www.thewestminsterschool.co.uk

2022/2023

Maths Policy

Building foundations and providing opportunities to create confident, aspirational, and independent members of our community.

Approved by Governing Body on:	**12/01/2023**
Signed by Chair of Governors:	P. A. Evans
Head Teacher:	**O M Flowers**
Lead Personnel:	**B Taylor**
Date of Review:	**12/01/2024**

Vision and Background Information

‘Maths is often represented as a process of linear progression, so specific skills are learned in a set order’ (Imray and Hinchcliffe, 2014). This means that pupils shouldn’t move on until the first block is learned, however Imray also states that those with learning difficulties may not be able to learn a certain building block which usually results in them being taught the same skill over and over again throughout the whole of their education. This developmental approach narrows the maths curriculum through educators desire to measure success against normative developmental markers which limits teaching, learning and experiences (Robins, 2000).

Imray and Hinchcliffe (2014), suggest that teaching theory of maths without context to students with learning difficulties does not allow for application and understanding to be achieved, instead the exact opposite of teaching the context alongside theory will give opportunities for more deep and meaningful learning to take place. This concept has formed the basis of teaching approaches for mathematics at The Westminster School, where planning practical, functional and real life experiences to embed learning is at the forefront of all teaching and learning. We are, after all, surrounded by mathematics skills in our everyday lives. Getting to places on time, shopping, budgeting, catching public transport and cooking are a few functional everyday tasks to name a few. We know that equipping pupils with functional mathematical skills, knowledge and real-life application is vital to enable them to access the world around them and to feel included members of their communities.

My Thinking Curriculum

At The Westminster School, Mathematics is taught within the My Thinking area of learning to all pupils. The 3 components that combine to form My Thinking are: Mathematics, Problem Solving and Technology.

Curriculum Intent Statement

To equip pupils with the skills needed to solve problems, be organised, think logically and utilise technologies to improve their independence and access the world around them.

My Thinking Aims:

- To develop functional mathematics and ICT skills in order to apply them to real-life contexts to be as independent as possible in accessing the community around them.
- To improve understanding of mathematical and thinking concepts
- To develop problem solving and reasoning skills through the use of concrete, pictorial and abstract representations, and demonstrate these skills in real life situations.
- To improve pupils working memory and coping with cognitive load

Mathematics is taught throughout the school through My Thinking lessons from Key Stage 2 to 5 to pupils aged seven to nineteen with a range of moderate to more complex learning difficulties. Pupil’s abilities range from the use of the engagement model and pre-key stage standards in Key Stage 2, up to Level 2 Functional skills and possibly GCSE where relevant in KS4/5.

Mathematics is a core subject in the National Curriculum and is essential for all pupils to progress in. All the children within the school have an EHCP and moderate learning difficulties, this means the needs of the children are very individual to each child and therefore teaching and learning is personalised throughout the school.

At The Westminster School, we have developed our My Thinking curriculum using a range of government documentation as well as other schemes and programmes to create a curriculum best suited to be achievable, yet challenging for our pupils (Appendix A). Key documents used to support the drafting process of the Skill Development Grids were:

- National Curriculum in England: Primary Curriculum
- Early Years Foundation Stage (EYFS) Statutory Framework
- EQUALS curriculum and schemes of work

KS2-KS4

- In Key Stages 2, 3 and 4, pupils engage in 5-6 discrete My Thinking lessons per week. Within these lessons the teacher plans for even coverage of the 3 components: Mathematics, Problem Solving and Technology. Teaching and Learning is planned using the Skill Development Grids for the 6 Skill Development Levels (Appendix A).

- All pupils work towards skills statements at an appropriately differentiated level within the 3 components each term for My Thinking. Teachers plan breaking down the skill statements to differentiate learning for pupils, ensuring breadth of coverage of each strand throughout the year using the Annual Curriculum Coverage Plan (Appendix B). Evidence is collected using Evidence for Learning, and progress is measured using the Independence Hierarchy.

- Cross-curricular teaching is promoted through teachers for all areas of learning capturing evidence and appending any My Thinking learning towards their My Thinking statements e.g. when travelling to a local town on public transport in My Community lessons, money and time statements will also be developed in Mathematics.

