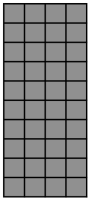

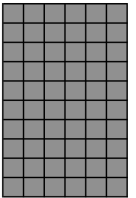


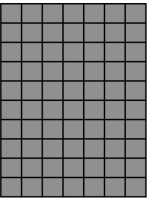

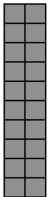

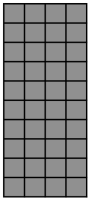

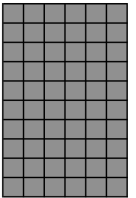


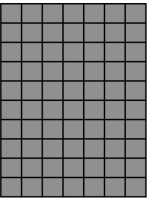

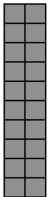

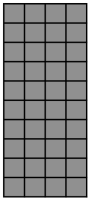

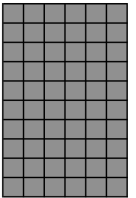


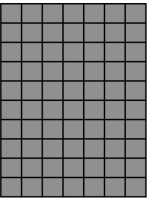

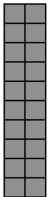



Class: Year 3	Year:	Term:	Week ( to )	Teacher:
---------------	-------	-------	-------------	----------

Prior learning – check that children can already:	Learning objectives:	Vocabulary:
<ul style="list-style-type: none"> <li>• solve one-step word problems involving all four operations</li> <li>• choose and use suitable equipment when following a given line of enquiry</li> <li>• select, organise and present information in lists, tables and simple diagrams</li> <li>• partition two-digit numbers and recognise the importance of place value</li> <li>• recognise simple fractions and find halves and quarters of sets of objects and small numbers</li> <li>• recall addition and subtraction facts for all numbers to 10 and multiples of 10</li> <li>• understand inverse operations and use the inverse relationships of addition and subtraction to generate number facts</li> <li>• understand multiplication and division and derive and recall multiplication and division facts for 2, 5 and 10</li> </ul>	<ul style="list-style-type: none"> <li>• Represent the information in a puzzle or problem using numbers, images or diagrams; use these to find a solution and present it in context, where appropriate using £.p notation or units of measure</li> <li>• Add or subtract mentally combinations of one-digit and two-digit numbers</li> <li>• Develop and use written methods to record, support or explain addition and subtraction of two-digit and three-digit numbers</li> <li>• Use practical and informal written methods to multiply and divide two-digit numbers (e.g. <math>13 \times 3</math>, <math>50 \div 4</math>); round remainders up or down, depending on the context (covered in unit E2)</li> <li>• Find unit fractions of numbers and quantities (e.g. <math>1/2</math>, <math>1/3</math>, <math>1/4</math> and <math>1/6</math> of 12 litres) (covered in unit E2)</li> <li>• Draw and complete shapes with reflective symmetry; draw the reflection of a shape in a mirror line along one side (covered in E2)</li> <li>• Read and record the vocabulary of position, direction and movement, using the four compass directions to describe movement about a grid</li> <li>• Use a set-square to draw right angles and to identify right angles in 2-D shapes; compare angles with a right angle; recognise that a straight line is equivalent to two right angles</li> <li>• Know the relationships between kilometres and metres, metres and centimetres, kilograms and grams, litres and millilitres; choose and use appropriate units to estimate, measure and record measurements (covered in E2)</li> <li>• Explain a process or present information, ensuring items are clearly sequenced, relevant details are included and accounts ended effectively</li> </ul>	<p>problem, solution, puzzle, pattern, methods, sign, operation, symbol, number sentence, equation, mental calculation, written calculation, informal method, jottings, diagrams, pictures, images</p> <p>add, plus, sum, total, subtract, take away, minus, difference, double, halve, inverse, multiply, times, multiplied by, product, multiple, share, share equally, divide, divided by, divided into, left, left over, remainder</p> <p>fraction, part, equal parts, one whole, one half, one third, one quarter, one fifth, one sixth, one tenth</p> <p>grid, row, column, horizontal, vertical, diagonal, higher, lower</p> <p>map, plan, compass point, north (N), south (S), east (E), west (W), turn, whole turn, half turn, quarter turn, clockwise, anticlockwise, right, left, up, down, ascend, descend, forwards, backwards, sideways, across</p> <p>measuring scale, interval, division, unit, standard unit, approximately, close, about the same as, ten times, hundred times measure, estimate, unit, length, distance, weight, capacity, ruler, tape measure, balance, scales, measuring cylinder/jug, angle, right angle, set-square, units of measurement and abbreviations: metre (m), centimetre (cm), millimetre (mm), kilogram (kg), gram (g), litre (l), millilitre (ml)</p> <p>time, clock, watch, hour (h), minute (min), second (s)</p>

