

## Mathematics at Westwood Park

### Our Vision of Maths at Westwood Park:

It is our intention to ensure that, by the end of their primary education, all children are fluent within the fundamentals of Mathematics. We aim to ensure that our children leave our school as deep-thinking, resilient problem solvers who are able to solve both real-life and abstract problems in a systematic, logical, routine and non-routine manner. We value Mathematics as a life skill and aim to provide a high-quality Mathematics Curriculum that empowers children to communicate their ideas and solutions to problems in a confident, self-assured manner.

### Action Plan Maths – Key area to develop:

- To ensure that pupils meet age-related expectations following the Covid-19 pandemic.
- To further support pupils who are currently working towards expected year group objectives (SEN Target Groups and Interventions).
- Develop skilled and competent teachers of Maths.
- To embed links with NW2 Maths Hub
  
- To raise the attainment of the More able pupils (G&T).
  
- To develop cross-curricular skills amongst pupils within other subjects.
- To prepare year 4 children for the times table statutory test.
  
- To develop effective assessment procedures throughout school.
- To ensure that pupils have quality resources and embed White Rose Scheme of work.
- To establish an outstanding learning environment around school and within individual classrooms.

**Whole School Development Plan Targets** – Reading / attendance / PP Children / Health and Wellbeing / Curriculum

### Curriculum and Target Sheets:

White Rose Scheme supplemented by Nrich, NCETM, Testbase and Target Maths resources.

Target sheets are stuck in the front of Maths books. Teachers refer to objectives closely when planning, ensuring that all objectives for their specific year group are followed.

### Presentation:




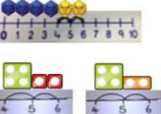
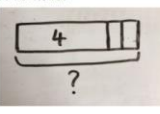

Pupils use 1 number per box, folding the page down the middle whenever possible, writing down the left hand side then onto the right within Key Stage 2 where appropriate.

### Calculation Policy Link:

We have developed our calculation policy based on the White Rose Scheme. It provides detailed examples of concrete, pictorial and abstract calculation strategies within addition, subtraction, multiplication and division.

#### Calculation policy: Addition

Key language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.

Concrete	Pictorial	Abstract
<p>Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars).</p> 	<p>Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.</p> 	<p><math>4 + 3 = 7</math> Four is a part, 3 is a part and the whole is seven.</p> 
<p>Counting on using number lines using cubes or Numicon.</p> 	<p>A bar model which encourages the children to count on, rather than count all.</p> 	<p>The abstract number line: What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? <math>4 + 2</math></p> 

WESTWOOD PARK  
SCHOOL

### EYFS Maths Curriculum:

The EYFS is based upon four principles:

- A Unique Child
- Positive Relationships
- Enabling Environments
- Learning and Development

Pupils follow the seven areas of Learning & Development as outlined in the Early Years Statutory Framework incorporating the National Curriculum. These are:

The Three Prime Areas of Learning and Development:

- Communication and Language
- Physical development (including Physical Education)
- Personal, Social and Emotional Development (PSHE)

The four Specific Areas of Learning and Development:

- Literacy
- **Mathematics**
- Understanding the World (Science, History, Geography, Computing, Design and Technology, Religious Education)

- Expressive arts and design (Art and Design, Music)

None of these areas can be delivered in isolation from the others. They are equally important and depend on each other. All areas are delivered through a balance of adult-led and child-initiated activities.

## Mathematics

Nursery : 1-5	Reception : 1-10
<p>Numberlanders are used for numbers 1 – 10 in conjunction with number blocks from 11 onwards. By the end of Nursery children working at the expected level should be able to: Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). Recite numbers past 5. Say one number for each item in order: 1,2,3,4,5. Talk about and identify patterns around them. Notice and correct and error in patterns. All verbal.</p>	<p>Follow the EYFS White rose Maths Scheme Maths activities as a focus and continuous provision By the end of Reception children working at the expected level should be able to: Link the number symbol (numeral) with its cardinal number value. Count to 10 Compare numbers. Understand one more and one less. Explore the composition of numbers to 10. Automatically recall number bonds to 10. Compose and decompose shapes. Continue, copy and create repeating patterns. Compare length, weight and capacity.</p>
<p><b>In order to achieve the above the EYFS team:</b></p> <ul style="list-style-type: none"> <li>- Have a maths area in each classroom linking to the current maths topics.</li> <li>- Provide maths focuses during play and learn time. These are recorded in their progress books.</li> <li>- Count on a daily basis, starting first thing in the morning when completing the daily calendar.</li> <li>- Display numbers and shapes around the areas within the room for the children to identify.</li> <li>- Create a number garden each week (Nursery) which displays the focus number of the week. The children add to the garden as the week progresses.</li> <li>- Have a balance of maths homework throughout the half term. During lockdown maths activities were placed online daily.</li> <li>- Encourage maths relating to capacity during water play.</li> <li>- Introduce number rhymes which are sung most days.</li> </ul>	

