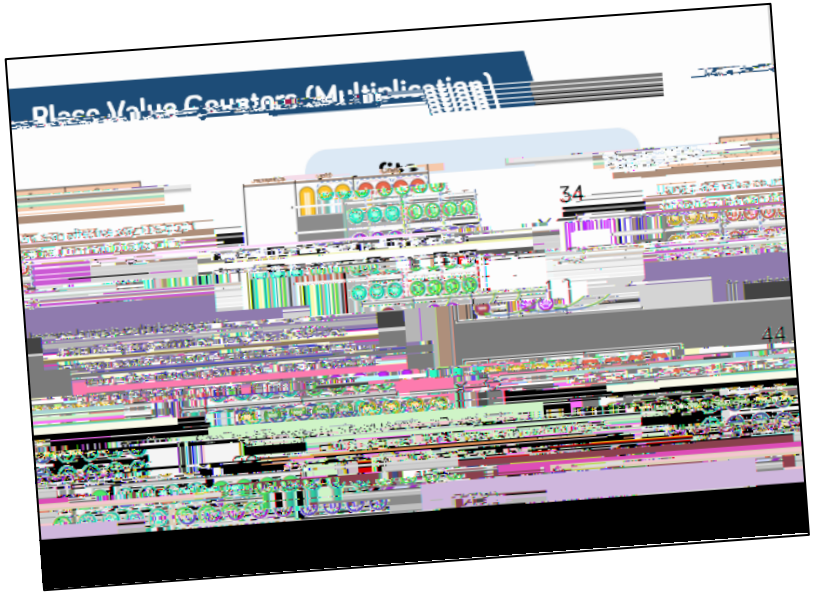
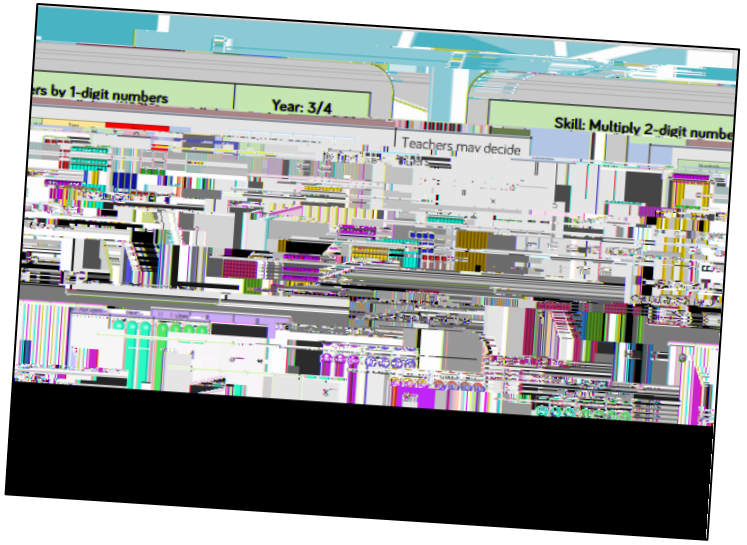
Calculation Policy

subtraction, and multiplication and division.



Each operation is then broken down into skills and each skill has a dedicated page showing the different models and images that could be used to effectively teach that concept.



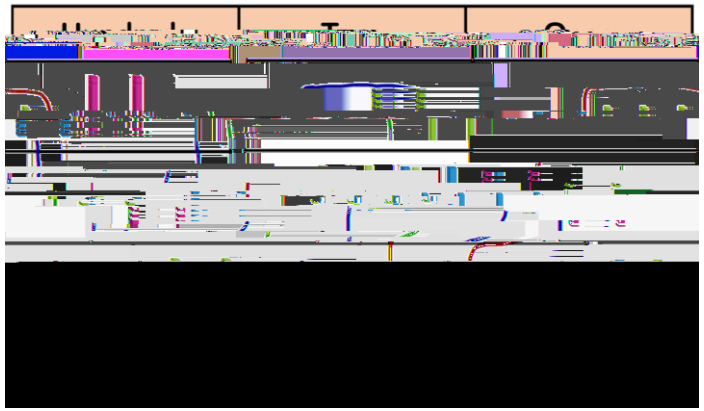
There is an overview of skills linked to year groups

Bar Model

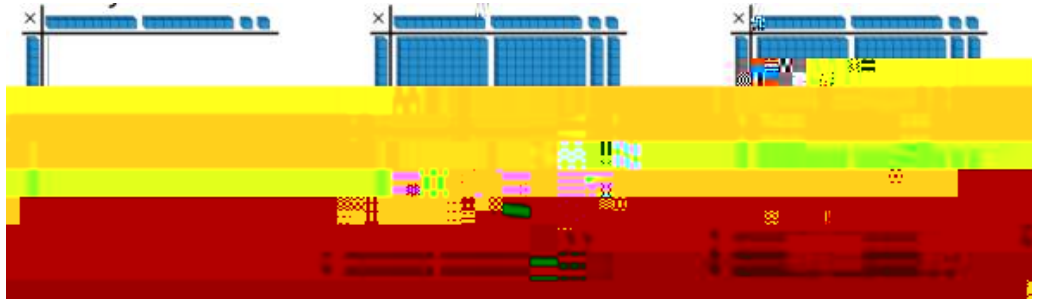
Number Tracks

Number Lines (labelled)