Weekly homework includes children learning their times-tables and number bonds (differentiated to the numbers they are up to), which they are then tested on once a week

When HA are working on MA work without listening to my model a TA will check they understand it and are doing it correctly

	OBJECTIVES	TEACHING ACTIVITIES  (20 mins)	INDEPENDENT WORK  (20 mins)	Plenary	SUCCESS CRITERIA  (10 mins)	Evaluation																		
M	<p>Mental: Add or subtract mentally combinations of one-digit and two-digit numbers</p> <p>Main: Develop and use written methods to record, support or explain addition of two-digit and three-digit numbers</p> <p>D2001</p>	<p>Mental: Revise addition by partitioning horizontally with three questions: one with 2-digit numbers, one with 3-digit numbers and one with decimals to one place. Revise strategy of not changing the first number and partitioning the second number e.g. <math>45 + 22</math>    <math>45 + 20 = 65 + 2 = 67</math></p> <p>Main: Ask children to do the following questions on their WBs: 1) <math>53 + 21</math> 2) <math>48 + 45</math> 3) <math>47 + 985</math> 4) <math>378 + 876 + 911 + 546</math></p> <p>Ensure with all this work that on the IWB I use a squared paper background and ensure the children put only 1 number or operation symbol in each square. Children who don't get the first 2 questions correct do LA work. Children who get first 2 questions, but don't get questions 3 and 4 do MA or HA work Children who get questions 3 and 4 get started on G + T work. Those doing LA work go with TA and represent the calculation using tens and units blocks e.g. <math>45 + 28</math> below – when the units column gets to more than ten, there isn't enough space in the units column so the ten needs to 'move next door' to the tens. LA work using expanded layout only and representing calculations with tens and unit blocks.</p> <div style="text-align:center; margin-top: 10px;"> <table style="margin: auto; border: none;"> <tr> <td style="text-align:center;">40</td> <td style="text-align:center;">5</td> <td style="text-align:center;">40</td> <td style="text-align:center;">20</td> <td style="text-align:center;">13</td> <td style="text-align:center;">70</td> <td style="text-align:center;">3</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>   <table style="margin: auto; border: none;"> <tr> <td style="text-align:center;">20</td> <td style="text-align:center;">8</td> </tr> <tr> <td></td> <td></td> </tr> </table> </div>	40	5	40	20	13	70	3								20	8			<p>LA – use expanded vertical partitioning (1<sup>st</sup> example) only</p> <p>MA – use 1<sup>st</sup> layout for 4 questions, 2<sup>nd</sup> layout for 4 questions and 3<sup>rd</sup> layout for 4 questions</p> <p>HA – use formal layout only</p> <p>G + T – use formal layout with decimals places</p>	<p>Give children an addition to do on their pupil WB, which requires carrying. As they do it they need to explain to their partner what they are doing. Emphasise the need to use the language of carrying ten or carrying a hundred, not carrying the 1 when it is actually a 10 or 100. This should help reinforce their understanding of the process. Children swap over.</p>	<p>M: partition numbers vertically to add</p> <p>S: use the formal vertical algorithm to add</p> <p>C: add with numbers with decimal places</p>	
40	5	40	20	13	70	3																		
																								
20	8																							
																								

For those doing MA / HA work, revise how column addition is useful because it allows us to line-up the hundreds, tens and units and do calculations with larger numbers and decimals.

Quick model of how to do 1 question with these layouts:

372 + 247:

- $300 + 70 + 2$   
 $+ 200 + 40 + 7$   
 $500 + 110 + 9 = 619$
- $372$   
 $+ 247$   
 $619$

I will use both methods for each question on the IWB so the children:

- still think of the numbers in the formal algorithm as hundreds, tens and units and not as separate numbers
- see how the formal algorithm is a contracted version of the expanded layout

Emphasise how with vertical addition you need to start on the right-hand side, not on the left hand side as you do with horizontal partitioning

Ask children doing MA / HA work whether they would feel comfortable with doing the expanded layout first, or if they feel confident using the formal layout and give them the MA or HA worksheet respectively.

