

Maths Policy

2021



Aim

We aim to provide a stimulating and exciting learning environment that takes account of different learning styles and uses appropriate resources to maximise teaching & learning.

The purpose of mathematics at Skelton Primary is to develop:

- positive attitudes towards the subject and awareness of the relevance of mathematics in the real world
- competence and confidence in using and applying mathematical knowledge, concepts and skills
- an ability to solve problems, to reason, to think logically and to work systematically and accurately
- initiative and motivation to work both independently and in cooperation with others
- confident communication of maths where pupils ask and answer questions, openly share work and learn from mistakes
- an ability to use and apply mathematics across the curriculum and in real life
- an understanding of mathematics through a process of enquiry and investigation

Children should be introduced to the processes of calculation through practical, oral and mental activities. As children begin to understand the underlying ideas, they should be encouraged to develop ways of recording to support their thinking and calculation methods.

Over time children learn how to use models and images, such as empty number lines and arrays to support their mental and informal written methods of calculation. Children will also learn how to use a range of concrete apparatus such as Numicon, Cuisenaire rods, multilink cubes and place value counters to aid their understanding of number and calculation.

As children's mental methods are strengthened and refined, so too are their informal written methods. The aim is that these methods quickly become more efficient and succinct and lead to efficient written methods that can be used more generally.

Planning

Years R-6 use the White Rose Maths Hub schemes of learning to guide and help structure their planning. These schemes provide teachers with exemplification for maths objectives and are broken down into fluency, reasoning and problem solving which are key aims of the National Curriculum. They support a mastery approach to teaching and learning and have number at their heart. They ensure objectives are taught in the correct sequence and support the ideal of depth before breadth. They support pupils working together as a whole group and provide lots of opportunity to build reasoning and problem-solving elements into the curriculum. Due to the impact of Covid, teachers need to ensure that the sequence of planning is adapted for their cohort as gaps from previous years are identified.

Numbers to 10,000

Notes and Guidance

Children use concrete manipulatives and pictorial representations to recap representing numbers up to 10,000

Within this step, children must revise adding and subtracting 10, 100 and 1,000

They discuss what is happening to the place value columns, when carrying out each addition or subtraction.

Mathematical Talk

Can you show me 8,045 (any number) in three different ways?

Which representation is the odd one out? Explain your reasoning.

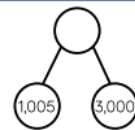
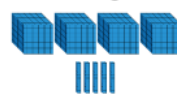
What number could the arrow be pointing to?

Which column(s) change when adding 10, 100, 1,000 to 2,506?

Varied Fluency

R

Match the diagram to the number.

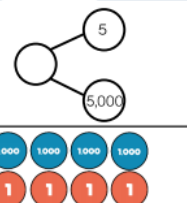
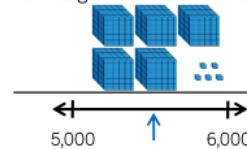


4,005

4,500

4,050

Which diagram is the odd one out?



Complete the table.

	Add 10	Add 100	Add 1,000
2,506			
7,999			
		6,070	

9

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Example WRM Planning

Teaching Sequence

UFOs – Using Four Operations

UFOs are our morning maths activity which are designed to develop pupils' arithmetic skills as well as provide an opportunity for key dialogue around reasoning and justification of their methods.

- Content - Pupils are provided with a list of questions (ranging from 4 to 12 questions depending on the year group). Lower KS1 will focus on the relationship between addition and subtraction represented in different ways. As children move through the year groups they are exposed to all 4 operations in the following format:
 - 4 fluency - 4 varied fluency - 4 reasoning/recap
- Recording – In lower KS1, pupils will record their answers on worksheets provided by teachers. As pupils move through school, scaffolding is gradually reduced to suit the needs of the pupils until calculations can be recorded independently. (See below) In key stage 2, pupils divide their page in half and record in columns. Work is neatly spaced and children rule off after each question.
- Marking – Answers should be provided for the children, providing an opportunity for key dialogue exploring the possible methods used and developing awareness of mental strategies. Active marking is encouraged to address misconceptions immediately.

