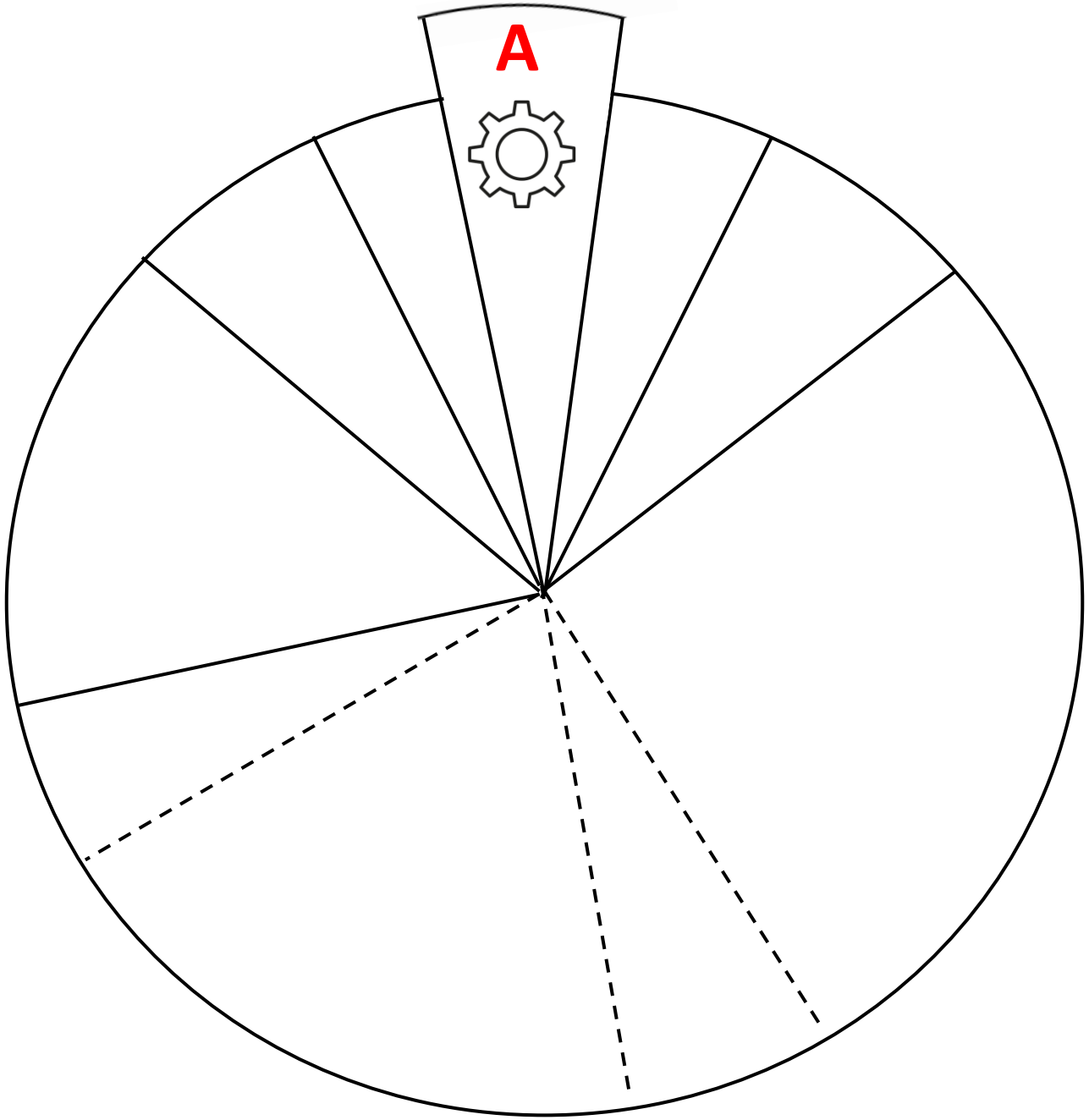
DfE Mathematics Guidance: key stages 1 and 2

Appendix: Number facts fluency overview

The Factual fluency progression table summarises the order in which pupil should learn the additive and multiplicative number facts. Pupils should learn the multiplication tables in the 'families' described in the progression table – making connections between the multiplication tables in each family will enable pupils to develop automatic recall more easily, and provide a deeper understanding of multiplication and division.

Factual fluency progression

	Year 1	Year 2	Year 3	Year 4	Year 5
Additive factual fluency	Addition and subtraction within 10.	Addition and subtraction across 10.	Secure and maintain fluency in addition and subtraction within and across 10, through continued practice.		
Multiplicative factual fluency			Recall the 10 and 5 multiplication tables, and corresponding division facts.	Recall the 3, 6 and 9 multiplication tables, and corresponding division facts.	Secure and maintain fluency in all multiplication tables, and corresponding division facts, through continued practice.
			Recall the 2, 4 and 8 multiplication tables, and corresponding division facts.	Recall the 7 multiplication table, and corresponding division facts.	
				Recall the 11 and 12 multiplication tables, and corresponding division facts.	



A – Arithmetic practice in Year 6

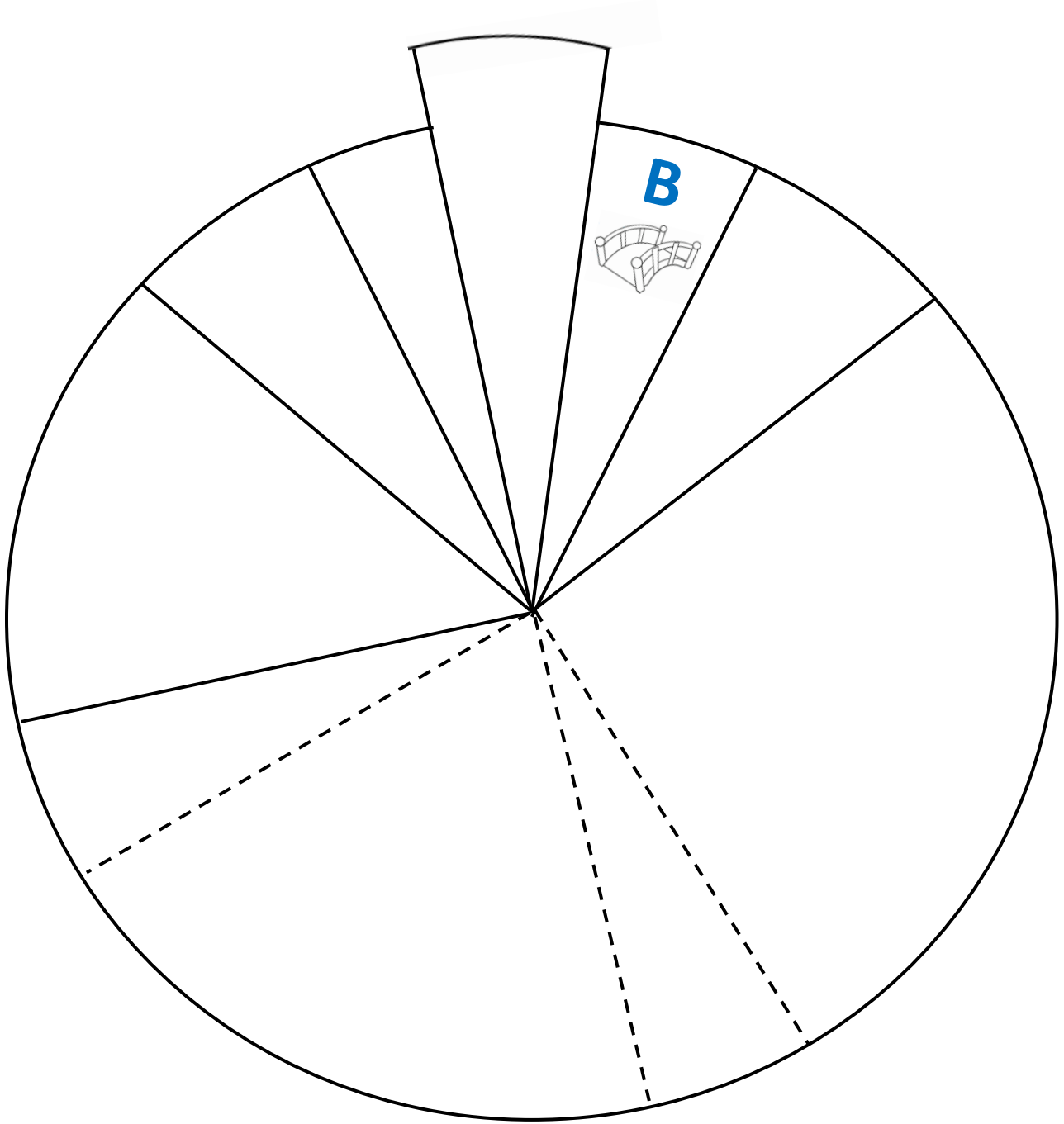
Purpose: To secure fluency in formal written methods and abstract procedures and apply known facts to calculate related facts when it is more efficient.