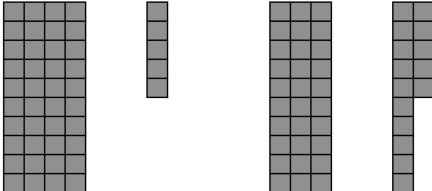
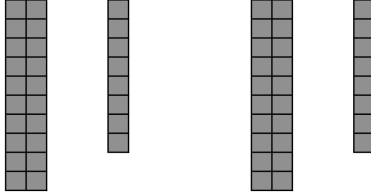
With G + T, who will be using the formal algorithm only, first few questions involve:

- adding several 3 digit numbers e.g.  $378 + 876 + 911 + 546$  with different numbers
- understanding what to do when a column adds up to 10 e.g. with  $238 + 465$  the 3 + the 6 + the carried 1 will give 10, so you put a 0 in the tens column and carry the 1 again:

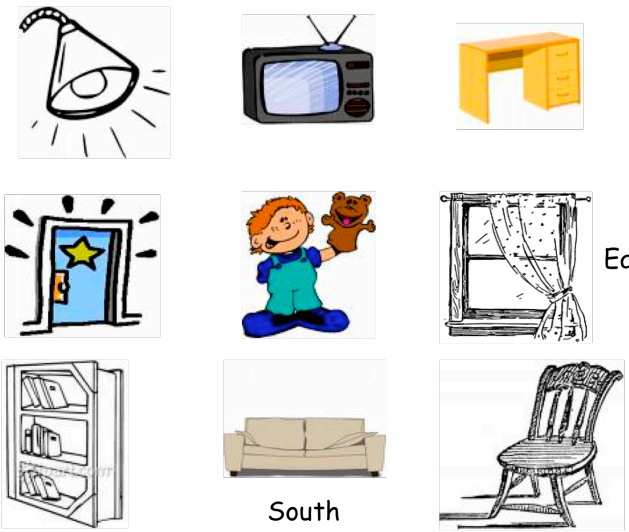
$238$   
 $+ 465$   
 $703$

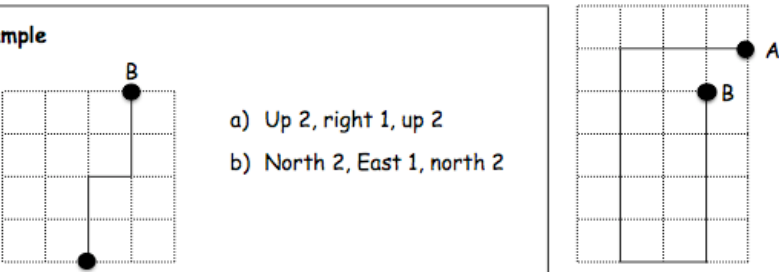
Go through answers to first few questions with those doing G+T work and check they understood the first few questions.

Depending on how they got on, explain how to answer first few questions or explain how to do column addition with decimals – emphasise it is the same thing, the key point is to put the numbers in the right columns

<p>Tu</p>	<p>Mental: Add or subtract mentally combinations of one-digit and two-digit numbers</p> <p>Main: Develop and use written methods to record, support or explain subtraction of two-digit and three-digit numbers</p> <p>D2002</p>	<p>Mental: Revise subtraction by partitioning horizontally, with three questions: one with 2-digit numbers, one with 3-digit number and one with decimals to one place. Revise strategy of not changing the first number and partitioning the second number e.g. <math>45 - 22</math>    <math>45 - 20 = 25 - 2 = 23</math></p> <p>Main: Ask children to do the following questions on their WBs: 1) <math>86 - 23</math> 2) <math>71 - 17</math> 3) <math>653 - 27</math> 4) <math>3,085 - 296</math></p> <p>Ensure with all this work that on the IWB I use a squared paper background and ensure the children put only 1 number or operation symbol in each square. Children who don't get the first 2 questions correct do LA work. Children who get first 2 questions, but don't get questions 3 and 4 do MA or HA work Children who get questions 3 and 4 get started on HA work. Those doing LA work go with TA and represent the calculation using tens and units blocks e.g. <math>45 - 28</math> below – I can't take 8 away from 5 so I need to go next door to get a 10 to make 15 LA work using expanded layout only and representing calculations with tens and unit blocks.</p> <div style="text-align: center;"> <p>40            5            30            15</p>  <p>20            8            20            8</p>  </div> <p>For those doing MA work, revise how column subtraction is useful because it allows us to line-up the hundreds, tens and units and do calculations with larger numbers and decimals. Model how to do the questions with this layout: <math>448 - 267</math>:  <ul style="list-style-type: none"> <li><math>300 + 140</math></li> <li><math>400 + 40 + 8</math></li> <li><math>- 200 + 60 + 7</math></li> <li><math>100 + 80 + 1 = 181</math></li> </ul> <ul style="list-style-type: none"> <li><math>\begin{array}{r} 448 \\ - 267 \\ \hline 181 \end{array}</math></li> </ul> </p>	<p>LA – use expanded vertical partitioning (1<sup>st</sup> example),</p> <p>MA – 6 questions using 1<sup>st</sup> expanded method and 6 questions using 2<sup>nd</sup> formal method</p> <p>HA – use formal algorithm only</p> <p>G+T – use formal algorithm with decimals</p>	<p>Give children a subtraction to do on their pupil WB, which requires 'taking'. As they do it they need to explain to their partner what they are doing. Emphasise the need to use the language of taking ten or taking a hundred, not taking the 1 when it is actually a 10 or 100. This should help reinforce their understanding of the process. Children swap over.</p>	<p>M: partition numbers vertically to subtract</p> <p>S: use the formal vertical algorithm to subtract</p> <p>C: subtract with numbers with decimal places</p>	
-----------	--	---	--	--	--	--

