





Y2	<p>R: Operations already learned. Practice</p> <p>C: Decomposing numbers into sums and products</p> <p>E: <i>Remainders. Puzzles</i></p>	<p><i>Lesson Plan</i></p> <p>111</p>
Activity		Notes
<p>1</p>	<p>Number cards (or Cuisenaire rods)</p> <p>Show me the number I am describing with number cards (or the correct Cuisenaire rod) when I say.</p> <p>e.g. 1 quarter of 32 (8), 1 fifth of 40 (8), 1 quarter of 20 (5), 4 times 3 (12), 2 times 6 (12), 1 third of 9 (3), etc.</p> <p style="text-align: right;">5 min</p>	<p>Whole class activity</p> <p>Cards (rods) shown in unison</p> <p>Agreement, checking, praising</p>
<p>2</p>	<p>Grouping by 3, with remainder</p> <p>T has pictures of 4 different kinds of fruit stuck or drawn on BB. Let's count them. First let's put them into groups of 3.</p> <p>Ps come out to circle the fruit in 3s and write a multiplication about it. Class agrees/disagrees.</p> <p>BB:</p>  <p>$2 \times 3 + 2 = 8$ $3 \times 3 + 1 = 10$ $2 \times 3 + 1 = 7$ $6 \times 3 + 1 = 19$</p> <p>Who thinks it is easier to count the fruit in 3s than in 1s? Why?</p> <p style="text-align: right;">10 min</p>	<p>Whole class activity</p> <p>Use whole copy master, enlarged; or cut out individual pieces of fruit and stick to BB</p> <p>Agreement, checking, praising</p> <p>Ps copy multiplications into <i>Ex Bks</i> (Lesson no. and date)</p> <p>Show of hands.. Discussion about quick ways to count.</p>
<p>3</p>	<p>PbY2b, page 111, Q.1</p> <p>Read: <i>We are packing 22 balls into boxes. Show how many boxes we will need if we pack:</i></p> <p>a) 3 balls in each box b) 5 balls in each box.</p> <p>Two Ps come out to circle the balls in 3s and in 5s. How many boxes could you fill? (7, 4) How many balls remain? (1, 2)</p> <p>T chooses 2 more Ps to come out to BB to write multiplications with additions. Who agrees? Who thinks something else?</p> <p>Who can come and write the matching division? Class agrees/disagrees.</p> <p style="text-align: right;">15 min</p>	<p>Whole class activity</p> <p>Drawn or stuck on BB (or use enlarged copy master or OHP)</p> <p>Agreement, checking praising</p> <p>Ps circle/write in <i>Pbs</i> too</p> <p>BB:</p> <p>a) $22 = 7 \times 3 + 1$ $22 \div 3 = 7, \text{ remainder } 1$</p> <p>b) $22 = 4 \times 5 + 2$ $22 \div 4 = 5, \text{ remainder } 2$</p>
<p>4</p>	<p>PbY2b, page 111</p> <p>Q.2 Read: <i>Four hens want to share out the eggs equally. How many eggs will each hen get and how many will remain if there are 9 eggs, . . .</i></p> <p>A, come and explain to us what the equations in part a) refer to. Is A correct? Who thinks something else?</p> <p>Let's see how many of these you can do! Check that your division is correct by writing a multiplication too.</p> <p>Review at BB with whole class. Mistakes corrected. (If problems, demonstrate with Ps at front of class.)</p> <p style="text-align: right;">23 min</p>	<p>Individual work, monitored, helped</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Discussion, agreement, checking, self-correction</p> <p>BB:</p> <p>b) $16 \div 4 = 4, \text{ remainder } 0$</p> <p>c) $17 \div 4 = 4, \text{ remainder } 1$</p> <p>d) $20 \div 4 = 5, \text{ remainder } 0$</p> <p>b) $22 \div 4 = 5, \text{ remainder } 2$</p> <p>f) $39 \div 4 = 9, \text{ remainder } 3$</p>
<p>5</p>	<p>Interlude</p> <p>Song or rhyme</p> <p style="text-align: right;">25 min</p>	<p>Whole class in unison</p>

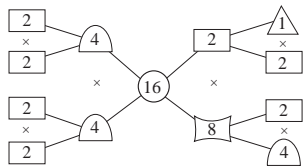
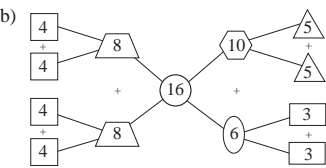
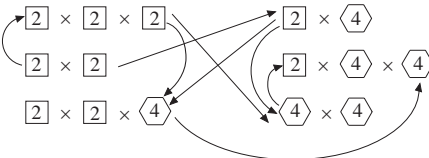
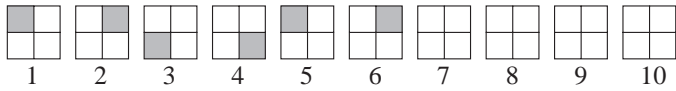