Number Lines (blank)



$$\begin{array}{r} 24 \\ \times \quad 3 \\ \hline 72 \\ \hline 1 \end{array}$$



Benefits

children's understanding of column multiplication. It is

As numbers become larger in multiplication or the

Base 10 also supports the area model of multiplication

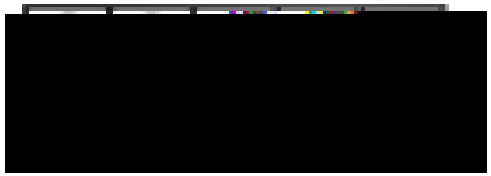
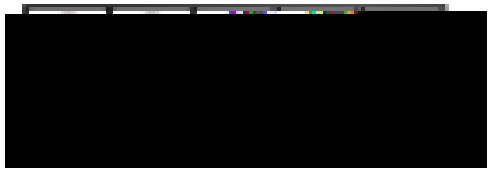
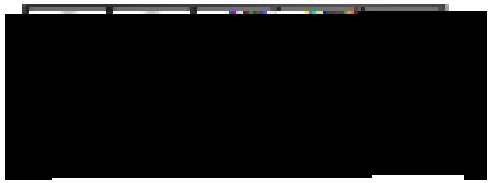
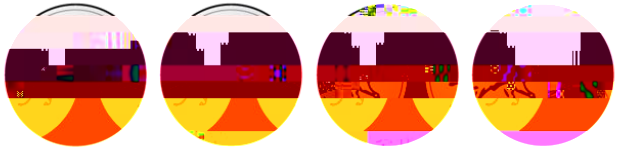
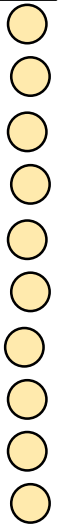
This area model

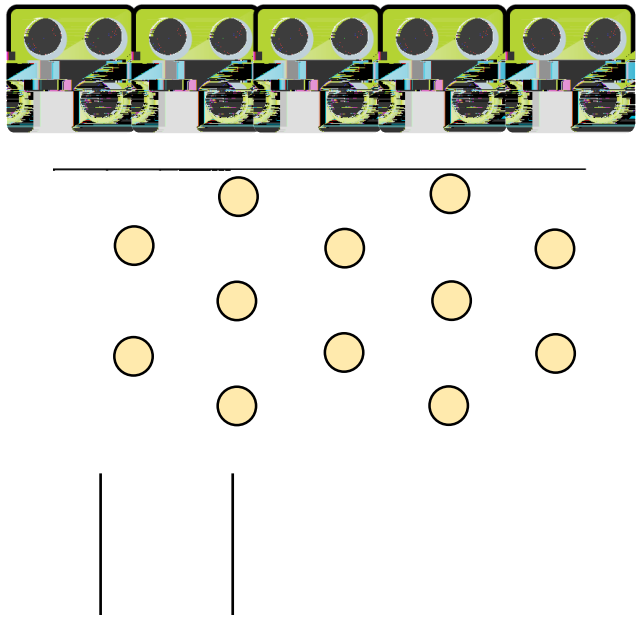
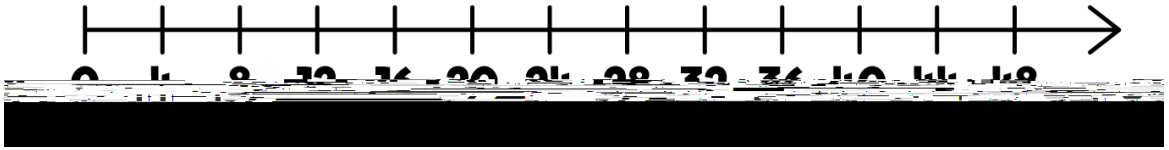
digits by 2-digits.

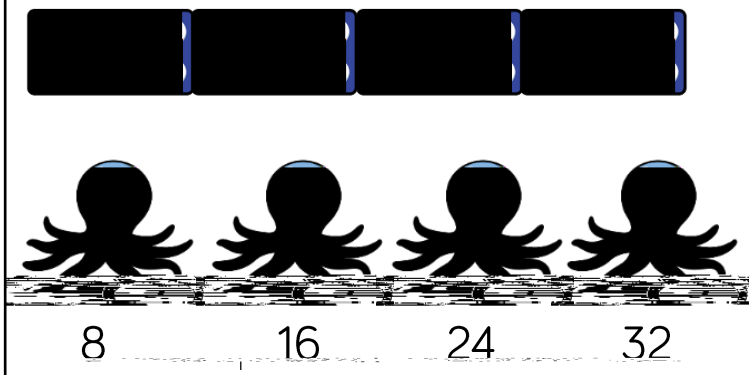
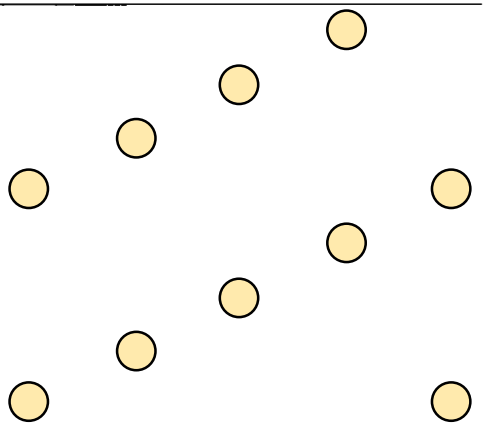
Times Tables

Skill	Year	Representations	
Recall and use multiplication and division facts for the 2-times table	2	Bar model Bead strings Bead strings Number lines Number lines Money Money Everyday objects Everyday objects	
Recall and use multiplication and division facts for the 5-times table	2	Bar model Bead strings Bead strings Number lines Number lines Money Money Everyday objects Everyday objects	
Recall and use multiplication and division facts for the 10-times table	2	Hundred square Bead strings Bead strings Number lines Number lines Money Money Base 10 Base 10	

