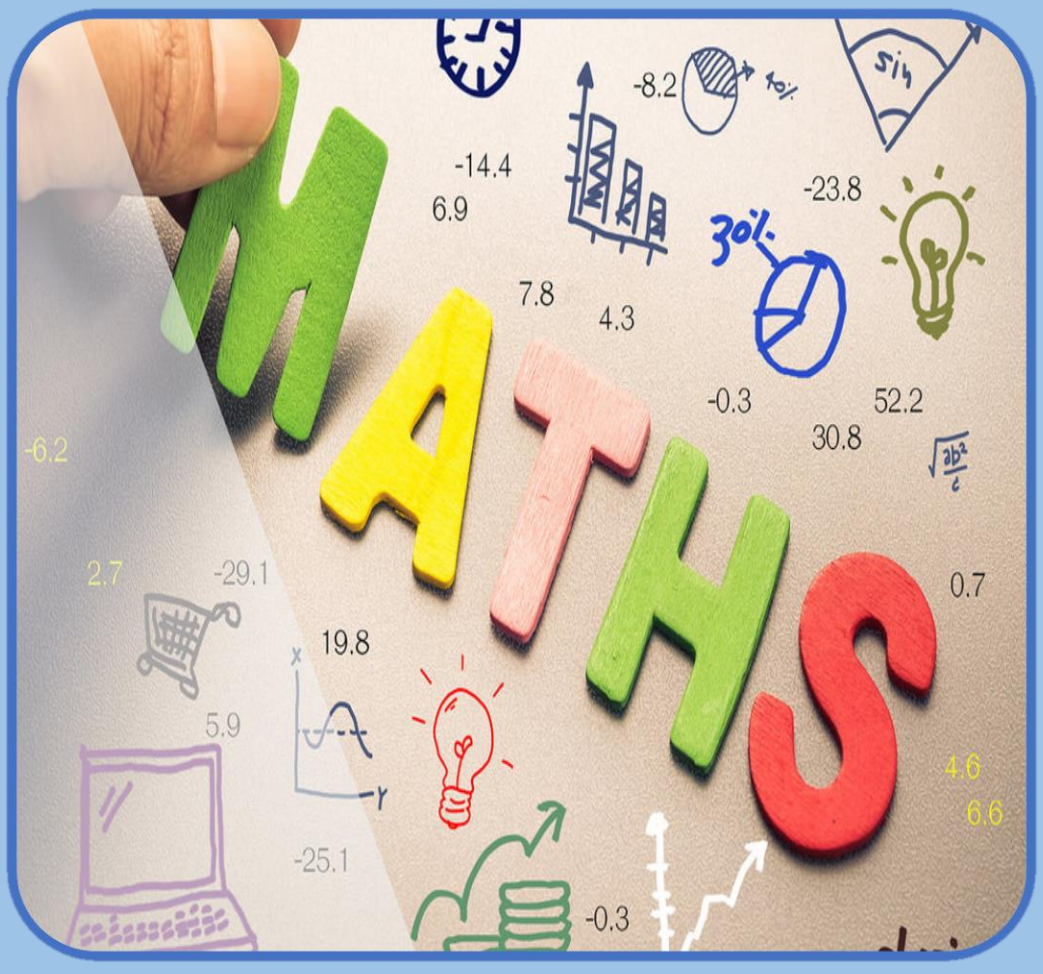
Mathematics



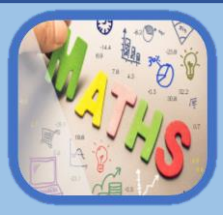
PORTSWOOD PRIMARY SCHOOL

KEY INFORMATION

September 2024

Mathematics

Intent



At Portswood Primary Academy Trust, we strive for achievement for all our pupils and believe that all pupils should develop a passion for maths.

