



# Willow Primary Academy Maths Curriculum



*“Without mathematics, there’s nothing you can do. Everything around you is mathematics. Everything about you is numbers.” – Shakuntala Devi*



### How we teach Maths at Willow Primary Academy:

We have adopted the mastery approach for Maths at Willow and we aim to provide the children with a mathematics curriculum that will produce individuals who can reason and solve problems, and are fluent, numerate, independent, enquiring and confident. We provide a stimulating environment and adequate resources so that children can develop their mathematical skills to their full potential. Teaching is underpinned by a belief in the importance of mathematics and that the vast majority of children can succeed in learning mathematics in line with national expectations for the end of each key stage.

The whole class is taught mathematics together, with no differentiation by acceleration to new content. The learning needs of individual pupils are addressed through careful scaffolding (Concrete, Pictorial, Abstract (CPA), modelling, cleverly designed tasks, skilful questioning and appropriate rapid intervention, in order to provide the necessary support and challenge. Factual knowledge (e.g. number bonds and times tables), procedural knowledge (e.g. formal written methods) and conceptual knowledge (e.g. of place value) are taught in a fully integrated way and are all seen as important elements in the learning of mathematics. The reasoning behind mathematical processes is emphasised. Teacher/pupil interaction explores in detail how answers were obtained, why the method/strategy worked and what might be the most efficient method/strategy. Interim methods (e.g. expanded methods for addition and multiplication) to support the development of formal written algorithms are used for a short period only, as stepping stones into efficient, compact methods. This is in line with our calculation policy. Precise mathematical language is always used by teachers and displayed, so that mathematical ideas are conveyed with clarity and precision. Pupils are required to do the same. Stem sentences are also used in lessons to reinforce the key facts and concepts that children need to know. These are also displayed and expected to be used repeatedly by the adults and the children. Sufficient time is spent on key concepts (e.g. multiplication and division) to ensure learning is well developed and deeply embedded. We encourage students to have a positive mindset, through our PRIDE values. The curriculum is progressive and prior learning is reviewed regularly.

There is a maths lesson and a fluency session every day. The maths lesson follows the Medium Term Planning for each year and has a clear sequence of lessons around each theme. The maths lesson should last 45-60 minutes and the fluency session 10-15 minutes. The maths lesson should follow the structure found below, which includes time to review prior learning, time to secure and deepen knowledge and understanding and time to review at the end. At Willow Primary, we use 'Do it, Secure it, Deepen it' question types for the pupils to complete. Do it focuses on fluency, Secure it focuses on reasoning and Deepen it focuses on problem solving. All parts link to the same objective. Sheets can be created for children to complete or questions can be displayed on the IWB. It is important that children are regularly recording their maths work directly into their books however, and are not always completing work on sheets. Pupils should be encouraged to show PRIDE in their presentation skills at all times and using the squares in their books will support this.

The fluency sessions enable the children to practise, embed or top-up their learning of key number facts and therefore become fluent in working with them. The teacher will identify the focus of each session using KIRFs (Key Instant Recall Facts) guidance and identify which pupils need an intervention at this time through the use of ongoing assessment.

### How we plan for Maths at Willow Primary Academy:

There are many levels to the maths planning at Willow Primary Academy. This is to ensure that the Maths Lead has planned a coherent and cohesive curriculum with the whole school oversight, whilst also ensuring that the teachers are thinking-through their implementation, with some level of autonomy. Each level of planning is supported by the progression documents. The school's calculation progression and fraction CPA progression documents should also be used to support planning.

The planning includes:

- Can Do Whole School Units Planning Overview.
- Long Term and Medium Term Plans from Can Do



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- Progression documents
- KIRF documents

### How we assess Maths at Willow.

All teachers will be constantly assessing maths, using AfL techniques, to ensure that they can plan for next steps, address misconceptions and fully-understand the current level of attainment of their class.

In EYFS, baseline assessments identify skills and gaps. The EYFS curriculum is front loaded to address gaps in children's physical development and early mark making so that children make rapid progress. The teachers will make observations on children and track progress. Immediate interventions will be put in place where a child is assessed as not meeting expectations. Teachers will report assessments onto Insight 3 times per year. They will be included in moderation (both in-school and cluster/LA) and will report against the ELG's in the summer.

Teachers track progress by regularly updating Insight Tracker objectives. 'Remember it' tests take place at the end of each short term (Year 1-6) to check for understanding of what should have been learned. Teachers will use the supporting Question Level Analysis documents to identify strengths and gaps and inform planning for the following term. These findings will then also be placed onto the Insight Tracking system. At the end of the Autumn, Spring and Summer Term, whole school assessments will take place using standardised tests for Years 1 - 6 and Year 2 and 6 will complete SATs in the Summer Term.

