St Joseph’s Catholic Primary School, Worcester

**‘Following Jesus in all we do’**



**Mathematics Curriculum Policy**

Maths Co-ordinator

Miss Lauren Malpass

St Joseph’s Catholic Primary School,

Chedworth Drive

Worcester

WR4 9PG

Telephone: 01905 452772

Email: office@st-josephs-pri.worcs.sch.uk

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# Why teach Mathematics?

# Mathematics equips pupils with a uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem-solving skills and the ability to think in abstract ways. “Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history’s most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.”

# (National Curriculum Orders 2014)

# Teaching for Mastery

# Since mastery is what we want pupils to acquire (or go on acquiring), rather than teachers to exhibit, we use the phrase ‘teaching for mastery’ to describe the range of elements of classroom practice and school organisation that combine to give pupils the best chances of mastering mathematics. Mastering maths means acquiring a deep, long-term, secure and adaptable understanding of the subject. At any one point in a pupil’s journey through school, achieving mastery is taken to mean acquiring a solid enough understanding of the maths that’s been taught to enable him/her move on to more advanced material.

# How we strive for mastery in our school

At St Joseph’s it is our aim in the teaching and learning of mathematics to ensure:

* A positive attitude towards mathematics for both children and those who are engaged in the teaching of mathematics.
* An awareness of the fascination of mathematics.
* Competence and confidence in mathematical knowledge, skills and concepts.
* An understanding of mathematics through a process of enquiry and experiment.
* An ability to solve problems, to reason, to think logically and to work systematically and accurately.
* An ability to work both independently and in co-operation with others.
* An ability to communicate mathematics.
* An ability to use and apply mathematics across the curriculum and in real life situations.

***The above, therefore forms the basis of our intent, implementation and impact of our mathematics curriculum.***

**Intent:**

Maths is a journey and long-term goal, achieved through exploration, clarification, practice and application over time. At each stage of learning, children should be able to demonstrate a deep, conceptual understanding of the topic and be able to build on this over time. The deep and deepest levels are what we are aiming for by teaching maths using the Mastery approach. We intend to do this by:

• Ensuring our children have access to a high quality maths curriculum that is both challenging and enjoyable, and builds upon previous learning.

• Providing our children with a variety of mathematical opportunities, which will enable them to make the connections.

• Showing the children that maths underpins much of our daily lives

• Ensuring children are confident mathematicians who are not afraid to take risks.

• Fully develop independent learners with inquisitive minds who have secure mathematical foundations and an interest in self-improvement

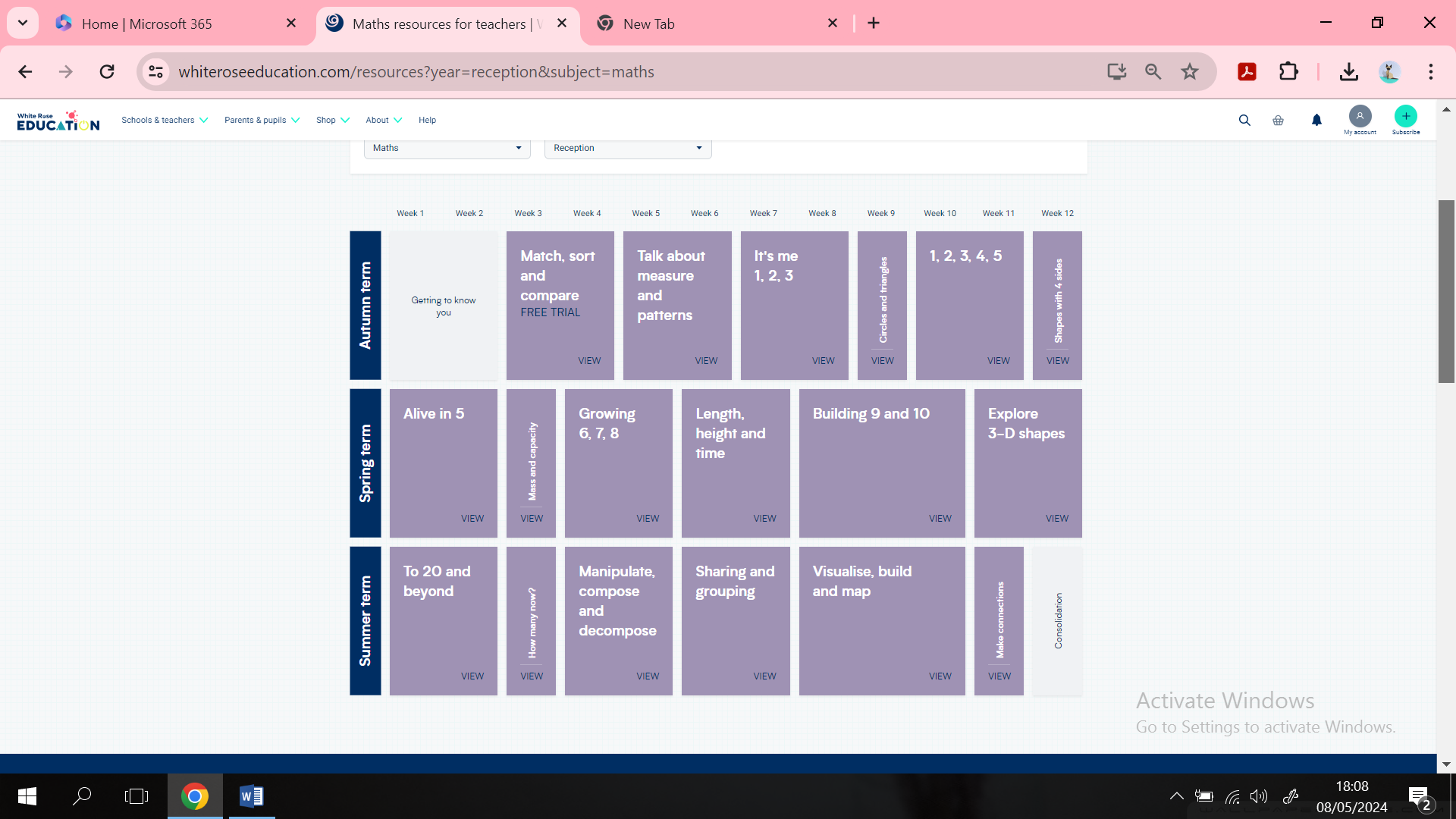
• Providing children with the opportunity to apply their mathematical knowledge across other curriculum areas.

