Year 1 Calculation and Bar Modelling Policy

Additive Reasoning

At this stage, the children should be exposed to the different models of addition and subtraction. It is important that they develop deep understanding of how addition and subtraction are related to each other – focus on language and how one model can be interpreted in many different ways.

ELO: To add and subtract
MI: Solve one-step problems with addition and subtraction:
 • Using concrete objects and pictorial representations including those involving numbers, quantities and measures.
 • Using the addition (+), subtraction (-) and equals (=) signs.
 • Applying their increasing knowledge of mental and written methods.

MI: Represent and use number bonds and related subtraction facts to 20

MI: Add and subtract numbers using concrete objects and pictorial representations and mentally, including:
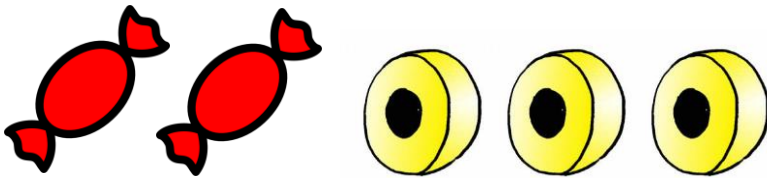 • One-digit and two-digit numbers to 20, including zero

ELO: To use algebra
MI: Solve addition and subtraction problems involving missing numbers
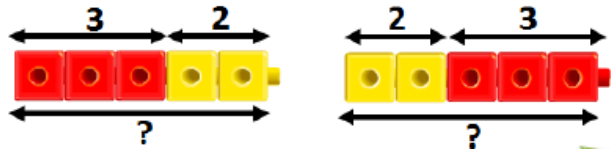
Examples of adding:

Concrete experiences	Numicon
Aggregation **Augmentation**	

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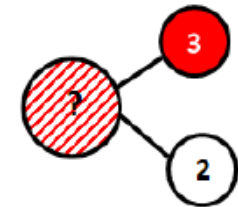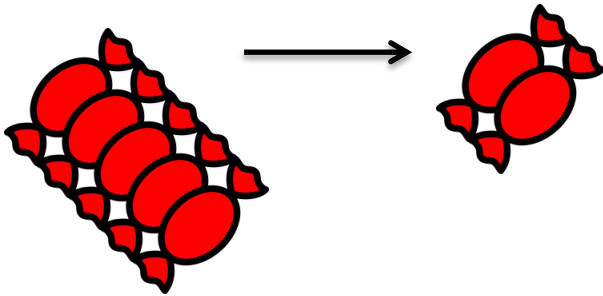| Multilink/ Cuisenaire/Bar model	Abstract/Written Method/Language
	Aggregation (two quantities combined) Three yellow sweets and two red sweets are on the table. How many sweets are on the table? Augmentation (one quantity is increased) Amber had three stickers. She was given two more. How many does she have now? 3+2=5 5=2+3 2+3=5 5=3+2 Three and two more is equal to five. Three add two equals five. Two and three more is equal to five. Two add three equals five.

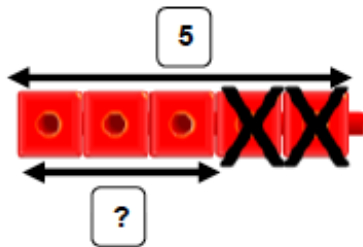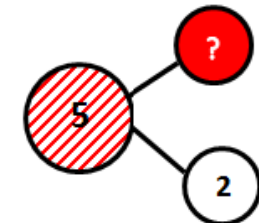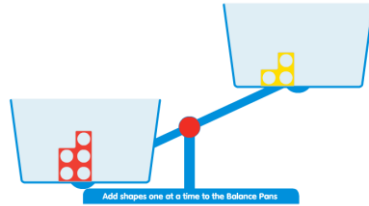| Examples of subtracting (taking away- one quantity is decreased by a provided amount)	
<u>Concrete experiences</u>	<u>Numicon</u>
<u>Multilink/ Cuisenaire/Bar model</u> 5 ?	<u>Abstract/Written Method/Language</u> Five sweets were on the table. Tom ate two sweets. How many sweets are on the table now? 5-2=3 3=5-2 Five subtract two equals three Two fewer than five is three. Three is two fewer than five.