The assessment lead, Maths lead and Headteacher will review the end of term Insight judgements and discuss with teachers at Pupil Progress meetings.

### Learning Environments

Learning environments must support the current learning for the children. Classrooms at Willow Primary Academy are designed by teachers to minimise 'wallpaper' displays that are not relevant, useful or referred to. Each classroom will have Working Walls for Maths that will scaffold and support the current unit of learning. Road maps and key vocabulary along with sentence stems will be displayed for each unit. They will act as a prompt to previous learning and will be used regularly by the adults and children in the classroom to enhance the learning. Once a unit is finished or a set of resources are not being referred to anymore, they can be archived/stored for retrieval should the teacher want to refer back to it later. They will address misconceptions and also act as an area for celebration. They are a key tool. Some displays may stay up throughout the year to act as constant reminders of non-negotiables for aspects of maths, such as presentation, number formation etc.



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Units Overview	TERM 1	TERM 2	TERM 3	TERM 4	TERM 5	TERM 6
<b>EYFS</b> (White Rose)	<p><b>GETTING TO KNOW YOU</b> Baseline assessments</p> <p><b>MATCH, SORT AND COMPARE</b> Match objects Match pictures and objects Identify a set Sort objects to a type Explore sorting techniques Create sorting rules Compare amounts</p> <p><b>TALK ABOUT MEASURE AND PATTERNS</b> Compare size Compare mass Compare capacity Explore simple patterns Copy and continue simple patterns Create simple patterns</p> <p><b>KIRFs</b> I can say numbers 0 to 5 and back from 5 to 0 in order</p>	<p><b>IT'S ME 1, 2, 3</b> Find 1, 2, 3 Subitise 1, 2, 3 Represent 1, 2, 3 1 more, 1 less Composition of 1, 2, 3</p> <p><b>CIRCLES AND TRIANGLES</b> Identify and name circles and triangles Compare circles and triangles Shapes in the environment Describe position</p> <p><b>1, 2, 3, 4, 5</b> Find 4 and 5 Subitise 4 and 5 Represent 4 and 5 1 more, 1 less Composition of 4 and 5 Composition of 1-5</p> <p><b>SHAPES WITH 4 SIDES</b> Identify and name shapes with 4 sides Combines shapes with 4 sides Shapes in the environment My day and night</p> <p><b>KIRFs</b> I can say numbers 0 to 10 and back from 10 to 0 in order</p>	<p><b>ALIVE IN 5</b> Introduce 0 Find 0-5 Subitise 0-5 Represent 0-5 1 more 1 less Composition Conceptual subitising to 5</p> <p><b>MASS AND CAPACITY</b> Compare mass Find a balance Explore capacity Compare capacity</p> <p><b>GROWING 6, 7, 8</b> Find 6, 7, 8 Represent 6, 7, 8 1 more 1 less Composition of 6, 7, 8 Make pairs – odd and even Double to 8 (find a double) Double to 8 (make a double) Combine 2 groups Conceptual subitising</p> <p><b>KIRFs</b> I can partition numbers to 5 in two groups</p>	<p><b>LENGTH, HEIGHT AND TIME</b> Explore length Compare length Explore height Compare height Talk about time Order and sequence time</p> <p><b>BUILDING 9 AND 10</b> Find 9 and 10 Compare numbers to 10 Represent 9 and 10 Conceptual subitising to 10 1 more, 1 less Composition to 10 Bonds to 10 (2 parts) Make arrangements of 10 Bonds to 10 (3 parts) Doubles to 10 (find a double) Bonds to 10 (make a double) Explore odd and even</p> <p><b>EXPLORING 3D SHAPES</b> Recognise and name 3D shapes Find 2D shapes within 3D shapes Use 3D shapes for tasks 3D shapes in the environment Identify more complex patterns Copy and continue patterns Patterns in the environment</p> <p><b>KIRFs</b> I can partition numbers to 10 in two groups</p>	<p><b>TO 20 ANY BEYOND</b> Build numbers beyond 10 (10-13) Continue patterns beyond 10 (10-13) Build numbers beyond 10 (14-20) Continue patterns beyond 10 (14-20) Verbal counting beyond 20 Verbal counting patterns</p> <p><b>HOW MANY NOW?</b> Add more How many did I add? Take away How many did I take away?</p> <p><b>MANIPULATE, COMPOSE AND DECOMPOSE</b> Select shapes for a purpose Rotate shapes Manipulate shapes Explain shape arrangements Compose shapes Decompose shapes Copy 2D shape patterns Find 2D shapes within 3D shapes</p> <p><b>KIRFs</b> I can count, read and write numbers to 20</p>	<p><b>SHARING AND GROUPING</b> Explore sharing Sharing Explore grouping Grouping Even and odd sharing Play with a build doubles</p> <p><b>VISUALISE, BUILD AND MAP</b> Identify units of repeating patterns Create own pattern rules Explore own pattern rules Replicate and build scenes and constructions Visualise from different positions Describe positions Give instructions to build Explore mapping Represent maps with models Create own maps from familiar places Create own maps and plans from story situations</p> <p><b>MAKE CONNECTIONS</b> Deepen understanding Patterns and relationships</p> <p><b>KIRFs</b> I can use physical representations to add and subtract two-single digit numbers and count on or back to find the answer</p>