Y2		Lesson Plan 111
<p>Activity</p> <p>6</p>	<p>Logic Puzzle (OHT 17, Txt 2, page 76, Q.4)</p> <p>Look at this puzzle. What do you think the rule could be? (The number at the top or sides of each column or row is the <u>sum</u> of all the numbers in that column or row. The same colour means the same number.) I will give you another rule: all the missing numbers have only 1 digit.</p> <p>What should we do first? Let's say all the numbers the rectangles could be. '0, 1, 2, 3, 4, 5, 6, 7, 8, 9' (T writes in a vertical line on BB.) We have to work out which of these numbers each colour represents.</p> <p>What gives us a clue? (the 'key' below the puzzle.) T (or P) reads it out: 'twice the <i>dark blue</i> gives the <i>dark green</i>, twice the <i>dark green</i> gives the <i>light green</i>, twice the <i>light green</i> gives the <i>orange</i>. Which of the numbers we have written on the BB could these colours represent?</p> <p>B, come and write in what you think the missing numbers in the key could be. Why did you write them? Who agrees? Let's check. (If nobody knows, T gives hint.)</p> <p><i>Dark blue</i> has to be '1', because it is the only one of the numbers which can be multiplied by 2 three times and still remain a 1-digit number. (Discuss the fact that 0 is impossible because if <i>blue</i> was zero, all the other 3 colours would be zero too, but they are all different.)</p> <p>If <i>dark blue</i> is '1' what must the <i>dark green</i> (<i>light green</i>, <i>orange</i>) be? Ps come out to write in the missing numbers. (2, 4, 8) Class agrees/ disagrees.</p> <p>What other clue are we given? (In 2nd row of 'key', 3 times the <i>red</i> gives the <i>pink</i>.) Elicit that the only number left (apart from zero which is again impossible) which can be multiplied by 3 and still remain a 1-digit number is '3', so <i>brown</i> must be 3 and <i>pink</i> must be 9.</p> <p>Where should we go next? (e.g. 1st column)</p> <p>BB: $4 + 4 \times 2 + 2 \times 9 + 2 \times \text{violet}$ is 44, $4 + 8 + 18 + 2 \times \text{violet}$ is 44, $30 + 2 \times \text{violet}$ is 44, so $2 \times \text{violet}$ is $44 - 30 = 14$, so <i>violet</i> must be 7.</p> <p>Continue in this way until puzzle is completed (e.g. then 3rd column from right to get <i>yellow</i>, then last column to get <i>light blue</i>).</p> <p>Let's check that our solution is correct. Ps choose columns/rows at random and confirm that numbers add up to number at top/beginning.</p> <p>Extension</p> <p>Ps could make up own puzzles (e.g. 6×4 rectangles).</p> <p style="text-align: right;">38 min</p>	<p>Notes</p> <p>Whole class activity</p> <p>If no OHP, use copy master, enlarged and coloured appropriately</p> <p>In unison</p> <p>Let Ps suggest method of solution throughout</p> <p><i>Solution:</i></p> <p>Dark Blue → 1 Dark Green → 2 Light Green → 4 Orange → 8 Red → 3 Pink → 9 Violet → 7 Yellow → 5 Light Blue → 6</p> <p>Involve as many Ps as possible in discussion/solution</p> <p>Ps could have own copies of puzzle to colour appropriately and fill in if they want.</p> <p>(Other orders possible – Ps suggest where to go next)</p> <p>Agreement, praising</p> <p>(Practice in addition, subtraction, multiplication and division)</p> <p>Checking, agreement</p> <p>To do at home if Ps want to</p>
<p>7</p>	<p>PbY2b, page111</p> <p>Q.3 Read: <i>Colour a route through the maze so that the numbers passed add up to 65.</i></p> <p>Review at BB with whole class. Alternative solutions discussed.</p> <p>e.g. $35 + 5 + 4 + 6 + 8 + 3 + 4 = 65$ or $35 + 8 + 4 + 2 + 8 + 4 + 4 = 65$</p> <p style="text-align: right;">45 min</p>	<p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Quick checking</p> <p>Praising</p>

Y2	R: Mental operations C: Decomposing numbers into sums and products E: <i>Problem solving. Inequality in context</i>	<i>Lesson Plan</i> 112																										
Activity	Notes																											
1 Sequences T says the first few elements in a sequence. T points to Ps to continue it. What is the rule? What else do you notice about the numbers? <ul style="list-style-type: none"> T: '2, 5, 8, ...' (Ps: 11, 14, 17, ...) <i>Rule:</i> increasing by 3. If divided by 3, remainder is 2. T: '35, 31, 27, ...' (Ps: 23, 19, 15, ...) <i>Rule:</i> decreasing by 4. If divided by 4, remainder is 3. (T gives hint about remainders if nobody notices.) <i>5 min</i>	Whole class activity In relay, at speed Discussion, agreement In relay, at speed Discussion, agreement Praising																											
2 Number snake T divides the class into 3 teams (A, B and C all with a roughly equal ability range). T gives each team a number, e.g. 24, 33 and 45. Ps from one team at a time come out in relay to BB to write out their 'number snake'. e.g A: $24 = 20 + 4 = 2 \times 12 = 3 \times 8 = 25 - 1 = 48 \div 2 = 3 \times 7 + 3 = \dots$ B: $33 = 30 + 3 = 20 + 12 = 3 \times 7 - 2 = 40 - 7 = 66 \div 2 = \dots$ C: $45 = 40 + 5 = 20 + 15 = 5 \times 9 = 50 - 10 = 90 \div 2 = \dots$ The winner is the team with the longest (correct) 'snake'. <i>10 min</i>	Whole class activity T encourages creativity At a good pace Other two groups applaud what they think are 'creative' equations and point out incorrect or repeated ones. Awards (stars/stickers) given																											
3 PbY2b, page 112 Q.1 Read: <i>Make up multiplications from the numbers in the bags and solve them. Choose the 1st number from Bag A and the 2nd number from Bag B.</i> How could we write them out in a logical order? (Start with the '3' from Bag A multiplied by each of the numbers in Bag B, then the '4' from Bag A, etc.) Review at BB with whole class. Mistakes corrected. How many multiplications are possible? ($3 \times 5 = 15$, i.e. for each of the 3 numbers in Bag A, there are 5 possible numbers in Bag B.) <i>16 min</i>	Individual work, monitored, helped Initial discussion on strategy Drawn on BB or use enlarged copy master or OHP Agreement, checking, praising (Or done as whole class activity with number cards in 2 opaque bags and numbers withdrawn one at a time)																											
4 Interlude Relaxation with music playing <i>18 min</i>	Whole class relaxing																											
5 PbY2b, page 82 Q.2 Read <i>Each number is the sum of the 2 numbers directly below it. Fill in the missing numbers.</i> Let Ps try without help first. Review at BB with whole class. Which number is at the top? (100) T writes in numbers as Ps dictate them. P comes out to explain method of solution. (Start with $8 + 9 = 17$) (Or done as a whole class activity, with Ps coming out to write in numbers and explain reasoning.) <i>24 min</i>	Individual work, monitored Drawn on BB or use enlarged copy master or OHP In unison Agreement, checking, praising Solution: <div style="text-align: center;"> <table border="1" style="margin: auto;"> <tr><td></td><td></td><td>100</td><td></td><td></td></tr> <tr><td></td><td>43</td><td></td><td>57</td><td></td></tr> <tr><td></td><td>17</td><td>26</td><td>17</td><td>31</td></tr> <tr><td></td><td>8</td><td>9</td><td>17</td><td>14</td></tr> <tr><td></td><td>7</td><td>1</td><td>8</td><td>9</td><td>5</td></tr> </table> </div>				100				43		57			17	26	17	31		8	9	17	14		7	1	8	9	5
		100																										
	43		57																									
	17	26	17	31																								
	8	9	17	14																								
	7	1	8	9	5																							