- Each term has a different curriculum theme which all teaching and learning links to in order to promote engagement and make learning meaningful and relatable for pupils.

KS4 & KS5

- In addition to the curriculum offering above, KS4 pupils also have access to a range of accreditations that are carefully selected on an individual basis so that accreditations are purposeful and functional for the pupils desired next steps.

- The range of accreditations currently offered to KS4 and KS5 pupils include: ASDAN Personal Development Programmes at Entry Level 3, NCFE Functional Skills in Mathematics at Entry Level 1,2 and 3, as well as Level 1 and 2, Princes Trust Level 1 Achieve Award.

- KS4 and KS5 pupils also start to engage with work placements and independent travel training where relevant and appropriate which encompasses a variety of mathematical skills and knowledge that pupils need to be able to apply practically to

be successful E.g. reading bus timetables to plan their route to work, completing stock takes and giving and receiving money.

- In KS5, aspects of problem solving are taught through the Skills Builder Universal Framework. This is conducted both discretely through projects and they are also incorporated into other subject disciplines and accreditations. Progress of problem solving is also charted through the Skills Builder Benchmarking Tools.

Planning

At the start of each academic year, all form tutors of pupils in KS2-5 write a Holistic Profile including information regarding likes, dislikes, strengths and areas to develop for all 6 Areas of Learning including My Thinking. To write these teachers use EHCPs, progress from the previous year, and discussions with staff who know the pupils best. There is a Skill Development Grid for the 3 components of My Thinking, including Mathematics, which outlines 7 strands shown below:

- Number and Place Value
- Calculations
- Measure
- Time
- Geometry
- Money
- Statistics

The Skills Development Grid is designed to show skill progression across 6 Skill Development Levels (Appendix A). Staff who deliver My Thinking use Holistic Profiles and the Skill Development Grids to plan for each individual pupil for each term (Appendix C). There are separate plans for each of the 3 components Problem Solving, Technology and Mathematics and also for each level needed to be planned for within the class.

Over the course of the year pupils will have experienced teaching and learning for all strands in all 3 components. The strand Number and Place Value in the Mathematics component is required to be covered every term and then at least two other areas which include: Calculations, Measure, Time, Geometry, Money and Statistics. Number and Place Value underpins all of the other aspects of the Skill Development Grids, however progress in the other strands will ensure the breadth of coverage and application. See Curriculum Annual Coverage Plan (Appendix B).

Pedagogy and Delivery

My Thinking is taught discretely for 5-6, 45 minute lessons per week across the school. Teachers will vary their approach in terms of activities, resources used, support staff and groupings based on the needs and engagement levels of the pupils in their group. There are a wide range of resources available in school to support the delivery of My Thinking including:

- Numicon
- Doodle Maths
- BKSB online
- STEM resource boxes
- A range of devices (iPads, laptops, desktop computers)
- OSMO
- Bee Bots
- Edoki App
- Lego WeDo
- Various Websites including: Topmarks, Education City, Busy Things, Twinkl, Hour of Code

Regular CPD is carried out for staff to ensure they are aware of resources available, how to use them and the impact they can have on pupil engagement and progress.

Evidence and Assessment

All staff have access to their own device which is used to capture photographs and videos of pupils working towards the skills statements. These are uploaded to the Evidence for Learning App with staff comments, next steps, engagement levels and how independently the pupil achieved the skill using the school Independence Hierarchy (Appendix D). All teachers who deliver My Thinking are required to upload at least 6 pieces of evidence towards My Thinking, per pupil per term.

At the end of each term, staff record an overall judgment using Evidence for Learning Assessment Books to record how independently the pupil has achieved each statement over the term. The completed termly assessment books feed into the school data system to provide information regarding the progress each pupil has made for the term, and year. Data is analysed by the My Thinking Subject Leaders and the Senior Leadership Team on a termly basis, any pupils making Lower Quartile Progress are discussed and action plans are put into place and monitored closely to try to improve pupil progress for the following term.