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<b>Year 1 Can Do</b>	<ul style="list-style-type: none"> <li>- Number and place value</li> <li>- Geometry – Properties of shapes</li> <li>- Addition and subtraction</li> </ul>	<ul style="list-style-type: none"> <li>- Number and place value</li> <li>- Addition and subtraction</li> </ul>	<ul style="list-style-type: none"> <li>- Geometry – Properties of shapes</li> <li>- Measure - length</li> </ul>	<ul style="list-style-type: none"> <li>- Addition and subtraction</li> <li>- Fractions</li> <li>- Geometry – position and direction</li> <li>- Addition and subtraction</li> </ul>	<ul style="list-style-type: none"> <li>- Measure – Time</li> </ul>	<ul style="list-style-type: none"> <li>- Multiplication and division</li> <li>- Measure – money</li> <li>- Measure – mass and capacity</li> </ul>
<b>Year 2</b>	<ul style="list-style-type: none"> <li>- Number and place value</li> <li>- Geometry – Properties of shapes</li> <li>- Addition</li> </ul>	<ul style="list-style-type: none"> <li>- Subtraction</li> <li>- Geometry – Properties of shapes</li> <li>- Multiplication and division</li> </ul>	<ul style="list-style-type: none"> <li>- Geometry – position and direction</li> <li>- Multiplication and division (Times tables)</li> <li>- Measure – length and mass</li> </ul>	<ul style="list-style-type: none"> <li>- Fractions</li> <li>- Measure – Time</li> <li>- Measure – Money</li> </ul>	<ul style="list-style-type: none"> <li>- Statistics</li> <li>- Measure – capacity and temperature</li> </ul>	<ul style="list-style-type: none"> <li>- Consolidation</li> </ul>
<b>Year 3</b>	<ul style="list-style-type: none"> <li>- Number and place value</li> <li>- Geometry – Properties of shapes</li> <li>- Multiplication and division (Times tables)</li> </ul>	<ul style="list-style-type: none"> <li>- Addition and subtraction mental methods</li> <li>- Fractions</li> </ul>	<ul style="list-style-type: none"> <li>- Addition and subtraction written methods</li> <li>- Measure – money</li> </ul>	<ul style="list-style-type: none"> <li>- Multiplication and division (Times tables)</li> <li>- Fractions – calculating</li> <li>- Statistics</li> </ul>	<ul style="list-style-type: none"> <li>- Measure – time</li> <li>- Geometry – angles</li> </ul>	<ul style="list-style-type: none"> <li>- Measure – length, mass and capacity</li> </ul>
<b>Year 4</b>	<ul style="list-style-type: none"> <li>- Number and place value</li> <li>- Geometry – Properties of shapes</li> <li>- Addition mental methods</li> </ul>	<ul style="list-style-type: none"> <li>- Subtraction mental methods</li> <li>- Multiplication and division (Times tables)</li> </ul>	<ul style="list-style-type: none"> <li>- Addition and subtraction written methods</li> <li>- Multiplication</li> </ul>	<ul style="list-style-type: none"> <li>- Division</li> <li>- Geometry – angles</li> <li>- Decimals</li> <li>- Measure – perimeter and area</li> </ul>	<ul style="list-style-type: none"> <li>- Fractions</li> <li>- Decimals - calculating</li> </ul>	<ul style="list-style-type: none"> <li>- Measure – time</li> <li>- Geometry – position and direction</li> <li>- Statistics</li> </ul>
<b>Year 5</b>	<ul style="list-style-type: none"> <li>- Number and place value</li> <li>- Geometry – Properties of shapes</li> <li>- Decimals</li> </ul>	<ul style="list-style-type: none"> <li>- Addition and subtraction</li> <li>- Multiplication and division</li> </ul>	<ul style="list-style-type: none"> <li>- Multiplication and division</li> <li>- Geometry – Position and direction</li> <li>- Statistics</li> </ul>	<ul style="list-style-type: none"> <li>- Fractions, decimals and percentages</li> <li>- Measure – length, mass and capacity</li> <li>- Measure – area and volume</li> <li>- Geometry – Angles</li> </ul>	<ul style="list-style-type: none"> <li>- Fractions – calculating</li> </ul>	<ul style="list-style-type: none"> <li>- Geometry – Angles</li> <li>- Measure – time</li> </ul>
<b>Year 6</b>	<ul style="list-style-type: none"> <li>- Number and place value including decimals</li> <li>- Multiplication and division</li> </ul>	<ul style="list-style-type: none"> <li>- Geometry – position and direction</li> <li>- Fractions, decimals and percentages</li> <li>- Geometry – Properties of shapes</li> <li>- Geometry – Angles</li> </ul>	<ul style="list-style-type: none"> <li>- All four operations</li> <li>- Fractions – calculating</li> </ul>	<ul style="list-style-type: none"> <li>- Ratio and proportion</li> <li>- Measure – converting units</li> <li>- Measure – area and volume</li> <li>- Algebra</li> <li>- Statistics</li> </ul>	<ul style="list-style-type: none"> <li>- Targeted revision</li> <li>- SATs week</li> </ul>	<ul style="list-style-type: none"> <li>- Consolidation</li> <li>- Transition</li> </ul>



