

Methods Guidance - Multiplication

Concrete



Numicon & Counting resources

Children select the Numicon piece to represent the group size or make groups using counting equipment. These are placed horizontally in front of them. We then, either count all objects in 1s or use our counting pattern knowledge to total. This can be represented as repeated addition.

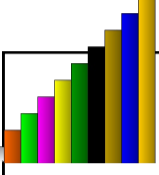
Aims:

To be used alongside the calculation policy and support the progression you are working on.

We teach the multiplication skill using the manipulatives indicated here to develop conceptual and procedural understanding.

Talk is embedded at every stage.

Cuisenaire

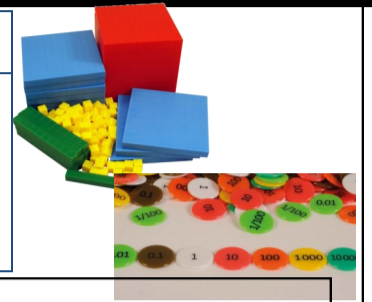


The rod for the group size is selected. Place them along a number track end-to-end the number of times indicated in the number sentence. Children will see the cumulative nature of multiplication as they do this.

The answer is generated by counting how many times the rod appears.

This can be expressed as repeated addition or using the multiplication sign.

H	T	1s



Great for exemplifying multiplication by 10 or 100!

The number to be multiplied is created on the place value mat. Dealing with each place value at a time, multiply by creating new groups of the start quantity (e.g. if I had 3 1s and I was multiplying by 4, I would create 4 groups of 3 within the 1s column). Repeat this for all place value columns.

Exchanging happens after all multiplication has taken place. Just like the formal method.

Arrays

Following that calculation policy, we create an array for the given multiplication by identifying the 'group size' and 'number of groups'. We use objects to create 1 initial group which is then copied underneath the correct number of times. This is then totalled by counting in 1s or using counting pattern knowledge.



Contextual application

We continue to use the manipulatives in context or move onto making sense of the problem by drawing a mathematical story.

X measures
scaling
patterns
Commutativity
fractions

Looking for patterns

If I start on 0 and count on in fives will I say the number 55?

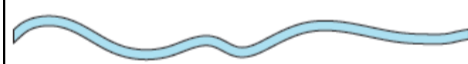
If I start on 4 and count on in twos will I say the number 17?

If I start at 10 and count on in tens will I say 100?

A 1 m piece of ribbon is cut into equal pieces and a piece measuring 4 cm remains.

What might the lengths of the equal parts be?

In how many different ways can the ribbon be cut into equal pieces?



Sam is planting onions in the vegetable plot in his garden.

He arranges the onions into rows of 4 and has two left over.

He then arranges them into rows of 3 and has none left over.

How many onions might he have had?

Exploring relationships

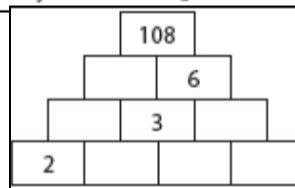
Explain your reasoning.

8 is a multiple of 4 and a factor of 16

6 is a multiple of 3 and a factor of

is a multiple of 5 and a factor of

is a multiple of and a factor of



Make connections within Multiplicative reasoning by linking multiplication skills and other objectives together. We can give everyday meaning to multiplication by scaling, solving problems with money and finding patterns.

Conjecturing

Captain Conjecture says, 'I can double any number, but I can only halve some numbers.'

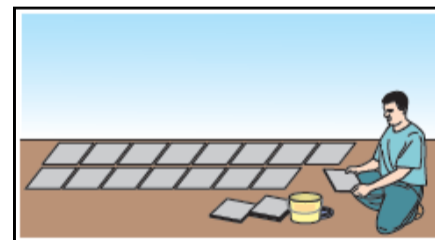
Do you agree?

Explain your reasoning.

Captain Conjecture says, 'Factors come in pairs so all numbers have an even number of factors.'

Do you agree?

Explain your reasoning.

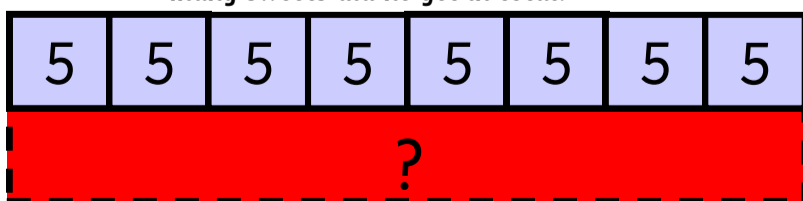


Roger has 96 patio slabs. Using all of the slabs find three different ways that he can arrange the slabs to form a rectangular patio.

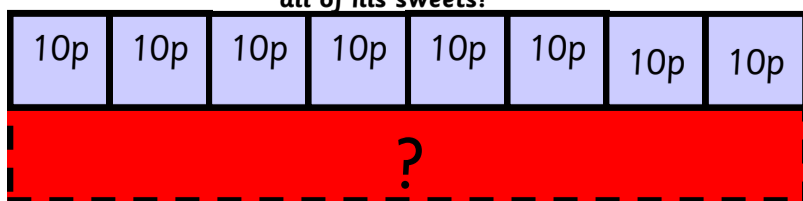
Abstract

Children have a good conceptual and procedural understanding of multiplication. They can now apply this understanding in an abstract form.

There are 5 sweets in a packet. James buys 8 packets. How many sweets did he get in total?



Each packet costs 10p. How much does he need to pay for all of his sweets?



Abstract application may also be simply using the correct formal written method and/or progression from the calculation policy.

102 People came to the sale and paid 15p each to go in

(a) How much money was collected at the entrance?

Each car had to pay £7 to be at the sale.



The school collected £399 from the cars.

(b) How many cars were there?



The 'Bar Model' is a great way for children to organise their thinking and is a way of recording the problem but is not a method to solve a problem. Mental skills or the current progression need to be used alongside.