Skill	Year	Representations	
Recall and use multiplication and division facts for the 7-times table	4	Hundred square Tables Numbers	Bead strings Number lines
Recall and use multiplication and division facts for the 9-times table	4	Hundred square Tables Numbers	Bead strings Number lines
Recall and use multiplication and division facts for the 11-times table	4	Hundred square Base 10	Place value counters Number lines
Recall and use multiplication and division facts for the 12-times table	4	Hundred square Base 10	Place value counters Number lines

ill: Sk10 times table	Year 2
      	Encourage daily counting in multiples both forwards and backwards. This can be supported using a hundred square. n times table, the ter using concrete manipulatives to support. Notice the pattern in the digits- the ones are always 0, and the tens increase by 1 ten each time.

ill: S4 times table	Year: 3
  	Encourage daily counting in multiples, [illegible] 1 hundred square [illegible] the four times table, [illegible] to the 2 times table, seeing how each multiple is double the twos. Notice the pattern in the ones [illegible] five multiples. [illegible] multiples are even [illegible] to support.

ill: Sk8 times table	Year: 3
  					
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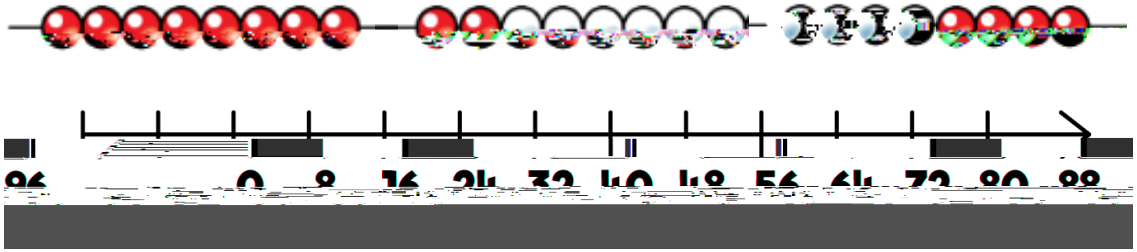
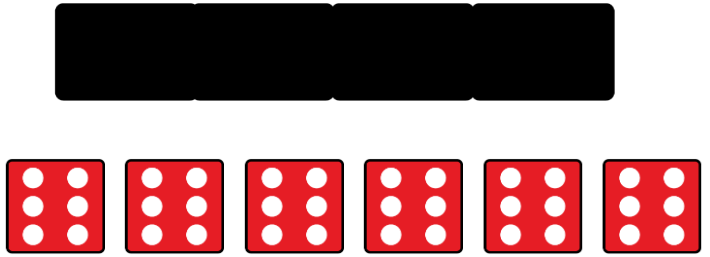
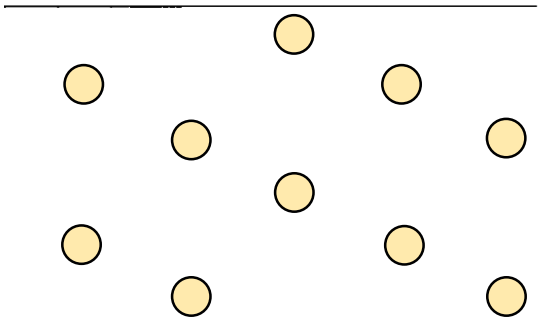
8	16	24	32	4
48	56	64	72	8 | 	Encourage daily counting in multiples, [illegible] hundred square [illegible] the eight times table, [illegible] to the 4 times table seeing how each multiple is double the pattern in the ones [illegible] five multiples. [illegible] multiples are even [illegible] to support.

