

# MULTIPLICATION STRATEGIES

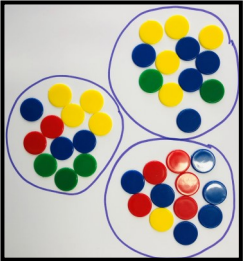
To demonstrate a depth of understanding of multiplication children should be able to progress through and confidently use a variety of strategies to solve problems and show working, and not be over reliant on one.

Literacy, Numeracy, Health & Wellbeing

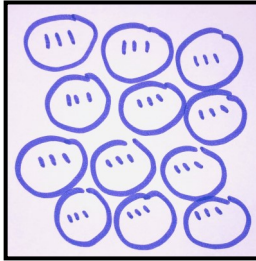
## 1. Groups Of

Use real items (sweets, counters, toys) and drawings as representations.

3 groups of 12



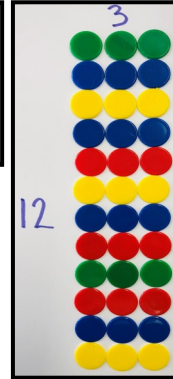
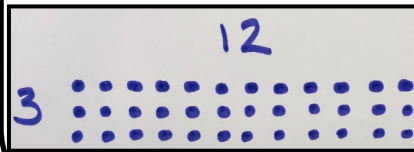
12 groups of 3



## 2. Arrays

Arrays are groups arranged in rows and columns in the shape of a rectangle. Always row x column.

3 groups of 12 or  $3 \times 12$



12 groups of 3 or  $12 \times 3$

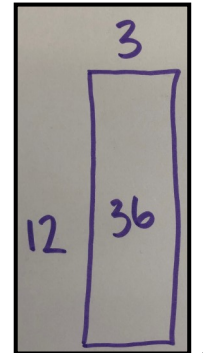
## 3. Area Model

Breadth (row from array) and length (column from array) multiply to find the area of the rectangle

$3 \times 12$

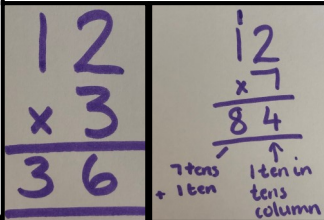


$12 \times 3$



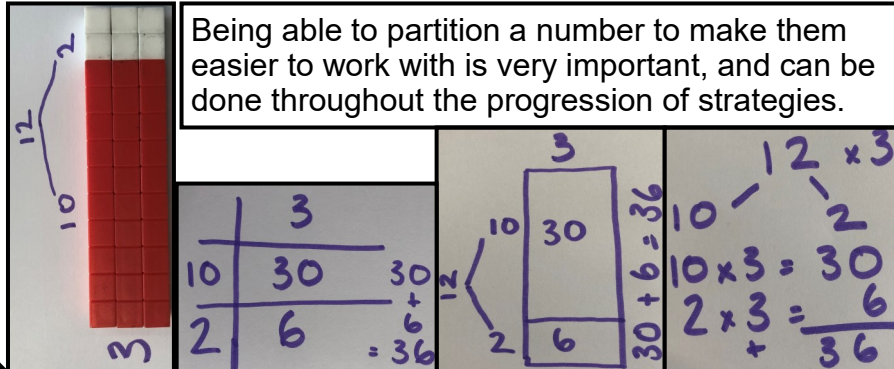
## 6. Formal Written

A true understanding of multiplication is demonstrated by confidently using a wide range of strategies. The formal written sum should only be used when confidence in the use of others has been achieved.



## 5. Partition

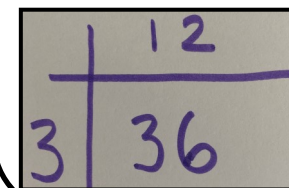
Being able to partition a number to make them easier to work with is very important, and can be done throughout the progression of strategies.



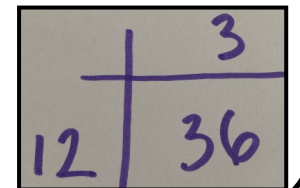
## 4. Grid

A progression from the Area model, and an informal way of writing or recording multiplication if a picture isn't needed.

$3 \times 12$

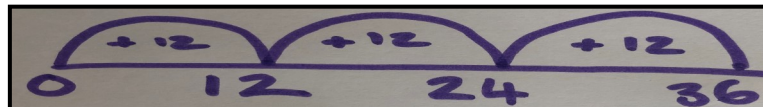


$12 \times 3$



## Skip Counting / Repeated Addition

Count or add in jumps of multiple. Can be done orally or written.