For accreditations, evidence is captured in the same way through the Evidence for Learning App, and teachers track the progress and success criteria for each unit.

- For NCFE Functional Skills Qualifications, pupils sit an assessment when the staff feel they are ready. For Entry Level 1,2 and 3 this is a formal controlled assessment in a classroom setting. For Level 1 and Level 2 the assessment is conducted in exam style conditions. The overall score from these assessments determine whether pupils achieve the pass mark. The results of these assessments are Internally Verified by one of the quality assurance team.
- ASDAN Personal Development Programmes and Princes Trust Level 1 Achieve Award are assessed and achieved through the evidence collected demonstrating pupils achieving criteria. The evidence is both internally and externally moderated.

Homework

All parents have access to the Evidence for Learning App which is used in school for staff capture and record evidence of pupil progress towards the skill statements. Staff share evidence with parents/carers regularly for them to see and discuss progress with their children. Parents/Carers are also encouraged to upload their own photographs and videos demonstrating any learning that pupils have completed at home. Once parents/carers submit their evidence, teachers can see, comment and use the evidence to demonstrate progress towards the skill statements.

Pupil account details are also shared with parents for any subscriptions relevant to Mathematics for pupils to access from home, e.g. Doodle Maths, BKSB and Education City.

Monitoring

The My Thinking area of learning leaders are responsible for monitoring the component Mathematics for planning, delivery, evidence, engagement and progress across the school. Monitoring of the standard of quality of teaching and learning in Mathematics is the responsibility of the Area of Learning Leaders and is supported by the Senior leadership team and Governors.

There is a monitoring cycle which ensures skill statements, planning, evidence, teaching practice, data and progress made and accreditations are checked using a consistent and thorough document by all leaders on a termly basis. Any actions needed following the monitoring cycle are discussed with the Senior Leadership Team and actioned appropriately.

Learning walks and observations are conducted at various points throughout the year which provide valuable information to update action plans, triangulation, CPD and any support needed.

Each term, data is monitored and triangulated across planning and evidence collected. Data is provided for the 3 components each term: Mathematics (Number and Place Value being the core strand), Problem Solving and Technology.

The work of the Area of Learning leaders also involves supporting colleagues in the teaching of My Thinking, including Mathematics, being informed about current developments in the subject whilst providing a strategic lead and direction. The school's governing body is briefed regularly and given an overview of the teaching of My Thinking including Mathematics. They are also invited in to school to see current practice.

The role of the My Thinking Area of Learning Leader is to:

- Be responsible for the development of Mathematics across the school.
- Monitor the impact and effectiveness of My Thinking teaching and learning.
- Moderate skills statements, planning, evidence, assessment and progress for My Thinking as a whole as well as the component Mathematics.
- Support teachers in their planning and delivery of Mathematical skills.
- Provide and organise staff training to develop staff skill set and confidence.
- Be responsible for providing appropriate mathematics resources.
- Oversee and facilitate offsite visits to promote pupil independence in My Thinking.
- Select, organise and moderate relevant accreditations for My Thinking in Key Stages 4 and 5.

The effectiveness and the impact of this policy, as a working document, must be evaluated over time. This will be carried out through regular monitoring of pupil outcomes, teaching and planning.

Reference List

Imray, P. and Hinchcliffe, V. (2014) *Curricula for Teaching Children and Young People with Severe of Profound and Multiple Learning Difficulties.* United Kingdom: Routledge.

Robbins, B. (2000) *Inclusive Mathematics 5-11.* London: Continuum.

Bibliography

Department for Education. (2013) *The National Curriculum in England: Key Stages 1 and 2 Framework Document.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/425601/PRIMARY_national_curriculum.pdf (Accessed: 5 July 2022).

Department for Education. (2021) *Statutory Framework for the Early Years Foundation Stage: Setting the standards for learning, development and care for children from birth to five.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/974907/EYFS_framework_-_March_2021.pdf (Accessed: 5 July 2022).