ill: [redacted]	Year: 4
[redacted]   					
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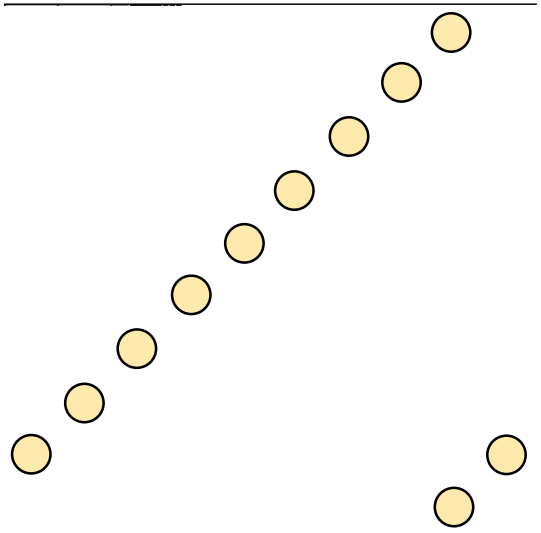
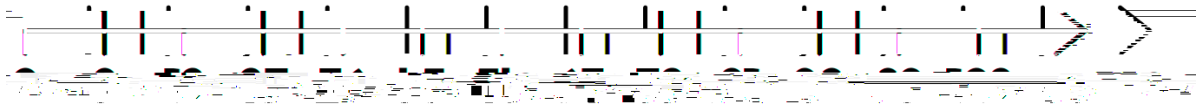
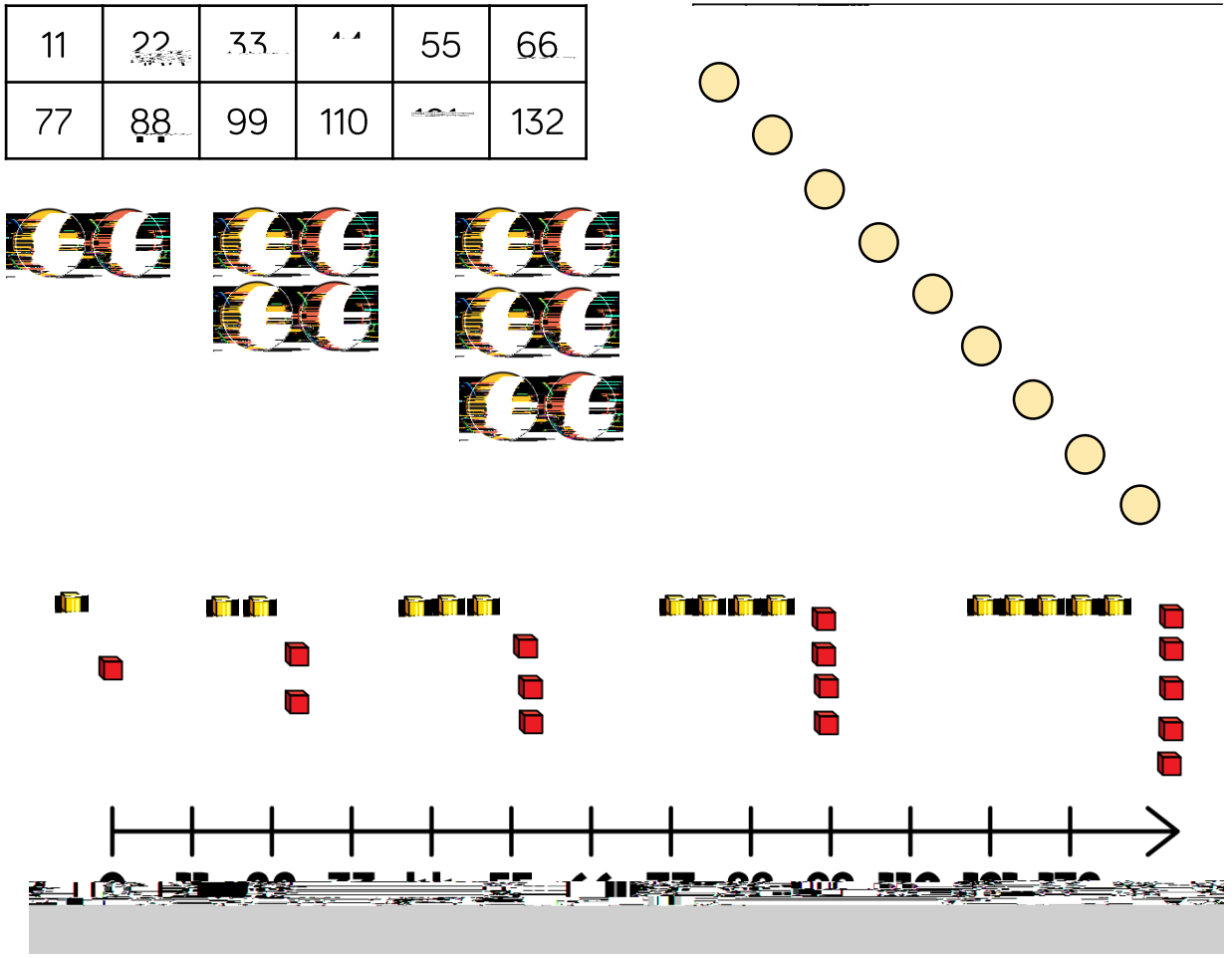
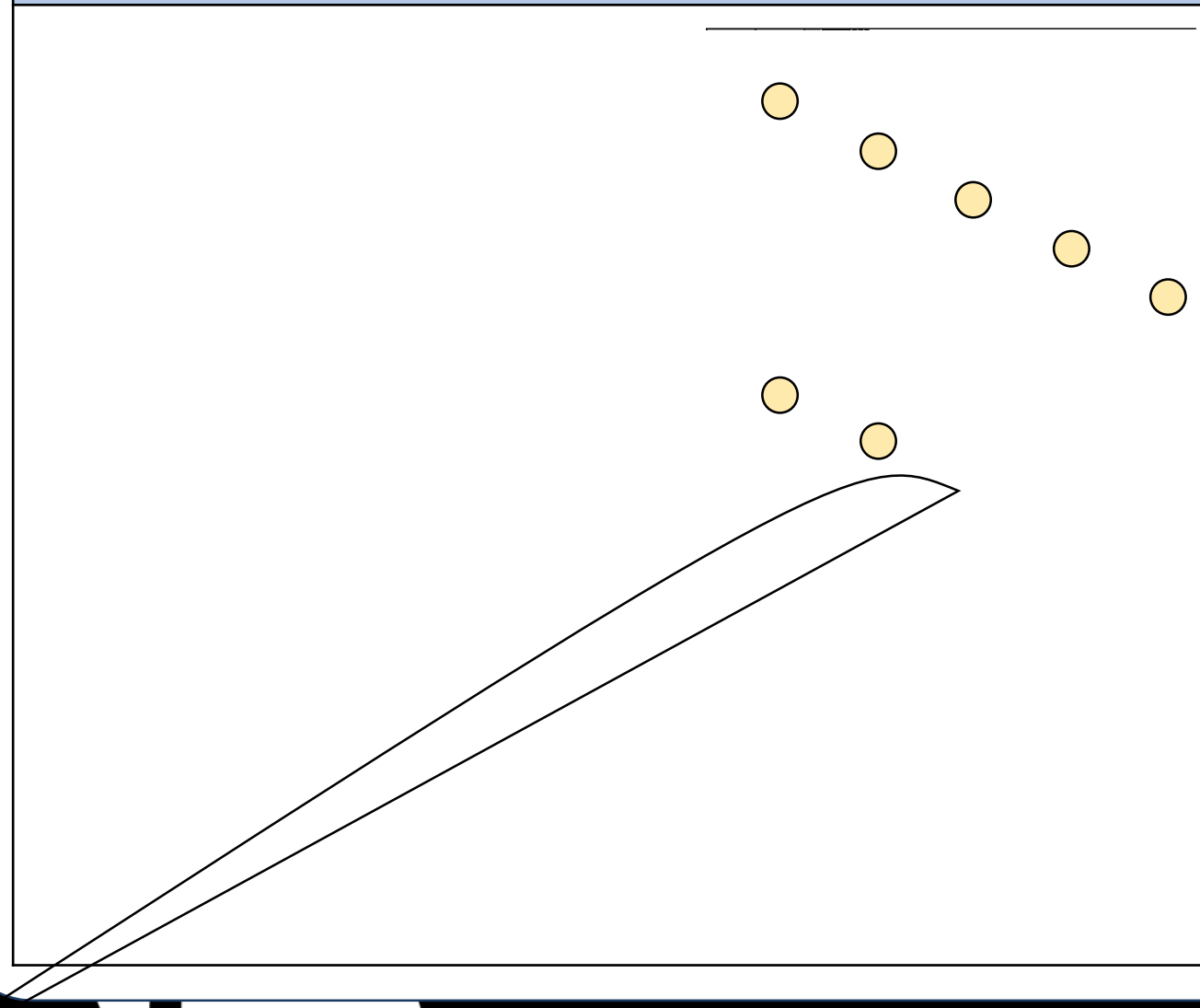
6	12	18	24	3[redacted]
36	42	48	54	6[redacted]
66	72	78	84	9[redacted] |  	Encourage daily counting in multiples, [redacted] [redacted] hundred square [redacted] [redacted] [redacted] to the 3 times table, seeing how each multiple is double the threes. Notice the pattern in the ones [redacted] within each [redacted] five multiples. [redacted] multiples are even [redacted] to support.

