

# Washingwell Primary School



## Calculation Support for Parents:

Year 3

2024 - 2025

Dear Parents,

In this booklet you will find worked examples of how we teach and use calculation strategies within school.

The calculation support document is broken down into four sections: addition, subtraction, multiplication and division.

At the beginning of each section you will find an overview of which aspects of each operation we cover across the year group.

Under each operation you will then see the progression of skills taught and worked examples of how these methods are taught within class.

We hope that by sharing these calculation methods with you, you will be able to support your child with their maths learning at home by building upon the strategies we teach in school.

Should you have any questions please do not hesitate to contact your child's teacher via their class email.

# Addition

Year 3

- Add 1s, 10s and 100s to a 3-digit number
- Add two numbers (no exchange)
- Add two numbers across a 10 or 100
- Complements to 100
- Add fractions with the same denominator within 1 whole
- Calculate the duration of events

<b>Year 3</b>	<ul style="list-style-type: none"> <li>• Add numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds.</li> <li>• Add numbers with up to three digits, using formal written methods of columnar addition.</li> <li>• Add fractions with the same denominator within 1 whole.</li> <li>• Calculate the time taken by particular events or tasks.</li> </ul>
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<b>Progression of skills</b>	<b>Key representations</b>
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<p><b>Add 1s, 10s or 100s to a 3-digit number</b></p> <p>Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.</p>	<p>The ones/tens/hundreds column will increase by ...</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1" style="display: inline-table;"> <thead> <tr> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p> <math>444 + 5 =</math>                      <math>777 + 2 =</math>  <math>444 + 50 =</math>                     <math>777 + 20 =</math>  <math>444 + 500 =</math>                    <math>777 + 200 =</math> </p>	Hundreds	Tens	Ones				H	T	O				<p>What patterns do you notice?</p> <p> <math>235 + 3 =</math>  <math>235 + 30 =</math>  <math>235 + 300 =</math> </p> <p> <math>111 + \square = 118</math>  <math>604 + 20 =</math>                      <math>111 + \square = 181</math>  <math>604 + 50 =</math>                      <math>111 + \square = 811</math>  <math>604 + 90 =</math> </p>
Hundreds	Tens	Ones												
H	T	O												

<p><b>Add two numbers (no exchange)</b></p> <p>Mental strategies and introduction of formal written method.</p>	<p>... ones + ... ones = ... ones          ... tens + ... tens = ... tens          ... hundreds + ... hundreds = ... hundreds</p> <div style="display: flex; align-items: center; justify-content: center;"> <table border="1" style="margin-right: 20px;"> <tr><td colspan="2" style="background-color: #f4a460;">?</td></tr> <tr><td style="background-color: #f4a460;">345</td><td style="background-color: #f4a460;">432</td></tr> </table> <table border="1" style="margin-right: 20px;"> <thead> <tr> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1" style="margin-right: 20px;"> <thead> <tr> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>+</td> <td>4</td> <td>3</td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black;"> </td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black;"> </td> </tr> </tbody> </table> </div>	?		345	432	Hundreds	Tens	Ones							H	T	O	3	4	5	+	4	3						
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Progression of skills	Key representations	
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**Add two numbers across a 10 or 100**

Formal written method involving up to 2 exchanges including 3-digit plus 2-digit numbers.

There are ... ones, so I do/do not need to make an exchange.  
 There are ... tens, so I do/do not need to make an exchange.  
 ... ones = ... ten and ... ones.  
 ... tens = ... hundred and ... tens.

The key representations include:

- A place value chart for  $255 + 54$  showing 2 hundreds, 5 tens, and 5 ones plus 5 tens and 4 ones. A number bond below shows 255 and 54.
- A place value chart for  $466 + 353$  showing 4 hundreds, 6 tens, and 6 ones plus 3 hundreds, 5 tens, and 3 ones. A number bond below shows 466 and 353.
- A place value chart for  $367 + 164$  showing 3 hundreds, 6 tens, and 7 ones plus 1 hundred, 6 tens, and 4 ones.
- A number line for  $255 + 54$  starting at 255, jumping +2 to 257, and then +52 to 309.