		<p>I will use both methods for each question on the IWB so the children:</p> <ul style="list-style-type: none"> <li>• still think of the numbers in the formal algorithm as hundreds, tens and units and not as separate numbers</li> <li>• see how the formal algorithm is a contracted version of the expanded layout</li> </ul> <p>Emphasise how with vertical subtraction you need to start on the right-hand side, not on the left hand side as you do with horizontal partitioning</p> <p>Emphasise how in the expanded version the addition signs in between the numbers do not show what type of calculation you are doing – this is indicated by the subtraction sign.</p> <p>Model how to do vertical subtraction with top numbers that have 0s in them e.g. 807 – 645</p> <p>Ask children doing MA / HA work whether they would feel comfortable with doing the expanded layout first, or if they feel confident using the formal layout and give them the MA or HA worksheet respectively.</p> <p>With HA, who will be using the formal algorithm only, first few questions involve subtracting numbers with different numbers of digits e.g. 912 - 7 as this will check if they understand how to align the numbers i.e. with the 7 under the 2.</p> <p>HA questions will also check that they understand what to do when there is a 0 in the top number e.g. with 208 - 165 you need to take a 100 from the 200 and make it 10 - 6</p> <ul style="list-style-type: none"> <li>• <math display="block">\begin{array}{r} 2^1 08 \\ - 165 \\ \hline 43 \end{array}</math></li> </ul> <p>Go through answers with those doing HA work and they do any corrections before moving on to column subtraction with decimals – emphasise it is the same thing, the key point is to put the numbers in the right columns. Also how you may need to put in zeros e.g. 4.5 – 2.22</p> $\begin{array}{r} 4.50 \\ - 2.22 \\ \hline \end{array}$				
W	<p>Mental: Add or subtract mentally combinations of one-digit and two-digit numbers</p> <p>Main: Develop and use written methods to record, support or explain addition and subtraction of two-digit and three-digit numbers</p> <p>D2003</p>	<p>Mental: Revise addition and subtraction by partitioning horizontally, with three questions: one with 2-digit numbers, one with 3-digit numbers and one with decimals to one place.</p> <p>Main: Ensure with all this work that on the IWB I use a squared paper background and ensure the children put only 1 number or operation symbol in each square. Model an addition and a subtraction using methods from the previous 2 lessons (both expanded and formal)</p> <p>As go through the examples, revise the key teaching points from previous 2 lessons:</p> <ul style="list-style-type: none"> <li>• putting the numbers in the correct columns</li> <li>• starting on the right hand side, not the left hand side</li> <li>• when to carry a ten or hundred in addition</li> <li>• need to take a ten or hundred in subtractions where one of the bottom numbers is bigger than the top number</li> <li>• <b>check if the question is an addition or subtraction</b>, and do the appropriate calculation</li> </ul> <p>Give children a choice of how to set out their work: with an expanded version or with a formal, contracted layout</p> <p>LA still to use an expanded layout only and represent calculations with tens and unit blocks</p> <p>Give children MA, HA or G+T worksheet based on how they got on over the last 2 days.</p>	<p>LA – use expanded vertical partitioning to add and subtract</p> <p>MA – use either expanded vertical partitioning or formal algorithm to add and subtract</p> <p>HA – use formal algorithm only to add and subtract</p> <p>G+T - use formal algorithm only to add and subtract, with decimals</p>	<p>Give children an addition to do on their pupil WB, which requires carrying and a subtraction that requires 'taking' a 10 or 100. As they do it they need to explain to their partner what they are doing. Emphasise the need to use the language of carrying / 'taking' ten or carrying a hundred, not carrying the 1 when it is actually a 10 or 100. This should help reinforce their understanding of the process. Children swap over.</p>	<p>M: partition numbers vertically to add and subtract</p> <p>S: use the formal vertical algorithm to add and subtract</p> <p>C: add and subtract with numbers with decimal places</p>	