How: In Year 6, use a range of resources e.g. MathsBot, Testbase, Maths Genie, Learning by Questions or Third Space Learning. **Please note:** you may use key weeks from Mastering Number to consolidate learning where needed.

When: 5 days a week, **outside** of the maths lesson for 10-15 minutes.

What will we see and hear:

- All children apply key additive and multiplicative facts from previous years to develop fluency in the written methods and abstract procedures e.g. long multiplication or calculating percentages of amounts. They explain the connections and patterns they see and notice e.g. how the key fact 6 x 4 = 24 can be used to calculate 0.6 x 0.4 or 24,000 ÷ 400 and use these strategies as efficient methods when formal written methods and procedures are not required.



B – **Connect** – (links to prior learning)

Purpose: To build new knowledge on to prior knowledge.

How: Display selected questions from the Oak National Academy starter quiz on the board. Note: you do not need to do all quiz questions. All children respond on whiteboards, jotters, number fans etc.

When: At the start of all maths lessons (5-10 mins).

What would expect to see/hear:

- All children are involved in retrieving information from the long term memory (high expectations for all children to answer the questions and share responses).
- Teachers and additional adults view the responses of all children and gather misconceptions, which are addressed where needed. Teachers make links to previous vocabulary and representations and explicitly models how new learning is building on from this, e.g. 'Can you remember when you learnt this in Y4, you used a bar model to represent this?'

Starter Quiz

Construct a whole when given a part and the number of parts

1 What is the missing label in this bar model? Fill in the blank

?		
part	part	part

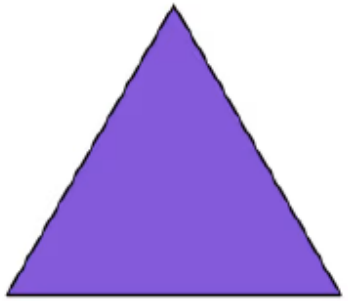
_____

2 Look at the sequence of months. Which season is missing? Tick **1** correct answer

Jan	Feb	Mar	Apr	May	Jun
Jul	Aug	?	?	?	Dec

- ☐ Spring
- ☐ Summer
- ☐ Autumn
- ☐ Winter

3 What is the name of this shape? Fill in the blank



_____

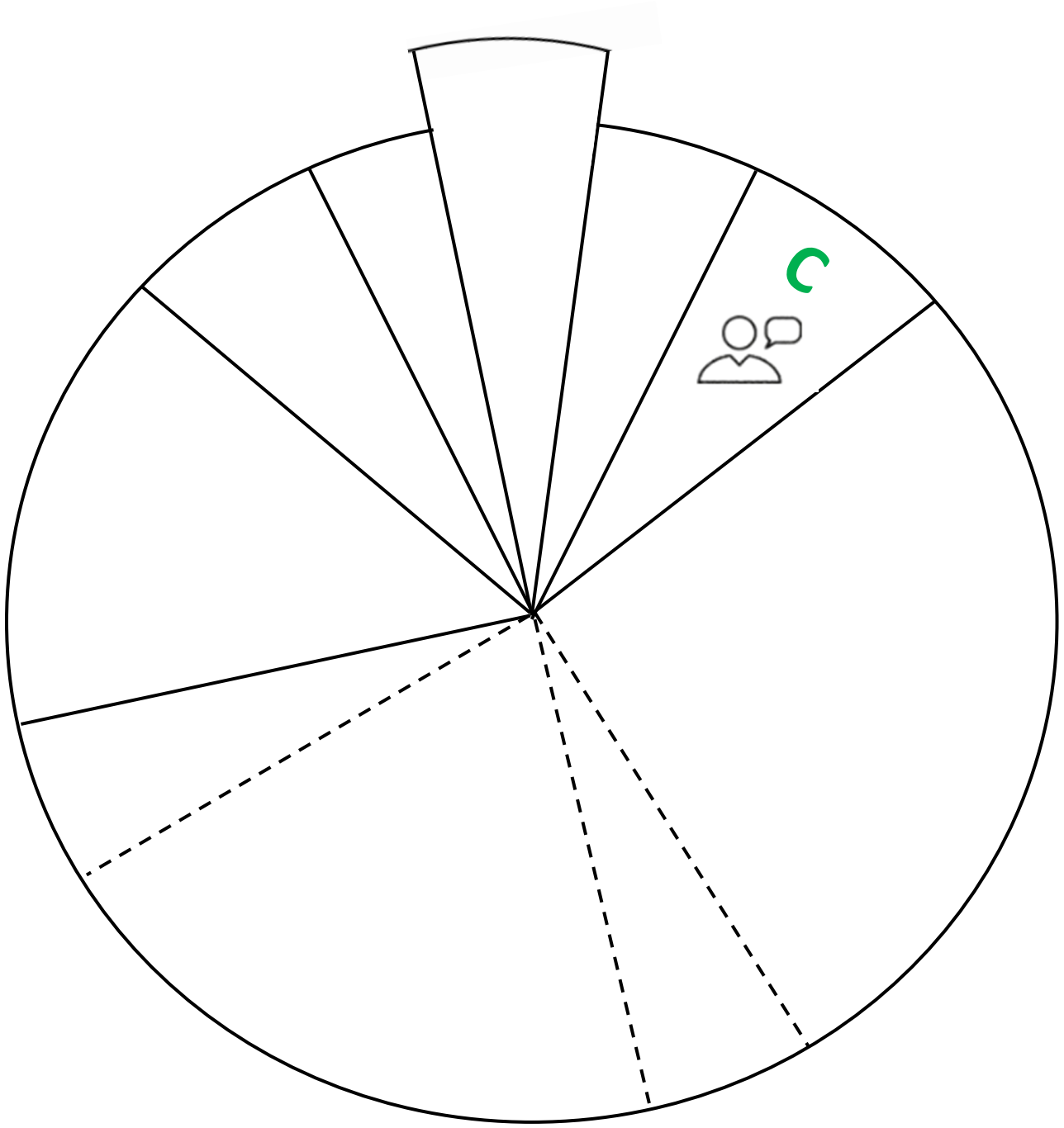
4 What is the name of this shape? Tick **1** correct answer

- ☐ Pentagon
- ☐ Hexagon
- ☐ Square
- ☐ Oblong

5 Complete the sentence. 90 is made of _____ groups of 10 Fill in the blank

6 How many 10s are there in 50? Fill in the blank

_____



C – Explore

Purpose: a low floor, high ceiling task (hook/anchor task) to provide an entry point for all learners to access the new learning. An opportunity for all children to share what they see, what they notice and what they wonder about the new learning.

How: Select one image/question from the beginning of the ONA slide deck for the children to explore and discuss. This image/question will be presented on a slide with no other text or images (see examples)

When: After 'connect' (approximately 10 mins)

What would expect to see/hear:

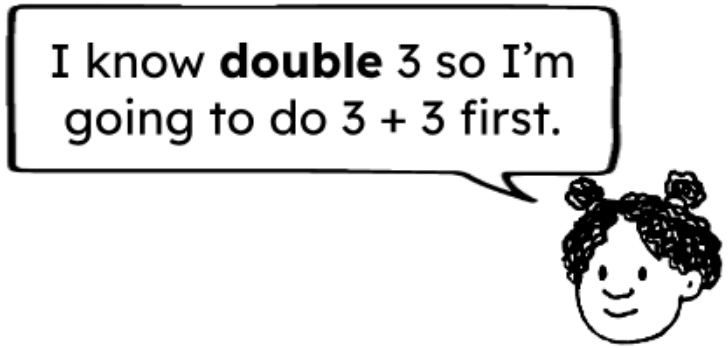
- All children share their though processes and make links to when they have seen something like this before, 'It reminds me of…' using full sentence responds and precise mathematical vocabulary.
- Teachers and adults direct the children on what they want them to focus on and prompt them to respond using: 'What do you see?' (How do you see it?) 'What do you notice?' (Why is that happening?) 'What do you wonder?' (How could you find that out?). They encourage children to reach a shared agreement, 'Do we all agree? Yes/no…**because**…'

From this…

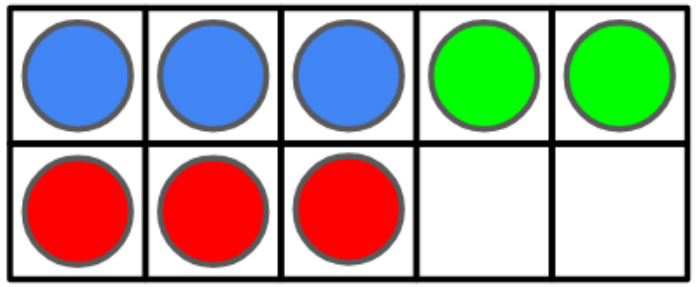
Adding 3 numbers together using doubles

Explanation

Izzy rolls 3 dice and finds the **sum**.