Y2		Lesson Plan 112																																																								
<p>Activity</p> <p>6</p>	<p>Money</p> <p>T has 3 items on table at front of class (or pictures cut out from copy masters or magazines) each with a price tag of 9 p, 28 p or 49 p.</p> <p>We only have 5 p coins in our purse. How many would we need to pay for this item? (T holds up item costing 9 p)</p> <p>T asks several Ps what they think. Let's think of it like this.</p> <p>How many 5 ps are in 9 p? Let's write it as a division on the BB.</p> <p>T writes with help of Ps.</p> <p>So how many 5 p coins would we need to pay with? (2: 1 whole 5 p and then another 5 p coin to pay the remaining 4 p; we would get 1 p back in change)</p> <p>Repeat for the other two items. Ps could write equations in <i>Ex. Bks</i> too.</p> <p>(Ps could have 5 p and 1 p coins on desks and work in pairs, one as the customer and the other as the shop assistant.)</p> <p>Extension</p> <p>How many 5 p (10 p) coins would be needed to pay for something costing 13 p (19 p, 24 p, 37 p, 59 p) and what change would there be?</p> <p style="text-align: right;">31 min</p>	<p>Notes</p> <p>Whole class activity</p> <p>Discussion, reasoning, agreement, checking, praising</p> <p>BB: $9 \text{ p} \div 5 \text{ p} = 1 \text{ (coin), remainder } 4 \text{ p}$ so <u>2</u> coins needed, 1 p change <i>Check:</i> $2 \times 5 \text{ p} - 1 \text{ p} = 9 \text{ p}$</p> <p>$28 \text{ p} \div 5 \text{ p} = 5 \text{ (coins), remainder } 3 \text{ p}$ so <u>6</u> coins needed, 2p change <i>Check:</i> $6 \times 5 \text{ p} - 2 \text{ p} = 28 \text{ p}$</p> <p>$49 \text{ p} \div 5 \text{ p} = 9 \text{ (coins), remainder } 4 \text{ p}$ so <u>10</u> coins needed, 1 p change <i>Check:</i> $10 \times 5 \text{ p} - 1 \text{ p} = 49 \text{ p}$</p> <p>Ps put up hands if they know.</p>																																																								
<p>7</p>	<p>PbY2b, page 112, Q.3</p> <p>Read: <i>Vicky had 57 p. She bought a carton of orange juice and now has more than 30 p, but less than 38 p, left.</i></p> <p><i>How much could the orange juice have cost? Fill in the table.</i></p> <p>If Vicky has more than 30 p, but less than 38 p left, what are the possible amounts she could have left? T writes down Ps' responses in bottom row of table: 31 p, 32 p, 33 p, 34 p, 35 p, 36 p, 37 p</p> <p>If she has 31 p left, how much did she pay for the orange juice?</p> <p>X, come and fill in the missing amount. Who agrees? etc.</p> <p>Ps come out to complete the other columns in a similar way, checking that the amounts in 2nd + 3rd rows add up to the amount in 1st row.</p> <p style="text-align: right;">36 min</p>	<p>Whole class activity</p> <p>Table drawn on BB or use enlarged copy master or OHP</p> <p>Ps show amounts on number line and T writes the inequality</p> <p>BB: $30 \text{ p} < \text{amount left} < 38 \text{ p}$</p> <p>Ps fill in table in <i>Pbs</i> too</p> <p>At a good pace.</p> <p>Praising</p>																																																								
<p>8</p>	<p>PbY2b, page 112</p> <p>Q.4 Read: <i>Colour these shapes on the grid if the product of their numbers is 24. Write the numbers in the shapes.</i></p> <p>T explains task. Review at BB with whole class.</p> <p><i>Solution:</i></p> <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>3</td><td>8</td><td>5</td><td>2</td><td>7</td><td>3</td><td>2</td><td>4</td></tr> <tr><td>9</td><td>1</td><td>4</td><td>3</td><td>6</td><td>1</td><td>3</td><td>5</td></tr> <tr><td>3</td><td>7</td><td>4</td><td>2</td><td>5</td><td>8</td><td>7</td><td>6</td></tr> <tr><td>2</td><td>9</td><td>3</td><td>5</td><td>2</td><td>4</td><td>7</td><td>4</td></tr> <tr><td>2</td><td>6</td><td>5</td><td>3</td><td>2</td><td>2</td><td>3</td><td>5</td></tr> </table> <table border="1" style="display: inline-table;"> <tr><td>2</td><td>3</td><td>2</td><td>4</td></tr> <tr><td>2</td><td>6</td><td>3</td><td>8</td></tr> <tr><td>6</td><td>2</td><td></td><td></td></tr> <tr><td>4</td><td>2</td><td>2</td><td>3</td></tr> </table> <p style="text-align: right;">41 min</p>	3	8	5	2	7	3	2	4	9	1	4	3	6	1	3	5	3	7	4	2	5	8	7	6	2	9	3	5	2	4	7	4	2	6	5	3	2	2	3	5	2	3	2	4	2	6	3	8	6	2			4	2	2	3	<p>Individual work, monitored (helped)</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Self-correction. Praising</p> <p>BB: $2 \times 2 \times 6 = 24$ $3 \times 2 \times 4 = 24$ $3 \times 8 = 24$ $6 \times 4 = 24$ $2 \times 2 \times 2 \times 3 = 24$</p>
3	8	5	2	7	3	2	4																																																			
9	1	4	3	6	1	3	5																																																			
3	7	4	2	5	8	7	6																																																			
2	9	3	5	2	4	7	4																																																			
2	6	5	3	2	2	3	5																																																			
2	3	2	4																																																							
2	6	3	8																																																							
6	2																																																									
4	2	2	3																																																							
<p>9</p>	<p>PbY2b, page 112, Q.5</p> <p>Read: <i>Write the answers as Roman numerals.</i></p> <p>Revise what V, X, L and C mean. Ps come out to write in answers, saying the equation as Arabic numbers too. Class agrees/disagrees.</p> <p>BB: a) $V \times II = X$ b) $III \times V = XV$ c) $VIII \times II = XVI$ $IV \times III = XII$ $VI \times V = XXX$ $IX \times II = XVIII$ $XXX \div V = VI$ $LX \div VI = X$ $C \div X = X$</p> <p style="text-align: right;">45 min</p>	<p>Whole class activity but Ps can write in <i>Pbs</i> too</p> <p>At a good pace</p> <p>Reasoning, agreement, checking, praising</p> <p>Class reads out equations in unison</p>																																																								

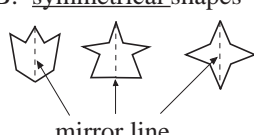
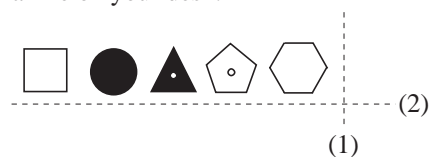
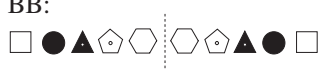