**Implementation:**

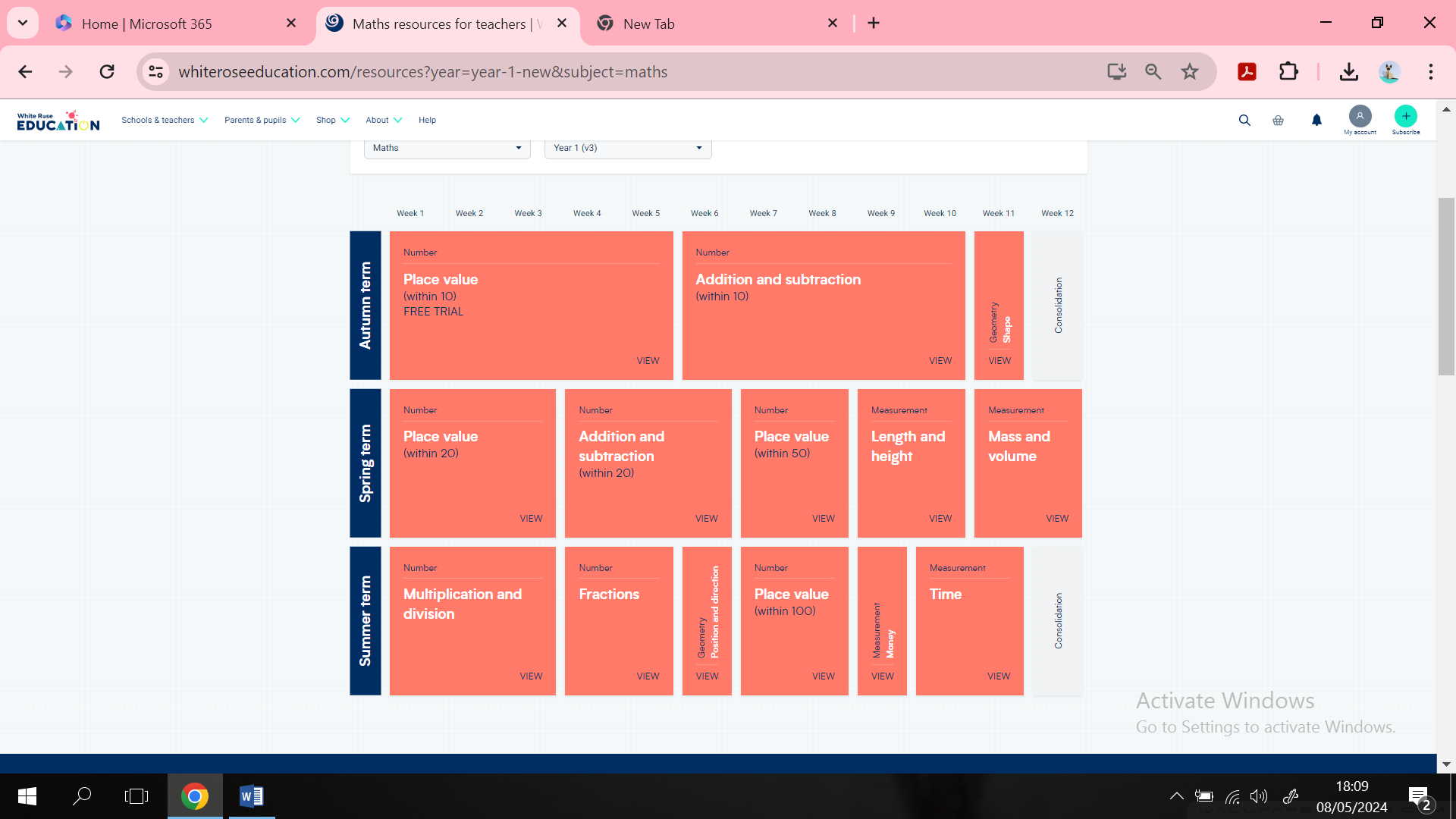
Our implementation is developed through secure understanding of the curriculum. St. Joseph’s Catholic Primary School follows the White Rose Hub scheme as the basis for implementing the statutory requirements of the programme of study for mathematics.