3 + 3 = 6 6 + 2 = 8



3 + 3 + 2 = 8

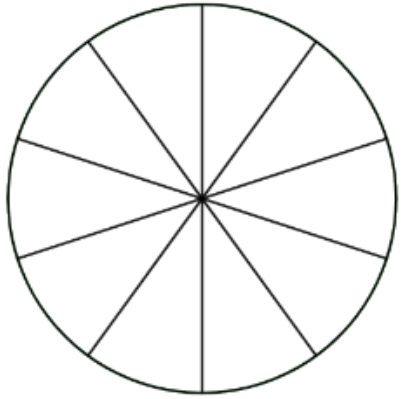
To this…

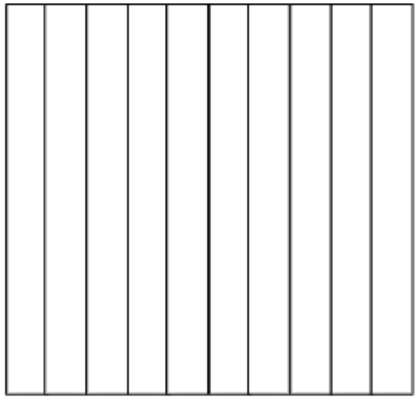
From this…

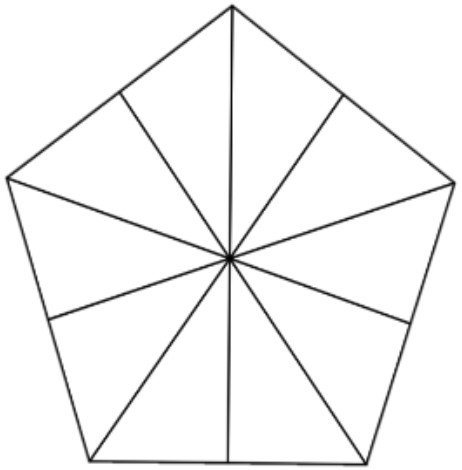
Define how one **tenth** relates to a whole

Explanation

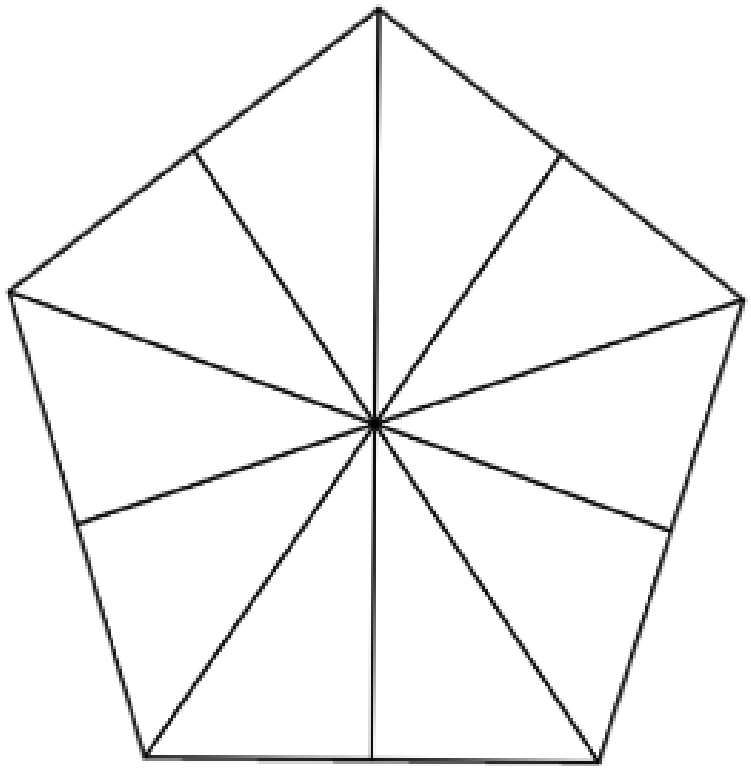
Look at each shape.
What is the same about them?
What is different?