**Complements to 100**

Pairs of numbers which total 100

... plus ... is equal to 100

The key representations include:


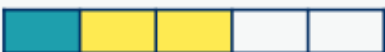

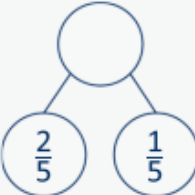



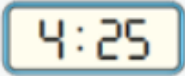
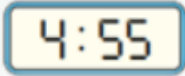
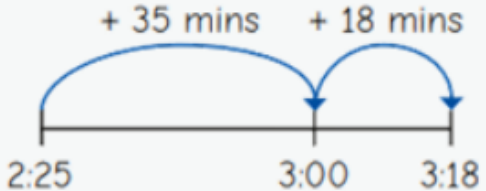
- A 10x10 grid where 38 squares are blue and 62 squares are orange, totaling 100 squares.
- A number bond for 100 with 38 and an empty circle.
- A number line for 100 with 38 and an empty circle.

I add ... to get to the next 10, then ... to get to 100

The key representation includes:

- A number line for 100 showing jumps of +2 and +60 from 38 to 100.

$38 + 62 = 100$   
 $62 + 38 = 100$   
 $100 = 38 + 62$   
 $100 = 62 + 38$

Progression of skills	Key representations
<p><b>Add fractions with the same denominator within 1 whole</b></p> <p>Make links with known facts.</p>	<p>When adding fractions with the same denominator, I only add the numerator.  ... fifths + ... fifths = ... fifths</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <math>\frac{1}{5} + \frac{1}{5}</math> </div> <div style="text-align: center;">  <math>\frac{1}{5} + \frac{2}{5}</math> </div> <div style="text-align: center;">  <math>\frac{1}{5} + \frac{3}{5}</math> </div> </div> <div style="text-align: right; margin-top: 20px;">  </div> <div style="text-align: right; margin-top: 20px;">  </div>
<p><b>Calculate the duration of events</b></p> <p>Find durations of time between a given start and end point. Children will need to calculate complements to 60</p>	<p>From ... to ... o'clock is ... minutes.  From ... o'clock to ... is ... minutes.  The total time taken is ... minutes.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>start</p> </div> <div style="text-align: center;">  <p>finish</p> </div> <div style="text-align: center;">  <p>start</p> </div> <div style="text-align: center;">  <p>finish</p> </div> <div style="text-align: center;">  </div> </div>

# Subtraction

Year 3

- Subtract 1s, 10s and 100s from a 3-digit number
- Subtract two numbers (no exchange)
- Subtract two numbers across a 10 or 100
- Complements to 100
- Subtract fractions with the same denominator within 1 whole

<b>Year 3</b>	<ul style="list-style-type: none"> <li>Subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds.</li> <li>Subtract numbers with up to three digits, using formal written methods.</li> <li>Subtract fractions with the same denominator within 1 whole.</li> </ul>
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<b>Progression of skills</b>	<b>Key representations</b>
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<p><b>Subtract 1s, 10s and 100s from a 3-digit number</b></p> <p>Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.</p>	<p>The ones/tens/hundreds column will decrease by ...</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th style="background-color: #d9ead3;">Hundreds</th> <th style="background-color: #fff2cc;">Tens</th> <th style="background-color: #f4cccc;">Ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th style="background-color: #d9ead3;">H</th> <th style="background-color: #fff2cc;">T</th> <th style="background-color: #f4cccc;">O</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p> <math>444 - 2 =</math>                      <math>777 - 4 =</math>  <math>444 - 20 =</math>                     <math>777 - 40 =</math>  <math>444 - 200 =</math>                    <math>777 - 400 =</math> </p>	Hundreds	Tens	Ones				H	T	O				<p>What patterns do you notice?</p> <p> <math>235 - 3 =</math>  <math>235 - 30 =</math>  <math>235 - 300 =</math> </p> <p> <math>118 - \square = 111</math>  <math>624 - 20 =</math>                      <math>181 - \square = 111</math>  <math>654 - 50 =</math>                     <math>811 - \square = 111</math>  <math>694 - 90 =</math> </p>
Hundreds	Tens	Ones												
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<p><b>Subtract two numbers (no exchange)</b></p> <p>Mental strategies and introduction of formal written method.</p>	<p>... ones – ... ones = ... ones          ... tens – ... tens = ... tens          ... hundreds – ... hundreds = ... hundreds</p> <div style="display: flex; align-items: center; justify-content: center;"> <table border="1" style="margin-right: 20px;"> <tr><td colspan="2" style="background-color: #f4cccc;">769</td></tr> <tr><td style="background-color: #d9ead3;">147</td><td style="background-color: #fff2cc;">?</td></tr> </table> <table border="1" style="margin-right: 20px;"> <thead> <tr> <th style="background-color: #d9ead3;">Hundreds</th> <th style="background-color: #fff2cc;">Tens</th> <th style="background-color: #f4cccc;">Ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1" style="margin-right: 20px;"> <thead> <tr> <th style="background-color: #d9ead3;">H</th> <th style="background-color: #fff2cc;">T</th> <th style="background-color: #f4cccc;">O</th> </tr> </thead> <tbody> <tr> <td>7</td> <td>6</td> <td>9</td> </tr> <tr> <td>-</td> <td>1</td> <td>4</td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black;"> </td> </tr> </tbody> </table> </div>	769		147	?	Hundreds	Tens	Ones							H	T	O	7	6	9	-	1	4			
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Progression of skills	Key representations	
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**Subtract two numbers across a 10 or 100**

Formal written method involving up to 2 exchanges including 3-digit subtract 2-digit numbers.