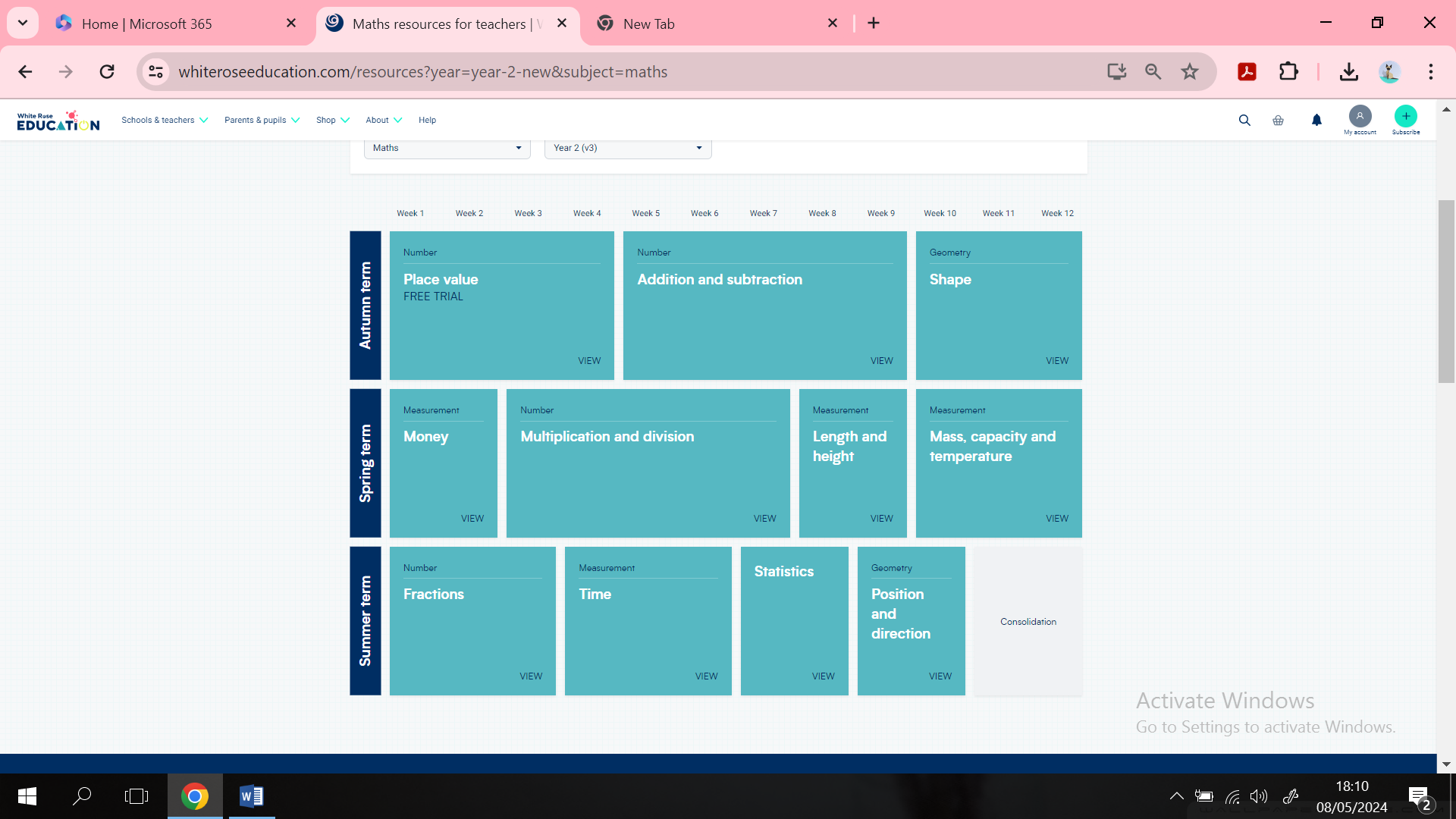
White Rose gives teachers the main teaching objectives (small steps) for each term and ensures an appropriate balance and distribution of work across each term. This planning gives ideas for mathematic talk, fluency, problem solving and reasoning. However, teachers are encouraged to supplement White Rose with other resources such as ‘Classroom Secrets’. As well as using ‘Times Tables Rockstars’ to improve children’s fluency and recall of the times tables.

