CALCULATION POLICY FOR MULTIPLICATION AND DIVISION

YEAR 1

Year 1			
	Block 1	Block 2	Block 3
Calculation content			CALCULATION (UNIT 6) • Identifying groups • Equal groups • Repeated addition • Making equal rows (arrays) • Doubles • Multiplication stories • Equal groups (division) • Equal sharing

Year 1			
	Block 1	Block 2	Block 3
Strategies/ methods			Children begin their work on multiplication with an understanding that a unit does not have to be one. In place value units and fluency sessions they have counted in twos, fives and tens. This provides some support with understanding the concept of multiplication. <u>Identifying groups</u> Initial learning about groups focuses on deepening understanding about what the term 'group' means. They identify whether a collection of objects can/cannot form a group. <u>Equal groups</u> Children learn to identify objects grouped into equal or unequal groups. Where the groups are not equal, they are encouraged to think about how to rearrange the objects to make equal groups. At this stage the focus is on the structures: number of groups and number in each group. The focus is *not* on the total amount.

Year 1			
	Block 1	Block 2	Block 3
Strategies/ methods			<u>Repeated addition</u> The next step involves describing equal groups using repeated addition. Children use repeated addition expressions to describe equal group situations. An expression is different from an equation as there is no equals sign. Children devise repeated addition expressions such as 3 + 3 + 3. At this stage they do not need to give the total amount. So they do not need to say things like 3 + 3 + 3 = 9. They also describe the groups, starting with the number of groups, then giving the group size. For example: *There are three groups. There are three dolls in each group.*

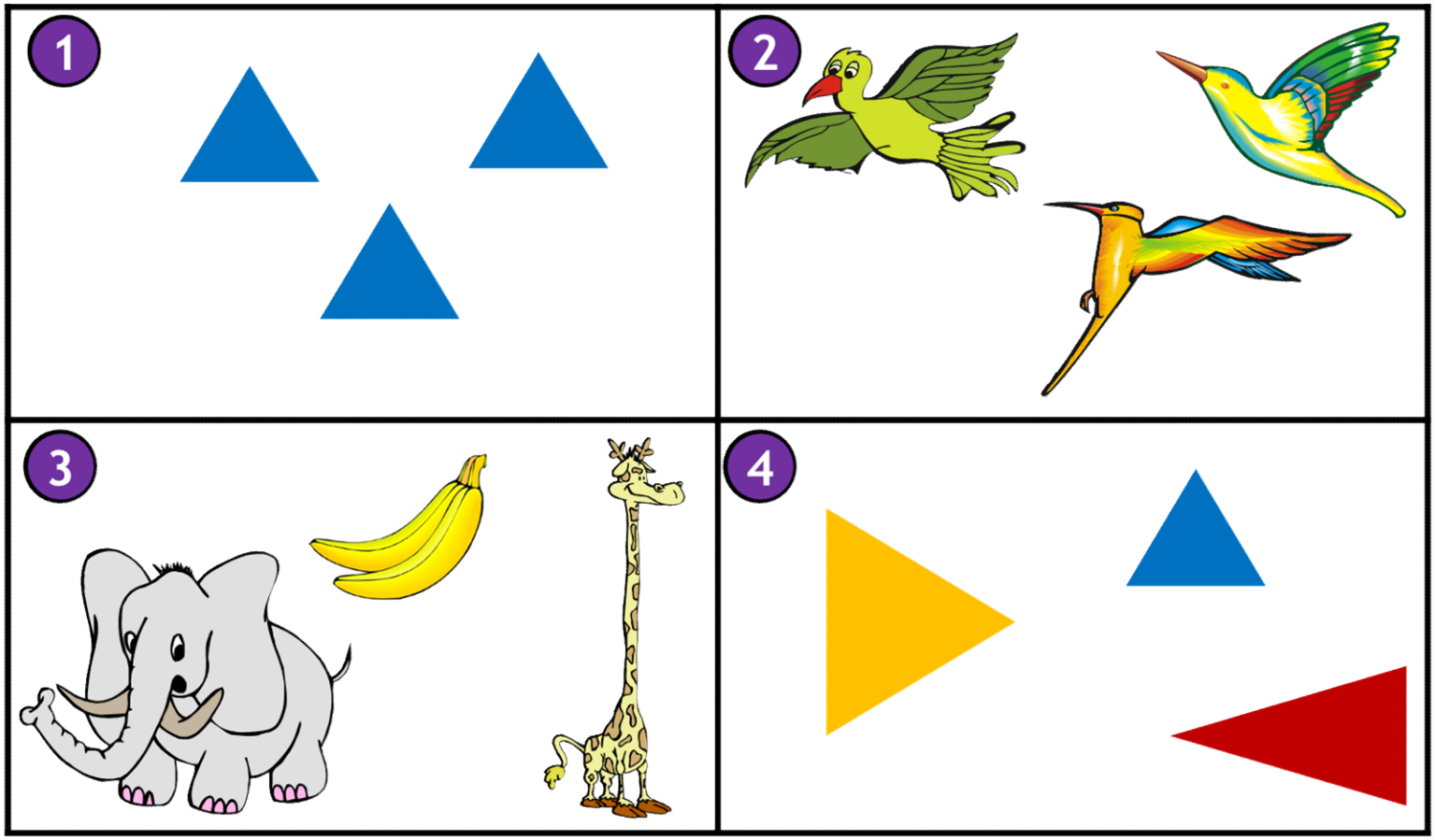
Year 1			
	Block 1	Block 2	Block 3
Strategies/ methods			<u>Making equal rows (arrays)</u> Children's learning about groups becomes more structured as they make equal rows. This means that they are building arrays. An array is a powerful structure to provide conceptual understanding for multiplication and, later, division. They describe the number of items in each row, the number of columns, and then the total. After this, children use counters to build arrays. They describe the arrays in two ways: • the number of rows followed by the number of counters in each row; • the number of columns followed by the number of counters in each column. <u>Doubles</u> Doubling has been encountered previously. Teaching now emphasises that 'double' is two groups of a number or an amount. Children's knowledge of doubles is extended from doubles of 1-5 to doubles of 1-10.