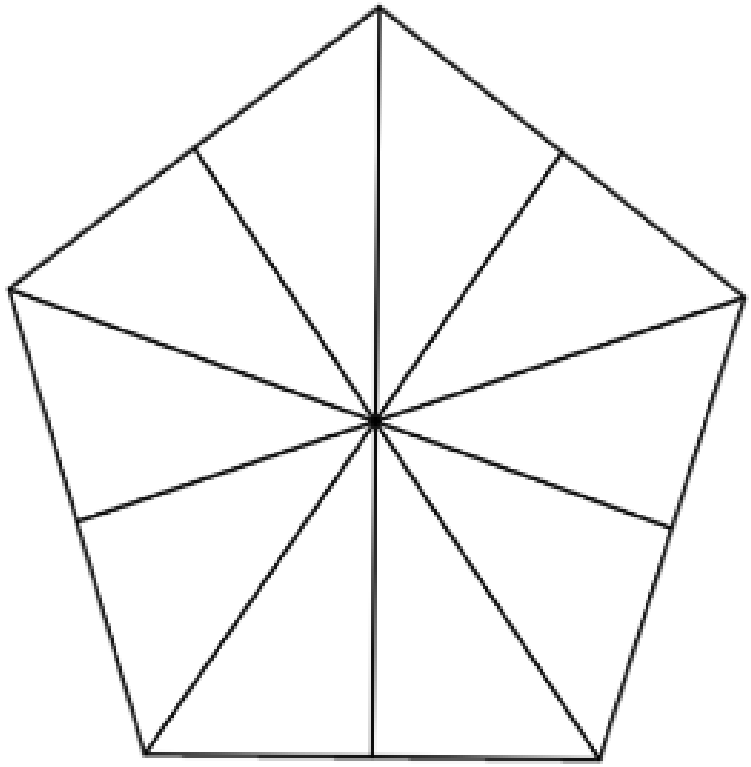


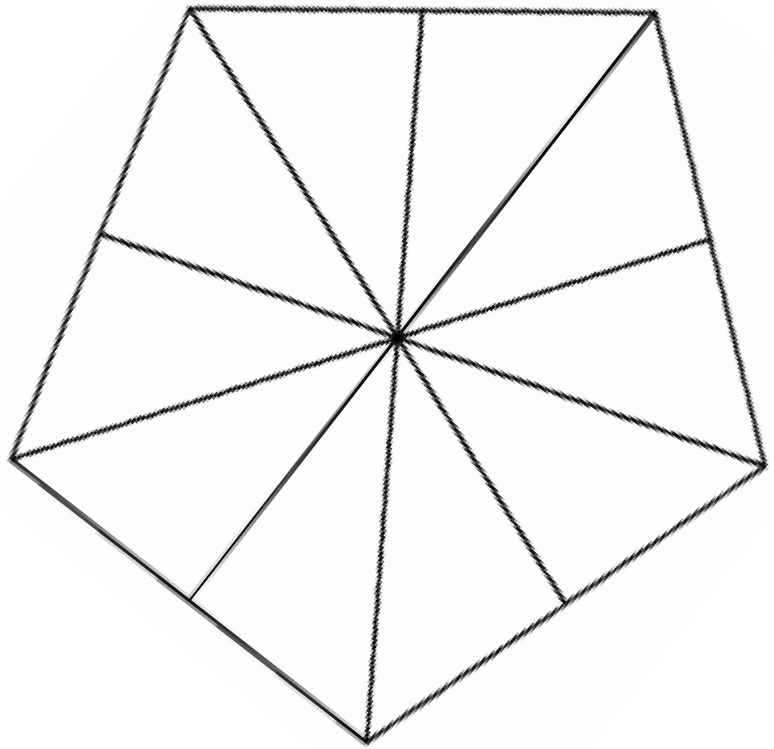


To this…

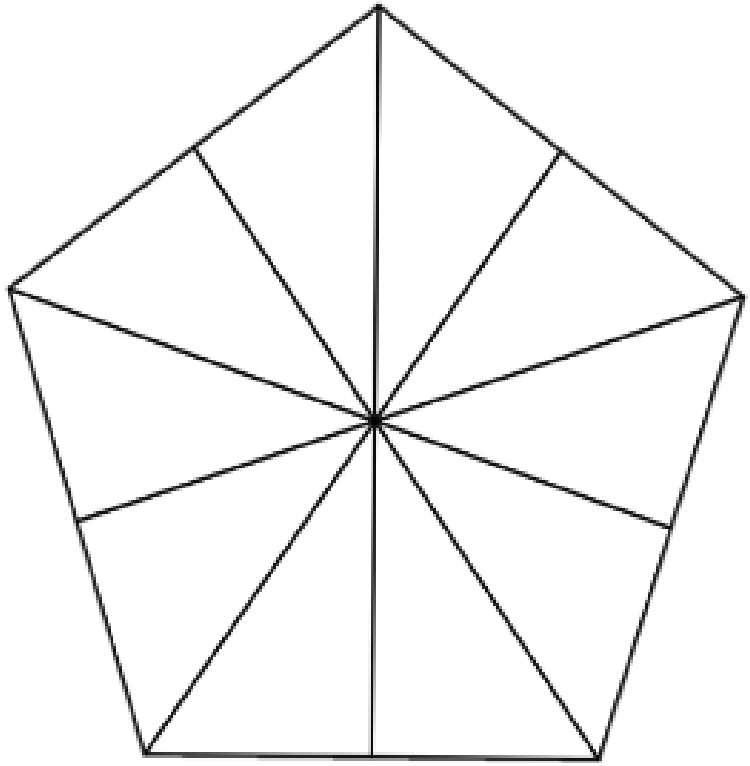


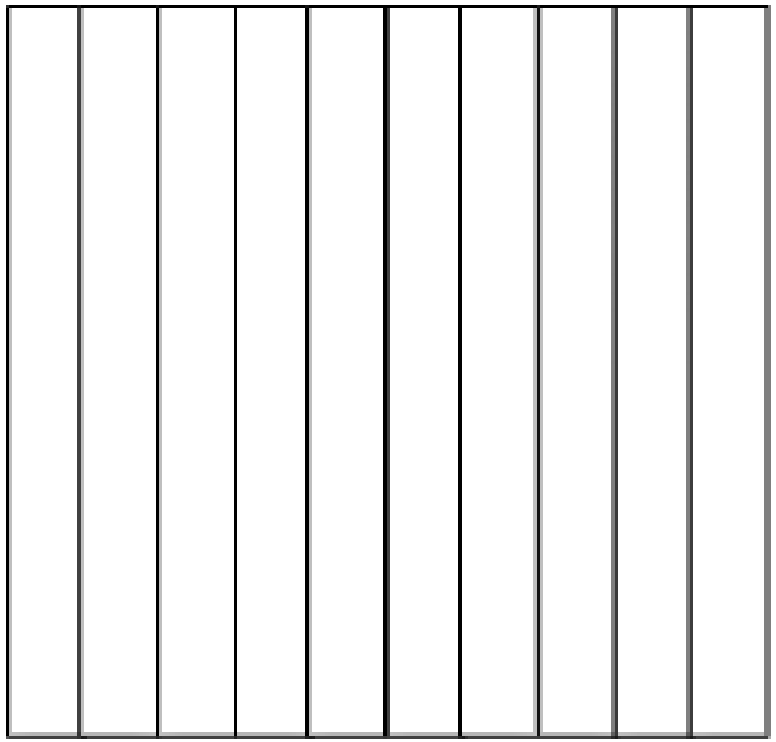
To this…





To this…



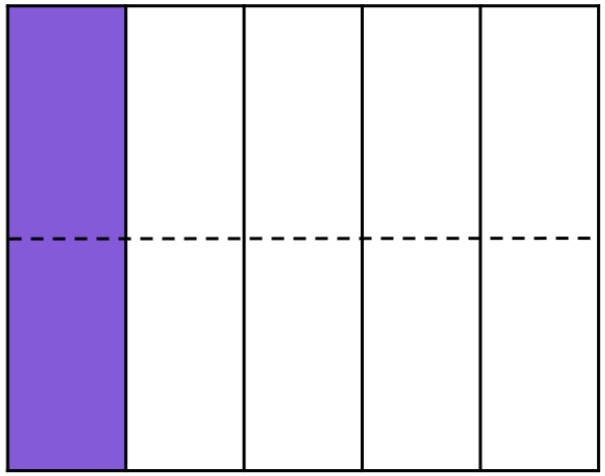


Or from this…

Naming equivalent fractions

Explanation

What fraction of the shape is shaded?



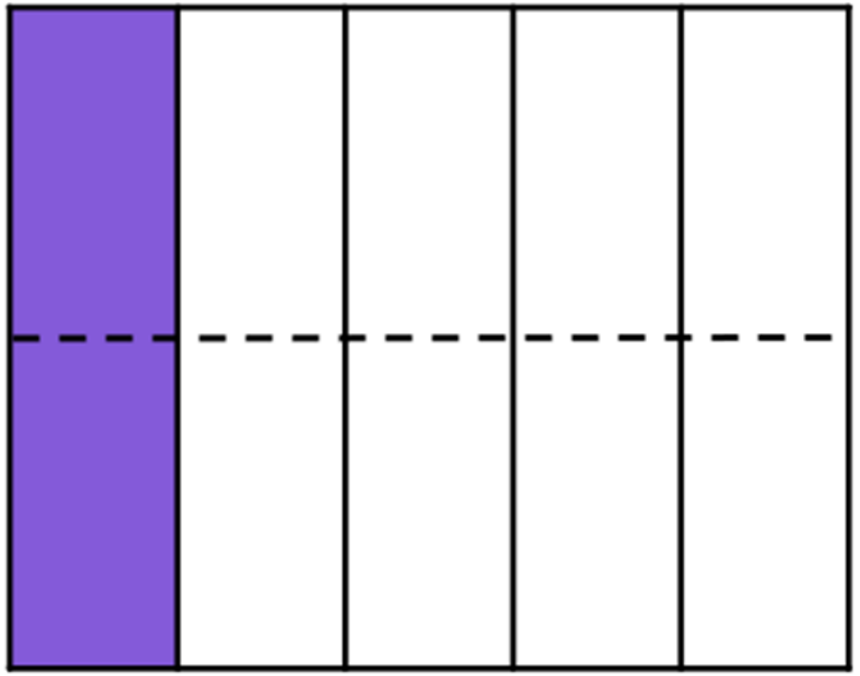
$\frac{1}{5}$

The whole is divided into 10 equal parts and 2 of these parts is/are shaded.

Let's look at it again.