## **Knowledge Organisers and Key Vocabulary:**

Knowledge organisers are stuck in the back of pupil Maths workbooks and give an overview of key vocabulary that the pupils can refer to throughout the year. Key calculation strategies, number squares, times tables etc are also outlined in the pupil Reading Diaries to support with homework.

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Primary School

### 2D shapes

Name	No. of sides
quadrilateral	4
pentagon	5
hexagon	6
heptagon	7
octagon	8
nonagon	9
decagon	10

Regular = all sides/angles the same  
Irregular = sides/angles not same

**Types of triangle**

**Types of quadrilateral**

Parallelogram Trapezium Rhombus  
**AREA**  
= the amount of space inside a 2D shape usually measured in cm<sup>2</sup> or m<sup>2</sup>.  
Area of a triangle = (base x height) ÷ 2  
Area of a parallelogram = base x height

### Multiplication and division vocabulary

Term	Definition	Example
factor	a number that divides exactly into another number	factors of 12 = 1, 2, 3, 4, 6, 12
common factor	factors of two numbers that are the same	common factors of 8 and 12 = 1, 2, 4
prime number	a number with only 2 factors: 1 and itself	2, 3, 5, 7, 11, 13, 17, 19...
prime factor	a factor that is prime	prime factors of 12 = 2, 3
multiple	a number in another number's times table	multiples of 9 = 9, 18, 27, 36...
common multiple	multiples of two numbers that are the same	common multiples of 4 and 6 = 12, 24...
square numbers	the result when a number has been multiplied by itself	25 (5 <sup>2</sup> = 5x5) 49 (7 <sup>2</sup> = 7x7)
cube numbers	the result when a number has been multiplied by itself 3 times	8 (2 <sup>3</sup> = 2x2x2) 27 (3 <sup>3</sup> = 3x3x3)

### Year Six Maths Knowledge Organiser

#### Measurement conversions

1 centimetre	10mm
1 metre	100cm
1 kilometre	1,000 m
1 mile	1.6 km
8 kilometre	5 miles
1 kilogram	1,000 grams
1 litre	1,000 millilitres

#### Fractions, decimals & percentage

1/100	0.01	1%
1/20	0.05	5%
1/10	0.1	10%
1/8	0.125	12.5%
1/5	0.2	20%
1/4	0.25	25%
1/3	0.33	33%
2/5	0.4	40%
1/2	0.5	50%
3/4	0.75	75%
1	1	100%

#### Shape vocabulary

Perimeter = measure around the edge of a shape.

**horizontal line**      **parallel lines**

**vertical line**      **perpendicular lines (at right angles)**

Radius  
Diameter (r = radius x 2)  
Circumference = perimeter of a circle

#### Co-ordinates

Read co-ordinates along the x axis (horizontal) first, then the y axis (vertical). E.g. (3,-4) = go right 3, down 4.

**Volume of a cuboid** = length x width x height

#### The mean

The mean is a type of average. To find the mean, add up all the numbers and divide by how many there are.  
E.g. the mean of 4, 5, 3, 4 is 4. (Because 4 + 5 + 3 + 4 = 16, and 16 ÷ 4 = 4)

**Thirty days hath September, April, June, and November, all the rest have thirty-one except February which has 28.**

**Angles:** Full turn = 360° Half turn = 180° Right angle = 90° acute angle = <90° obtuse angle = >90° reflex angle = >180°, angles on a straight line = 180° opposite angles = same angles in a triangle = 180° angles in a quadrilateral = 360°

Twinkl also provide specific unit knowledge organisers that teachers place on working walls to support day to day teaching.