<h1>Y2</h1>	<p>R: Mental calculation C: Decomposing numbers into sums and products E: <i>Problem solving, Order of operations</i></p>	<h2>Lesson Plan 113</h2>																																																										
<p>Activity 1</p>	<p>Equations competition</p> <p>T writes 3 numbers on left, middle and right of BB:   </p> <p>T divides class into 3 teams of equal ability, one for each number.</p> <p>T says 'Start!' One P after another from each team comes to BB to write an equation describing their number. (Ps may have other turns if there is time.) After about 2 minutes, T says 'Stop!'.</p> <p>Class reviews each team's equations. The team which has most correct, different equations wins! T gives a 'star' for the most creative equation.</p> <p style="text-align: right;">5 min</p>	<p>Notes</p> <p>Whole class activity Use copy master, enlarged and cut out At speed (3 Ps at a time working on BB) (Develops creativity) Agreement, checking, praising Ps give '3 cheers' to winners</p>																																																										
<p>2</p>	<p>Problem</p> <p>Listen carefully, do the calculation in your heads and show me the answer with number cards when I say.</p> <p><i>I have 13 sweets in my pocket and want to divide them up equally among 3 pupils. How many sweets will be left for me?</i></p> <p>Show me the answer . . . now! (1)</p> <p>A, come and explain your answer. Who agrees? Who thinks something else? Demonstrate with Ps at front of class if necessary.</p> <p>Repeat for other numbers: $22 \div 4$, $33 \div 5$, etc.</p> <p style="text-align: right;">10 min</p>	<p>Whole class activity (Develops concentration and mental visualisation) T repeats question slowly In unison Discussion, agreement, checking, praising</p> <p>BB: $13 = 3 \times 4 + 1$ $13 \div 3 = 4, \text{ remainder } 1$</p>																																																										
<p>3</p>	<p>PbY2b, page 113</p> <p>Q.1 Read <i>Each number is the <u>sum</u> of the 2 numbers directly below it. Fill in the missing numbers.</i></p> <p>Let Ps try without help first. Review at BB with whole class. Which number is at the top? (100) etc.</p> <p>Ps come out to explain methods of solution. (e.g. start with $5 + 9 = 14$, or $1 + 4 = 5$, or $4 + 5 = 9$)</p> <p>(Or done as a whole class activity, with Ps coming out to write in numbers and explain reasoning.)</p> <p style="text-align: right;">16 min</p>	<p>Individual work, monitored, helped Drawn on BB or use enlarged copy master or OHP T writes what Ps dictate Agreement, checking, praising</p> <p>Solution:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td colspan="5" style="text-align: center;">100</td></tr> <tr><td colspan="2" style="text-align: center;">36</td><td colspan="3" style="text-align: center;">64</td></tr> <tr><td style="text-align: center;">14</td><td style="text-align: center;">22</td><td colspan="2" style="text-align: center;">42</td><td></td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">9</td><td style="text-align: center;">13</td><td colspan="2" style="text-align: center;">29</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td><td style="text-align: center;">8</td><td style="text-align: center;">21</td></tr> </table>	100					36		64			14	22	42			5	9	13	29		1	4	5	8	21																																	
100																																																												
36		64																																																										
14	22	42																																																										
5	9	13	29																																																									
1	4	5	8	21																																																								
<p>4</p>	<p>PbY2b, page 113, Q.2</p> <p>Read <i>The product of the 4 numbers in each row or column is equal to the number at the end. In each square, the same mark means the same number. Fill in the missing numbers.</i></p> <p>a) Where should we start? (top row as all the numbers are the same) Ps come out to fill in missing numbers and explain reasoning. Class agrees/disagrees. Final check that all horizontal and vertical multiplications are correct.)</p> <p>b) As in a) but starting at the 3rd column.</p> <p style="text-align: center;">Solutions:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">a)</td> <td> <table border="1" style="display: inline-table;"> <tr><td>2</td><td>2</td><td>2</td><td>2</td></tr> <tr><td>2</td><td>4</td><td>2</td><td>2</td></tr> <tr><td>3</td><td>2</td><td>2</td><td>1</td></tr> <tr><td>2</td><td>1</td><td>5</td><td>7</td></tr> <tr><td>=</td><td>=</td><td>=</td><td>=</td></tr> <tr><td>24</td><td>16</td><td>40</td><td>28</td></tr> </table> </td> <td style="text-align: center;">b)</td> <td> <table border="1" style="display: inline-table;"> <tr><td>2</td><td>*</td><td>3</td><td>2</td><td>3</td></tr> <tr><td>*</td><td>5</td><td>1</td><td>2</td><td>2</td></tr> <tr><td>*</td><td>3</td><td>*</td><td>2</td><td>5</td></tr> <tr><td>2</td><td>2</td><td>2</td><td>2</td><td>1</td></tr> <tr><td>=</td><td>=</td><td>=</td><td>=</td><td>=</td></tr> <tr><td>60</td><td>18</td><td>16</td><td>30</td><td></td></tr> </table> </td> </tr> </table> <p style="text-align: right;">26 min</p>	a)	<table border="1" style="display: inline-table;"> <tr><td>2</td><td>2</td><td>2</td><td>2</td></tr> <tr><td>2</td><td>4</td><td>2</td><td>2</td></tr> <tr><td>3</td><td>2</td><td>2</td><td>1</td></tr> <tr><td>2</td><td>1</td><td>5</td><td>7</td></tr> <tr><td>=</td><td>=</td><td>=</td><td>=</td></tr> <tr><td>24</td><td>16</td><td>40</td><td>28</td></tr> </table>	2	2	2	2	2	4	2	2	3	2	2	1	2	1	5	7	=	=	=	=	24	16	40	28	b)	<table border="1" style="display: inline-table;"> <tr><td>2</td><td>*</td><td>3</td><td>2</td><td>3</td></tr> <tr><td>*</td><td>5</td><td>1</td><td>2</td><td>2</td></tr> <tr><td>*</td><td>3</td><td>*</td><td>2</td><td>5</td></tr> <tr><td>2</td><td>2</td><td>2</td><td>2</td><td>1</td></tr> <tr><td>=</td><td>=</td><td>=</td><td>=</td><td>=</td></tr> <tr><td>60</td><td>18</td><td>16</td><td>30</td><td></td></tr> </table>	2	*	3	2	3	*	5	1	2	2	*	3	*	2	5	2	2	2	2	1	=	=	=	=	=	60	18	16	30		<p>Whole class activity Drawn on BB or use enlarged copy master or OHP Discussion, agreement, checking, praising</p> <p>Check:</p> <p>$2 \times 2 \times 3 \times 2 = 4 \times 6 = 24$ $3 \times 3 \times 2 \times 5 = 9 \times 10 = 90$ etc.</p> <p>(Or done as individual work if the majority of Ps want to try it alone. T monitors and helps those having difficulty)</p>
a)	<table border="1" style="display: inline-table;"> <tr><td>2</td><td>2</td><td>2</td><td>2</td></tr> <tr><td>2</td><td>4</td><td>2</td><td>2</td></tr> <tr><td>3</td><td>2</td><td>2</td><td>1</td></tr> <tr><td>2</td><td>1</td><td>5</td><td>7</td></tr> <tr><td>=</td><td>=</td><td>=</td><td>=</td></tr> <tr><td>24</td><td>16</td><td>40</td><td>28</td></tr> </table>	2	2	2	2	2	4	2	2	3	2	2	1	2	1	5	7	=	=	=	=	24	16	40	28	b)	<table border="1" style="display: inline-table;"> <tr><td>2</td><td>*</td><td>3</td><td>2</td><td>3</td></tr> <tr><td>*</td><td>5</td><td>1</td><td>2</td><td>2</td></tr> <tr><td>*</td><td>3</td><td>*</td><td>2</td><td>5</td></tr> <tr><td>2</td><td>2</td><td>2</td><td>2</td><td>1</td></tr> <tr><td>=</td><td>=</td><td>=</td><td>=</td><td>=</td></tr> <tr><td>60</td><td>18</td><td>16</td><td>30</td><td></td></tr> </table>	2	*	3	2	3	*	5	1	2	2	*	3	*	2	5	2	2	2	2	1	=	=	=	=	=	60	18	16	30				
2	2	2	2																																																									
2	4	2	2																																																									
3	2	2	1																																																									
2	1	5	7																																																									
=	=	=	=																																																									
24	16	40	28																																																									
2	*	3	2	3																																																								
*	5	1	2	2																																																								
*	3	*	2	5																																																								
2	2	2	2	1																																																								
=	=	=	=	=																																																								
60	18	16	30																																																									
<p>5</p>	<p>Interlude</p> <p>Action song</p> <p style="text-align: right;">28 min</p>	<p>Whole class in unison</p>																																																										