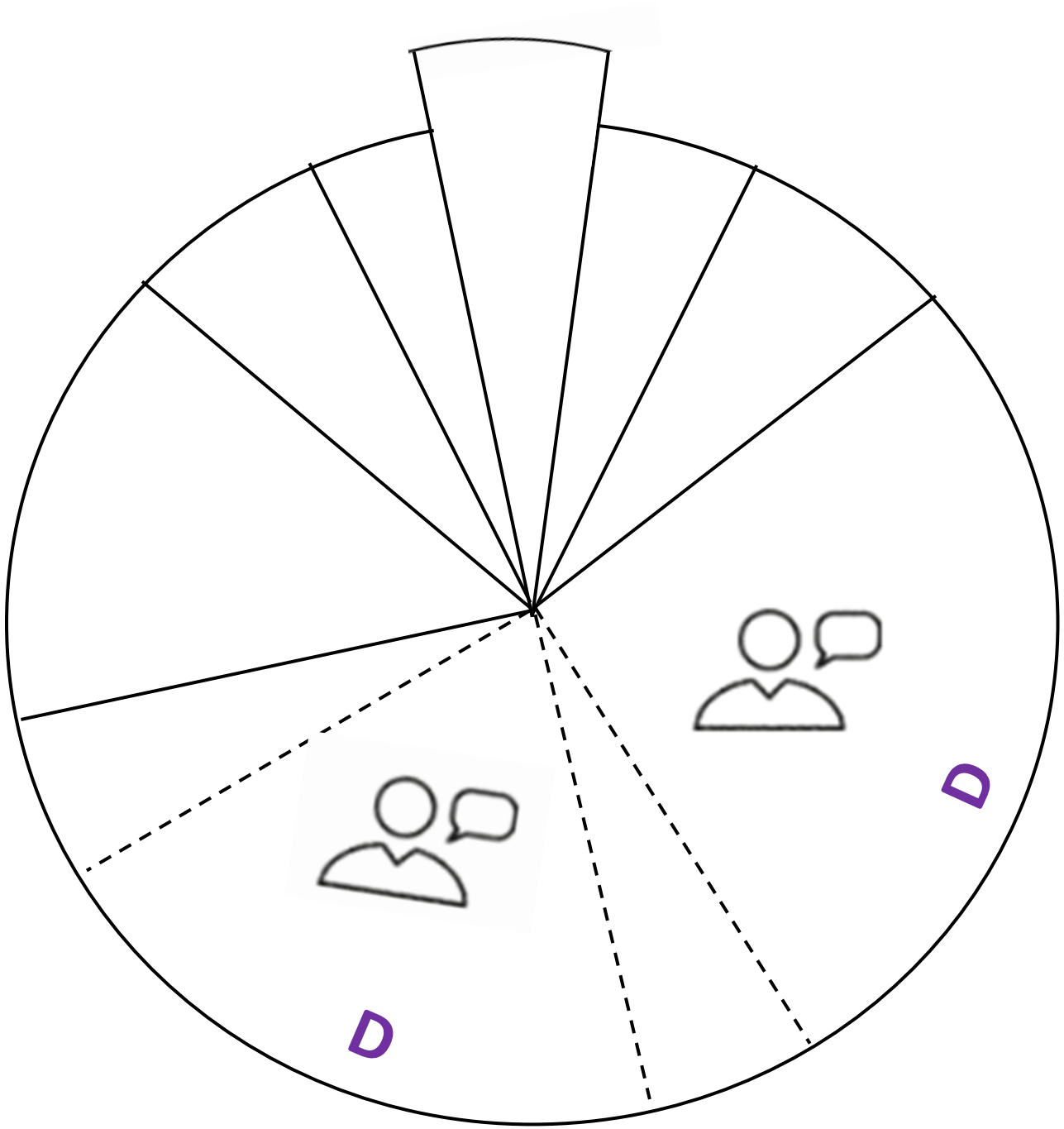
I can use the stem sentence to check.

To this



Teacher checklist for explore:

- Highly visual
- Accessible for all
- Feels safe for all children to explore
- **Teacher directed** but feels pupil led (what do you want the children to notice? What key vocabulary are you drawing out?)
- Provide enough time to deeply explore
- Questioning provides challenge for all
- Address/predict mistakes and misconceptions but keep on the intended journey of the lesson
- May link to a key representations including concrete manipulatives with opportunities for the children to represent (draw or make) what they see on the board



D – Explain

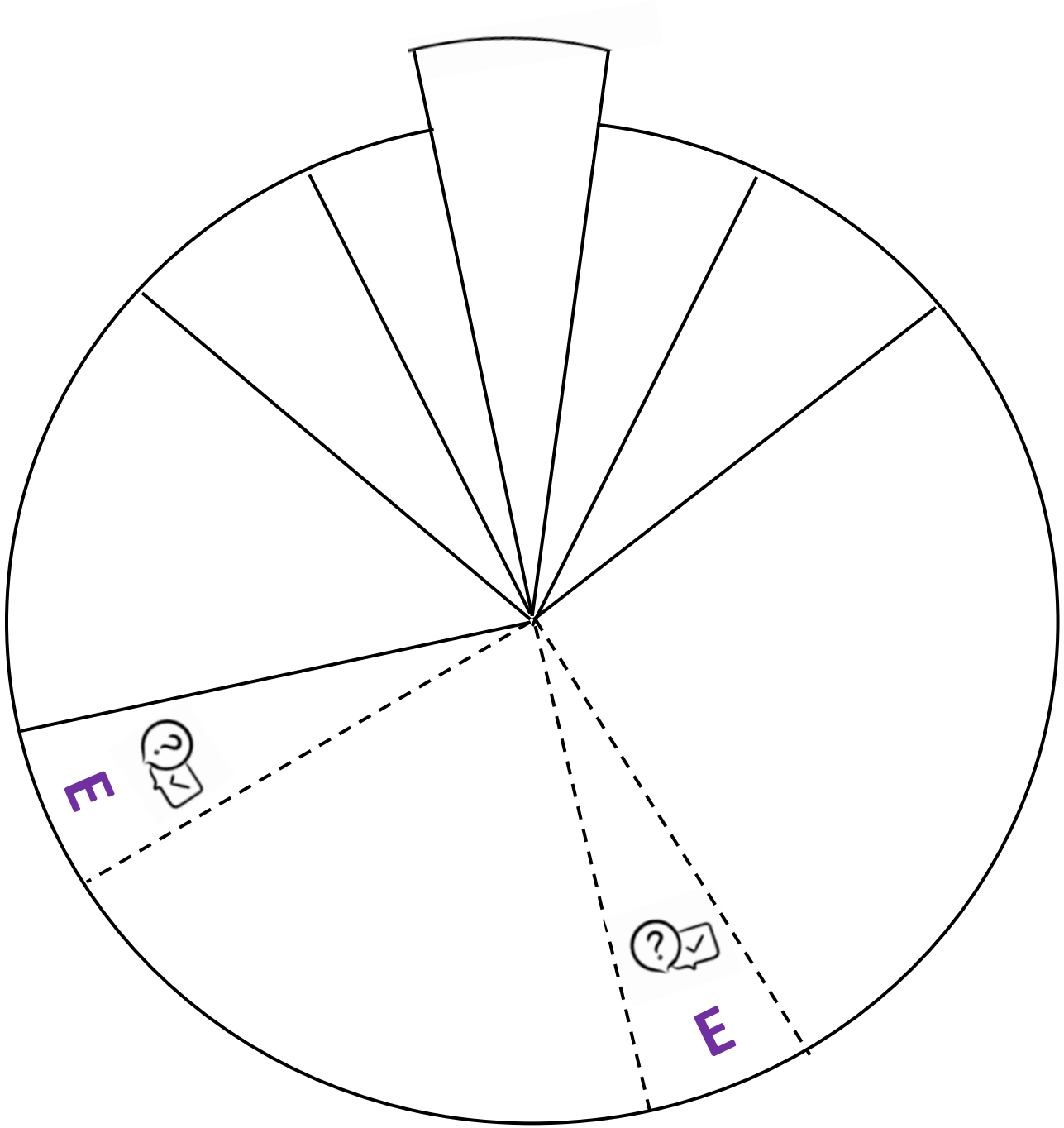
Purpose: To explain information (new learning) in small steps to minimise cognitive load and maximise understanding and retention.

How: Use the Oak National Academy slide deck (explain slides).

When: When the children are ready to access the next step of new learning.

What would expect to see/hear:

- All children feel safe to share their ideas and use key representations to share their mathematical thinking. Children work collaborative (dialogue/oracy) as they continue to explore the new learning.
- Teachers select concrete manipulatives to expose the new learning. Using a questioning rich (ping pong) environment, they slowly reveal the new learning/information, address/predict mistakes and misconceptions but keep on the intended journey of the lesson. They have high expectations for all including children with SEND, PLA and PHA pupils. Teacher directs the learning but it feels pupil led.