ill: Sk	Year: 4
   	Encourage daily septing in multiple both forwards and backwards. This can hundred square the nine times table, using concrete manipulatives to support. Notice the pattern in the tens and ones using the hundred square to multiples.

9	18	27	36	45
54	63	72	81	9

ill: Sk	Year: 4
	Encourage daily counting in multiples both forwards and backwards, supported by a number line or a hundred square. can be trickier to the numbers. however commutativity. Children can still see number shapes to support.

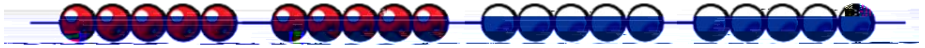
ill: Sk	Year: 4
	Encourage daily counting in multiples both forwards and backwards. This can be supported using a hundred square. Use the [illegible] table, using concrete manipulatives to support. Notice the pattern in the tens and ones using the hundred square to support. Also consider the pattern after crossing 100

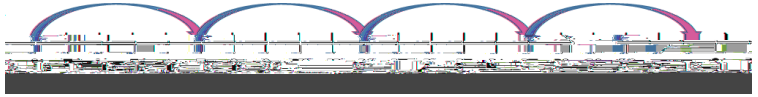
ill: Sk	Year: 4
	Encourage daily counting in multiples, [illegible] hundred square [illegible] the 12 times table, [illegible] seeing how each multiple is double the sixes. Notice the pattern in the ones [illegible] hundred square can support in highlighting this

Skill	Year	Representations	
Solve one-step problems with [illegible]	1/2	Bar model [illegible] Numbers	[illegible] Number lines
Multiply 2-digit by 1-	3/4	[illegible] Base 10	Short written method Expanded written method
-digit by 1-	4	[illegible]	Short written method
-digit by 1-	5	Place value counters	Short written method

Skill	Year	Representations
Multiply 2-digit by 2-	5	Short written method Grid method
Multiply 2-digit by 3-	5	Short written method Grid method
Multiply 2-digit by 4-	5/6	Formal written method

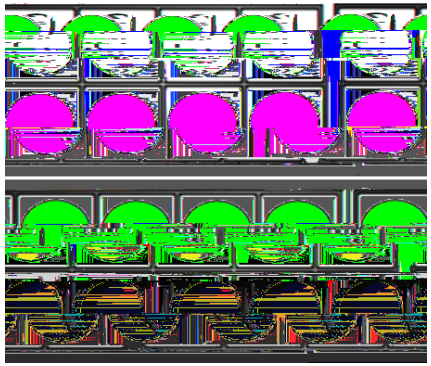
Skill: Solve 1-step problems using multiplication

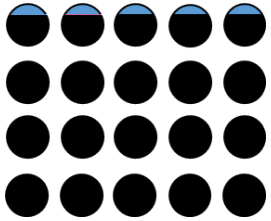




One bag holds 5 apples

How many apples do 4 bags hold?

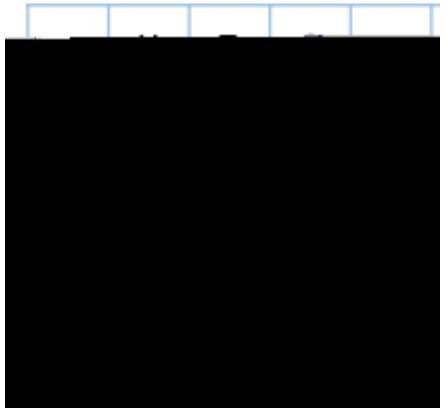
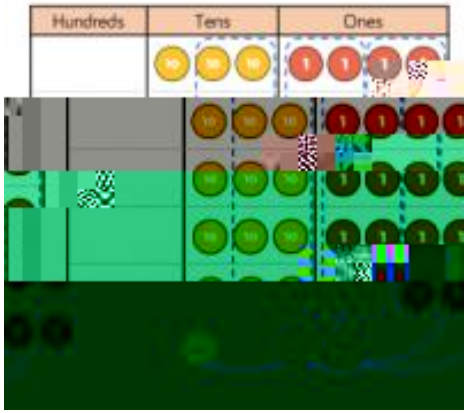




5 +

Children represent multiplication as repeated addition in concrete and pictorial representations to [redacted] are not expected to formally.