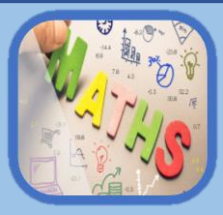
We want pupils to be ***confident*** in their use of maths; being able to ***identify*** where the ***maths*** is ***in*** the ***problems*** they are ***faced*** with, to prepare them for its use in the ***real world*** and to ensure that they are ready for the ***next stage*** of their ***mathematics education.***

Our ***aims*** for maths, ***reflect*** the aims of the ***National Curriculum***. Pupils should:

- Become ***fluent*** in the fundamentals of Maths
- ***Reason mathematically***
- ***Solve problems***

Pupils, at Portswood Primary School, should have a ***secure knowledge of mathematical facts*** and be able to ***recall*** them ***rapidly.*** Ensuring that pupils ***retain*** a ***knowledge*** of number, other mathematical facts or the processes of calculation, will mean they are ***not a barrier to use in wider mathematics.***

Mathematics



Intent – Curriculum Content

The curriculum for Maths at Portswood Primary School reflects the contents of the ***National Curriculum programme of study***.
This is reflected in the school's Long Term Planning (LTP) and in greater detail in the school's Medium Term Planning (MTP). ***LTP*** has been ***devised*** by ***Phase Leaders***, with the support of ***Curriculum leads***, and is ***reviewed annually***.

Adaptations to teaching content are ***made*** at the ***Short Term Planning (STP) stage*** based on on-going ***formative teacher assessment*** information.

STP and coverage are ***supported by non-negotiables*** for each area of maths, which highlight 'what should a pupil in year x be learning in concept y?'.
These non negotiables also highlight ***what has previously been learned*** and allow to identify ***where learning*** will be ***taken next***.

Curriculum content is also supported by ***key milestone targets***, drawn up by teachers. 'What do I want to receive pupils being able to do?' These are reviewed annually and ***ensure*** that ***key skills*** at each point of learning are ***addressed***.

Mathematics

Implementation

Maths teaching should be supported by using a ***concrete, pictorial, abstract*** approach.

This allows for ***secure retention*** of key mathematical concepts. ***Manipulative resources*** should be available until a pupil is confident working with abstract concepts. They may be returned to at any time.
Significant numbers of EAL pupils, within the school, mean that these are an important component of maths teaching.

Retrieval practice should be built into teaching practice to ensure that ***knowledge*** taught ***is retained***. This may be seen in ***many different forms***. It is crucial that pupils are able to ***activate prior learning***.

Rapid recall and securing ***retention*** of knowledge is also ***supported*** by ***on-line*** mathematics ***software***.

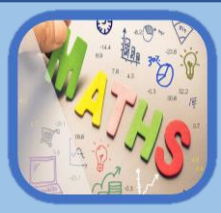
doodlemaths

NUMBOTS

Times Tables Rock Stars

Mathematics

Implementation



As pupils become ***confident*** using mathematic skills, they should be encouraged to ***solve larger problems***, preferably when they will have to ***combine*** the ***skills*** from more than one mathematical concept. This is most prevalent in the final years of schooling.

Keeping up to date:

We aim to keep staff knowledge and subject leadership up to date through:

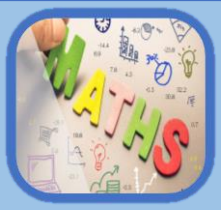
- Ensuring that ***teaching staff*** are ***involved*** in development work
- Sharing practice using ***INSET*** and ***PDM*** time.
- Keeping abreast of ***pertinent mathematical publications*** (in-print and on-line), including ***EEF*** guidance reports.
- Engaging in ***teaching school*** and ***professional community work.***

Progression of skill

Progression of skills documents explain development of mathematics from early years up to end of Key Stage 2 and methods taught. These documents can be found on the school website.

Teaching and Learning

Implementation



Mathematics is taught each day at Portswood Primary School.
This should happen in the morning and pupils should receive at least 5 mathematics lessons per week.

Teaching is whole-class based, supported by appropriate differentiation, for Y1 to Y4.