I need to subtract ... ones. I do/do not need to make an exchange.  
 I need to subtract ... tens. I do/do not need to make an exchange.  
 I can exchange 1 ... for 10 ...

**Complements to 100**

Focus on subtraction facts.

Encourage children to notice patterns.

100 minus ... is equal to ...

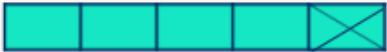


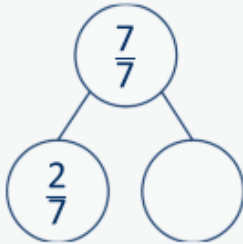

I subtract ... tens, then I subtract ... ones.

$$100 - 38 = 62$$

$$100 - 62 = 38$$

$$62 = 100 - 38$$

$$38 = 100 - 62$$

Progression of skills	Key representations
<p><b>Subtract fractions with the same denominator within 1 whole</b></p> <p>Make links with known facts.</p>	<p>When subtracting fractions with the same denominator, I only subtract the numerator.  ... fifths – ... fifths = ... fifths</p> <div style="display: flex; align-items: center; margin-bottom: 10px;">  <div style="margin-left: 10px;"><math>\frac{5}{5} - \frac{1}{5}</math></div> </div> <div style="display: flex; align-items: center; margin-bottom: 10px;">  <div style="margin-left: 10px;"><math>\frac{4}{5} - \frac{1}{5}</math></div> </div> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"><math>\frac{3}{5} - \frac{1}{5}</math></div> </div> <div style="text-align: right; margin-top: 20px;">  </div> <div style="text-align: center; margin-top: 20px;">  </div>




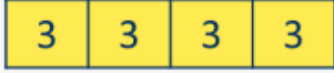

# Multiplication

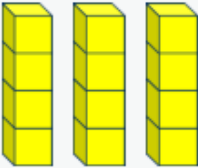




Year 3

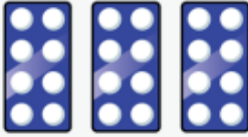
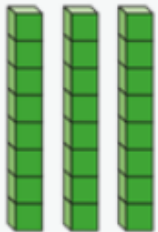






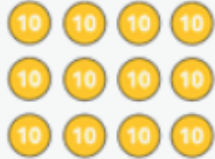




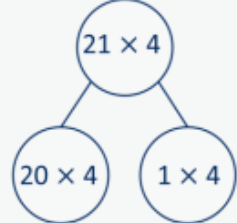
































- The 3 times-table
- The 4 times-table
- The 8 times-table
- Related facts
- Multiply a 2-digit number by a 1-digit number - no exchange
- Multiply a 2-digit number by a 1-digit number - with exchange
- Scaling
- Correspondence problems

















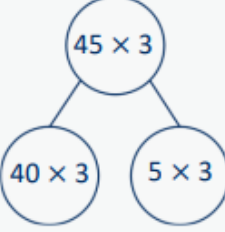




























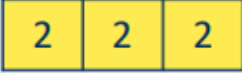



<b>Year 3</b>	<ul style="list-style-type: none"> <li>Recall and use multiplication facts for the 3, 4 and 8 multiplication tables.</li> <li>Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.</li> <li>Solve problems, including missing number problems, involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.</li> </ul>
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<b>Progression of skills</b>	<b>Key representations</b>
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<p><b>The 3 times-table</b></p> <p>Encourage daily counting in multiples both forwards and back.</p>	<p>... groups of 3 =</p> <p>... <math>\times 3 =</math></p> <p>3, ... times = </p> <p><math>3 \times \dots =</math> </p> <p> </p>	<p>... times 3 is equal to ...</p> <table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> </table> <p><math>4 \times 3 = 12</math>   <math>12 = 4 \times 3</math></p> 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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<p><b>The 4 times-table</b></p> <p>Encourage daily counting in multiples both forwards and back. Encourage children to notice links between the 2 and 4 times-tables.</p>	<p>... groups of 4 =</p> <p>... <math>\times 4 =</math></p> <p>4, ... times = </p> <p><math>4 \times \dots =</math> </p> <p> </p>	<p>... times 4 is equal to ...</p> <table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> </table> <p><math>3 \times 4 = 12</math>   <math>12 = 3 \times 4</math></p> 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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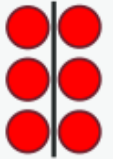