**The White Rose Programmes of Study:**

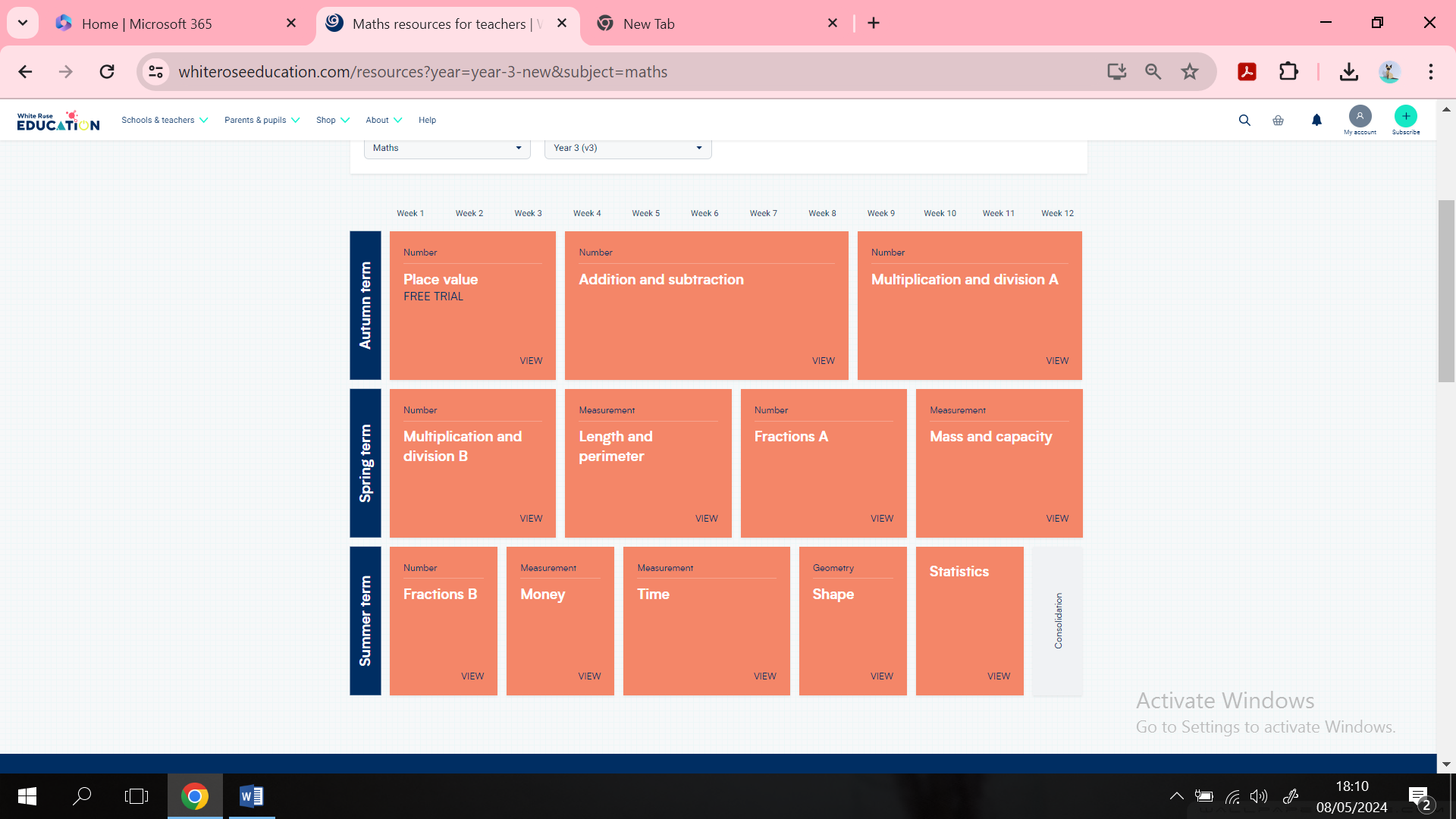
**Reception**

**Year 1**

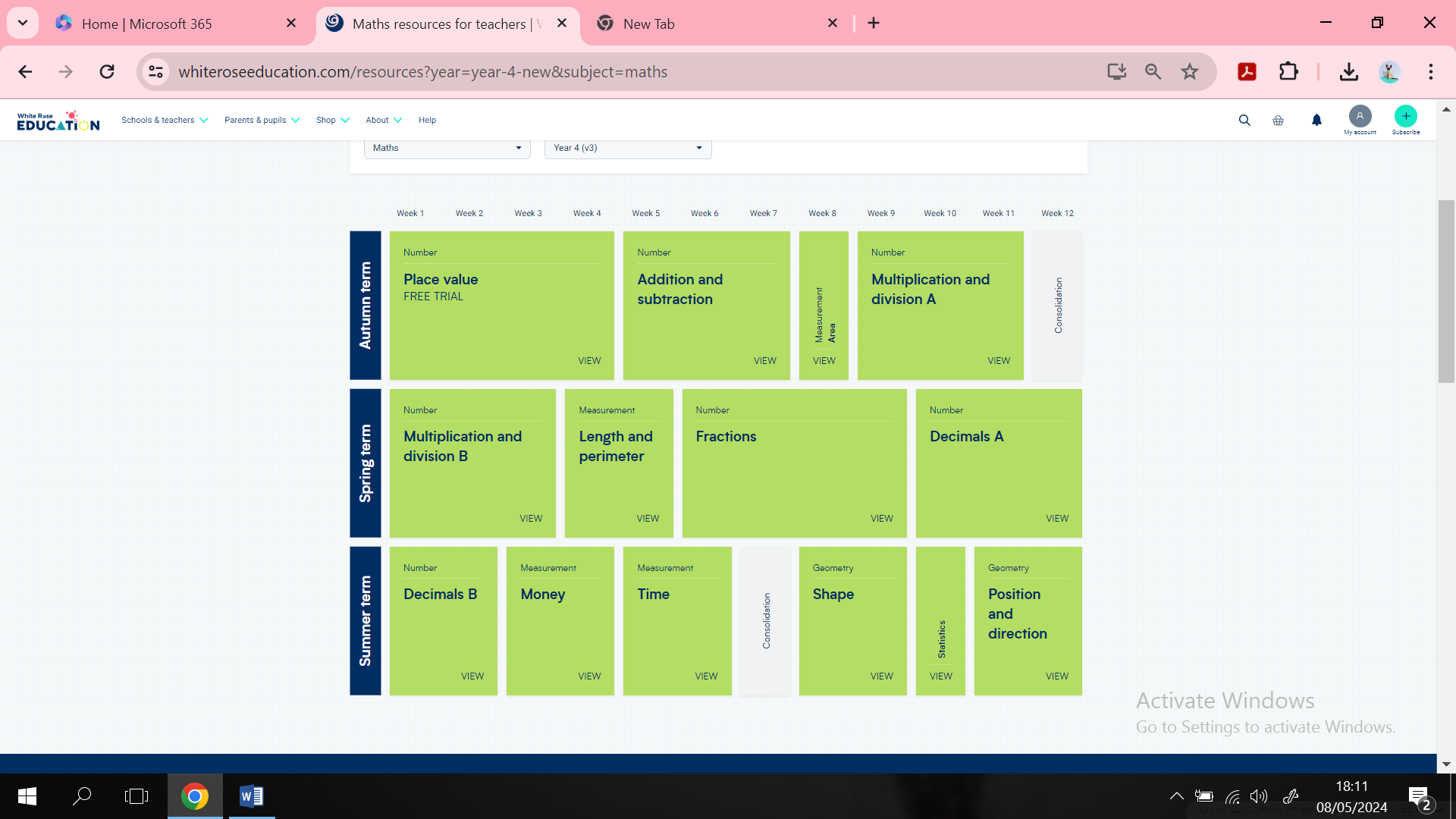


**Year 2**

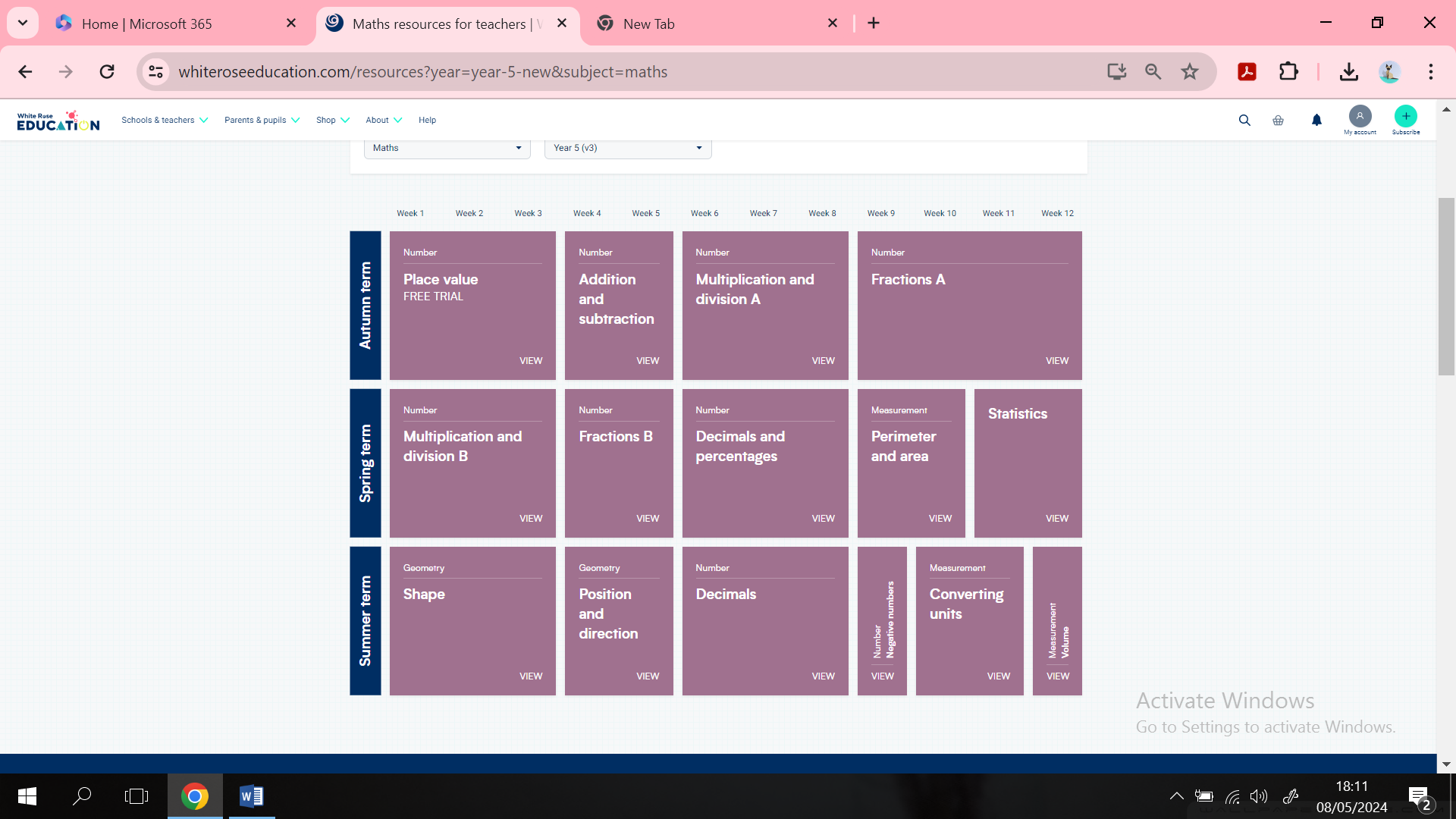
**Year 3**

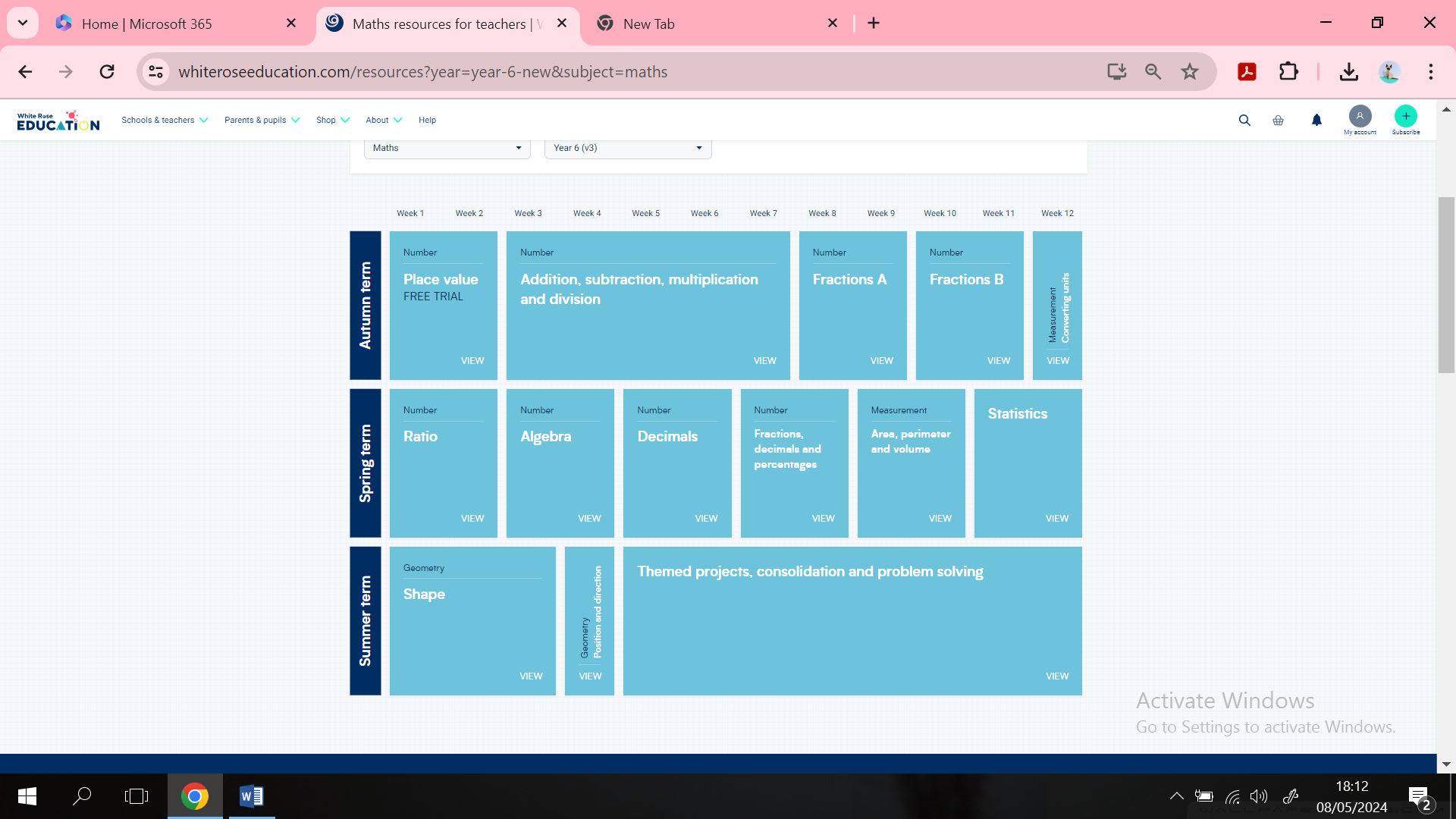


**Year 4**



**Year 5**



**Year 6**

**Concrete, pictorial, abstract**

Objects, pictures, words, numbers and symbols are everywhere. The mastery approach incorporates all of these to help children explore and demonstrate mathematical ideas, enrich their learning experience and deepen understanding. Together, these elements help cement knowledge so pupils truly understand what they’ve learnt. All pupils, when introduced to a key new concept, should have the opportunity to build competency in this topic by taking this approach. Pupils are encouraged to physically represent mathematical concepts. Objects and pictures are used to demonstrate and visualise abstract ideas, alongside numbers and symbols.

