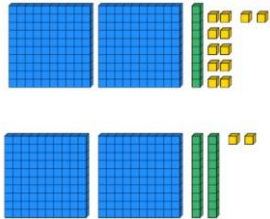




# Year 5: Addition

**Vocabulary:** add, make, altogether, sum, and, plus, total, more than, greater than, combined, increased



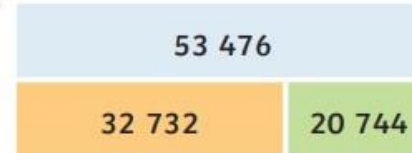
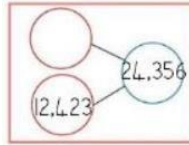
Strategy	Concrete	Pictorial	Abstract																														
Column addition (compact) <u>with</u> and <u>without</u> regrouping/exchanging (addition up to and including five digit numbers).	<p><b>Without regrouping:</b> Use dienes apparatus to physically add thousands, hundreds, tens and ones.</p> <p><b>With regrouping:</b> <math>119 + 103 = 222</math></p> <p>Physically exchange ten ones for a ten, ten tens for a hundred and ten hundreds for a thousand.</p> 	<p><b>Without regrouping:</b> Draw dienes apparatus and add ones first, then add tens, then add hundreds and finally add thousands.</p> <p><b>With regrouping:</b> Draw dienes apparatus and <b>to add from the right to the left, beginning with the ones as with compact column addition.</b> When exchanging, cross out and regroup e.g. Cross out ten ones and add the extra ten into the tens column.</p>	<p><b>Without regrouping, one regroup/exchange and multiple regrouping/exchanges:</b></p> <table border="1" data-bbox="1547 448 2096 742"> <tr><td></td><td>1</td><td>2</td><td>8</td><td>4</td><td>7</td></tr> <tr><td>+</td><td>1</td><td>1</td><td>6</td><td>2</td><td>4</td></tr> <tr><td colspan="6"><hr/></td></tr> <tr><td></td><td>2</td><td>4</td><td>4</td><td>7</td><td>1</td></tr> <tr><td></td><td></td><td>1</td><td></td><td>1</td><td></td></tr> </table> <p>Work from the right to the left, beginning with the ones. When exchanges take place, they should be recorded beneath the calculation.</p>		1	2	8	4	7	+	1	1	6	2	4	<hr/>							2	4	4	7	1			1		1	
	1	2	8	4	7																												
+	1	1	6	2	4																												
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	2	4	4	7	1																												
		1		1																													

Using the inverse to check calculations and identify missing numbers.

Use practical apparatus such as counters, dienes apparatus, cubes etc. to form addition number sentences and then the related addition sentence using the commutative law and the related subtraction number sentences.

Use pictorial models including bar models and part, whole models to show the inverse operation and the related number sentences. E.g.

$$53,476 - ? = 20,744$$
$$24,356 = ? + 12,423$$



Use formal methods for column addition and subtraction to demonstrate understanding of the inverse operation.

$$35,718 + ? = 48,675$$

	3	5	7	1	8
+	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	4	8	6	7	5

$$75,351 - 40,428 =$$

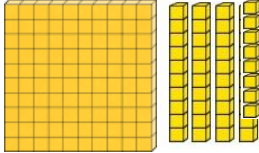
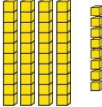
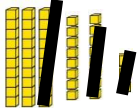
The difference between 34,623 and 75,351 is 40,728. Use the inverse to check this statement.



# Year 5: Subtraction

**Vocabulary:** minus, take away, difference, less than, less, leave, left, left over, fewer, subtract, minus, difference between, distance between, subtraction **reduced**, decreased



Strategy	Concrete	Pictorial	Abstract																																				
Compact column subtraction <u>with and without</u> exchanging.	<p><b>Without exchanging: 148</b></p> $- 17 =$ <p>Physically take away the ones, then the tens and then the hundreds.</p>  <p><b>With exchanging: 32 - 7 =</b></p> <p>Make the largest number using dienes apparatus. Physically take away the ones, then the tens and finally the hundreds. If there are not enough ones, exchange one ten for ten units. If there are not enough tens, exchange one hundred for ten tens.</p>	<p><b>Without exchanging:</b> Draw the largest numbers. Cross out the ones being taken away, followed by the tens and then the hundreds.</p> <p><b>With exchanging: 47 - 19 =</b></p> <p>Draw the largest numbers.</p>  <p>If there are not enough ones, exchange one ten for ten units. If there are not enough tens, exchange one hundred for ten tens. Cross out the ones being taken away followed by the tens and the units.</p> 	<p><b>With and without exchanging:</b></p> <table border="1" data-bbox="1608 373 2136 639"> <tr><td></td><td>3</td><td>5</td><td><del>6</del></td><td><del>13</del></td><td><del>1</del></td></tr> <tr><td>-</td><td></td><td>3</td><td>4</td><td>7</td><td>6</td></tr> <tr><td></td><td>3</td><td>2</td><td>2</td><td>6</td><td>6</td></tr> </table> <table border="1" data-bbox="1608 724 2136 997"> <tr><td></td><td><del>1</del></td><td><del>1</del></td><td>4</td><td><del>6</del></td><td><del>1</del></td></tr> <tr><td>-</td><td></td><td>2</td><td>2</td><td>4</td><td>4</td></tr> <tr><td></td><td>1</td><td>9</td><td>2</td><td>2</td><td>8</td></tr> </table>		3	5	<del>6</del>	<del>13</del>	<del>1</del>	-		3	4	7	6		3	2	2	6	6		<del>1</del>	<del>1</del>	4	<del>6</del>	<del>1</del>	-		2	2	4	4		1	9	2	2	8
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-		2	2	4	4																																		
	1	9	2	2	8																																		

Finding the difference.