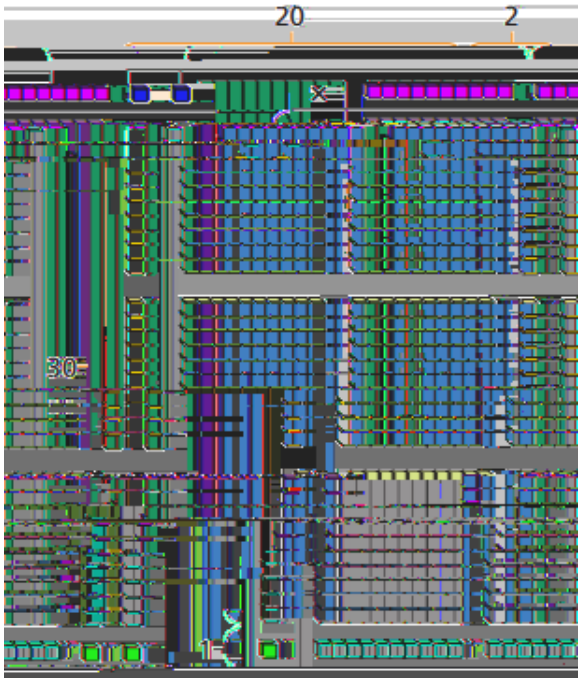
In Year 2, children are introduced to the multiplication symbol.

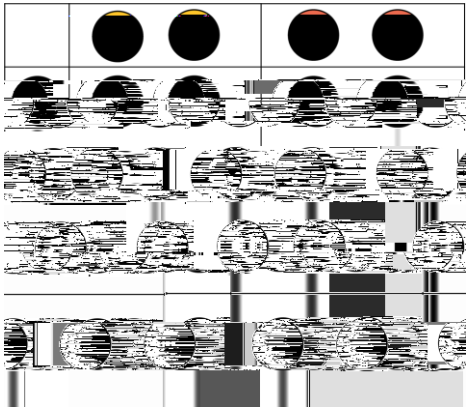
ill: Sk - [redacted]	Year: 3/4
[redacted] 34 × 5 = 170 [redacted]  	Teachers may decide to first look at the expanded column method before moving on to the short multiplication method. The place value [redacted] lead to an understanding of the method rather than supporting the multiplication, as children should use times table knowledge.

	H	T	O		
		3	4		
×			5		
		2	0	(5 × 4)	

ill: Sk [redacted]	Year: 3/4
345 [redacted]	[redacted] -digit multiplication, encourage children to [redacted] short formal written method. Base 10 and place value counters continue to support [redacted] the written method. [redacted] exchanges needed in [redacted] move children away [redacted] from resources when multiplying larger [redacted] numbers.

Skill: Skill: Multiplying 2-digit numbers by 2-digit numbers





×	20	2
30	600	60
1	20	2

	H	T	O
		2	2
×			1
		2	2
	6	6	0
	6	8	2

22 × 31 = 682

Why?

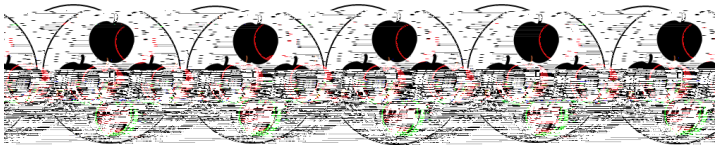
When multiplying a multi-digit number by a 2-digits use the area model to help children understand the size of the numbers they are using. This links to finding the area of a rectangle by finding the space covered by the Base 10. The grid method matches the area model as an initial written method before moving to the formal written method.

ill: SkMultiply 4-[redacted]	Year: 5/6
[redacted] × 28 = [redacted]	-digits, children should be confident in the written method. If they are still struggling with times tables, provide multiplication grids to support when they are focusing on the use of the method. Consider where [redacted] placed and make

Skill	Year	Representations	
Divide 2-digits by 1-digit (sharing, remainders)	3/4	Base 10 Bar model	Place value counters Part-whole model
Divide 2-digits by 1-digit (grouping)	4/5	Place value counters	Place value grid Written short division
Divide 3-digits by 1-digit (sharing, exchange)	4	Base 10 Bar model	Place value counters

Skill	Year	Representations
Divide 4-digits by 1-digit (grouping)	5	Place value counters, Place value grid, Written short division
Divide multi-2-digits (short division)	6	Written short division
Divide multi-digits by 2-digits (long division)	6	Written long division, List of multiples

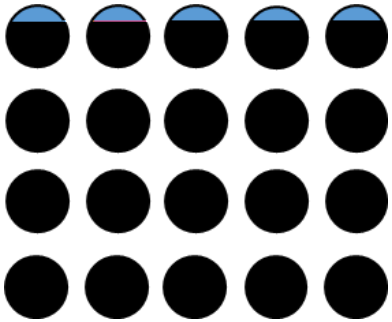
ill: Skip

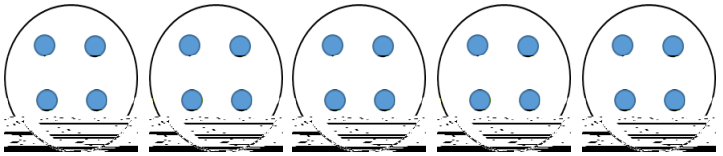


?				

They are shared equally between 5 bags.

How many apples are in each bag?





20 ÷ 5 = 4

Children can

amounts into equal groups.

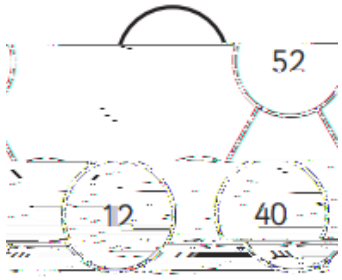
In Year 1, children use concrete and pictorial representations to

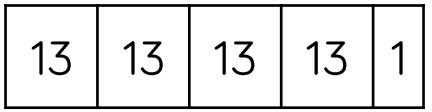
are not expected to record division formally.