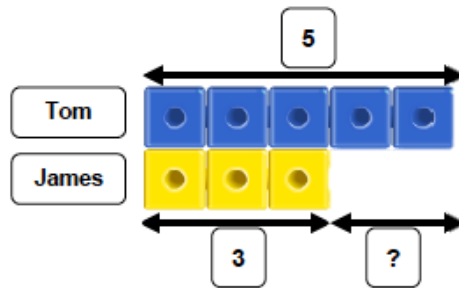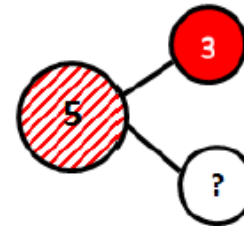| Examples of subtracting (comparison- find the difference)	
Concrete experiences	Numicon
Multilink/ Cuisenaire/Bar model	Abstract/Written Method/Language
	Tom has five sweets and Jane has three sweets. How many more sweets does Tom have than Jane?

Multilink/ Cuisenaire/Bar model

5

Tom

James

3

?

Abstract/Written Method/Language

Tom has five sweets and Jane has three sweets. How many more sweets does Tom have than Jane?
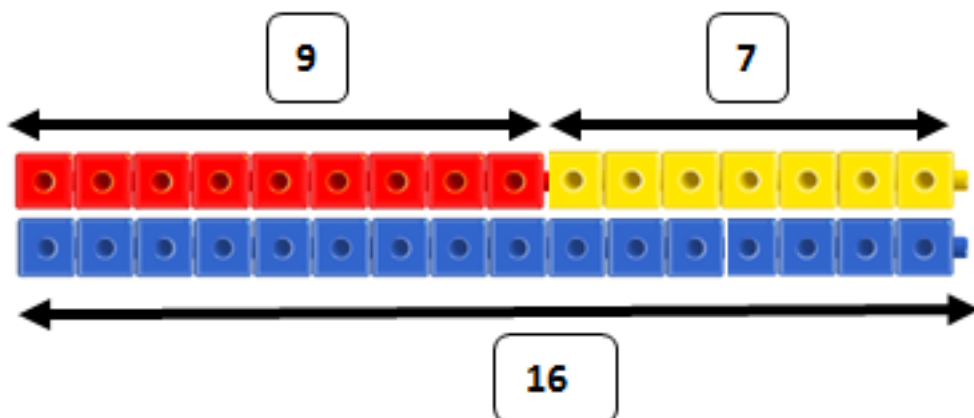
3

5

?

Five is two more than three.
Three is two fewer than five.

Examples of comparison models to see the relationship between adding and subtracting

Yellow is green add red.
Red add green equals yellow.
Yellow subtract green equals red.
Yellow subtract red equals green.

9

7

16

Seven more than nine is 16.
Seven add nine is equal to 16.
Nine add seven is equal to 16.
Nine more than seven is 16.
Sixteen subtract seven is nine.
Seven fewer than 16 is nine.
Sixteen subtract nine is seven.
Nine fewer than 16 is seven.

Ensure that the children explore the models and are able to move the position of the unknown quantity.
- How would I find the number of red cubes?
- Can you tell me a story problem which makes the seven the unknown?
- Can you tell me about the model using "greater than"?
- What else can you tell me?

Multiplicative Reasoning

Guidance

At this stage it is important that the children begin to understand that multiplication and division involve the replication of a single unit a number of times and start to explore unitisation e.g. one block is worth two.

ELO: To know and use numbers

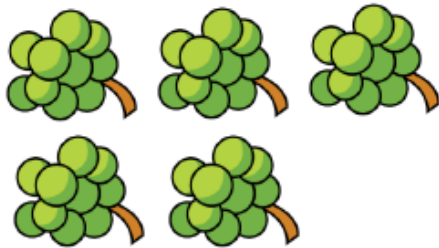MI: Count in steps of 2, 5 and 10 from 0 or 1 and in tens from any number, forward and backward.

ELO: To multiply and divide

MI: Solve one-step (two-step at greater depth) problems involving multiplication and division.
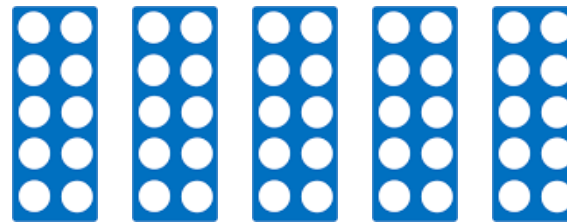
MI: Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables.