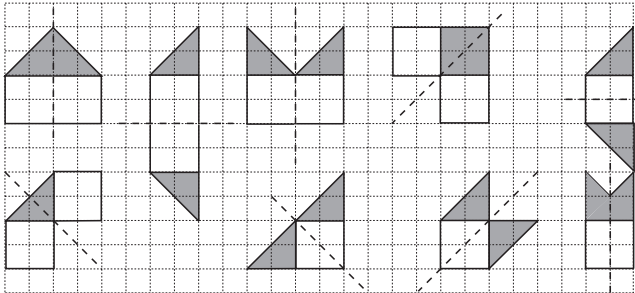
Y2		<i>Lesson Plan 113</i>
Activity 6	<p><i>PbY2b, page 113, Q.3</i></p> <p>Read: <i>Fill in the missing numbers.</i></p> <p>Look at the first equation in part a). What do you think the LHS equals? B, come and write in the missing number. Who agrees? Who thinks something else? BB: $2 \times 3 + 9 = 6 + 9 = \underline{15}$</p> <p>Talk about the order of calculating operations.</p> <ul style="list-style-type: none"> If there are <u>no</u> brackets, always do the multiplications or divisions <u>before</u> the additions or subtractions . If there are brackets, do the operation inside the brackets first. T demonstrates the two situations by drawing in brackets around the $(3 + 9)$ BB: $2 \times (3 + 9) = 2 \times 12 = 24$ <p>Are there brackets in any of the equations in this question? (No) So what should we calculate first? (multiplications and divisions)</p> <p>Ps come out to write value above RHS and LHS of equations. Other Ps come out to fill in the missing numbers, explaining reasoning. Class checks that they are correct..</p> <p style="text-align: right;"><i>35 min</i></p>	<p style="text-align: center;">Notes</p> <p>Whole class activity</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement, checking, praising</p> <p>Discussion, demonstration</p> <p>BB:</p> <p>a) $2 \overset{6}{\times} 3 + 9 = \underline{15}$ $4 \overset{12}{\times} 3 - 2 = 5 \times 2 \quad (10)$ $4 \overset{28}{\times} 7 - 12 = 4 \times 4 \quad (16)$</p> <p>b) $16 \overset{8}{\div} 2 - 1 = \underline{28} \div 4 \quad (7)$ $16 \overset{4}{\div} 4 + 1 = \underline{15} \div 3 \quad (5)$ $14 \overset{7}{\div} 2 + 1 = \underline{32} \div 4 \quad (8)$</p> <p>Praising</p>
7	<p><i>PbY2b, page 113</i></p> <p>Q.4 Read: <i>Measure the sides of the rectangles and fill in the missing lengths.</i></p> <p>T reminds Ps how to measure accurately with rulers. Why are there only 2 missing lengths in A and D when they each have 4 sides? (In rectangles, opposite sides are equal.)</p> <p>Why is there only 1 missing length in B and C? (B and C are also squares and have all 4 sides equal.)</p> <p>Review lengths at BB with whole class. Mistakes corrected.</p> <p>Read: <i>Write an equation for each rectangle to show the total length of its 4 sides.</i></p> <p>T talks about starting at one corner of A and walking all the way round the outside. This measurement is called the <u>perimeter</u>. (BB)</p> <p>Ps come out to BB to show perimeters of B, C and D.</p> <p>Ps write down equations for each of rectangles in <i>Pbs</i>.</p> <p>Review at BB with whole class. T chooses Ps who wrote the equations in different ways to demonstrate/explain on BB.</p> <p>Which way is correct? (all correct)</p> <p>Which do you think is easiest? Why? (e.g. using brackets requires least number of calculations and is shortest)</p> <p style="text-align: right;"><i>42 min</i></p>	<p>Whole class discussion about shapes first</p> <p>Use enlarged copy master or OHP for demonstration only!</p> <p>Individual work, monitored, helped for measuring</p> <p>Demonstration</p> <p>BB: <u>perimeter</u></p> <p>Individual work, monitored</p> <p>Discussion, agreement, checking, praising</p> <p>BB: A: perimeter = $4 \text{ cm} + 3 \text{ cm} + 4 \text{ cm} + 3 \text{ cm}$ $= 2 \times 4 \text{ cm} + 2 \times 3 \text{ cm}$ $= 2 \times (4 \text{ cm} + 3 \text{ cm})$ $= \underline{14 \text{ cm}}$ etc. for B, C, D</p>
8	<p>Tessellation</p> <p>Which of these rectangles could we use to cover the other rectangles exactly? How many would we need? Deal with one rectangle at a time. Ask several Ps what they think.</p> <p>How could we make sure we are correct? (Demonstration with cut-out rectangles or by drawing on squared paper or by calculation.)</p> <p>Elicit that:</p> <ul style="list-style-type: none"> A can be covered exactly by B (12) and D (2) B can be covered exactly by none C can be covered exactly by B (4) D can be covered exactly by B (6) <p style="text-align: right;"><i>45 min</i></p>	<p>Whole class activity</p> <p>T has cut-out rectangles from copy master ready for demonstration on BB (or Ps have them on desks)</p> <p>Discussion, agreement, checking, praising</p> <p>Preparation for area and combinatorics</p>

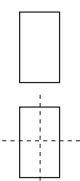
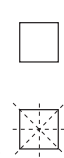
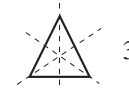

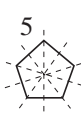
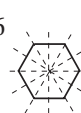