Use practical apparatus to show the difference between two numbers. Equipment such as multilink, which is equal in size and can be lined up exactly, demonstrates this concept.

Use bar models to show finding the difference between two numbers.

What is the difference between 25,567 and 1,875?



**Number Sentence:**

What is the difference between 102,616 and 14,504?

$$102,616 - 14,504 =$$

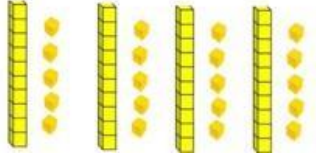
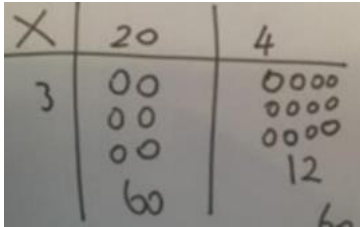


# Year 5: Multiplication

**Vocabulary:** double, groups, lot, grouping, array, twos, tens, fives, times, multiply, multiplied by, two times table, ten times table, five times table, multiple of, once, twice, three times, five times, ten times, time as, repeated addition, row, column, sets, product, six times table, seven times tables, nine times table, eleven times table, twelve times table, short multiplication, **long multiplication**



**Timetables Progression:** 2s to 12s

Strategy	Concrete	Pictorial	Abstract																												
Short Multiplication	<p>Use dienes apparatus to make groups. Combine units and tens. Add together to find the total.</p>  <p> <math>4 \times 15 =</math>  <math>4 \times 10 = 40</math>  <math>4 \times 5 = 20</math>  <math>40 + 20 = 60</math> </p> <p>Use counters to represent value of digits to multiply in a place value grid. Recombine tens and ones.</p> <table border="1" data-bbox="309 914 622 1145"> <thead> <tr> <th>10s</th> <th>1s</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table> <p> <math>23 \times 3 =</math>  <math>20 \times 3 = 60</math>  <math>3 \times 3 = 9</math>  <math>60 + 9 = 69</math> </p>	10s	1s			<p>Draw dienes apparatus or counters to represent place value of digits in columns.</p> <p> <math>24 \times 3 =</math>  <math>60 + 12 = 72</math> </p> 	<p><b>Short Multiplication:</b></p> <table border="1" data-bbox="1400 464 1727 831"> <thead> <tr> <th>Th</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td>5</td> <td>4</td> <td>3</td> </tr> <tr> <td>x</td> <td></td> <td></td> <td>4</td> </tr> <tr> <td colspan="4"><hr/></td> </tr> <tr> <td>2</td> <td>1</td> <td>7</td> <td>2</td> </tr> <tr> <td></td> <td>1</td> <td>1</td> <td></td> </tr> </tbody> </table> <p>Multiply from the right to the left (ones, tens and then hundreds). When exchanges take place, they should be recorded beneath the calculation.</p>	Th	H	T	O		5	4	3	x			4	<hr/>				2	1	7	2		1	1	
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Th	H	T	O																												
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x			4																												
<hr/>																															
2	1	7	2																												
	1	1																													







# Year 5: Division

**Vocabulary:** half, halve, pair, share equally, equal groups, grouping, sharing, repeated subtraction, arrays, column, row, one each, two each, three each, group in pairs, group in tens, group in fives, equal groups of, divide, divided, divided by, divided into, remainder, divide by 10



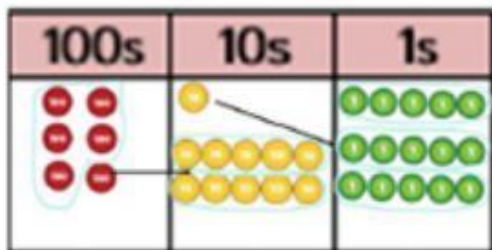
**Timetables Progression:** 2s-12s

## Strategy

Short Division:  
Use short division to divide three and four digit numbers by one digit numbers.

## Concrete

$$615 \div 5 = 123$$

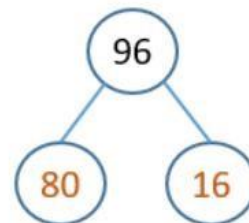
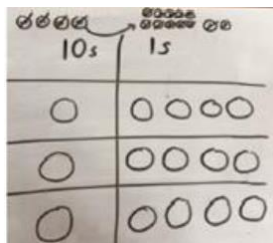


Make 615 with place value counters. How many groups of 5 hundreds can you make with 6 hundred counters?  
Exchange 1 hundred for 10 tens.  
How many groups of 5 tens can you make with 11 counters?  
Exchange 1 ten for 10 ones.  
How many groups of 5 ones can you make with 15 ones?

## Pictorial

Place Value Grid/Part-Whole Model

$$42 \div 3 = 14 \quad 96 \div 4 = 24$$



$$(80 \div 4) + (16 \div 4) \\ 20 + 4 = 24$$

## Abstract

Number Sentence:

Without carrying:

		4	8
6	2	8	8

With carrying:

	1	1	7
5	5	8	5

How many 5's in 5 (hundreds)?  
How many 5's in 8 (tens)?  
Exchange the remaining 3 tens.  
How many 5's in 35?