**Concrete**: Children have the opportunity to use concrete objects and manipulatives to help them understand and explain what they are doing.

**Pictorial** – children then build on this concrete approach by using pictorial representations, which can then be used to reason and solve problems.

**Abstract** – With the foundations firmly laid, children can move to an abstract approach using numbers, symbols and key concepts with confidence.

**Teaching**

All children are entitled to ‘Quality first teaching’ linked to the teaching standards. All teachers:

1. ‘Know where their children are’ through the use of assessment, prior learning, assessment, maths talk

2. ‘Understand where their children need to be’ through a secure understanding of year group expectations and/or pre key stage expectations and ongoing, formative assessment

3. ‘Know how they are going to get them there’ through the use of a range of strategies to promote independence, mastery and high expectations of ALL.

4.Effectively deploy adults, specifically during introductions, plenaries & catch-up sessions

5. Plan for progression during and between lessons.

**Impact:**

Pupils will leave our primary school prepared for the next stage in their lives with:

• Quick recall of facts and procedures

• The flexibility and fluidity to move between different contexts and representations of mathematics

• The ability to recognise relationships and make connections in mathematics

• Confidence and belief that they can achieve

• The knowledge that maths underpins most of our daily lives

• Skills and concepts that have been mastered.

A mathematical concept or skill has been mastered when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations and this is the goal for our children. These will be assessed through: assessment, tracking, pupil progress meetings, performance management, moderation and standardisation.

**Teaching Methods and Approaches**

Teachers decide upon the most appropriate way to teach lessons according to the individual needs of their class. However, teachers have been given the following guidance to follow when planning maths lessons. All maths lessons must include; a skills focused learning objective, fluency starter and problem/reasoning questions, an introduction linked to the lesson, independent or group activities (adapted where necessary to suit the individual needs of each pupil) and key questions used as assessment opportunities and resources. Please see our calculations policy for the progression and guidance in mental and written strategies for calculations.