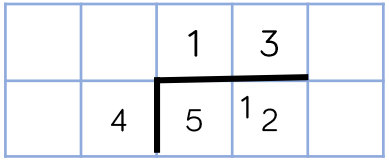
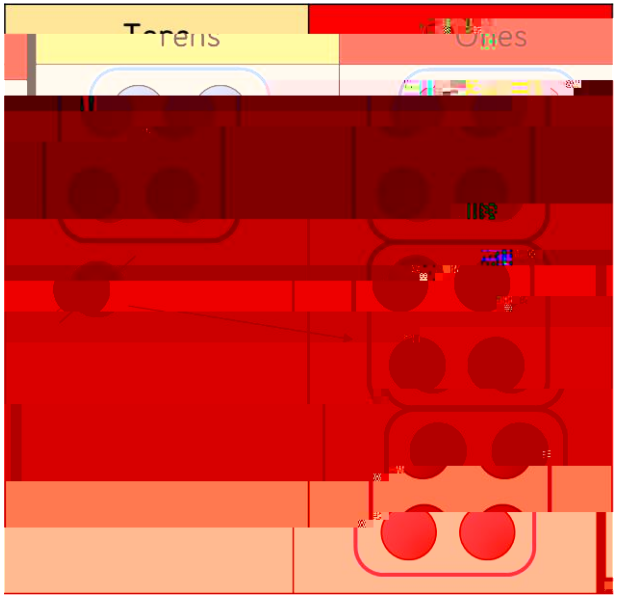
In Year 2 children are introduced to the division symbol.

ill: Sk[redacted]step problems using division (grouping)	
How many bags are there?	repeated subtraction on a number line. They can use concrete [illegible] number shapes which [illegible] between multiplication and

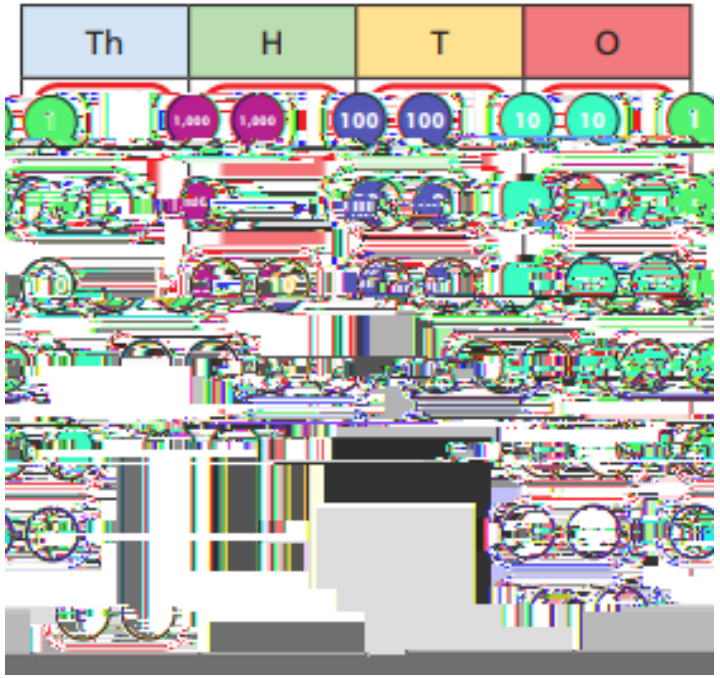
ill: SkDivide 2- -digit (sharing with no exchange)	

ill: SkDivide 2 [redacted] -[redacted]	Year: 3/4
[redacted]   52 ÷ 4 =	When dividing numbers involving an exchange, children can use Base 10 and place value counters for ten ones. Children should start with the equipment [redacted] [redacted] ones equally between the rows. [redacted] a part-[redacted] supports this method.