Year 1			
	Block 1	**Block 2**	**Block 3**
Strategies/ methods			<u>Multiplication stories</u> Year 1 work on multiplication concludes by consolidating children's understanding about ways to describe equal groups. They do this by stating the number of groups, then the number in each group. They also use repeated addition. For example: *There are 2 trees with apples on.* *There are 5 apples on each tree.* *5 + 5 = 10.* <u>Equal groups (division)</u> Children's understanding about equal groups is now applied to learning about division. They take an amount and divide it into equal groups. Division as grouping is also known as quotitive division. The language used is important. We are not saying 12 'divided by' 3. We are saying '12 put into groups of 3 makes 4 groups'. In division as grouping the quotient (the answer) is the number of equal groups.

Year 1			
	Block 1	Block 2	Block 3
Strategies/ methods			<u>Equal sharing</u> Finally, the division structure of sharing is introduced. (This is also known as partitive division.) Here, the total amount is split between a number of people/objects etc. Using the language of grouping is avoided as it is not appropriate for sharing contexts. In division as sharing the quotient (the answer) is the number of items each person has.

Identifying groups

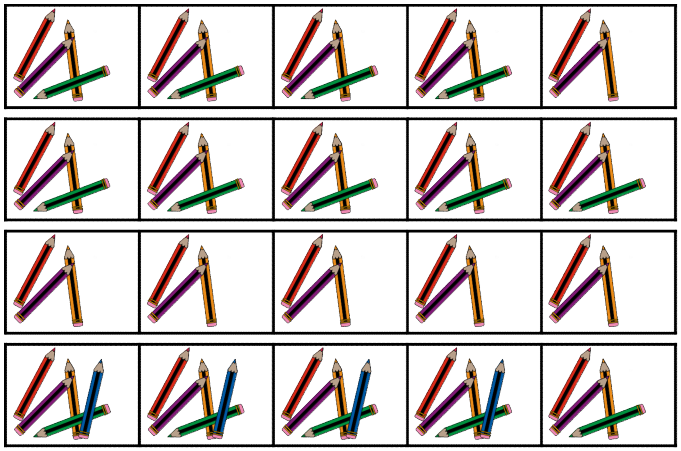
Groups or not groups?