1. $\begin{array}{c} 17 \\ \swarrow \searrow \\ 7 \quad 10 \end{array}$ ✓ ✓

2. $\begin{array}{|c|c|c|} \hline 10 & 9 & 15 \\ \hline \end{array}$
 $\begin{array}{|c|c|c|} \hline 9 & 10 & 15 \\ \hline \end{array}$ ✓
 smallest greatest

4. $17 = 7 + \boxed{10}$ ✓

5. $17 - 10 = \boxed{7}$ ✓

one less one more
 $\begin{array}{|c|c|} \hline 12 & 13 \\ \hline \end{array}$ $\begin{array}{|c|c|} \hline 14 & 15 \\ \hline \end{array}$

$15 - 4 = \boxed{11}$ ✓

I am greater than 12 but less than 17

15
18
✓
14
16

3 3 3 3 3 3 3

$5 + 11 + 14 = 10$

19.04.21 UFO

1. $\begin{array}{|c|c|c|} \hline 5 & 3 & \\ \hline \end{array}$
 $\begin{array}{|c|c|c|} \hline 6 & + & \\ \hline \end{array}$

2. $\begin{array}{|c|c|c|} \hline 4 & 9 & \\ \hline \end{array}$
 $\begin{array}{|c|c|c|} \hline 5 & - & \\ \hline \end{array}$

3. $\begin{array}{|c|c|c|} \hline 5 & 6 & \\ \hline \end{array}$
 $\begin{array}{|c|c|c|} \hline 2 & 3 & + \\ \hline \end{array}$

4. $\begin{array}{|c|c|c|} \hline 4 & 5 & \\ \hline \end{array}$
 $\begin{array}{|c|c|c|} \hline 6 & - & \\ \hline \end{array}$

5. $\begin{array}{|c|c|c|} \hline 8 & \times & \\ \hline \end{array}$ $\begin{array}{|c|c|c|} \hline & \times & \\ \hline \end{array}$

6. $6 + 5 = 12$ $\begin{array}{|c|c|c|} \hline & + & \\ \hline \end{array}$

1. $\begin{array}{r} 53 \\ 6+ \\ \hline 59 \end{array}$ ✓

2. $\begin{array}{r} 49 \\ 5 \times \\ \hline 44 \end{array}$ ✓

3. $\begin{array}{r} 56 \\ 23+ \\ \hline 79 \end{array}$ ✓

4. $\begin{array}{r} 45 \\ 6- \\ \hline 41 \end{array}$ $\begin{array}{r} 6 \\ 42 \\ \hline \end{array}$

5. $8 \times 10 = 80$ ✓

6. $6 + 5 = 12 - 1$ ✓

new page each day

Fold page

Ruled line after each questions—leave one line

SPACE
one clear space after question number

QUESTION NUMBERS
aligned
in one box even if more than one digit

Decimal point to have its own box.

Ruler skills are reinforced continually as ruler is on the page and accessible as a number line at all times.

1. $\begin{array}{r} 1234 \\ + 152 \\ \hline 620 \end{array}$

2. $\begin{array}{r} 1212074 \\ - 12434 \\ \hline \end{array}$

3. $\begin{array}{r} 1052 \\ \times 6 \\ \hline \end{array}$

4. $9 \overline{) 6273}$

5. $\begin{array}{r} 34 \\ \times 28 \\ \hline \end{array}$

6. No because ...

7. $\begin{array}{r} 650535 \\ 650537 \\ 651563 \\ 653572 \end{array}$

8. 9,37,92,127,348

Factual Fluency

Pupils take part in a daily activity to develop their mental maths skills. This generally occurs at the start of the lesson and is a basis for the skills required in the main teaching. This may include -

- Counting activities
- Teaching of mental strategies e.g. bridging, compensation for 9 etc.
- Teaching of times tables

The teaching of times tables facts should be planned as a series of activities and consolidation should be part of both the daily Maths lesson thereafter across all areas of Maths as well as the use of Times Table Rockstars. Children should understand the times tables facts and related division facts. They should be able to explain methods used and patterns identified, using mathematical language.

Mental strategies introduced in each year group are set out in [Calculation Policy](#).