E – Check

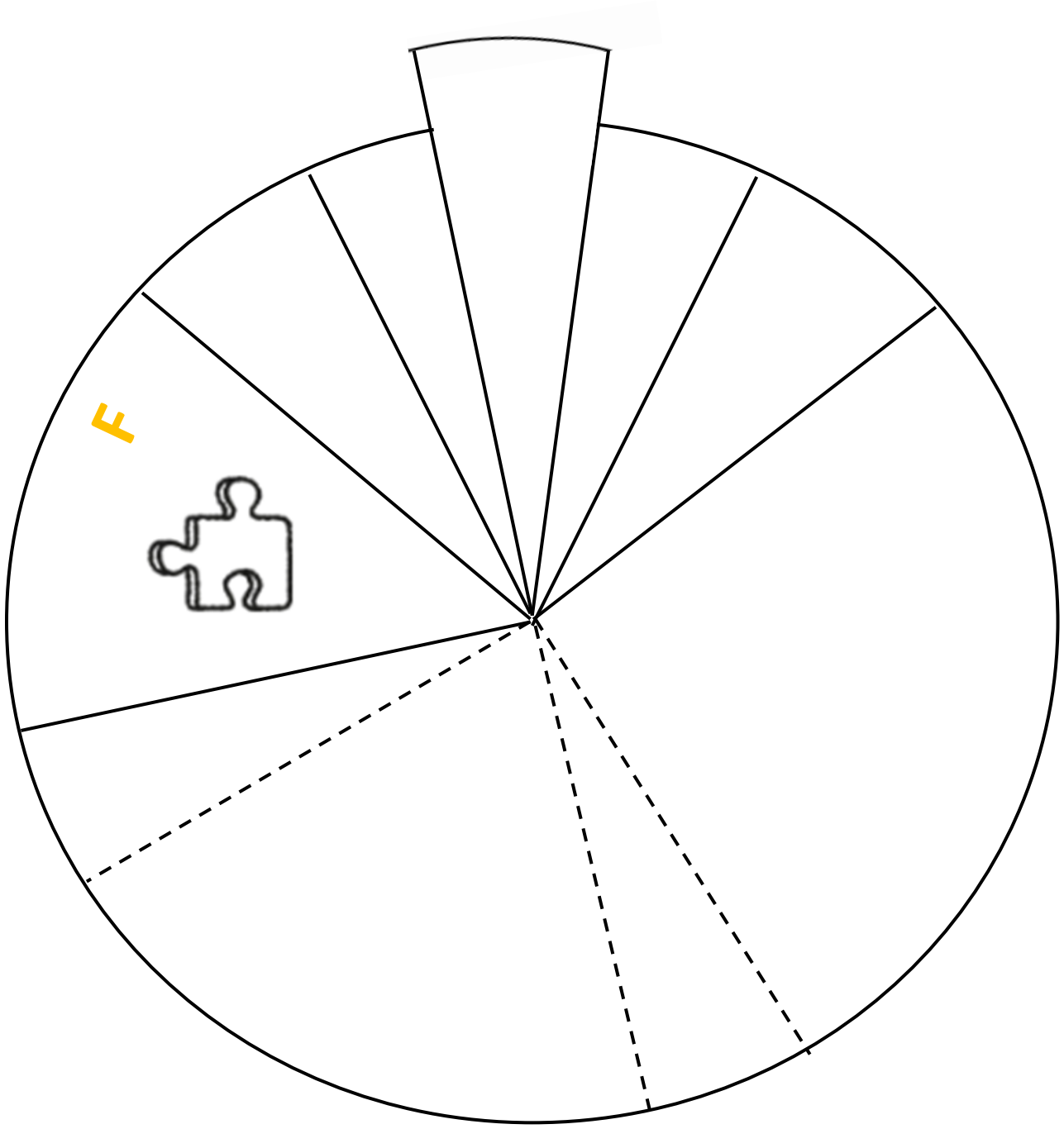
Purpose: Check for understanding are directly linked to the explanation (who has understood the small step). The process by which teachers can assess pupils' understanding by targeting common misconceptions and mistakes.

How: Use the Oak National Academy slide deck (check slides). All children respond on whiteboards, jotters, number fans etc then use the following worked example slides for the children to self-mark or correct their answers.

When: At regular points throughout the lesson.

What would expect to see/hear:

- All children confidently answer the 'check' questions and share their responses. For 'tick the correct answer' questions, they give show/explain why some answers are incorrect and identify the intended misconception.
- Teachers view the responses of all children and gather misconceptions, which are addressed where needed and encourage children to reach a shared agreement, 'Do we all agree? Yes/no…**because**…'. For 'tick the correct answer' questions, they ask 'Why could it not be answer…?'



F – Practice

Purpose: Practice provides pupils with opportunities to check, apply and consolidate their learning, helping to commit new knowledge and skills to memory. By embedding key learning through practice, cognitive load is reduced, paving the way for complex thinking.

'It's not practise makes perfect, it's practise makes permanent.'
Doug Lemov

How: Use the Oak National Academy 'worksheet' tasks, activities and questions. Worksheets are fully editable and also appear on the slide decks for reference. You may snip/copy the questions from the slide deck if you find this easier.

When: Daily independent practice is essential after each learning cycle throughout the lesson or at the end of the lesson (see next slide).

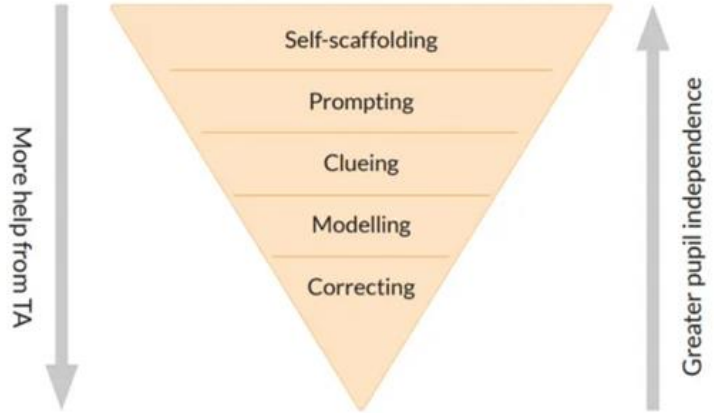
What would expect to see/hear:

- All children have the opportunity to independently practice the new learning on worksheets in books, whiteboards or during the suggested Oak National Academy games and tasks
- All children need to feel success (see next slide)
- Teachers scaffold and support where needed (see next slide)

F – Practice

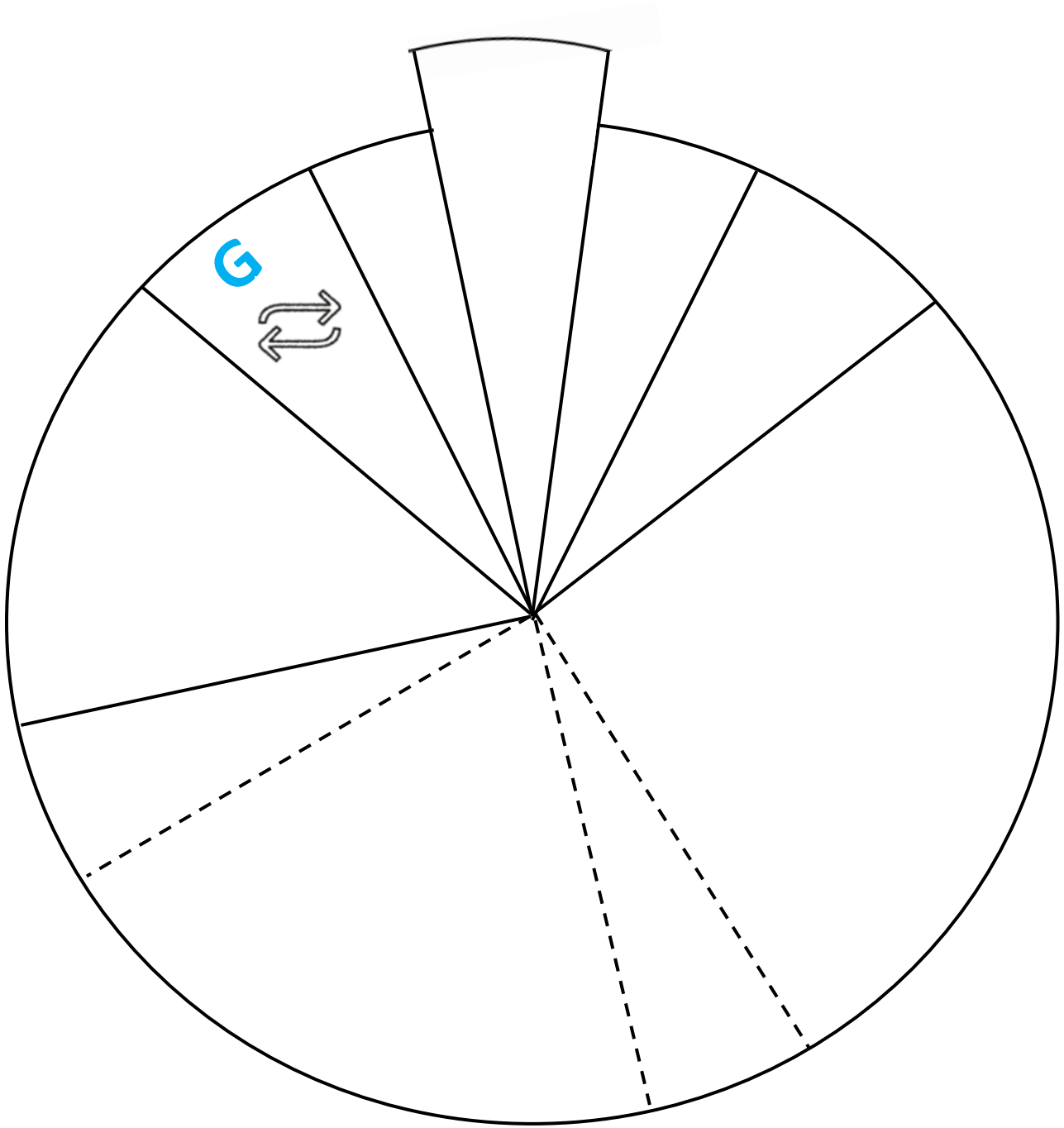
Children with SEND and struggling learners:

