Additive Reasoning 6.2	Length of unit: **3 weeks**	Week beg:	Year: **6**	Teacher:

Success criteria

Pupils can solve addition and subtraction problems in different contexts, appropriately choosing and using operations, number facts, understanding of place value and mental and written methods. They can explain their decision making and justify their solutions and level of accuracy.

Prior Learning:

Check that children can already

- solve problems involving number up to three decimal places
- add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- add and subtract numbers mentally with increasingly large numbers
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation including scaling
- solve comparison, sum and difference problems using information presented in a line graph
- complete, read and interpret information in tables, including timetables
- recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]
- add and subtract fractions with the same denominator and denominators that are multiples of the same number
- measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres

Resources

Maths vocabulary book

Using and Applying in every maths lesson

Assessment through guided maths

Think Maths!

Pitch and Expectations Y6 and Y7

Mind the Gap (L3 to L4)

Overcoming Barriers to Learning – L3 to 4 and L4 to 5 (available online)

Securing Level 4 and Securing Level 5 documents

Errors and Misconceptions in Maths at KS2

Guidance

Pupils explore the order of operations using brackets; for example, 2 + 1 × 3 = 5 and (2 + 1) × 3 = 9.

Pupils should be introduced to the use of symbols and letters to represent variables and unknowns in mathematical situations that they already understand, such as:

missing numbers, lengths, coordinates and angles

equivalent expressions (for example, a + b = b + a)

number puzzles (for example, what two numbers can add up to).

Using the number line, pupils use, add and subtract positive and negative integers for measures such as temperature.

Learning objectives

Pupils should be taught to:

Number and place value

- use negative numbers in context, and calculate intervals across zero

Addition, subtraction, multiplication and division

- perform mental calculations, including with mixed operations and large numbers
- use their knowledge of the order of operations to carry out calculations involving the four operations
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- solve problems involving addition, subtraction
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Fractions (including decimals and percentages)

- solve problems which require answers to be rounded to specified degrees of accuracy

Algebra

- use simple formulae
- generate and describe linear number sequences
- express missing number problems algebraically
- find pairs of numbers that satisfy an equation with two unknowns
- enumerate possibilities of combinations of two variables

Measurement

- solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate
- use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places

Statistics

- interpret and construct pie charts and line graphs and use these to solve problems.

Pupil outcomes:

I can explain how a line graph I have drawn shows changes in temperature in the school greenhouse over a 24 hour period. I can find two points on the graph which show a change in temperature of 7.5° and I can calculate the time period over which the change took place, justifying my level of accuracy.

I can explain and represent different ways of solving 3.456 litres + 729ml and 8.315 litres – 990ml and give reasons for which would be the most efficient. I can suggest contexts where these calculations might be necessary. I can explain and represent how I know how to calculate an increase in temperature of 5° from different starting numbers that I am using from a table of data, such as -7° and -2°.