Appendix A – Skill Development Grids for Mathematics

My Thinking – Mathematics

Explore

Skill development			
Number and Place Value	**Calculations**	**Measure**	**Time**
1. Engage in a variety of media in relation to basic numbers (0-9) 2. Demonstrate an understanding of the concept of 1:1 correspondence (e.g. giving on cup to each pupil	1. Distinguish between one and lots when shown an example of a single object and a group of objects	1. Experient with measuring equipment 2. Identify the big or small object from a selection of 2	1. Use a schedule during the school day (could include now and next)
Geometry	**Money**	**Statistics**	
1. Copy and continue simple patterns using real-life materials (e.g. apple, orange, apple, orange)	1. Experience exchanging something as part of a transaction (a symbol of a banana for a banana etc)	• N/A	

My Thinking – Mathematics

Building Concepts

Skill development			
Number and Place Value	**Calculations**	**Measure**	**Time**
1. Read, write, order and compare numbers up to 10 2. Demonstrate that the number of objects remains the same when they are rearranged	1. Count, demonstrating that the next number is one more and the previous number is one less 2. Demonstrate an understanding that the last number counted represents the total count 3. Demonstrate an understanding of mathematical symbols of add, subtract and equal to	1. Sort objects according to size	1. Use a range of time related vocabulary (such as quicker, slower, earlier, later, first, today, morning) 2. Recognise and use language relating to days of the week, months and year 3. Tell the time the nearest hour and half hour
Geometry	**Money**	**Statistics**	
1. Recognise and name common 2D & 3D shapes 2. Describe basic position, directions and movements 3. Compare and sort common 2D and 3D shapes and recognise them in every day objects/environments	1. Recognise and know the value of British currency (coins and notes) 2. Use vocabulary including pounds and pence	1. Sort objects into categories (colour, shape, animal etc)	

My Thinking – Mathematics

Early Knowledge

Skill development

Number and Place Value	Calculations	Measure	Time
1. Read, write, order and compare numbers up to 100 2. Partition a 2 digit number into tens and ones 3. Count in 2s, 5s and 10s from zero. 4. Recognise find and name fractions including half, quarter knowing they have 2/4 equal parts	1. Recall number bonds to 10 (including 6+4=10 and 4+6=10) 2. Add and subtract any 2 digit numbers using efficient strategies explaining their method (verbally, using pictures etc) 3. Recall multiplication and division facts for 2, 5 and 10 and use them to solve problems	1. Read scales to measure including 1s, 2s, 5s, and 10s 2. Choose and use appropriate standard units to estimate and measure length, height, mass, temperature and capacity	1. Compare and sequence intervals of time (knowing that an hour is longer than half an hour) 2. Tell the time to the nearest quarter hour and nearest 5 minutes 3. Know the number of minutes in an hour and the number of hours in a day
Geometry	**Money**	**Statistics**	
1. Identify and describe the properties of 2D and 3D shapes (sides, vertices, edges and faces) 2. Calculate the perimeter of 2D shapes 3. Order and arrange objects in patterns and sequences 4. Use vocabulary to describe position, direction and movement (straight line, anti clockwise, clocks, half turn, full turn, three quarter turn etc)	1. Recognise and use symbols (£ and p) 2. Find different combinations of coins that equal the same amount 3. Begin to add and subtract different values of money 4. Recognise if I have enough money and if I will receive some change 5. Recognise different ways to pay for something (cash, card, online)	1. Interpret and construct simple pictograms, tally charts and tables. 2. Ask and answer simple questions by counting the number of objects in a category	

My Thinking – Mathematics

Developing Understanding

Skill development

Number and Place Value

1. Count in 4s, 8s, 50s and 100 from zero
2. Recognise the place value of each digit in a 3 digit number
3. Read, write, compare and order numbers up to 1000
4. Round any number to the nearest 10, 100 and 1000.
5. Recognise find, name and write fractions (1/3, ¼, ½ of a length, shape, object or quantity
6. Recognise and write decimal equivalents and percentages to a half and a quarter (1/4 = 0.25 = 25%)

Calculations

1. Add and subtract numbers with up to 3 digits
2. Recall multiplication and division facts for 3, 4 and 8 and use them to solve problems
3. Recall all number bonds to and within 20
4. Find 10 or 100 more of less than a given number
5. Use known multiplication facts to solve problems
6. Multiply 2 and 3 digit numbers by a 1 digit number using formal methods

