

Scheme of Learning: Year 7 Summer Term

Topic Sequence: Reasoning with numbers

13	14	15
Developing number sense	Sets and probability	Prime numbers and proof

Topic Overview:

Students will review and extend their mental strategies with a focus on using a known fact to find other facts. Strategies for simplifying complex calculations will also be explored. The skills gained in working with number facts will be extended to known algebraic facts

Learning Sequence:

Mental addition and subtraction This step is for students to understand properties of addition and subtraction, and how these can be used to simplify mental strategies in calculations. The explicit use of the vocabulary commutative and associative is important in ensuring that students approach calculations appropriately and with flexibility.

Mental multiplication and division Teacher modeling of different strategies to simplify calculations, using concrete and pictorial representations alongside the abstract will help the students to develop a flexible approach to problem solving as well as giving them the confidence to choose an appropriate strategy. Partitioning of numbers and using factors to simplify calculations including spotting multiples such as 5 and 10 are important skills to develop.

Mental strategies for decimals In this step students will recognise that previous strategies used to calculate with integers can be extended to decimals. Students should have a sound grasp of place value so that they can use the language of thousandths, hundredths and tenths confidently

Mental strategies for fractions This step ensures that students understand the role of the denominator as a divisor in finding a fraction of a quantity. Students will understand the idea of sharing a whole to find the value of each equal part and then multiplying to find the required fraction. They will use concrete and pictorial representations alongside jottings or mental calculations to support understanding.

Use factors to simplify calculations This step students will develop flexibility in representing numbers using their factors and will be able to choose the most efficient representation in terms of allowing a calculation to be simplified. In particular looking for combinations of 25 and 2, 125 and 8 etc.

Estimation Students will be challenged to find the most appropriate estimate in different contexts, it is not always suitable to round to 1sf. Students will consider whether their rounding will lead to overestimates or underestimates. Rounding to one significant figure will be revised including working with numbers less than one

Number facts to derive other facts Students need a firm understanding of the structure of the operation (eg addition) in order to manipulate this to find other facts. All students will be involved in discussion about their approaches and will share ideas.

Algebraic facts to derive other facts Students will demonstrate the difference between an equations and an expression by being able to identify equivalent facts. This step also allows manipulation of number facts to be extended to rearranging equations without the need of a formal introduction to this

Choosing the best strategy In this step the choice of method and strategy will be the key focus rather than the final answer. Students will become able to quickly identify whether an efficient mental method should be used or whether a formal written method is more appropriate. They will also know when to use their calculator and to interpret the calculator display in the units referred to in the problem (eg money)

Sequence of Learning:		Topic Resources:	
1	Know and use mental addition and subtraction strategies for integers	Knowledge Maps:	Factors, Multiples, Primes Algebraic manipulation Fractions
2	Know and use mental multiplication and division strategies for integers		
3	Know and use mental arithmetic strategies for decimals	Assessment:	
4	Know and use mental arithmetic strategies for fractions	Knowledge:	End of Topic test
5	Use factors to simplify calculations	Application of Knowledge:	Termly mixed topic assessment
6	Use estimation as a method for checking mental calculations	Supportive Reading:	
7	Use known number facts to derive other facts	Any supported reading listed here	Sparx Maths www.sparxmaths.co.uk
8	Use known algebraic facts to derive other facts		Corbett Maths : www.corbettmaths.com
9	Know when to use a mental strategy, formal written method or a calculator		AQA Revision Guide