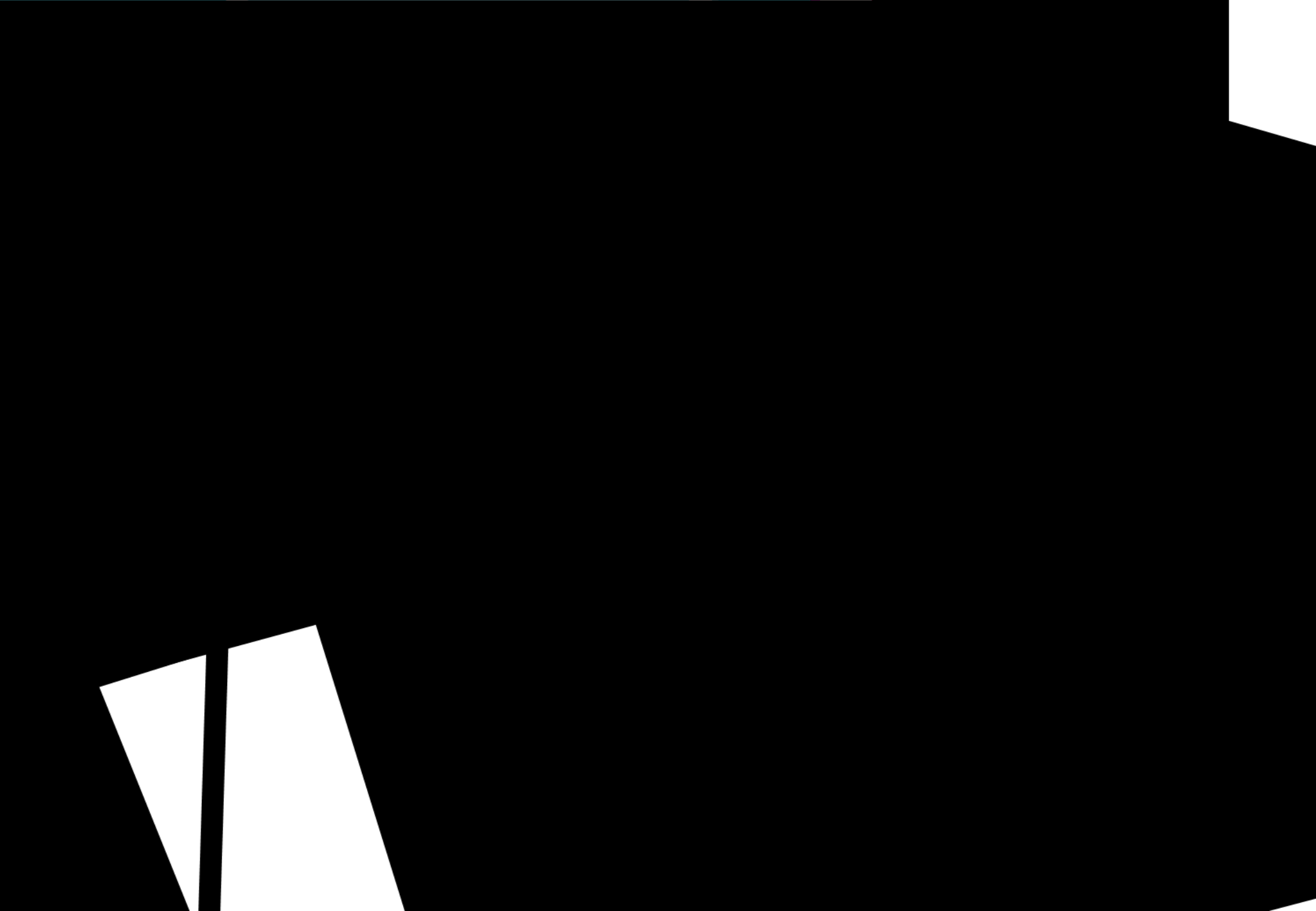
Skill: Divide 2-	Year: 3/4
 53 ÷ 4 =	When dividing numbers with ers, children remaind can use Base 10 and place value counters for ten ones. equipment outside the place value grid will highlight remainders, as they will be left outside the grid once the equal groups have been made. a part-whole model supports this method.

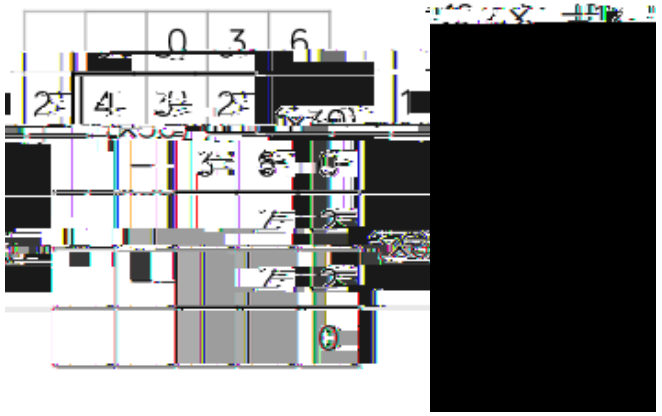
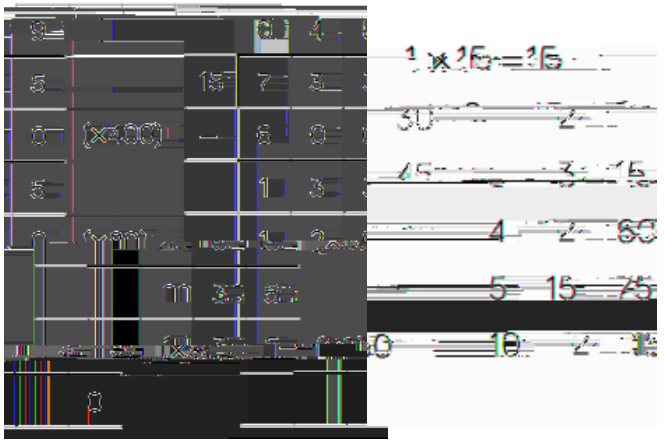
ill: SkDivide 2- -	Year: 4/5
 52 ÷ 4 =	 	When using the short division method, I encourage children use grouping. Starting with the largest place value, they group by the divisor. Language is important here. Children should say 'how many groups of 4 tens can we make?' and 'how many ones can we make?' Remainders can also be seen as they are left ungrouped.

ill: SkDivide 3- -	[redacted]
÷ 4 = [redacted]	[redacted] to use grouping to support their understanding of [redacted] dividing a 3-digit [redacted]-digit [redacted] Place value counters [redacted] be used on a place [redacted] to support [redacted] this understanding. [redacted] draw their own counters and group [redacted] them through a more [redacted] pictorial method.

ill: SkDivide 4- -	Year 5
 8,532 ÷ 2 = 4,266	Place value counters be used on a place alue grid to support children to divide 4-digits by 1-digit. draw their own counters and group them through a more pictorial method. Children should be away from the concrete and pictorial when dividing numbers with multiple exchanges.

	4	2	6	6
2	8	5	1	12



ill: Skill: Divide multi-digits by 2-ision) digits (long di	Year: 6
	Children can also divide by 2-digit numbers using long division.
432 ÷ 12 = 36	Children can write out multiples to support their calculations with larger numbers.
7,335 ÷ 15 = 489	Children will also solve problems with remainders where the quotient can be rounded as appropriate.
	

Glossary

Array – A [illegible] of numbers, cubes or other item in rows and columns.

Commutative – Numbers can be multiplied or added in any order.