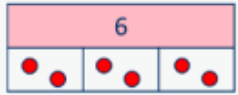
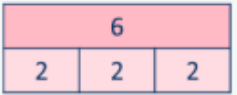

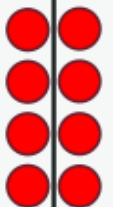


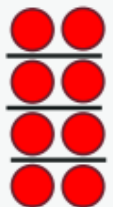

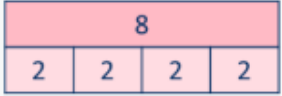
Progression of skills	Key representations																															
<p><b>The 8 times-table</b></p> <p>Encourage daily counting in multiples both forwards and back. Encourage children to notice links between the 2, 4 and 8 times-tables.</p>	<p>... lots of 8 =  <math>\times 8 =</math></p>  <p>8, ... times =</p> <p><math>8 \times \dots =</math></p>   	<p>... times 8 is equal to ...</p> <table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> </table> <p><math>3 \times 8 = 24</math>   <math>24 = 3 \times 8</math></p> 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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<p><b>Related facts</b></p> <p>Use knowledge of multiplying by 10 to scale times-table facts.</p>	<p>... <math>\times</math> ... ones is equal to ... ones  so ... <math>\times</math> ... tens is equal to ... tens.</p>     <p><math>3 \times 4 = 12</math>  <math>3 \times 40 = 120</math></p>																															
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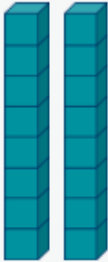
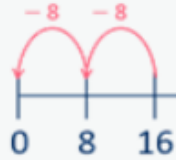






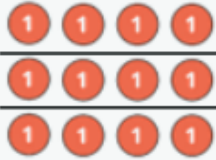

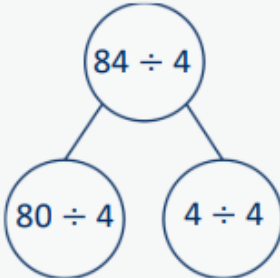
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<p><b>Scaling</b></p> <p>Children focus on multiplication as scaling ( ... times the size) as opposed to repeated addition.</p>	<p>There are ... times as many ... as ...</p>    <p>There are 3 times as many triangles as circles.</p>	<p>... is ... times the size of ... ... is ... times the length/height of ...</p>    <p>Miss Smith is twice the height of Jo.</p>																		