- ***may*** only attempt question 1 or 2
- ***may*** need additional scaffolds or support to consolidate the learning (time, additional or adapted resources including representations and adult intervention/guidance)
- ***may*** reason at stage 1 (describe) or 2 (explain) * see five-step progression in reasoning NRICH prompt sheet
- need the daily opportunity to work independently to demonstrate what they can and can't do



PHA (previously higher attaining) children:

- ***may*** attempt all questions
- ***may*** need additional scaffolds or support to extend/deepen the learning (time, additional or adapted resources including representations and adult intervention/guidance)
- ***may*** extend explanations and reason at stage 3 (convince), 4 (justify) or 5 (prove) * see five-step progression in reasoning NRICH prompt sheet e.g. a pre-teach can be used to model how to justify using words such as 'because', 'therefore', 'and so', 'that leads to'... or use a different representation or write a story to match the question
- need the daily opportunity to demonstrate how they can extend their own explanations independently. Because I know…therefore… however…as a result…I can prove that…



G – Feedback

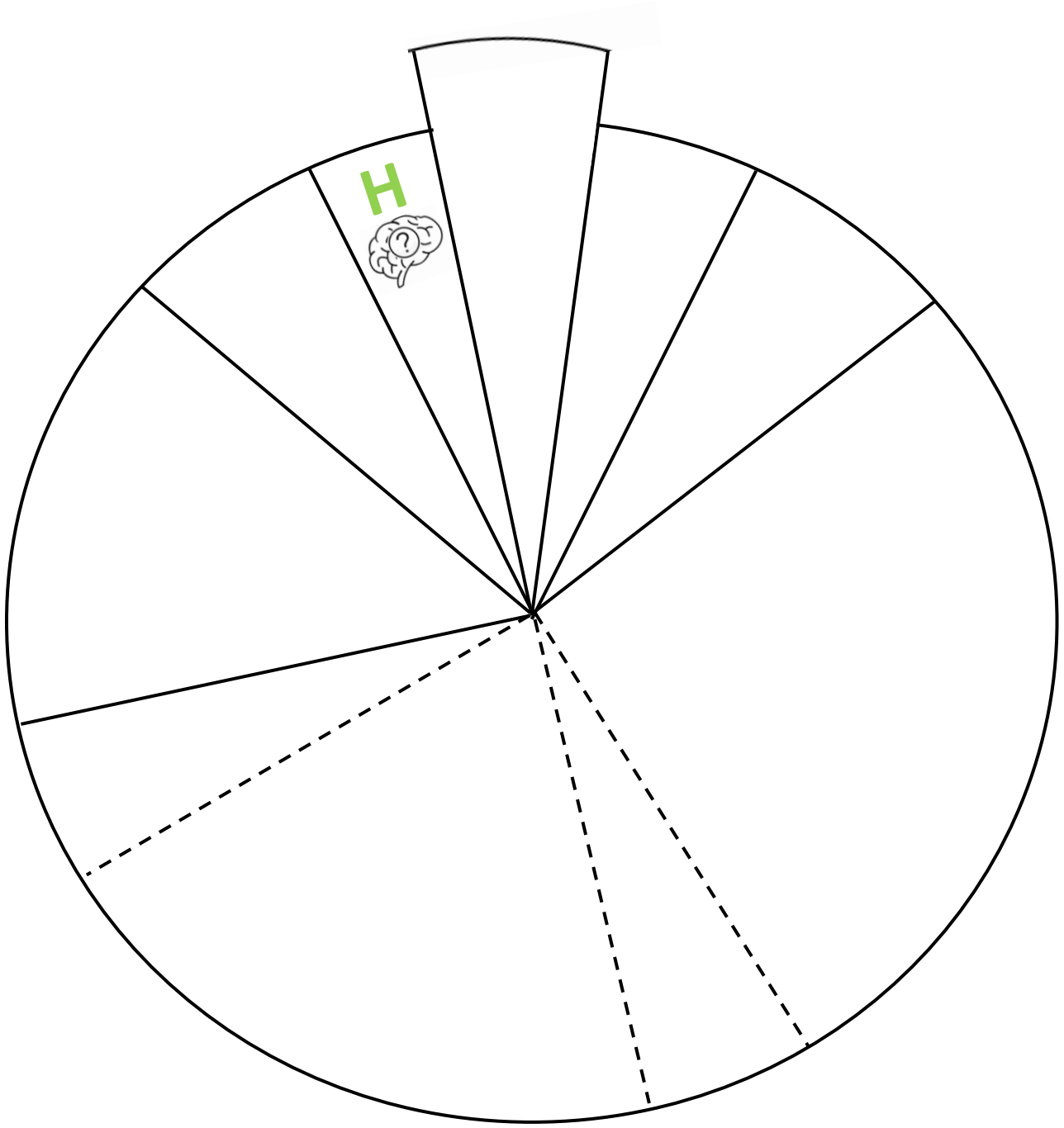
Purpose: To provide pupils with information about their performance in a task or activity, with the goal of helping them to improve their learning. An opportunity to find out what a child can and cannot do, does and does not know so you can adapt your teaching and their learning accordingly.

How: Use the Oak National Academy slide deck (check slides) with **live marking**. Oak's teaching resources include regular and consistent feedback, providing teachers with the tools to motivate pupils with an understanding of their successes, as well as identify areas for improvement.

When: During the lesson after the practice tasks and activities (worksheets)

What would expect to see/hear:

- All children self/peer mark their work in line with the school's marking and feedback policy.
- Teachers use the feedback slides to model correct answers, methods and strategies, address misconceptions and adapt lessons in response. They encourage children to compare their strategies, noticing what is the same and what is different.



H – Debrief

Purpose: To find out if the children learnt what you intended them to learn and to consolidate generalisations.

How: Use the final summary slide to agree on a generalisation. In addition, you can display selected questions from the Oak National Academy exit quiz. **All** children respond on whiteboards, jotters, number fans or as tickets out of the door.

When: At the end of the maths lessons (5 mins).

What would expect to see/hear:

- Children agree upon and choraly rehearse generalisations. They can articulate what they have learnt in the lesson.
- Teachers share generalisations “Every time we…the …” (Every time we add two odd addends, the sum is always even). Teachers probe children to find out ‘*What did we learn today?*’

“What do you think you have learnt today?”

- Everybody needs to draw, make, write, show…journaling/jotters
- Opportunity for formative assessment – where do you need to start you next lesson? Who needs SDI or pre-teach?
- Making generalisations, “Every time…Whenever….”

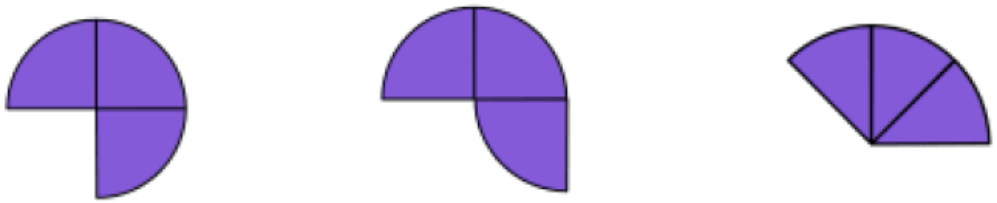
Does what the children say/show reflect the summary slide?

Do they use the key vocabulary? Look at this slide before you plan your lesson so you are clear on the intended outcome and key vocabulary.