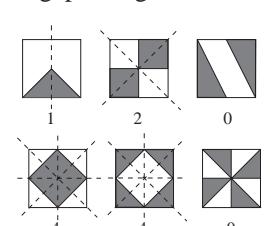
<h1>Y2</h1>	<p>R: Mental calculation C: Decomposing numbers into sums and products E: <i>Problems. Sequences.</i></p>	<h2>Lesson Plan 114</h2>
<p>Activity 1</p>	<p>Equal values</p> <p>Tell me an addition, subtraction, multiplication or division which is equal to the number I am describing.</p> <p>e.g. T says '2 × 4', P₁ says '5 + 3', P₂ says '12 - 4', P₃ says '1 × 8', P₄ says '24 ÷ 3', etc.</p> <p>Repeat for 5 × 2, 4 × 5, 20 ÷ 4, 15 ÷ 5, etc.</p> <p style="text-align: right;">8 min</p>	<p>Notes</p> <p>Whole class activity At speed round class Class points out mistakes or repeats Encourage creativity Praise 'original' ideas</p>
<p>2</p>	<p>Logic puzzle</p> <p>The same shape means the same number. Let's fill in the missing numbers.</p> <p>BB: a) </p> <p>b) </p> <p>Ps come out to write numbers in the shapes, explaining their reasoning. Class agrees/disagrees.</p> <p style="text-align: right;">16 min</p>	<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>At a good pace</p> <p>Reasoning, agreement, checking praising</p> <p>(N.B. The RHS of part b) has more than 1 solution)</p>
<p>3</p>	<p>PbY2b, page 114, Q.1</p> <p>Read: <i>The missing values are either 2 or 4. The arrow points towards the value which is twice as much.</i></p> <p>Fill in the numbers and draw the missing arrows.</p> <p>Let Ps try to solve it themselves through class discussion. Ps decide where to start and where to go next, with agreement of rest of class.</p> <p>T gives hints only if necessary.</p> <p><i>Solution:</i></p>  <p style="text-align: right;">22 min</p>	<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, agreement, checking, praising</p> <p>T repeats inaccurate or vague reasoning correctly</p> <p>Checking, praising</p>
<p>4</p>	<p>Interlude</p> <p>Relaxation, with music playing</p> <p style="text-align: right;">24 min</p>	<p>Whole class relaxing</p>
<p>5</p>	<p>Sequences</p> <p>T has 10 blank squared grids stuck to BB. Watch carefully while I colour the grids and see if you can notice what the rule is.</p> <p>BB: </p> <p>T colours in the first 3 elements. Who thinks they know which square should be coloured next? P comes out to BB to colour next 3 grids.</p> <p>Are they correct? What is the rule? Let's write the position numbers below the grids. (1, 2, 3, 4, ..., 10)</p> <ul style="list-style-type: none"> Which numbers would be below this grid? (T points to each in turn.) Which grid would the 7th (8th, 9th, 12th, 15th, 18th, 26th, 32nd, 35th, 40th) be? Ps come out to point and explain. <p>Discussion about different remainders after division by 4.</p> <p style="text-align: right;">30 min</p>	<p>Whole class activity</p> <p>Grids drawn on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement</p> <p><i>Rule:</i> top left, top right, bottom left, bottom right</p> <ul style="list-style-type: none">  1, 5, 9, ... (remainder 1)  2, 6, 10, ... (remainder 2)  3, 7, 11, ... (remainder 3)  4, 8, 12, ... (remainder 0) when divided by 4

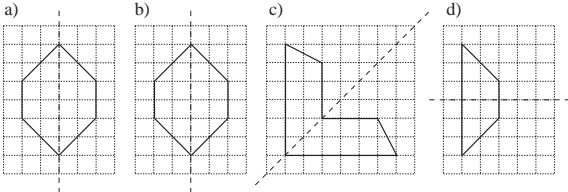
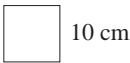
Y2		<i>Lesson Plan 114</i>
Activity 6	<p><i>PbY2b, page 114, Q.2</i></p> <p>Read: <i>Fill in the missing numbers.</i></p> <p>T revises the order of doing operations.</p> <p>(If there are no brackets, do any multiplications or divisions first; if there are brackets, do the operation inside the brackets first.)</p> <p>Ps come out to write value above RHS and LHS of equations.</p> <p>Other Ps come out to fill in the missing numbers, explaining reasoning. Class checks that they are correct.</p> <p>Extension</p> <p>Discuss the change in result if brackets were added. e.g.</p> <p>b) $4 \times (7 + 5) = 5 \times 5 + \underline{23}$ LHS: 48</p>	<p>Notes</p> <p>Whole class activity</p> <p>Written on BB – pre-prepared</p> <p>Reasoning, agreement, checking praising</p> <p>BB:</p> <p>a) $9 \times 2 = \underline{6} \times 3$ $18 \overset{6}{\div} 3 = 2 \times \underline{3}$ $18 \overset{9}{\div} 2 = \underline{27} \div 3$</p> <p>b) $4 \times 7 + 5 = 5 \times 5 + \underline{8}$ LHS: 33 etc.</p>
7	<p><i>PbY2b, page 114,</i></p> <p>Q.3 Read: <i>Fill in the missing numbers.</i></p> <p>Let's see how many of these you can do in 3 minutes!</p> <p>Try to do them without looking at your multiplication table.</p> <p>Review orally round the class. Mistakes corrected.</p>	<p>Individual work, monitored</p> <p>Ps count how many correct out of 12 (3×4). Praising</p> <p>Reasoning, agreement, checking, self-correction</p>
8	<p><i>PbY2b, page 114</i></p> <p>Q.4 Read: <i>Colour the small rectangles according to their answers.</i> <i>yellow: 1-digit and odd; green: 2-digit and odd;</i> <i>red: 1-digit and even; blue: 2-digit and even</i></p> <p>Review at BB with whole class. Mistakes corrected.</p> <p>(N.B. $28 \div 2 = 20 \div 2 + 8 \div 2 = 10 + 4 = 14$)</p>	<p>Individual work, monitored (helped)</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, agreement, checking praising</p>
Extension (or to do at home)	<p><i>PbY2b, page 114</i></p> <p>Q.5 Read: <i>I thought of a number, halved it, added 32 and subtracted 4 times 3. I ended up with 30.</i> <i>What was the number I first thought of?</i></p> <p>Ps come to BB to explain how they worked out the answer. (Start with 30 and do the inverse operations.)</p> <p>Check the answer by starting at 20 and following the original operations.</p>	<p>Individual work</p> <p>Discussion at BB</p> <p>Reasoning, agreement, checking, praising</p> <p>BB:</p> $\boxed{20} \begin{array}{c} \xrightarrow{+2} \\ \xleftarrow{\times 2} \end{array} 10 \begin{array}{c} \xrightarrow{+32} \\ \xleftarrow{-32} \end{array} 42 \begin{array}{c} \xrightarrow{-4 \times 3} \\ \xleftarrow{+12} \end{array} 30$


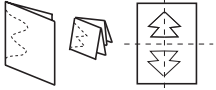
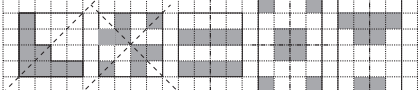
Y2		<i>Lesson Plan</i> 115
<i>Activity</i>	Tables practice, revision, activities, consolidation <i>PbY2b, page 115</i>	<i>Notes</i>