The teaching of mathematics provides opportunities for whole class teaching, group work, paired work and individual work. Pupils engage in:

• The development of mental strategies

• Written methods

• Practical work

• Investigative work

• Problem-solving

• Mathematical discussion

• Consolidation of basic skills, routines and operations

**Children in the Foundation Stage**

Mathematics is taught in Pre-school and Reception under practice guidance, supported by the White Rose materials, for the Early Years Foundation Stage Curriculum – number, shape, space and measure.

The children are given rich opportunities to develop their understanding of: number, calculating, measurement, pattern and shape and space through structured and child-initiated play-based activities both indoors and out. This enables the children to enjoy, explore, learn, practise and talk about their developing understanding of mathematics.

**Cross-Curricular Links**

Mathematical concepts are taught mainly discretely but the using and applying of mathematics should be linked to all subject areas, where appropriate. We try to identify the mathematical possibilities across the curriculum at the planning stage. We also draw children’s attention to the links between mathematics and other curricular work. We want children to understand that mathematics is not an isolated subject.

* Literacy - Maths lessons actively promote the skills of reading, writing, speaking and listening. For example, in maths lessons, where appropriate, children are expected to read and interpret problems in order to identify the mathematics involved and they explain and present their work to others. Children can also enjoy stories and rhyme that rely on counting and sequencing.
* Computing – ICT enhances the teaching of maths significantly. Teachers can use software to present information visually, dynamically and interactively. Children use ICT to explore mathematical concepts and present their work, for example tables and graphs. ICT also enables teachers to evidence practical sessions through photographs and videos.
* Science - Children are given opportunities to measure length, weight, capacity, time and force in Science and Technology. Tables, graphs and charts are used to display data for pupils to interpret and are used for pupils to present their results from investigations.
* Art and Design Technology - Children are encouraged to consider the properties of shape and geometric patterns in technology and art. Opportunities are planned for children to measure materials in design technology and draw to scale plans.
* History and Geography - Children are able to collect and present data, including timelines and maps in History and Geography lessons.
* Physical Education Opportunities are planned for children to consider position and direction, including compass directions, angles and clockwise/anti-clockwise directions

**Assessment**

Assessment is regarded as an integral part of teaching and learning and is a continuous process. Assessment should be constantly used to inform planning. It is the responsibility of the class teacher to assess all pupils in their class. In our school we are continually assessing the progress our pupils are making. We see assessment as an integral part of the teaching process and we endeavour to make our assessment purposeful, allowing us to match the correct level of work to the needs of the pupils, thus benefiting the pupils and ensuring progress.

Assessment is carried out on three levels:

* Short-term assessments are an informal part of every lesson and are closely matched to the teaching objectives. Children are given feedback through marking and discussion.
* Overall judgements about children’s progress and attainment are made by the class teacher at least once a term. The class teacher is responsible for putting intervention/support in place for any children who have not made expected progress.
* Teachers are aware of the progress requirements for each child. The co-ordinator and Senior Management Team will review the progress and hold pupil progress meetings in the light of the results.

**Resources**

Resources for the delivery of the mathematics curriculum are mainly stored in classrooms with a small central store for larger items such as measuring scales. St Joseph’s uses a variety of materials to facilitate the teaching of mathematics but recognises the need for the teaching of mathematics to be ‘scheme assisted not scheme driven’. Materials are constantly updated, as new and relevant items become available.

**The role of parents and carers:**

At St Joseph’s Catholic Primary School we encourage parents to be actively involved by:

• Holding parent evenings twice yearly to discuss the progress of their child.

• Circulating information via Parent Mail and Seesaw

• Celebrating children’s successes with weekly awards.

• Holding workshops for parents

• Inviting parents into school to be involved with their child’s learning.

**Monitoring and Review**

The monitoring of the standard of the children’s work and the quality of teaching in Maths is the responsibility of the Subject Leader reporting back to the Senior Leadership Team. The Subject Leader will carry this out in a variety of ways:

* Lesson observations
* Monitoring books.
* Conducting interviews with children about their work.
* Observing and supporting colleagues within the teaching of Maths.
* Ensuring continuity and progression from year group to year group
* Providing all members of staff with guidelines and a scheme of work to show how aims are to be achieved and how the variety of all aspects of mathematics is to be taught
* Advising on in-service training to staff where appropriate. This will be in line with the needs identified in the School Development Plan and within the confines of the school budget mathematics throughout the school
* Assisting with requisition and maintenance of resources required for the teaching of mathematics. Again, this will be within the confines of the school budget

**Review and Adoption**

This policy will be reviewed annually by the subject co-ordinator and agreed by governors.