Th	<p>Mental: Variety of mental calculations</p> <p>Main: Read and record the vocabulary of position, direction and movement, using the four compass directions</p> <p>D2004</p>	<p>Mental: Display coordinates grid on IWB, available from <a href="http://www.numeracyworld.com/coordinates.php">http://www.numeracyworld.com/coordinates.php</a>. The grid has numbers at different coordinates. In ability pairs children make up mental maths questions for each other to answer by saying the coordinates of the answer</p> <p>Main: Ask children to answer the following questions using the images below: 1) Is the boy facing north, south, east or west if he faces the window? 2) The boy turns from facing the couch to face the door. Has he gone through a quarter-turn, a half turn, a three-quarters turn or a full turn? 3) The boy turns a three quarters turn from the window to face the TV. Has he turned clockwise or anti-clockwise? 4) What direction on a compass is the boy facing if he faces the lamp? Children who get none of the questions right do LA work. Children who get question 1 right, but not questions 2, 3 and 4, do MA work. Children who get all questions right do HA work. On the non-interactive WB display the following: Quarter-turn = 90° Half-turn = 180° Full turn = 360° HA get started.</p> <div style="text-align: center;"> <p>North</p>  <p>West</p> <p>East</p> <p>South</p> </div> <p>Explain:</p> <ul style="list-style-type: none"> <li>• what a compass is, what it is for and the eight compass points</li> <li>• clockwise and anticlockwise (by referring to the clock)</li> <li>• quarter turns, half turns and full turns (ask children to stand up and make these turns)</li> <li>• link concept of a quarter turn to a right angle, a half turn to two right angles and a full turn to four right angles</li> </ul> <p>Model how to answer questions. LA and MA get started.</p>	<p>Answer questions on amount of turn clockwise / anti-clockwise with:</p> <p>LA – only 4 main compass points: north, south, east and west and quarter / half / full turns</p> <p>MA – as LA, but 8 compass points (also south-west, south-east, north-east and north-west)</p> <p>HA – as MA, but measure turn in degrees</p>	<p>In pairs children orally make up questions using the worksheet and ask them to each other</p>	<p>M: know clockwise / anti-clockwise and four compass points</p> <p>S: know how to make a quarter / half / full turn and know the eight compass points</p> <p>C: measure turn in degrees</p>	
----	---	---	--	--	---	--

<p>F</p>	<p><b>Mental:</b> Recognise multiples of 2, 5 and 10</p> <p><b>Main:</b> Read and record the vocabulary of position, direction and movement, using the four compass directions to describe movement about a grid</p>	<p><b>Mental:</b> In partners children come up with a question for each other: 'Give me a multiple of 2 / 5 / 10 between ___ and ___'. HA ask each other to come up with common multiples of 2, 5 and 10.</p> <p><b>Main:</b> Ask children to answer following questions on their WB:</p> <p>Describe the movement from point A to point B: a) using up, down, left and right b) using the compass points</p> <div data-bbox="376 406 1198 710" style="border: 1px solid black; padding: 5px;"> <p><b>Example</b></p>  </div> <p>Children who get part a and b right, go with TA to learn how to translate shapes from one position on a grid to another.</p> <p>Explain:</p> <ul style="list-style-type: none"> <li>• how translate simply means move</li> <li>• how to translate one corner of the shape at a time and then join up the corners once you have translated them all</li> </ul> <p>Children who don't get part a and b stay on carpet:</p> <p>Explain:</p> <ul style="list-style-type: none"> <li>• North - up, south - down, west - left, east - right</li> <li>• how to remember right from left: if you raise your thumbs your left hand makes an L for Left</li> <li>• how to remember direction of West and East because they spell WE on the compass</li> </ul> <p>Explain how translate means move, and how the best way to do this is move one corner of the shape at a time and then join the corners.</p>	<p>LA – describe movement on a grid from one point to another</p> <p>MA – translate shapes from one position to another, <i>in the first quadrant</i></p> <p>HA - translate shapes from one position to another, <i>in all 4 quadrants</i></p> <p>Ext – make up their own shapes on the grid, translate them and write instructions on how to translate them</p>	<p>Children draw a path from A to B / a shape to translate with instructions on how to translate it for their partner to do</p>	<p>M: describe movement from one point to another using directions and compass points</p> <p>S: translate shapes in the first quadrant</p> <p>C: translate shapes in all four quadrants</p>
----------	--	--	--	---	---