## Times Tables

A good indicator for how well a child remembers multiplication facts, but not always how well they know how to multiply. Ask how they know the answer.

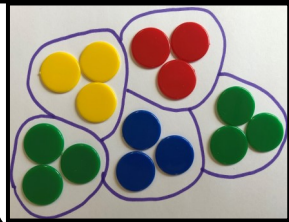
# DIVISION STRATEGIES

To demonstrate a depth of understanding of division children should be able to progress through and confidently use a variety of strategies to solve problems and show working, and not be over reliant on one.

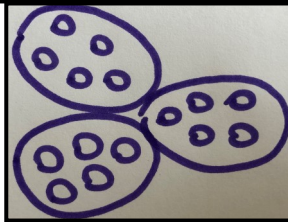
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## 1. Grouping

Use real items (sweets, counters, toys) and drawings as representations. Children should know the difference between **groups** and **groups of**.



15 into 5 groups

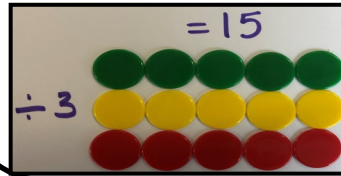


15 into groups of 5

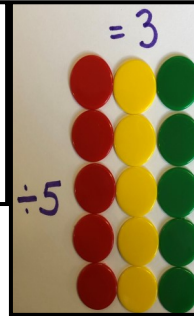
## 2. Arrays

Arrays are groups arranged in rows and columns in the shape of a rectangle or square. Row = dividing by  
Column = Answer

15 into 3 rows  $15 \div 3 = ?$



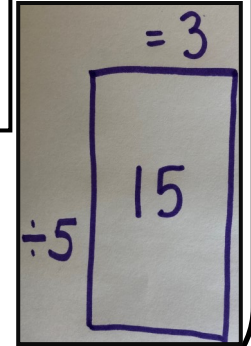
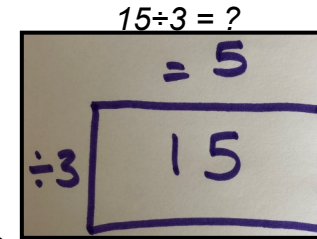
15 into rows of 3  
 $15 \div ? = 3$



## 3. Area Model

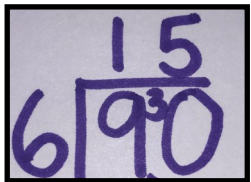
Rows (breadth) and total amount (area) divide to find the answer of the rectangle or square.

$15 \div ? = 3$



## 6. Formal Written

A true understanding of division is demonstrated by confidently using a wide range of strategies. The formal written calculation should only be used when confidence in the use of others has been achieved.



## 5. Partitioning in different ways

Being able to partition or change a number to make them easier to work with is very important. It can be done throughout the progression of strategies and when working with different numbers.

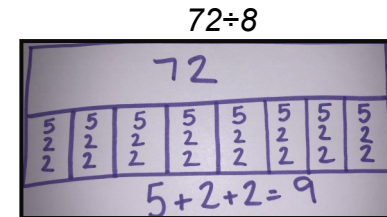
$$\begin{array}{r} 8 \times 10 = 80 \\ 8 \times 10 = 80 + \\ 8 \times 4 = 32 + \\ \hline 192 \\ 10 + 10 + 4 = 24 \\ 192 \div 8 = 24 \end{array}$$

**Multiplying Up**  $192 \div 8$  /  $72 \div 9$   
Multiply the divisor up to the number you're dividing, continue until you reach the number dividing, then add the total times divisor is multiplied.

$$\begin{array}{r} 9 \times 5 = 45 \\ 9 \times 3 = 27 \\ \hline 45 + 27 = 72 \\ 5 + 3 = 8 \\ \hline 72 \div 9 = 8 \end{array}$$

## 4. Bar Model

Dividing the whole amount into equal parts. Use things to physically share or their knowledge of addition/multiplication amongst the parts to solve.



## Skip Counting / Repeated Addition

Count/subtract in jumps of multiple. Can be done orally or written.

$72 \div 9 = 8$

$$\begin{array}{r} 72 - 9 - 9 - 9 - 9 \\ - 9 - 9 - 9 - 9 = 0 \end{array}$$

$$\begin{array}{r} 0 + 9 + 9 + 9 + 9 \\ + 9 + 9 + 9 + 9 = 72 \end{array}$$

## Times Tables

$$\begin{array}{r} 9 \times 8 = 72 \\ \hline \text{so } 72 \div 9 = 8 \end{array}$$