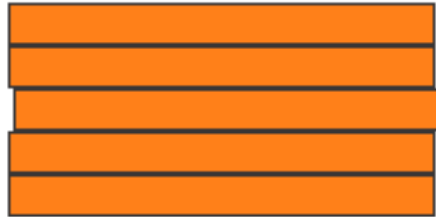## Examples of counting in multiples of 2, 5 and 10

Concrete experiences | Numicon
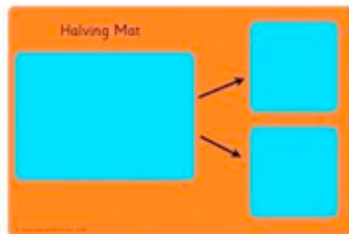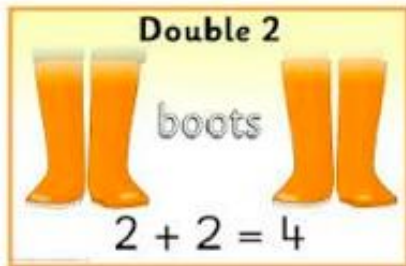

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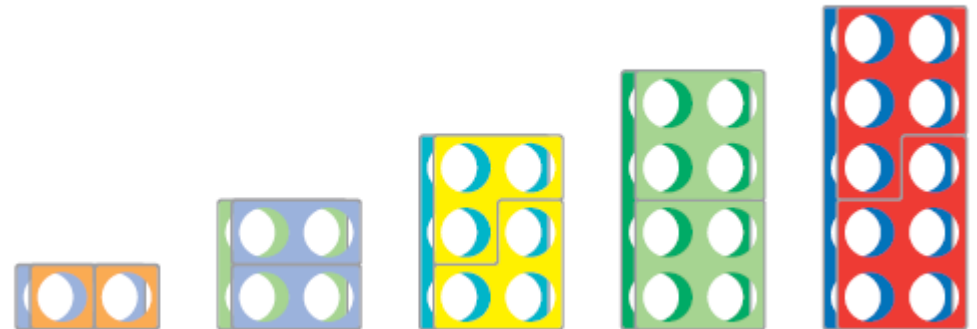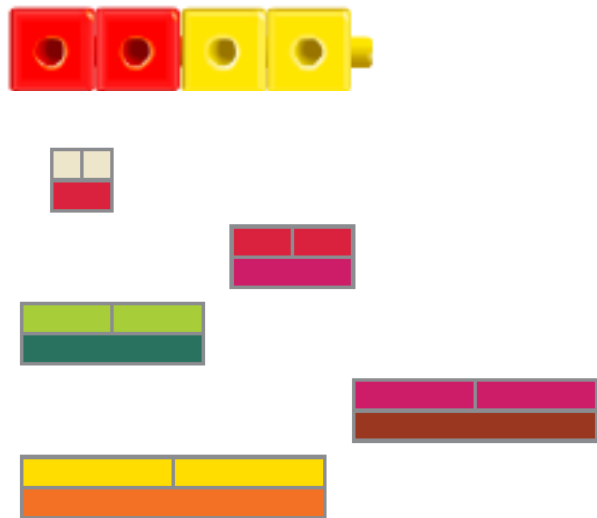| Multilink/ Cuisenaire/Bar model	Abstract/Written Method/Language
	The grapes are in bunches of 10. How many grapes are there altogether?

Examples of doubling and halving	
Concrete experiences	Numicon

Multilink/ Cuisenaire/Bar model	Abstract/Written Method/Language
	2+2 = 4 4-2-2 = 0 Two and two makes four. Double two is equal to four. Half of four is two.