Class: Year 3	Year:	Term:	Week ( to )	Teacher:
---------------	-------	-------	-------------	----------

M	<p>Mental: Continue sequences</p> <p>Main: Use a set-square to draw right angles and to identify right angles in 2-D shapes; compare angles with a right angle; recognise that a straight line is equivalent to two right angles</p> <p>D2006</p>	<p>Mental: In partners children come up with a sequence on their WB for their partner to continue. Encourage HA to do this with negative numbers, decimals and fractions.</p> <p>Main: Explain the term 'angle' and what a right angle is. Use analogy of a crocodile's mouth:</p> <ul style="list-style-type: none"> <li>if the mouth is half open / half shut then it is a right-angle</li> <li>if the mouth is open wide (more than halfway) it is bigger than a right angle</li> <li>if the mouth is less than half open it is smaller than a right angle</li> </ul> <p>Get children to make the 'crocodile's mouth' or angle with their hands Explain how a straight line is 180° because it is 2 right angles added together Explain how a circle is 360° because it is 4 right angles added together Model how to check if an angle is a right angle using a set-square (or corner of sheet of paper if no set squares available). LA start work. Explain how angles smaller than a right angle are known as acute, and angles bigger than a right angle (up to a straight line) are known as obtuse. Introduce the term reflex. Display classification system for angles: Acute – 1° to 89° Obtuse – 91° to 179° Reflex – 181° to 359° Display worksheet and emphasise how the angle you are measuring is where the partial circle symbol is shown Model how to use a protractor by</p> <ol style="list-style-type: none"> <li>putting the cross hairs on the point where the two lines meet</li> <li>lining up the 0° line with the horizontal line</li> <li>looking at the correct numbers (inside or outside set of numbers) to get the angle</li> </ol> <p>Display these steps on the IWB during independent work Model how extending the lines (with a ruler) can make it easier to measure the angle</p>	<p>LA – recognise angles as being right angles, or bigger / smaller than a right angle</p> <p>MA – as LA, but use the terms acute, obtuse and right angle</p> <p>HA – measure acute and obtuse angles</p> <p>G + T – as HA, but also measure reflex angles</p> <p><b>For Angles worksheet generator for HA and G+T work search for 'B1010 Measuring angles with a protractor'</b></p>	<p>In partners children draw an angle for each other on their WBs. LA say if it is bigger / smaller than a right angle. HA say if it is acute, obtuse or reflex.</p>	<p>M: recognise an angle as smaller / bigger than a right angle</p> <p>S: measure angles &lt;180°</p> <p>C: measure angles &gt;180°</p>
Tu	<p>Mental: Subtraction by counting on</p> <p>Main: Use practical and informal written methods to multiply and divide two-digit numbers (e.g. 13 × 3, 50 ÷ 4)</p> <p>D2007</p>	<p>Mental: Revise how to subtract by counting on when there is a small gap between 2 numbers e.g. 97 – 95.</p> <p>Main: Ask children to answer the following questions on their WBs:</p> <ol style="list-style-type: none"> <li>4 X 30</li> <li>6 X 200</li> <li>20 X 9</li> <li>30 X 50</li> <li>200 X 700</li> <li>40 X 3,000</li> </ol> <p>Children who get all of the questions wrong do LA work Children who get first 3 questions right do MA work</p>	<p>LA – use multiplication facts in the 2, 5 and 10 times tables with numbers in 10s and 100s e.g. 5 X 2 = 10 so 5 X 20 = 100</p> <p>MA – use multiplication facts in the 2, 3, 4, 5 and 10 times tables with numbers in 10s, 100s and 1,000s e.g. 4 X 3</p>	<p>In partners children come up with a question for each other (similar to what they did for their independent work), answer each other's questions and check each other's answers</p>	<p>M: know that known multiplication facts can help us work out unknown ones</p> <p>S: use known multiplication facts to work out unknown ones</p> <p>C: calculate missing angles</p>