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## Lesson Structure – PowerPoint slide titles

REVIEW IT (Hook)	<b>QUESTIONING/CHECKING FOR UNDERSTANDING/DAILY, WEEKLY, MONTHLY REVIEW/LOW-STAKES QUIZZES</b>
TEACH IT	<b>MODELLING/SCAFFOLDING/QUESTIONING/PRESENT NEW LEARNING IN SMALL STEPS</b> <ul style="list-style-type: none"> <li>• Fluency (Conceptual and procedural)</li> <li>• CPA (Concrete, Pictorial, Abstract)</li> <li>• Precise mathematical vocabulary - displayed</li> <li>• 'Prevent the Gap' interventions</li> </ul>
PRACTICE IT/DO IT	<b>INDEPENDENT PRACTICE/GUIDED STUDENT PRACTICE/QUESTIONING/CHECK FOR UNDERSTANDING/OBTAIN HIGH SUCCESS RATE</b> <ul style="list-style-type: none"> <li>• Practise</li> <li>• What it is...</li> <li>• Standard and non-standard representations, e.g. <math>3 + 7 = 10</math>, <math>10 = 3 + 7</math>, <math>3 + 7 &lt; 11</math></li> <li>• Application</li> </ul>
SECURE IT	<b>INDEPENDENT PRACTICE/QUESTIONING, PROBING/CHECK FOR UNDERSTANDING/OBTAIN HIGH SUCCESS RATE</b> <ul style="list-style-type: none"> <li>• Reasoning</li> <li>• What it's not...</li> <li>• Mistakes and misconceptions</li> <li>• Active argument – ABC (Agree, Build, Challenge)</li> <li>• Yes/no, true/false</li> <li>• Probing questions</li> </ul>
DEEPEN IT	<b>INDEPENDENT PRACTICE/QUESTIONING, PROBING/CHECK FOR UNDERSTANDING/OBTAIN HIGH SUCCESS RATE</b> <ul style="list-style-type: none"> <li>• Problem solving – missing numbers/symbols, generate the question, always/sometimes/never, linking concepts and making connections</li> </ul>
REVIEW IT	<b>DAILY REVIEW/QUESTIONING/CHECK FOR UNDERSTANDING/LOW-STAKES QUIZZES</b> <ul style="list-style-type: none"> <li>• Sharing solutions</li> <li>• Have they got it?</li> <li>• Can they apply the learning and make connections?</li> <li>• Next steps</li> </ul>



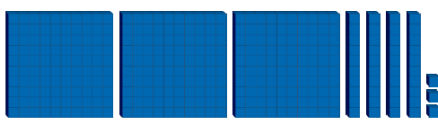
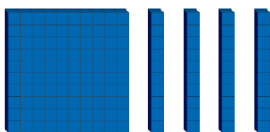
Example of independent tasks:

8.10.21

WALT: Add a 2-digit number to a 3-digit number.

Do it:

What number is represented below?



Now add 45.

Now add 48.

What is the total?

What is the total?

Complete the calculations.

	Hundreds	Tens	Ones
+			

	Hundreds	Tens	Ones
+			

Complete these calculations using columns.

$$245 + 31 =$$

$$517 + 44 =$$

$$739 + 57 =$$

$$323 + 28 =$$

Secure it:

Willow is adding a 3-digit number to a 2-digit number.

The 3-digit number has a 4 in the tens column, and the 2-digit number has a 5 in the tens column.

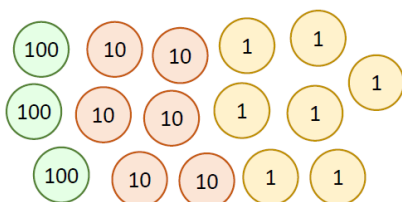


Willow thinks the answer will have a 7 in the tens column. Is he correct?

Explain your answer.

Deepen it:

1a. I have added a 2-digit number and a 3-digit number. This is the answer.



What is the calculation?