	Examples of multiplication using equal groups
Concrete experiences	Numicon

Year 1

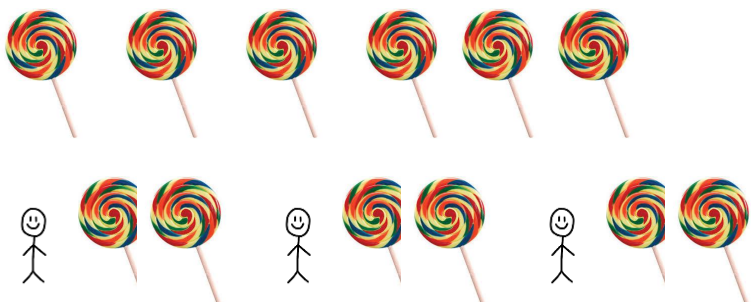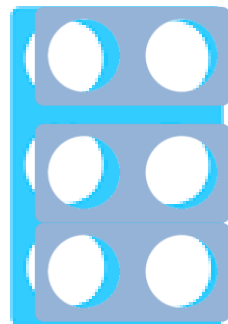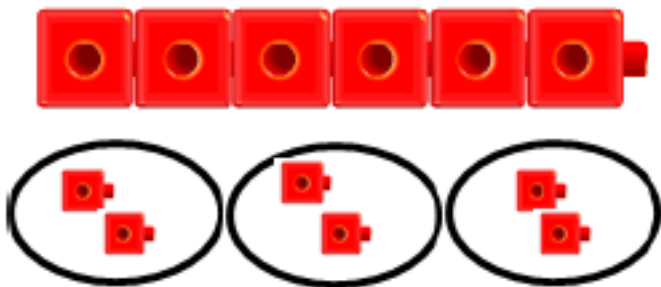| Multilink/ Cuisenaire/Bar model	Abstract/Written Method/Language
	Rosie wants to give her three friends two lollies each. How many lollies does she need? Two and two and two makes six. Three groups of two make six. 2 + 2 + 2 = 6

Examples of division using sharing

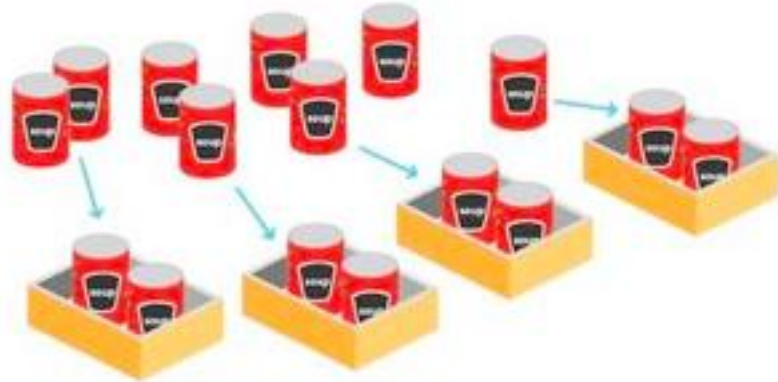| Concrete experiences	Numicon

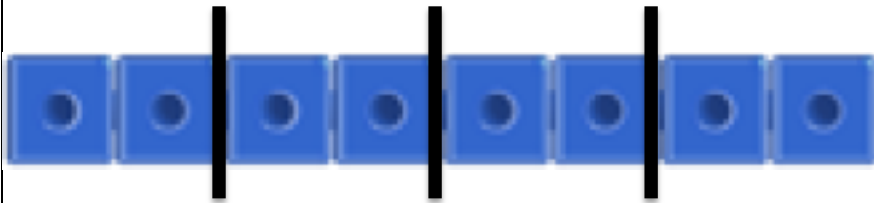| Multilink/ Cuisenaire/Bar model	Abstract/Written Method/Language
	Rosie has six lollies. She wants to share them equally between her three friends. How many lollies does each of her friends get? Six shared into three equal groups is two in each group.

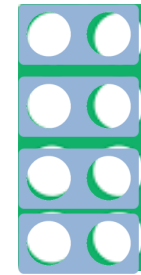| Examples of division using grouping	
Concrete experiences	Numicon
Multilink/ Cuisenaire/Bar model	Abstract/Written Method/Language Grouping: I have 8 cans and want to put them into boxes with 2 cans in each box. How many boxes will I need?

Fractions

ELO: To use fractions
MI: Recognise, find and name a half as one of two equal parts of an object, shape or quantity.
MI: Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.
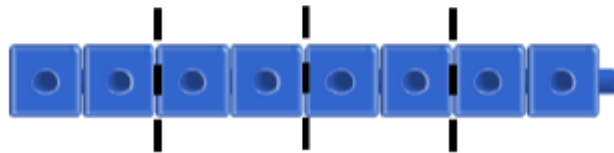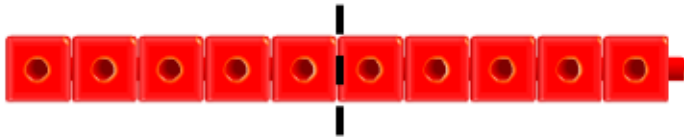
Concrete experiences	Numicon

Multilink/ Cuisenaire/Bar model	Abstract/Written Method/Language
	Orange is double the yellow. Yellow is half of the orange. Yellow add yellow equals orange. Orange subtract yellow equals orange. Four reds are equal to brown. A quarter of brown is one red. Red add red add red add red equals brown.