		<p>Children who get all 6 questions right go with TA to do HA work TA to revise how:</p> <ul style="list-style-type: none"> <li>a straight line is 180°</li> <li>the angles in a triangle add up to 180°</li> <li>a right-angle is represented by a square</li> <li>a short line through the sides of a triangle represents that those sides are the same length</li> </ul> <p>Using a known multiplication fact to work out unknown multiplication facts e.g.  <math>7 \times 8 = 56</math>  <math>70 \times 8 = 560</math>  <math>70 \times 80 = 5,600</math>  etc</p> <p>Explain how:</p> <ul style="list-style-type: none"> <li>the front 2 numbers do not change (56)</li> <li>however many 0s are added to 1 side of the equals sign, the same number of 0s needs to be added to the other side of the equals sign</li> </ul> <p>In independent work children underline the extra 0s to show this and make them notice it</p>	<p>= 12 so <math>40 \times 30 = 1,200</math></p> <p>HA – calculate missing angles on a straight line</p>		on a straight line	
W	<p>Mental: Ordering numbers</p> <p>Main: Understand that division is the inverse of multiplication and vice versa</p> <p>D2008</p>	<p>Mental: LA to order 3-digit numbers e.g. 432, 781, 134 MA to order decimals and negative numbers e.g. -4, -10, 6, 4 HA to order combined decimal and negative numbers e.g. 9.7, -2.1</p> <p>Main: LA go with a TA to work on addition and subtraction as I know they do not understand this. TA to emphasise how to create the different number sentences you need to:</p> <ul style="list-style-type: none"> <li>use the same 3 numbers in all 4 number sentences</li> <li>start with the biggest number for subtractions and end with the biggest number for additions</li> </ul> <p>Ask children to do derive three more number sentences on their WBs from each of the following:  1) <math>48 + 13 = 61</math>  2) <math>14 \times 5 = 70</math>  3) <math>180 \div 6 = 30</math></p> <p>If necessary, revise how addition and subtraction are inverses, and how 1 addition / subtraction fact can be used to derive three other addition / subtraction facts  e.g. <math>48 + 13 = 61</math> so <math>13 + 48 = 61</math>, <math>61 - 13 = 48</math> and <math>61 - 48 = 13</math>  Revise how division and multiplication are inverses and how 1 multiplication / division fact can be used to derive three other multiplication / division facts.  Give children a multiplication fact or division fact to derive another 3 related multiplication or division facts from  e.g. <math>4 \times 20 = 80</math> so <math>20 \times 4 = 80</math>, <math>80 \div 20 = 4</math> and <math>80 \div 4 = 20</math>  Revise how division always starts with the biggest number and multiplication always ends with the biggest number  Emphasise the need to not repeat any number sentence, and for each of the three number sentences to be different  Children who got first question wrong start on LA work.  Children who got second question wrong start on MA work.  Children who got third question wrong start on HA work.  Children who got all the questions right start on G + T work.</p>	<p>LA – derive 3 related addition and subtraction facts from a given addition or subtraction e.g. <math>70 - 20 = 50</math></p> <p>Derive 3 related multiplication and division facts from a given multiplication or division</p> <p>MA – 1-digit numbers e.g. <math>4 \times 5 = 20</math></p> <p>HA – multiples of 10 and 100 e.g. <math>4 \times 20 = 80</math></p> <p>G+T – numbers with decimal places e.g. <math>1.2 \times 5 = 6</math></p>	<p>On IWB one child writes a multiplication / division fact and others write the corresponding 3 facts</p>	<p>M: know that the term inverse means opposite</p> <p>S: derive 3 related facts from a given fact</p> <p>C: work with numbers with decimal places</p>	