<p>Y2</p>	<p>R: Practice in calculation C: Geometry: reflections E: <i>Crossing axes</i></p>	<p><i>Lesson Plan</i> 116</p>
<p>Activity 1</p>	<p>Symmetry (see <i>Tx 2, page 38</i>) <i>Ps have mirrors, sheets of paper and scissors on desks. (If Ps are not happy using scissors, they can tear the paper.)</i></p> <p>Fold your sheet in half, so that the edges meet exactly like this. (T demonstrates to class.) Cut out (or tear) a shape from the folded edge. Put your mirror along the fold (of both the piece cut out and the piece left). Open out the two pieces of paper. What do you notice?</p> <p>Elicit that in both cases, the shapes on each side of the fold are exactly the same (as they would be seen in a mirror). Who knows what we call a shape in which two halves are the same? (<u>symmetrical</u>) (BB)</p> <p>The fold shows the <u>mirror line</u> (or <u>line of symmetry</u>).</p> <p>Who can tell me other shapes in the classroom which are symmetrical? Where would the mirror line (line of symmetry) be?</p> <p>T calls some Ps out to front to hold up their shapes (if possible, choose Ps with very different shapes). T holds up what is left of their sheets in random order. Class decides which shape came from which sheet.</p> <p style="text-align: right;"><i>10 min</i></p>	<p>Notes</p> <p>Whole class activity and individual work</p> <p>Demonstration with large sheet Monitoring, praising Discussion, agreement BB: <u>symmetrical shapes</u></p>  <p>Class agrees/disagrees Discussion, agreement, checking, praising (Shapes could be exhibited on wall of classroom)</p>
<p>2</p>	<p>Mirror image</p> <p>Lay out the shapes I describe in a line on your desk. e.g. large, white, plain square, then large, black, plain circle, then large, black, triangle with centre point, etc:</p>  <p>Hold your mirror <u>vertically</u> after the last shape (mirror line 1). Lay out shapes from the other set of shape cards in the order you see in the mirror. This is called the <u>mirror image</u>. Ps read out shapes from mirror line to right: 'large, white, plain hexagon, large white pentagon with centre point', etc. Ps correct mistakes.</p> <p>What do you notice? (shapes are in reverse order to original pattern, i.e. shape nearest the mirror line is also nearest it in the mirror image. What can we say about the whole pattern? (It is symmetrical.)</p> <p>Ps gather up shapes in 'mirror image' and repeat exercise with the mirror held horizontally <u>below</u> the row of shapes (mirror line 2).</p> <p>What do you notice? (shapes are upside down, i.e. points nearest the mirror are also nearest the mirror in the mirror image) N.B. This can only be seen from the triangle and pentagon but Ps could put a mark on the top of the other shapes and confirm in mirror.)</p> <p style="text-align: right;"><i>16 min</i></p>	<p>Whole class and paired work following instructions from T Ps have 2 sets of shape cards and mirrors on desk T sticks shapes on BB too</p> <p>T demonstrates Monitored, helped BB:</p>  <p>Discussion, agreement</p> <p>Monitored, helped BB:</p>  <p>Discussion, agreement, checking</p>
<p>3</p>	<p>Lines of symmetry (see <i>Tx 2, page 39, Q. 2</i>)</p> <p>T sticks some simple shapes or pictures on BB (drawn and coloured or cut out from magazines) or Ps can find on posters. Which of these are symmetrical? Where do you think the line of symmetry is? How can we check? (by folding or by using a mirror) Is there another one?</p> <p>Discuss the fact that some shapes or patterns can be symmetrical about different lines of symmetry (e.g. a square can be folded in half vertically, horizontally or diagonally).</p> <p style="text-align: right;"><i>20 min</i></p>	<p>Whole class activity</p> <p>Ps come out to BB to choose a shape and show the line of symmetry (mirror line)</p> <p>Discussion, agreement, checking, praising</p> <p>T (or P) demonstrates</p>
<p>4</p>	<p>Interlude Song or rhyme</p> <p style="text-align: right;"><i>22 min</i></p>	<p>Whole class in unison</p>

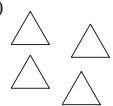
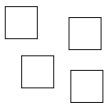
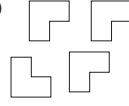
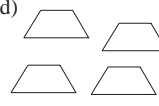



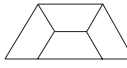


Y2		<i>Lesson Plan 116</i>
Activity 5	<p><i>PbY2b, page 116</i></p> <p>Q.1 Read: <i>We reflected all the 1-digit numbers and got these pictures. Write the number we reflected below each picture. Draw in the mirror line.</i></p> <p>T explains what 'reflected' means. What numbers could they be? (0, 1, 2, . . . , 9)</p> <p>Do part a) with whole class first, with Ps coming to BB to write in numbers and draw mirror lines. Class agrees/disagrees.</p> <p>Then Ps do part b) in <i>Pbs</i>. Review at BB with whole class.</p> <p>Discuss that '8' has 2 possible mirror lines (lines of symmetry): horizontal and vertical.</p> <p style="text-align: right;"><i>30 min</i></p>	<p style="text-align: center;">Notes</p> <p>Whole class activity to start Drawn on BB or use enlarged copy master or OHP</p> <p>In unison Ps write in <i>Pbs</i> too Discussion, agreement</p> <p>Individual work, monitored Ps can check using mirrors and number cards if necessary</p>
6	<p><i>PbY2b, page 116</i></p> <p>Q.2 Read: <i>Draw the mirror image of each shape. The dotted lines are mirror lines.</i></p> <p>What do you notice about the pictures? (The same shape each time but with 9 different mirror lines.)</p> <p>Deal with one shape at a time. Ps count the grid squares to help them do the drawing/shading. Let Ps try on their own first, then discuss solution at BB with whole class.</p> <p><i>Solution:</i></p>  <p style="text-align: right;"><i>38 min</i></p>	<p>Individual work, monitored, helped Drawn on BB or use enlarged copy master or OHP Ps may use a mirror if necessary</p> <p>Agreement, checking, self-correction, praising</p>
7	<p><i>PbY2b, page 116</i></p> <p>Q.3 Read: <i>Practise calculation.</i></p> <p>Deal with one column at a time. Set a time limit for each. Review orally round the class, with Ps reading out the whole equation and explaining reasoning (especially in cases which involve crossing tens). Other Ps check the divisions and subtractions with multiplications and additions.</p> <p>Who was correct? Who made a mistake? What kind of mistake? Who did the same? Who made a different one? etc.</p> <p>If problems, demonstrate on BB (at number line, on multiplication table, with Ps at front, etc.).</p> <p style="text-align: right;"><i>45 min</i></p>	<p>Individual work, monitored (helped) T takes note of common errors and individual misconceptions Discussion, agreement, checking, self-correcting Demonstration if necessary (if possible, a P who understands explaining to Ps who have made mistakes) Praising</p>