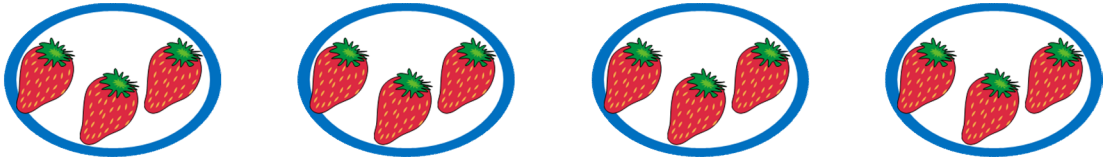


Year 1 - Block 3

Equal groups

Find the equal groups.





There are __ groups. Each group has __ strawberries.

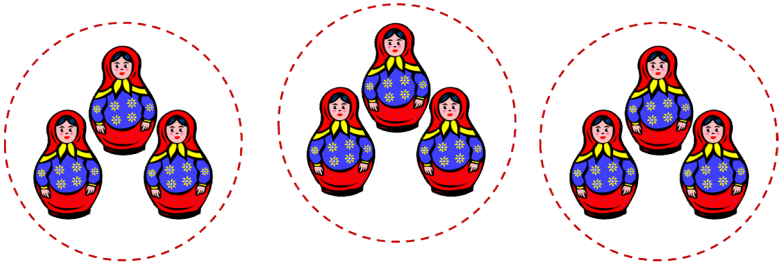
There are __ groups. Each group has __ cherries.

Year 1 - Block 3

Repeated addition

Describing equal groups

3 + 3 + 3



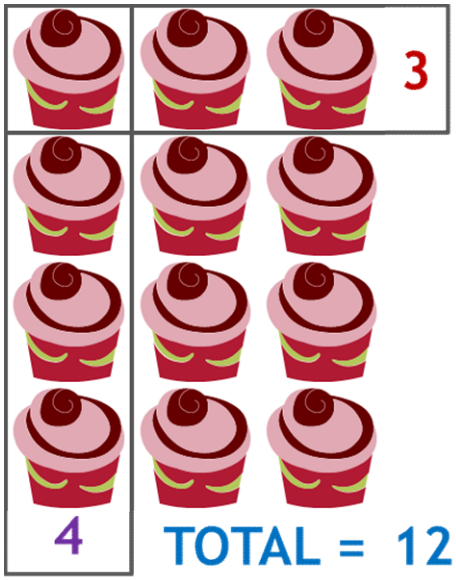
3 groups of 3

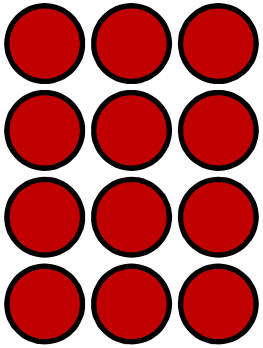
	=	3 groups of 2	= 2 + 2 + 2
	=	2 groups of	=
	=	2 groups of	=
	=	groups of 3	=
	=	groups of 3	=

Year 1 - Block 3

4 lots of 3 makes 12 • 3 lots of 4 makes 12

Making equal rows (arrays)





There are ☐ rows.

There are ☐ circles in each row.

☐ + ☐ + ☐ + ☐ = 12

☐ lots of 3 makes ☐.

There are ☐ columns.

There are ☐ circles in each column.

☐ + ☐ + ☐ = 12

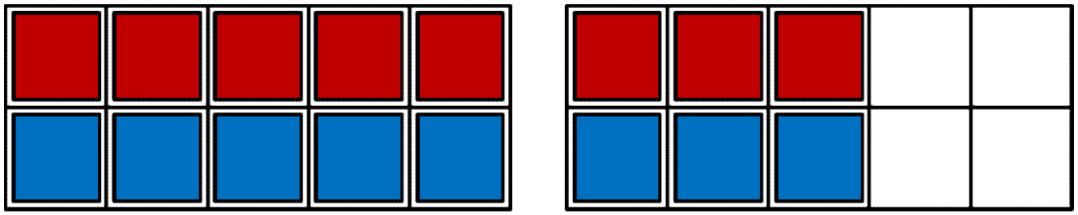
☐ lots of 4 makes ☐.