Th	<p>Mental: Find fractions of numbers</p> <p>Main: Use practical and informal written methods to multiply two-digit numbers (e.g. <math>13 \times 3</math>)</p> <p>D2009</p>	<p>Mental: LA find quarters and halves of numbers. MA find fractions of numbers e.g. <math>5/6</math>, <math>3/10</math> Find percentages of numbers.</p> <p>Main: Ask children to do the following questions on their WBs <math>5 + 5 + 5 + 5 = 5 \times \underline{\quad}</math> Write <math>3 \times 6</math> as an addition number sentence. Children who don't get these 2 questions right go with a TA to work on understanding multiplication as repeated addition. Model for those still on the carpet how to use the grid method to multiply by 2 or 3-digit numbers as follows for <math>12 \times 13</math>: 1) partition 12 into <math>10 + 2</math> and write these numbers across the top 2) partition 13 into <math>10 + 3</math> and write these numbers down the side 3) multiply each of the numbers by each other, putting each total in the middle 4) add up all the totals from the middle of the grid</p> <p><math>12 \times 13</math></p> <table border="1" data-bbox="450 587 678 683"> <tr> <td></td> <td>10</td> <td>2</td> </tr> <tr> <td>10</td> <td>100</td> <td>20</td> </tr> <tr> <td>3</td> <td>30</td> <td>6</td> </tr> </table> <p><math>100 + 20 + 30 + 6 = 156</math> <math>12 \times 13 = 156</math></p> <p>HA and G+T will need to use column addition to calculate the totals within their grids. Emphasise how when drawing your own grids, you need to make sure that you make them too big, rather than too small. For MA and HA, they need to do 8 questions where I have drawn the grids for them, followed by 4 questions where they need to draw their own grids. G+T need to draw their own grids from the beginning. Display MA, HA and G+T questions in columns on the IWB. Give children a choice of which column to do, but encourage them to choose a column they won't find too difficult as I want them to practice the method. Keep an eye and, if anyone chooses work that they are finding very difficult, tell them to do the easier column.</p>		10	2	10	100	20	3	30	6	<p>LA – multiplication as repeated addition</p> <p>Use the grid method to multiply:</p> <p>MA – 2-digit numbers by 1-digit numbers</p> <p>HA – 2-digit numbers by 2-digit numbers</p> <p>G+T – 2-digit numbers by 3-digit numbers</p>	<p>Children come up with their own question for themselves. In partners one child works through their question, explaining to their partner the steps as they do them. Their partner needs to listen and see if they miss out / aren't clear in their explanation. Model for children how to do this.</p>	<p>M: understand multiplication as repeated addition</p> <p>S: use the grid method in grids drawn for them</p> <p>C: draw their own grids</p>	
	10	2													
10	100	20													
3	30	6													
F	<p>Mental: Variety of mental calculations</p> <p>Main: Use practical and informal written methods to multiply two-digit numbers (e.g. <math>13 \times 3</math>)</p> <p>D2010</p>	<p>Mental: Display coordinates grid on IWB, available from <a href="http://www.numeracyworld.com/coordinates.php">http://www.numeracyworld.com/coordinates.php</a>. The grid has numbers at different coordinates. In ability pairs children make up mental maths questions for each other to answer by saying the coordinates of the answer</p> <p>Main: Children who worked on multiplication as repeated addition and arrays for the previous 2 days, go with a TA to make 3 number sentences from 1 number sentence using the same 3 numbers e.g. <math>4 \times 2 = 8</math>, so <math>2 \times 4 = 8</math>, <math>2 + 2 + 2 + 2 = 8</math> and <math>4 + 4 = 8</math> Group remaining children based on marking of yesterday's work. Those who were secure with short multiplication yesterday try to do it with decimals without any help. Just remind them that they need to make sure they keep the decimal point in the same place.</p>	<p>LA – multiplication as repeated addition and arrays</p> <p>MA – same as yesterday if didn't get it</p> <p>HA – move on to multiplication without partitioning if understood partitioning yesterday</p> <p>G+T – move on to</p>	<p>Children come up with their own question for themselves. In partners one child works through their question, explaining to their partner the steps as they do them. Their partner needs to listen and see if they miss out /</p>	<p>M: understand multiplication as repeated addition and arrays</p> <p>S: understand short multiplication</p> <p>C: understand long multiplication</p>										

For MA and HA revise model from yesterday on short multiplication, with and without, partitioning.  
 Check how G + T got on with short multiplication with decimals, if struggled then go through how to do this.  
 If G + T were OK with short multiplication with decimals, then explain how to do long multiplication as follows for  $24 \times 65$ :

- 1) multiply 5 by 4, which gives 20 which you write down under the line.
- 2) multiply 5 by 20, which gives 100, so you put 1 in the hundreds column.
- 3) multiply 60 by 4, which gives 240, so you write down the 40 and carry the 2 hundreds by writing a small 2 above the hundreds column.
- 4) multiply 60 by 20, which gives 1,200, to which you add the 2 hundreds you carried, which gives 1,440
- 5) add the 120 to the 1,440 to give an answer of 1,560

	2	2	
		2	4
	X	6	5
	1	2	0
1	4	4	0
1	5	6	0

long multiplication if understood short multiplication yesterday

aren't clear in their explanation. Model for children how to do this.