Measure

1. Add and subtract different measures including weight, volume and capacity
2. Convert between different units of measure (km to m etc)
3. Estimate and compare different measures

Time

1. Read, write and convert time between analogue and digital (12 and 24 hour clocks)
2. Solve problems involving converting from hours to minutes, minutes to seconds, years to months and weeks to days

Geometry

1. Identify and describe the properties of 2D and 3D shapes (including lines of symmetry, vertical lines, perpendicular and parallel lines)
2. Identify right angles (recognise that 2 right angles make half a turn and 4 right angles make a whole turn
3. Calculate the area of 2D shapes and volume of 3D shapes
4. Describe position using coordinates

Money

1. Know there is 100p in £1
2. Compare different values of money in pounds and pence
3. Add and subtract different values of money, calculating change (including knowing if I spend 87p, I can give £1 etc)
4. Make a transaction and wait for change if applicable (in a shop/ online)

Statistics

1. Interpret and present data using bar charts, pictograms, graphs and tables
2. Answer simple questions about data presented (e.g. how many more, how many fewer)

My Thinking – Mathematics

Proficient Application

Skill development

Number and Place Value	Calculations	Measure	Time
1. Count in 6s, 7s, 25s and 1000s from zero 2. Recognise the place value of each digit in a 4 digit number 3. Read, write, compare and order numbers beyond 1000 4. Estimate number using different representations 5. Add and subtract fractions with the same denominator 6. Add and subtract percentages and decimals 7. Compare and order fractions and percentages	1. Count backwards through zero to include negative numbers 2. Add and subtract numbers with up to 4 digits 3. Recall multiplication and division facts for multiplication tables up to 12 x 12 4. Solve addition and subtraction 2 step problems in context 5. Multiply numbers up to 4 digits by a 1 or 2 digit number using formal methods 6. Divide numbers up to 4 digits by a 1 digit number using formal methods 7. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	1. Convert between different units of metric measure (cm and m, g and kg) 2. Estimate volume and capacity 3. Use all 4 operations to solve problems involving measure	1. Use knowledge of time and durations and apply this in a variety of contexts (plan a journey, follow recipe etc)
Geometry	**Money**	**Statistics**	
1. Compare and classify geometric shapes including quadrilaterals and triangles based on their properties 2. Identify if an angle is acute or obtuse 3. Measure angles 4. Compare and order angles based on their size 5. Plot coordinates on a grid/graph 6. Add and subtract fractions with the same denominator 7. Compare and order fractions	1. Use all 4 operations to solve problems involving money 2. Convert between pence and pounds 3. Begin to work within a budget including researching the price of items 4. Compare the price of different brands to find a cheaper alternative	1. Interpret and compare data presented in a range of graphs and tables	

My Thinking – Mathematics

Extending Application

Skill development			
Number and Place Value	**Calculations**	**Measure**	**Time**
1. Read, write, compare and order numbers up to and beyond 1,000,000 and determine the value of each digit 2. Round any number to a required degree of accuracy 3. Apply knowledge of percentages, fractions and percentages to every day situations (e.g. cutting a pizza for 8 people etc, or working out the price of something in a 50% sale)	1. Use negative numbers in context and calculate intervals across zero 2. Add and subtract numbers with more than 4 digits 3. Multiply whole numbers and those involving decimals by 10, 100 and 1000 4. Multiply multi digit numbers up to 4 digits by a 2 digit number 5. Divide numbers up to 4 digits by a 2 digit whole number 6. Use knowledge of the order of operations to carry out calculations involving the 4 operations (BODMAS)	1. Apply knowledge of measure in real life contexts (measure the size of room before buying furniture, cooking a meal)	1. Extend knowledge of time and durations into within the wider community (travel independently, cook meals at home)
Geometry	**Money**	**Statistics**	
1. Estimate and compare angles 2. Use positional vocabulary including 180° and 360° 3. Reflect and translate shape 4. Apply knowledge of positional vocabulary in the wider world (e.g. to give directions)	1. Work effectively to a budget 2. Manage income and outgoings 3. Open a personal bank account 4. Understand the concept of an overdraft and the consequences of going over this 5. Know the risks of taking out a personal loan	1. Interpret and construct pie charts 2. Calculate and interpret the mean as an average 3. Use knowledge of graphs and charts to solve problems	

