

## End of Year 4 – Multiplicative thinking

- Students are able to use their knowledge of multiplication facts to solve problems involving multiplication and division e.g.  $23 \times 6$  can be solved mentally in a variety of ways including:

- $(20 \times 6) + (3 \times 6)$
- $(10 \times 6) + (10 \times 6) + (3 \times 6)$

Before resorting to using the vertical multiplication algorithm. Conversely this applies to division problems.

- Students are able to work flexibly and efficiently with larger whole numbers, decimals, common fractions, ratio and percent.
- Effectively communicate their thinking about multiplication in words, diagrams and written algorithms.
- To complete multiplication questions students think of numbers in 'groups' and skip count to find answers e.g. 4 groups of 3... 3,6,9,12 rather than adding the numbers to each other (additive thinking).

### ***What does it look like in classrooms?***

- Thinking of, representing and working with multiplication problems in an 'array format' i.e.  $6 \times 4$  is 6 rows of 4.
- Students are encouraged to see a multiplication problem not as a count of the groups but instead the number of groups e.g. not  $1 \times 4$ ,  $2 \times 4$  but as 4 ones, 4 twos etc.
- Encouraging students to mentally solve multiplication problems by breaking a problem into its composite parts and using their knowledge of factors and multiples to answer it e.g.  $14 \times 8$  becomes  $(10 \times 8) + (4 \times 8) = 80 + 32 = 132$ .
- Devising mental strategies for tables facts to ten until they are committed to memory. This means they think of Ones facts as the same as the number, Two facts are doubles, Three facts are double and one more group, Four facts are double double, Five and Ten facts are related to each other, Eight facts are double double double, and then the remaining facts can be linked to their existing knowledge e.g. Nine facts are Ten facts minus one group.