Due to the differing needs of pupils in Upper Key Stage 2, pupils will be taught in ability groups. Movement between these groups should be fluent.

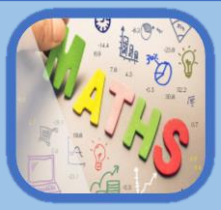
In the Early Years stage, mathematics should be a part of daily learning tasks. This may be through Discovery Time, Star Jobs or as part of outdoor learning.

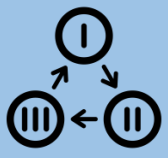
LTP, for maths, is created so that each Programme of Study (POS) component is visited and revisited throughout the course of the academic year. The LTP for each year group covers the POS as set out in the Primary National Curriculum.

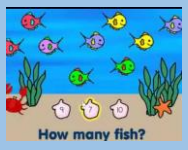
Pupils' progress through the POS follows National Curriculum advice: "The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace.
Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on."

Teaching and Learning

Implementation – Key Milestones

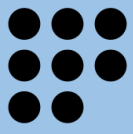






Early Years

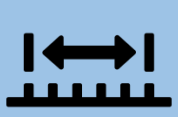
- Assigning one number name to each object that is being counted.
- When counting the numbers must be said in a certain order.
- Linking numerals to their value.
- Being able to count and find a final total
- Developing understanding of counting in a number of different contexts to numbers beyond 10 and then beyond 20.
- Use subitising to recognise quantities without counting.
- Compare quantities in different contexts.
- Recall all number bonds to 5 and some to 10.
- Develop an understanding of number patterns including odd and even and double facts.
- Model and encourage use of mathematical language and asking mathematical questions
- Use number stories, songs and rhymes, pictures and objects to illustrate counting
- Encourage children to use mark-making to support their thinking about numbers and simple problems.
- Demonstrate the language for shape, position and measures
- Encourage children to talk about the shapes they see and use and how they are arranged and used in constructions.



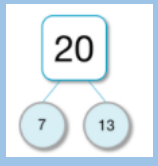
Key Stage 1

- Confidence and mental fluency with whole numbers, counting and place value.

- Recognise, describe, draw, compare and sort different shapes.



- Describe and compare different measures such as length, mass, capacity/volume, time and money.

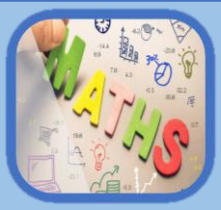


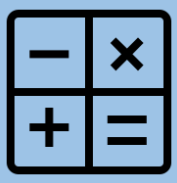
- By the end of year 2, pupils should know the number bonds to 20.

There should be an emphasis on the teaching and modelling of appropriate mathematical vocabulary at all stages of teaching.

Teaching and Learning

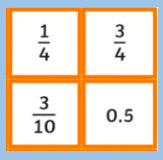
Implementation – Key Milestones

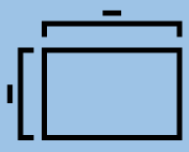


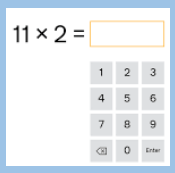


Lower Key Stage 2

- Increasingly fluent with whole numbers and the four operations.
- Develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.
- Solve a range of problems, including with simple fractions and decimal place value.
- Draw with increasing accuracy; Develop mathematical reasoning so they can analyse shapes and their properties
- Can use measuring instruments with accuracy
- By the end of year 4, pupils should know multiplication tables up to and including the 12



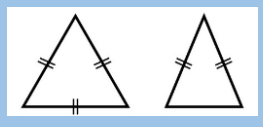




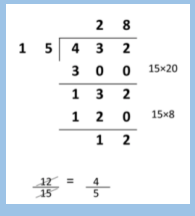
Upper Key Stage 2

- Extend understanding of the number system and place value to include larger integers. Develop connections between multiplication and division with fractions, decimals, percentages and ratio.

- Solve increasingly complex problems, using efficient written and mental methods of calculation.