Appendix B – Example My Thinking Annual Curriculum Coverage Plan

My Thinking			
Component	**Autumn Term**	**Spring Term**	**Summer Term**
Mathematics	- Number and Place Value - Calculations - Measure	- Number and Place Value - Time - Geometry	- Number and Place Value - Money - Statistics
Problem Solving	- Identification - Anticipation and Prediction	- Cause and Effect - Choice and Comparison	- Adaptation - Memory Building
Technology	- Online Safety and Behaviour	- Functional Apps and Software	- Social Media and Gaming

	- Accessing Devices	- Creating and Following Processes	- Using the Internet

Appendix C – Termly Planning Template for 1 Level in Mathematics

Theme: We're all in this together
Term: Autumn

My Thinking – Mathematics
Early knowledge

Learning experiences

Resources

Key vocabulary

Skill development

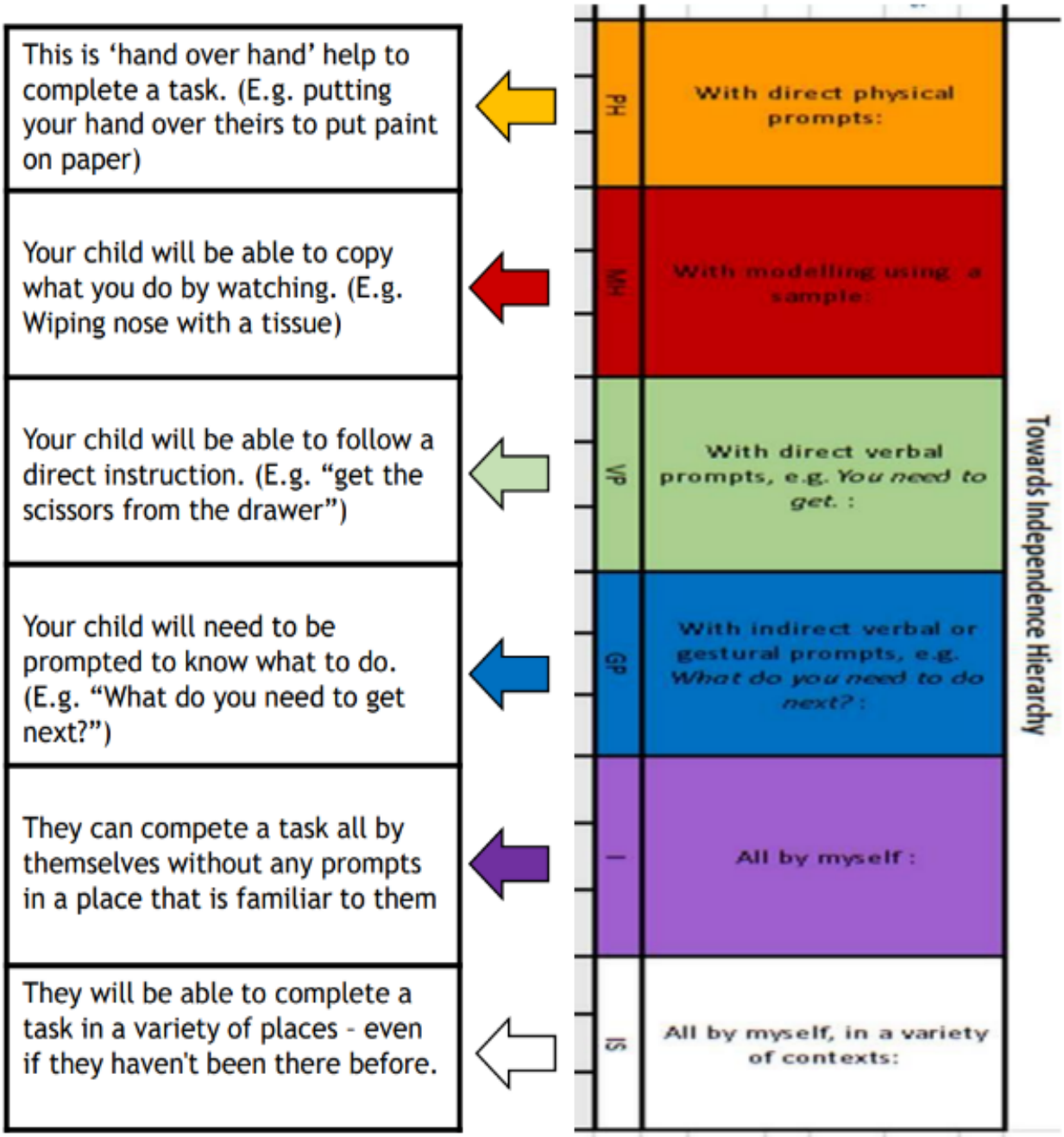
Number and Place Value	Calculations	Measure	Time
1. Read, write, order and compare numbers up to 100 2. Partition a 2 digit number into tens and ones 3. Count in 2s, 5s and 10s from zero. 4. Recognise find and name fractions including half, quarter knowing they have 2/4 equal parts	1. Recall number bonds to 10 (including 6+4=10 and 4+6=10) 2. Add and subtract any 2 digit numbers using efficient strategies explaining their method (verbally, using pictures etc) 3. Recall multiplication and division facts for 2, 5 and 10 and use them to solve problems	1. Read scales to measure including 1s, 2s, 5s, and 10s 2. Choose and use appropriate standard units to estimate and measure length, height, mass, temperature and capacity	1. Compare and sequence intervals of time (knowing that an hour is longer than half an hour) 2. Tell the time to the nearest quarter hour and nearest 5 minutes 3. Know the number of minutes in an hour and the number of hours in a day
Geometry	**Money**	**Statistics**	
1. Identify and describe the properties of 2D and 3D shapes (sides, vertices, edges and faces) 2. Calculate the perimeter of 2D shapes 3. Order and arrange objects in patterns and sequences 4. Use vocabulary to describe position, direction and movement (straight line, anti clockwise, clocks, half turn, full turn, three quarter turn etc)	1. Recognise and use symbols (£ and p) 2. Find different combinations of coins that equal the same amount 3. Begin to add and subtract different values of money 4. Recognise if I have enough money and if I will receive some change 5. Recognise different ways to pay for something (cash, card, online)	1. Interpret and construct simple pictograms, tally charts and tables. 2. Ask and answer simple questions by counting the number of objects in a category	