#### 4-part lesson:

- Gap-plugging starter
- Reasoning activity
- main input and differentiated activities
- HOTT or reasoning-based plenary.

#### Marking and Fluid Groupings:

Throughout the school, a 1 is given to children if they independently achieve an objective. A HOTT challenge will then be provided. If the pupil is developing their skills linked to a particular objective, but has not quite achieved it independently, a 2 is given. If a pupil has a misconception and does not understand a particular concept, they will be given a 3 and post teaching will be provided within class immediately or that afternoon in order to address the misconception at the earliest opportunity. Pupils receiving post teaching are logged within intervention books and their work during the intervention is recording within Maths books.

#### Assessment:

Pupils are assessed in November, March and July using the NCETM tests. Results are collated within gaps analysis documents and these are used to identify gaps. Gaps are then taught within interventions or during whole-class teaching if common misconceptions arise throughout the class.

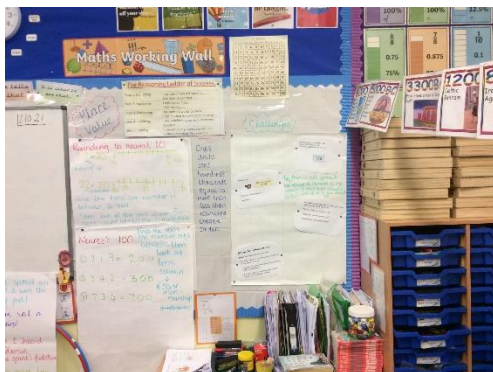
			Dy	Cn	Za	So	Av	Ke	Bn	Re	All	Lif	Mi	Sr	Te	Da	Bn	All	Sk	Lil	Me	Sa	En	Ru
1	40 + 1000	1	91x																					
2	707 + 1818	1	83x																					
3	4/6 + 3/6	1	91x																					
4	505 ÷ 1	1	83x																					
5	345 - 60	1	78x																					
6	2.7 + 3.014	1	92x																					
7	? = 4500 + 600	1	78x																					
8	8 x 33	1	43x																					
9	72 ÷ 9	1	78x																					
10	167 x 4	1	74x																					
11	4912 - 824	1	61x																					
12	62/100 - 38/100	1	61x																					
13	? - 100 = 1059	1	61x																					
14	50 + (36 ÷ 6)	1	61x																					
15	4/6 x 3/5	1	61x																					
16	30 x 40	1	92x																					
17	581 ÷ 7	1	93x																					

These are used as a focus for the Gap-plugging starters.

### Working Walls:

Working walls should include vocabulary, examples of strategies, reasoning sentence starters and pupil work that is relevant to the work being taught at that time in class.

Examples of Maths working walls:



### Covid Recovery and Embedding Basic Skills:

Strategies to plug gaps:

- 1) Covid Recovery funding used within intervention groups
- 2) Post Teaching occurs every afternoon.
- 3) Stringent gaps analysis data recorded and analysed.
- 4) Rockstars Booster Club set up
- 5) Numicon training provided and club established
- 6) Quality first teaching received from class teacher and TA.
- 7) LS shares practice with other teachers through HIVE/Team Teaching.
- 8) Explanation sentence stems/working walls/Knowledge Organisers to hand/stuck in Maths books or visual at all times within class.
- 9) Fluent in Five gap-plugging activities taught daily.
- 10) Morning Club set up in Year 5/6 to plug gaps in preparation for SATS.
- 11) Year 6 will receive I Pads for 1 hour every day (Autumn Term) and Year 4 (Spring Term) in order to embed basic counting and times table skills.
- 12) Homework meetings with parents to discuss curriculum.

### Homework:

KS1: Maths homework set bi-weekly. Seesaw activities set as additional tasks.

KS2: Maths homework set weekly both in paper form and on Seesaw.

### Pupil Premium Opportunities:

- Catch – up funding used to support Y5 Pupil Premium pupils and target children within their learning in Maths.
- GD/SATs booster interventions
- Lego Club/STEM Competition/Chess club
- Acoms
- Inter-school Times Table Rockstars competition
- Second Step intervention to boost resilience
- Targeted teacher questioning.