Double 8 is 16

Doubles

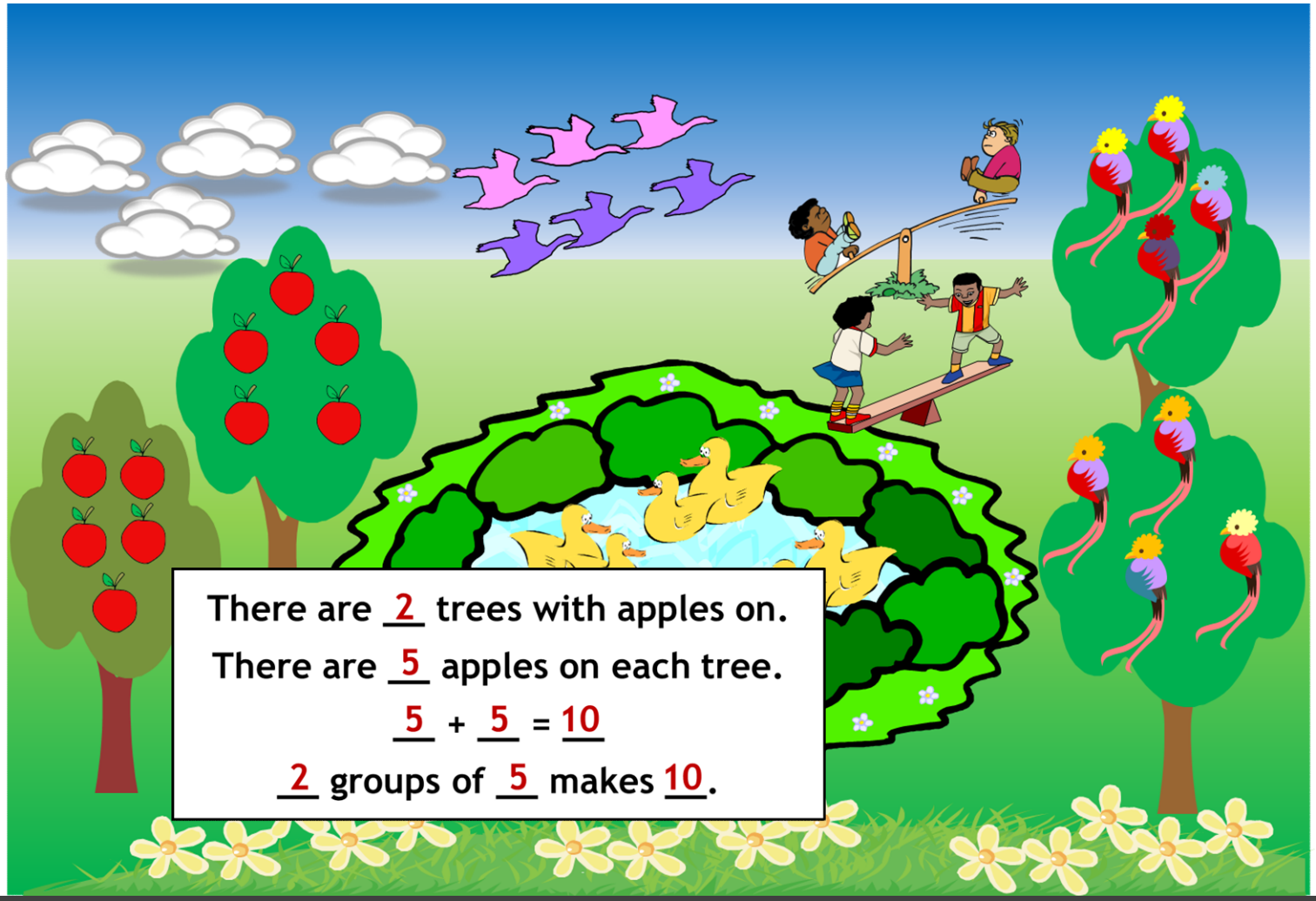
Double =

Double =



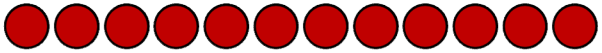
Year 1 - Block 3

Multiplication stories



Year 1 - Block 3

Equal groups (division)