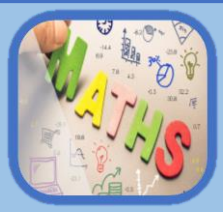
- Classify shapes with increasingly complex geometric properties.



- By the end of year 6, be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

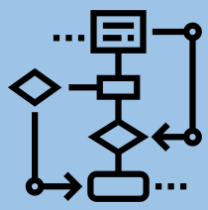
There should be an emphasis on the teaching and modelling of appropriate mathematical vocabulary at all stages of teaching.

Teaching and Learning



Implementation – Teaching expectations

Maths lessons at Portswood Primary School are encouraged to include the following elements:



- Recall and revisiting previous learning (to develop fluency and confidence)
- Delivery of new content
- Shared ownership/modelling/guided group work
- Independent application
- Appropriate differentiation or support
- Challenge and extension tasks

Implementation – How effective is teaching in maths?

To ensure that teaching of mathematics is effective, the school monitors using the following approaches:

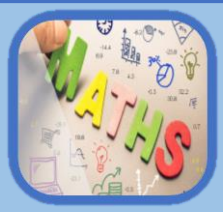
- A maths focus during school teaching and learning reviews. These are completed at whole school and teaching phase level.

- Coaching for teaching and support staff as part of ongoing CPD. This can be provided at planning or delivery stage to ensure all teaching staff receive the appropriate level of support to develop subject knowledge and teaching and learning strategies.

- Yearly moderation activity as part of continuous CPD.

- Termly standardised assessment tasks in Y2-Y6. The outcomes of these assessments tasks form part of the school's pupil progress program. These are used to inform pupil attainment and progress. Additional intervention and curriculum requirements are prioritised as part of this program.

Teaching and Learning



Impact – Quality of teaching

Reviews of Teaching and Learning have made the following observations about mathematics:

Early Years

In the teaching of Maths, in the Early Years, the use of concrete apparatus supported the concept of sharing/dividing. Teachers model and visually demonstrate which aids understanding.

Some pupils are able to explain their thinking and are developing early reasoning skills.

The use of open-ended questions gave some pupils the opportunity to explain their understanding in more depth.

Pupils have a range of different activities and resources to apply their knowledge independently.

Learning skills were explicit and language/rhyme reinforced the concept of sharing.

TAs are used effectively to support groups leading to greater progress.

Teaching and Learning

Impact – Quality of teaching

Key Stage One:

The phase is teaching well considered progression of skills and building deeper pupil understanding.
There is clear progress seen in maths books across the phase.

A range of visual representations are used to support the children's understanding in maths and to challenge their thinking.

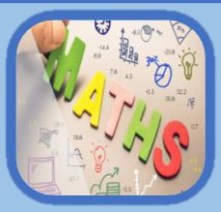
Stem sentences are used in all ability books to support the use of mathematical language. Children are encouraged to solve problems and apply reasoning using concrete, pictorial and visual representations.

Learning builds upon previous learning. Steps in learning are deliberately small to ensure concepts are understood.
The maths activities are presented logically for the pupils which leads to high level of engagement. Pupils routinely engage in the retrieval of prior learning.

Teachers work to develop conservation of number in the minds of pupils so they recognise small amounts quickly and can retain numbers in their head to count on from.

Teaching and Learning

Impact – Quality of teaching



Lower Key Stage Two:

Mathematics is taught well in the phase. Changes over recent years have seen lessons include concrete, pictorial and abstract representation which aids understanding.

Pupils are encouraged to use different methods for calculations.

Pupils are rightly encouraged to explain their methods because this deepens understanding.

Sequences of maths lesson are well planned and build upon the skills and knowledge of previous years.

Retention of multiplication tables are prioritised and outcomes in the Multiplication Tables Check are above national averages.

Tasks are carefully chosen to meet the needs of learners including the most able.

Teachers adapt lessons based upon ongoing formative assessment and provide effective feedback including appropriate written feedback.