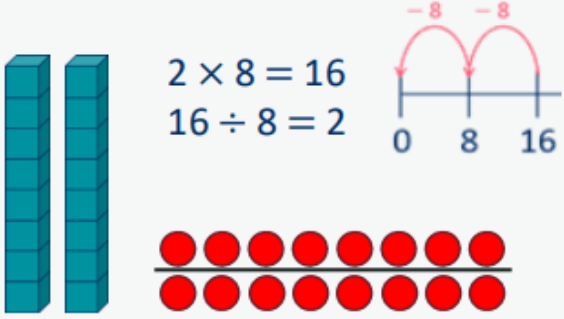
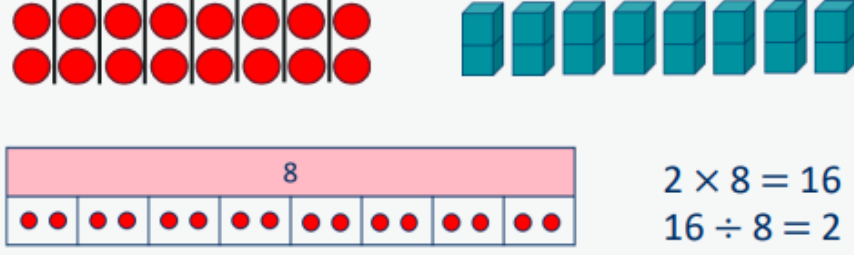
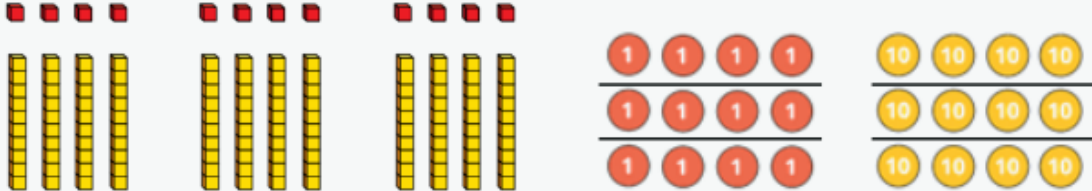
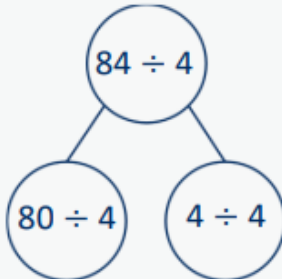
Progression of skills	Key representations								
<p><b>Correspondence problems</b> (How many ways?)</p> <p>Encourage children to work systematically to find all the different possible combinations.</p>	<p>For every ... , there are ... possible ... There are ... <math>\times</math> ... possibilities altogether.</p> <div style="display: flex; align-items: center; justify-content: space-around;">  <table border="1"> <thead> <tr> <th>hats</th> <th>scarves</th> </tr> </thead> <tbody> <tr> <td>blue </td> <td>    </td> </tr> <tr> <td>orange </td> <td>    </td> </tr> <tr> <td>purple </td> <td>    </td> </tr> </tbody> </table> </div> <p>For every hat, there are two possible scarves. <math>3 \times 2 = 6</math></p> <p>There are 6 possibilities altogether.</p>	hats	scarves	blue 	 	orange 	 	purple 	 
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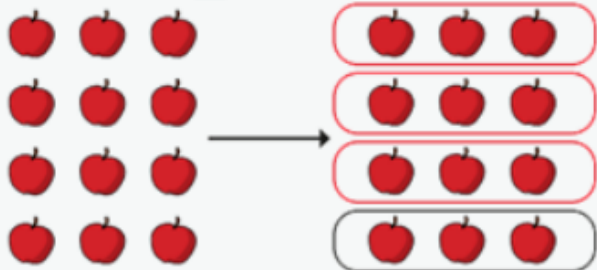
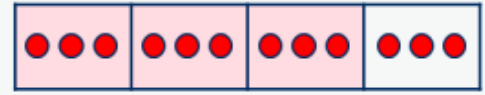
# Division

Progression of skills	Key representations								
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Year 3	<ul style="list-style-type: none"> <li>Recall and use division facts for the 3, 4 and 8 multiplication tables.</li> <li>Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.</li> <li>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.</li> </ul>	
Progression of skills	Key representations	
<p><b>Divide by 3</b></p> <p>Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.</p>	<p>There are ... groups of 3 in ...</p> <p>... <math>\div 3 =</math></p>   	<p>... has been shared equally into 3 equal groups.</p> <p>... <math>\div 3 =</math></p>    
<p><b>Divide by 4</b></p> <p>Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.</p>	<p>There are ... groups of 4 in ...</p> <p>... <math>\div 4 =</math></p>   	<p>... has been shared equally into 4 equal groups.</p> <p>... <math>\div 4 =</math></p>    

Progression of skills	Key representations																					
<p><b>Divide by 8</b></p> <p>Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.</p>	<p>There are ... groups of 8 in ...  <math>\dots \div 8 =</math></p>  <p><math>2 \times 8 = 16</math>  <math>16 \div 8 = 2</math></p>  	<p>... has been shared equally into 8 equal groups.  <math>\dots \div 8 =</math></p>    <p><math>2 \times 8 = 16</math>  <math>16 \div 8 = 2</math></p>																				
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<p><b>Divide a 2-digit number by a 1-digit number - no exchange</b></p> <p>Partition into tens and ones to divide and then recombine.</p>	<p>... tens divided by ... is equal to ... tens.  ... ones divided by ... is equal to ... ones.</p> <table border="1"> <thead> <tr> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table> <p><math>60 \div 2 = 30</math>  <math>4 \div 2 = 2</math>  <math>64 \div 2 = 32</math></p>  <table border="1"> <thead> <tr> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>		Tens	Ones									Tens	Ones								
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Progression of skills	Key representations	
<p><b>Non-unit fractions of a set of objects</b></p> <p>Bar models are a useful representation and show the links with division and multiplication.</p>	<p>The whole is divided into ... equal parts. Each part is <math>\frac{1}{\square}</math> of the whole.</p>  <p><math>\frac{3}{4}</math> of 12 apples is 9 apples.</p>	<p><math>\frac{1}{\square}</math> of ... is ..., so <math>\frac{\square}{\square}</math> of ... is ...</p> <p><math>\frac{3}{4}</math> of 12 is 9</p>  <p><math>\frac{2}{3}</math> of 36 is 24</p> 