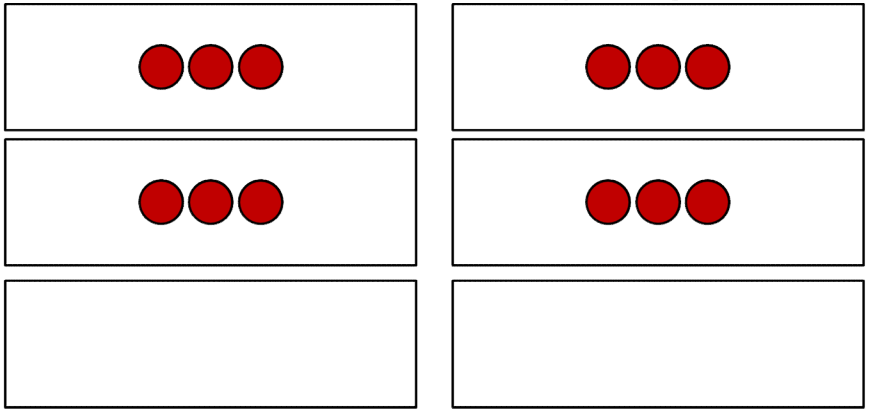
Take 12 counters. 

Put 2 counters into each rectangle. *How many rectangles are used?* 6

Put 3 counters into each rectangle. *How many rectangles are used?* 4

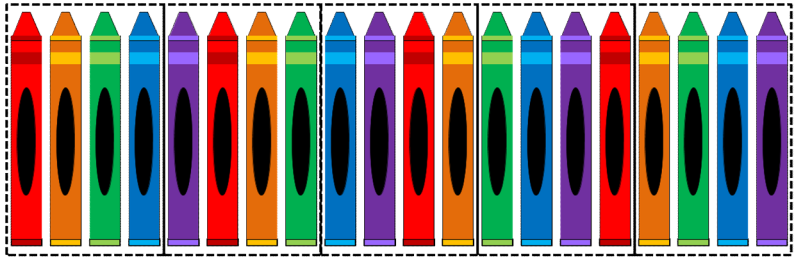
Put 4 counters into each rectangle. *How many rectangles are used?*

Put 6 counters into each rectangle. *How many rectangles are used?*



12 put into groups of 3 makes 4 groups.

There are 20 crayons.
The crayons are put into groups of 4.
How many groups of 4 crayons?



20 is made up of ____ groups of ____.

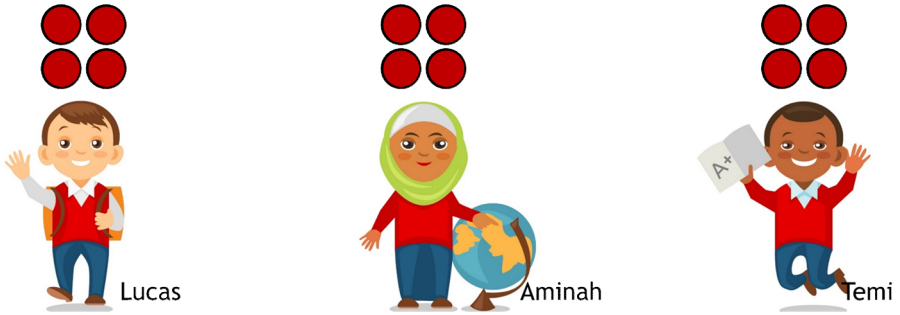
What numbers are missing from the bar model?

20 put into groups of 4 makes 5 groups.

Year 1 - Block 3

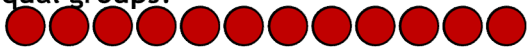
Equal sharing

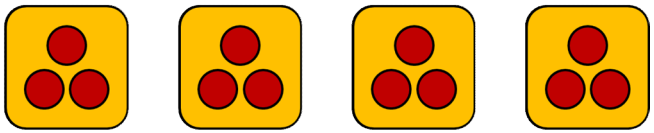
There are 12 counters.
The counters are shared equally between the children.
How many counters does each child receive?



division as sharing

There are 12 counters.
The counters are put into groups of 3.
How many equal groups?





division as grouping