Pupils are highly motivated in maths.
Teachers ensure that there are opportunities for retrieval of prior learning.

Teaching and Learning

Impact – Quality of teaching

Upper Key Stage Two:

Pupils attain significantly above the national average.

Teachers use their deep subject knowledge to plan effective learning experiences for pupils. They model and structure learning to help pupils learn very well.

Effective whole class teaching based upon strong subject knowledge contributes to pupils achieving well in maths.

Calculation strategies are taught through clear modelling which pupils are then able to apply independently. Misconceptions are used to 'unpick' learning.

Pupils take responsibility for their learning such as through selecting activities and self-marking.

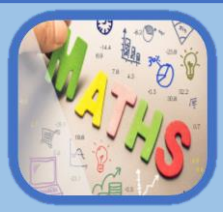
Pupils are keen mathematicians who relish the challenge of solving problems and feel a sense of achievement when they are successful. They are resilient in achieving the success and can do so independently and with others.

Teachers ensure that there are opportunities for retrieval of prior learning and regular independent practice.

Outcomes at the end of Key Stage 2 are significantly above national outcomes.

Teaching and Learning

Impact – Pupil Outcomes



Early Years Foundation Stage:

	Number	Numerical Patterns
National Average 2023	79%	78%
Portswood Primary 2022	87%	87%
Portswood Primary 2023	80%	82%
Portswood Primary 2024	80%	78%

Key Stage One:

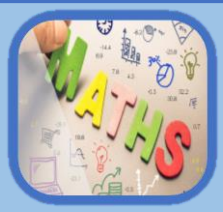
	Maths at the expected standard +	Maths at greater depth of standard
National Average 2023	70%	16%
Portswood Primary 2022	71%	9%
Portswood Primary 2023	78%	20%
Portswood Primary 2024	81%	16%

Year 4 Multiplication Tables Check (scored out of 25):

	Scoring 25	Average Score
National Average 2023	29%	19.6
Portswood Primary 2022	38%	21.6
Portswood Primary 2023	49%	23.0
Portswood Primary 2024	40%	22.5

Teaching and Learning

Impact – Pupil Outcomes



Key Stage Two:

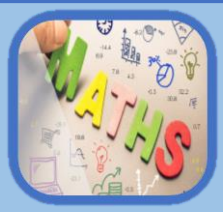
	Maths at the expected standard +	Maths – High score
National Average 2024	73%	24%
Portswood Primary 2022	90%	49%
Portswood Primary 2023	92%	42%
Portswood Primary 2024	92%	50%
NB: Expected standard: A scaled score of 100+ High Score: A scaled score of 110+ Scaled scores range from 80 to 120.		

Key Stage Two – Average Scaled Score:

	Portswood Primary School	National Outcome
2022	109	104
2023	108	104
2024	110	104

Teaching and Learning

Impact – Pupil Outcomes



Progress and attainment at key stages 1 and 2

↑ School difference from national has improved from comparator year
↑ School difference from national has improved slightly from comparator year
– Similar to comparator year or fewer than 11 pupils
↓ School difference from national has weakened slightly from comparator year
↓ School difference from national has weakened from comparator year

	2023 cohort	Performance in 2023	2023 value	2023 nat value	1 year	4 year
Mathematics KS1 expected standard %	60	Not sig different to national and 72nd percentile	78	70	–	–
Multiplication tables check	61	Sig above national and 90th percentile	23	20	–	No data
Mathematics KS2 progress	58	Sig above national and 93rd percentile	3.6	0.0	–	–
Mathematics KS2 expected standard %	59	Sig above national and 91st percentile	92	73	–	–
Mathematics KS2 high standard %	59	Sig above national and 91st percentile	42	24	–	↓
EGPS KS2 expected standard %	59	Sig above national and 83rd percentile	86	72	–	–
EGPS KS2 high standard %	59	Sig above national and 93rd percentile	53	30	–	↓

Source IDSR - 2 May 2024