**Year 4 Times Table Check:** Rockstars paper tests, online, celebration wall chart, Speed Grid,

- KS2 Pupils complete Daily Rockstars paper-copy quizzes. Results recorded.
- Times Table club after school with VP.
- Times Table Tracker set up to monitor times tables test performance of Year 4 children. Those that need more support are invited to times table club.
- Times Tables Rockstars competition and celebration day throughout school. Class vs Class / Teacher vs pupils.
- Prodigy Club

### Governors:

Maths Governor – Mr Ambage. Links are made with the Parent Governor to discuss the current practices within Maths.

### CPD and Maths Hub links:

We are continuing to work with Claire Kinch and the Maths Cluster. In September 2021, we are beginning the 'Sustaining Mastery programme' – third phase which aims to develop/embed the teaching of mastery throughout the school and builds on Phase 2 which was successfully completed in 2020-21. CPD/TRG Training sessions offered by the Maths Hub and LS/VT completing online NCETM Basecamp activities linked to the Sustaining Mastery programme.

### CPD in Maths (2021-22):

- Numicon (6<sup>th</sup> September),
- Ready to Progress planning progression and modelling.
- Cross-curricular online Science / Maths CPD,
- Sustaining Reasoning updates provided by LS/VT
- Begin each staff meeting with a counting or reasoning/explanation game to promote staff knowledge.
- Staff took the 2018-19 Maths SATS test to ensure that they understand the requirements of Year 6. LS to Gap analyse and create an arithmetic crib sheet for teaching staff to use.
- Master Classes delivered to staff following lesson observations.
- Reasoning Training
- NPQSL for Maths subject leader
- Real-life Maths

### Real-life reasoning and Cross-curricular work:

Pride Mornings and half-termly Reasoning lessons/projects designed to expose pupils to real-life Mathematical scenarios e.g. money, measures, ratio, algebra.

- 2 per half term – cross-curricular lessons expected within Topic/Science books.

### Weekly Certificates in Assembly:

Times Table Rockstars (speed/coins earned) and Magical Mathematician of the Week certificates presented in assembly.

### Monitoring:

Book Monitoring Schedule: Friday afternoon monitoring time

Week 1: Work with teachers to identify gaps from previous test week. Identify 5 key focus areas.

Week 2: Marking/presentation/target sheets stuck in and being completed

Week 3: Learning Walk in classrooms and around the school. Curriculum coverage/Ready to progress objectives being taught alongside White Rose.



Week 4: Evidence of Problem Solving / Reasoning starters/activities. Use of HOTT challenges / Explanations to deepen understanding. 3 part Maths lesson structure.

Week 5: Cross-Curricular links and coverage in line with White Rose Curriculum. Real-life reasoning monitoring.

Week 6: Differentiation, post/pre teaching, fluid groupings. Use of 1s, 2s and 3s. Marking policy being adhered to?

Week 7: Pupil Premium children and target children's books. Are gaps being plugged? Is Pre/Post Teaching evident?

Week 8: How are the more able pupils being challenged? Update G&T list.

Week 9: Times Table Rockstars / Mental Maths/ Arithmetic Tests / Speed grid/ Times Table results (Year 4).

#### More Able Opportunities:

- G&T Maths competition/quiz (Autumn 2).
- Cluster school G&T Maths Challenge competition – dependent on virus restrictions.
- Talk project – Daily discussion linked to a mathematical concept or problem (reasoning starters).
- Greater Depth Club set up focusing on answering Y6 SATS Reasoning paper questions. Y5/6 teaching assistants/teachers teach a weekly Greater Depth intervention delivered to MA pupils.
- Real-life problem solving lessons taught half termly and stuck in back of books.

#### Maths Team:

Established involving, LS (whole school), VT (KS1), NB (Foundation) and VP (LKS2)

Useful links:

Fluent in Five: [\[FREE\] Fluent in Five Weeks 1-6 \(Years 1-6\) - Third Space Learning](#)

Ready to Progress Documentation: [Exemplification of ready-to-progress criteria | NCETM](#)

NCETM Mastery Resources: [In the Classroom | NCETM](#)

Testbase: [Testbase | Giving you the freedom to teach | Primary Assessment](#)

White Rose: [White Rose Maths | Free Maths Teaching Resources | CPD Training](#)

Nrich: [Primary Students \(maths.org\)](#)