Times Table Rockstars

Times Table Rockstars is an app that is used to improve recall accuracy, provide consolidation and above all promote pupils' engagement in times tables. Pupils are introduced to the app in year 2 and once they get to KS2, it is recommended they spend 5 minutes daily on the app practicing their recall of times tables. Teachers can divide pupils into ability groups on the app and set weekly tables for each group to practice based on the data provided or they can use automatic training mode which uses the pupils data to set the focus table automatically. Pupils work towards earning coins to customise their avatar as well as improving their rock speed. Weekly leaderboards are displayed in school and awards provided for the highest earners/most improved.

Features of maths in Key Stage One and Two:

Where appropriate, teachers follow the **Concrete Pictorial Abstract (CPA) approach** to the teaching of maths. The CPA approach builds on children's existing knowledge by introducing abstract concepts in a concrete and tangible way. It involves moving from concrete materials, to pictorial representations, to abstract symbols and problems. Concrete apparatus is used throughout school to support in the CPA approach to maths.

Concrete representation - The children are first introduced to an idea or a skill by acting it out with real objects. This is a 'hands on' approach using real objects and it is the basis for conceptual understanding.

Pictorial representation - This is used when a child has sufficiently understood the hands-on experiences performed and can now relate them to representations, such as a diagram or picture of the problem.

Abstract representation - The symbolic stage – a pupil is now capable of representing problems by using mathematical notation. The abstract stage involves the teacher

introducing abstract concepts (for example, mathematical symbols). Children are introduced to the concept at a symbolic level, using only numbers, notation, and mathematical symbols (for example, +, −, ×, ÷) to indicate addition, subtraction, multiplication or division.

Differentiation

Throughout school, children are taught in maths classes which are grouped on ability. Teachers ensure tasks are differentiated and challenge is provided. A good example of this is using the model of Tricky, Trickier and Trickiest tasks to allow work to be quickly adapted within the lesson based on the pupils' needs.

Recording

Maths tasks are recorded a minimum of three times a week within maths books. All work is recorded in columns with the date and title underlined with a ruler. Depending on task/ability, pupils may record on worksheets which are presented in columns. All maths work is completed in pencil throughout school. The presentation of one number per square is followed with squares becoming increasingly smaller as pupils move up through school. Decimal points should be recorded in their own square to ensure presentation accuracy.

Features of maths in the Foundation Stage:

Mathematics within the EYFS is developed through purposeful, play based experiences and will be represented throughout the indoor and outdoor provision. The learning will be based on pupils' interests or current themes and will focus on the expectations from Early Years Foundation Stage Framework. As the pupils progress, more focus is placed on representing their mathematical knowledge through more formal experiences. Pupils will be encouraged to record their mathematical thinking when ready and this will increase throughout the year.

The EYFS Framework in relation to mathematics aims for our pupils to:

- develop and improve their skills in counting
- understand and use numbers
- calculate simple addition and subtraction problems
- describe shapes, spaces, and measures

Assessment

Maths is assessed in line with whole school policy using

1. Diagnostic
2. Formative
3. Summative

Assessments to inform misconceptions, support, planning and teaching.

For more detailed information, please refer to the 'Feedback and Assessment Policy'.

Moderation takes place within teams, cross phase or cross school on a half termly basis.

[Basic Skills Checklist](#)

As part of the calculation policy, each year group is provided with a Basic Skills Checklist. This allows teachers to promote a zero tolerance approach to basic skills for expected children. These are the key objectives that need to be secure in order for a child to be at the expected standard. Checklists are displayed on maths board and should be used interactively when appropriate.

See [Calculation Policy](#) for checklists for each year group.

[Display](#)

Maths displays are consistent throughout school. They need to be purposeful and link to the current learning in the classroom. Displays should be designed using the environment checklist below.

Maths (Black background with squared paper shire sealed)
<ul style="list-style-type: none">• Working all to include live maths—working vocabulary, modelled methods,• Resource areas—concrete apparatus• Maths mats readily available• Calculations policy• Washing line with prior learning

[Feedback](#)

Children's work is marked and feedback given according to our school's agreed marking policy.

[Resources](#)

All maths resources are stored on our shared area under

>Staff Shared Documents >Curriculum >Maths > Resources

These include White Rose Maths planning, an overview of mental maths strategies for each year group and resources to support the CPA approach.