Theme: We're all in this together
Term: Autumn

My Thinking – Mathematics
Early knowledge

Pupil names	Skill(s)	Focus for learning	Comments/Next steps

Appendix D - Independence Hierarchy



Appendix E – Sample Doodle Maths Concepts Page

Concept Title	Year Group
Counting objects	R
Recognize and count 1-3	R
Use left, middle, right to describe position	R
Recognize and count 4-6	R
Sort 2D and 3D shapes	R
Subitising 1-5	R
Recognize and name basic 2-D shapes	R
Subitising irregular arrangements 1-5	R
Recognize and count 7-10	R
Recognize, create and describe patterns	R
Conceptual subitising within 10	R
Building numbers to 10 in ten frames	R
Solve problems by comparing quantities using objects	R
Recognising zero	R
Solving problems by comparing quantities using objects (2)	R
Ordering numbers 1-10	R
Use everyday language to talk about size, weight and capacity	R
One more or less than a given number 0-9	R
Use above, below, top and bottom to describe position	R
Recognise, create and describe patterns (2)	R
Distributing items evenly (sharing)	R
Recognize and count 11-15	R
Use everyday language to talk about time	R
Recognize and name basic 3-D shapes	R
Recognize and count 16-20	R
Ordering numbers 11-20	R
One more or less than a given number 10-20	R
Identifying groups with the same number of things	R
Using the language 'before', 'after' and 'between'	R

Please find the rest of the Doodle Maths Concepts document by clicking here.