*The exit quiz can be used at the end of the day

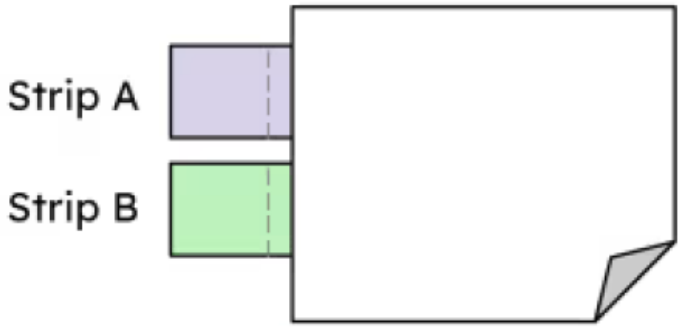
Exit Quiz

2 Thinking about the parts, which of these wholes is the odd one out? Tick **1** correct answer



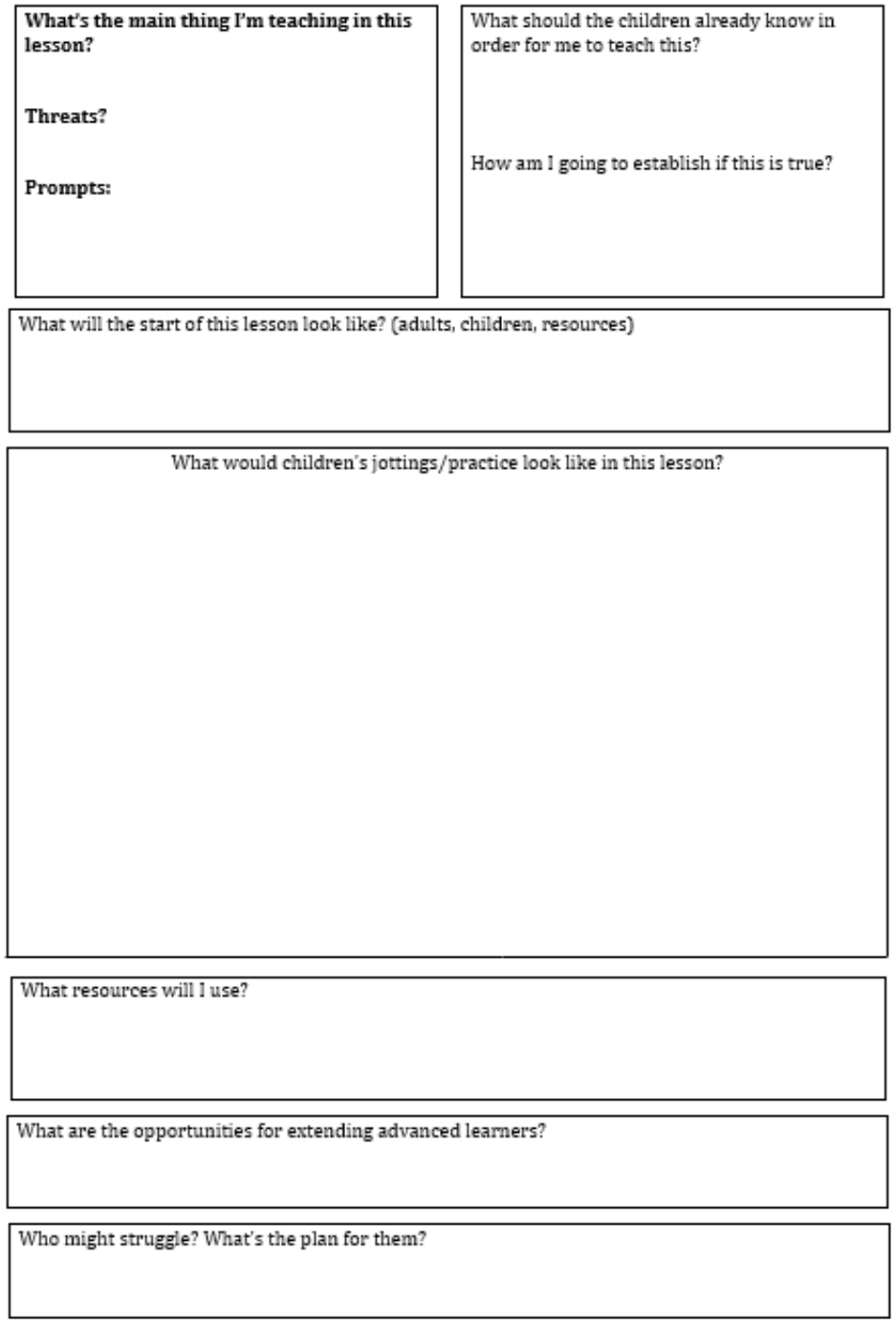
☐ ☐ ☐

3 Strip A is made up of 3 equal parts. Strip B is made up of 4 equal parts. Which strip is the longest? Tick **1** correct answer



☐ Strip A

☐ Strip B



Collaborative planning

At Aspire Education Trust, our schools understand the positive impact of planning, teaching and reflecting collaboratively. We use the 'Thinking-Planning Tool' to reflect on the coherent journey through the lesson for all children and where scaffolds and supports may be needed for all leaners. The **summary slide is always moved to the start of the slide deck** to ensure teachers are clear on the main thing they are teaching in the lesson and to help to identify what the children should already know and any threats that may prevent children from experiencing success in the lesson.

Summary Add two 3-digit numbers using partitioning

Unitising is where we count each object within a group as one 'unit'.

Unitising can be used to add three-digit numbers together.

When adding two three-digit numbers, partitioning can be used to separate the **addends** into place value groups.

The groups can be recombined to find the **sum**.

Additional resources and links

DfE Mathematics guidance: key stages 1 and 2 and exemplification materials (intervention ppts)

Oak National Academy MEI image bank http://bit.ly/3WJVs4I

Reasoning: the Journey from Novice to Expert (nrich)

For additional problems arranged by curriculum topic and age group, see nrich Primary Curriculum Mapping Document.

For additional problems arranged by curriculum topics, see nrich curriculum topics

For additional problems arranged by mathematical thinking skills, see nrich mathematical thinking skills

For additional problems arranged by mathematical mindsets, see nrich mathematical mindsets

Successful mathematicians understand curriculum concepts, are fluent in mathematical procedures, can solve problems, explain and justify their thinking, and have a positive attitude towards learning mathematics. What makes a good mathematician?

NCETM The Essence of Mathematics Teaching for Mastery - underpinning principles, lesson design, and how mastery works in the classroom

What do you see? How do you see it? *What do you notice? Why is it happening?* *What do you wonder? How could we find out?*			*Who would like to instigate the discussion?* *Can you build on from …'s thinking? or* *Can you challenge …'s thinking?*	
Describe it!	**Explain it!**	**Convince me!**	**Justify it!**	**Prove it!**
Can you describe what you did? (what)	**Can you explain why you did that? (why)**	**Can you convince me that your chain of reasoning is right? (how)**	**Can you provide a logical argument to complete a chain of reasoning? (when)**	**Can you prove that using a mathematically sound argument based on generalisation or underlying structure? (whenever)**
	The power of 'because'		therefore… and so… that leads to...	
Can you describe **what** you see/notice? Can you describe what you did? (Response: I drew, counted, grouped, made, used, found) What does the…represent? "So the_____ represented_____, is that right?"	Can you explain **why** you/your friend…(drew, counted, grouped, multiplied)? Can you explain what you/they were trying to find out? Can you explain what is the same and what is different? (Compare images, representations or their response to a peer's) Can you explain how it happen? Can you explain why that happened?	What is the same and what is different? **How** do you know that? How did you know, without doubt, that…? So what is it not? What did you/could you use/draw to show that without doubt? How can you convince a friend who has a different answer or strategy?	Can you tell me more to show what happens when/if… What if we… Can you use words like a mathematician to tell me more like because… therefore… and so… that leads to... (In response to their idea) Therefore, can you show me a non-example or when that wouldn't work and explain why?	Is that always, sometimes or never true? How can you prove that? Show me. What about when… Can you write a different question to prove that? Can you use a representation that proves that? Can you write a generalisation to prove that? (short and concise) Can you write a mathematical story to prove that?

Describe it!	Explain it!	Convince me!	Justify it!	Prove it!
I can see… I noticed that…. The first thing I did was… I began by... I started with... Then I…. After that I… The next step I took was... Finally I…	I noticed that when… This is the same as…because... This is different to…because… I chose this strategy because... I chose this method because… I used this approach because... I chose these calculations because... The reason I did this was because	Without a doubt, I know that… I know that…will happen because… I already know that...so… I know how… I know when… I know why… Another example is ….. I know my answer is reasonable because... I believe my answer is correct because... I am confident in my solution because	I can justify my answer because I know that… Therefore… I also know that …. So …… That leads to …… Without a doubt...however, I'm wondering if…	Every time that I…the same happens… As I know…I can prove that… I can prove my thinking by… This is always true because… I can prove my answer is complete because… The pattern I have found is…so I can prove my solution is true. The pattern I identified is consistent, and I can generalise it by saying