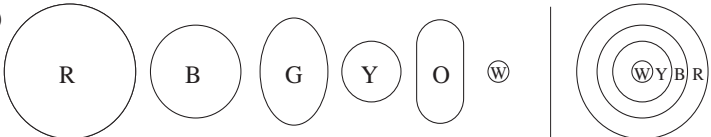
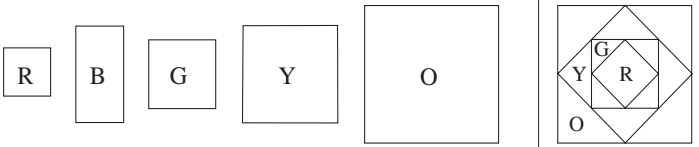
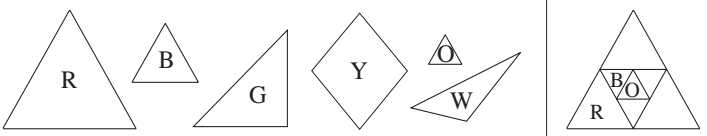
<h1>Y2</h1>	<p>R: Practice in calculation C: Geometry: reflection E: <i>Lines of symmetry of regular polygons. Perimeter and area</i></p>	<h2>Lesson Plan 117</h2>
<p>Activity</p> <p>1</p>	<p>Multiplication and division practice (2, 3, 4, 5, 10)</p> <p>a) T says a multiplication or division, P says product or quotient. b) T says a number, P says a multiplication or division, e.g. T: '20, P: '4 times 5' or '2 times 10'; T: '9', P: '3 times 3' or '36 divided by 4'</p> <p>(Or done as a competition, with Ps standing at first and sitting down when they have answered correctly. Team with fewest Ps standing wins.)</p> <p style="text-align: right;"><i>5 min</i></p>	<p>Notes</p> <p>Whole class activity At speed. T chooses Ps at random (or Ps can choose Ps and ask the questions) Class points out mistakes Praise creative answers to part b)</p>
<p>2</p>	<p>Lines of symmetry</p> <p>Ps have 2 sheets of paper on desks (rectangle and square).</p> <p>a) Fold your rectangle in half so that the 2 opposite sides meet exactly and smooth down the fold. (T demonstrates with large sheet.) Open it out again. What does the fold show? (the mirror line or line of symmetry) See how many other lines of symmetry you can find. A, how many did you find? (2) Come and show us. Who agrees? b) Repeat for the square (4 lines of symmetry) (Ps hold up sheets.)</p> <p style="text-align: right;"><i>10 min</i></p>	<p>Individual work, monitored, followed by whole class discussion</p> <p>BB:</p> <p>a)  b) </p>
<p>3</p> <p>Extension</p>	<p>Logic set</p> <p>a) Lay out on your desk shapes which have exactly 3 lines of symmetry. B and C, what have you put out? Who agrees? Who thinks some thing else? (8 triangles: large or small, white or black, plain or with red centre point, i.e. $2 \times 2 \times 2 = 8$) T draws an equilateral triangle on BB. Ps come out to draw in the 3 lines of symmetry. Class agrees/disagrees b) Hold up a shape which has exactly 5 (6) lines of symmetry. Show me . . . now! (pentagon, hexagon) T draws each on BB and Ps come out to draw in lines of symmetry. How many of these are in your shape card set? (all 8: as for triangles)</p> <p>Which shape have we not mentioned yet from your sets? (circle) How many lines of symmetry do you think a circle has? Ask several Ps what they think. (Show on BB that they could go on and on drawing different lines of symmetry, i.e. an <u>infinite</u> number!)</p> <p style="text-align: right;"><i>20 min</i></p>	<p>Paired work , monitored Discussion, agreement, checking, praising</p> <p>BB: </p> <p>In unison BB:   </p> <p>Discussion, demonstration, agreement</p> <p>BB:  : <u>infinite</u> number etc.</p>
<p>4</p>	<p>Interlude</p> <p>Action song</p> <p style="text-align: right;"><i>22 min</i></p>	<p>Whole class in unison</p>
<p>5</p> <p>Extension</p>	<p>PbY2b, page 117, Q. 1</p> <p>Read: <i>Which shapes are symmetrical? Draw the possible mirror lines in blue. Write below each picture how many mirror lines you have drawn.</i></p> <p>Discuss that normal squares would have 4 mirror lines but that the shading on these squares makes them different. Deal with one at a time. Ps come out one after another to BB to draw in a mirror line. When class is agreed that all are drawn, T writes in total number. (Ps can draw/write in Pbs too.)</p> <p>What part of each square is shaded? (1 quarter in first square, 1 half in all the others)</p> <p style="text-align: right;"><i>28 min</i></p>	<p>Whole class activity Drawn on BB or use enlarged copy master or OHP Discussion, agreement, checking, praising</p> <p>BB: </p>

<p>Y2</p>		<p><i>Lesson Plan 117</i></p>
<p>Activity</p> <p>6</p>	<p><i>PbY2b, page 117</i></p> <p>Q.2 Read: <i>Put a mirror on the dotted line. Draw the mirror image of each shape.</i></p> <p>T tells Ps to count the squares in the grid to help them draw lines of the correct length. Review at BB with whole class. Call out 4 Ps finished first to draw in the shapes on BB too. Class agrees/disagrees.</p> <p><i>Solution:</i></p>  <p style="text-align: center;">34 min</p>	<p>Notes</p> <p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, agreement, checking, praising</p>
<p>7</p> <p>Extension</p>	<p><i>PbY2b, page 117</i></p> <p>Q.3 Read: <i>The total distance around the outside of a shape is called the perimeter.</i></p> <p><i>Measure a side of each square and write its length in the box.</i></p> <p>Why do we only need to measure 1 side to work out the perimeter? (In a square, all the sides are of equal length.)</p> <p>Deal with one square at a time. Review at BB with whole class. Mistakes corrected.</p> <p>Read: <i>Write an equation for each square to show the length of its perimeter.</i></p> <p>What kind of equation will we write? (multiplication, by 4)</p> <p>Ps write equations in <i>Pbs</i>. Review at BB with whole class.</p> <p>Elicit that the squares are the same shape, but different sizes. Each square is <u>similar</u> to the others, (larger or smaller but the same shape).</p> <p>Show me 2 shapes from your shape card set which are similar to each other. (T shows more examples if necessary.)</p> <p>Which squares can be used to cover exactly (<u>tessellate</u>) which others and how many would you need?</p> <p>Elicit that:</p> <ul style="list-style-type: none"> A can be tessellated by B (4) and C (16) B can be tessellated by C (4) C can be tessellated by none D can be tessellated by C (9) <p style="text-align: center;">42 min</p>	<p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP (for demonstration only)</p> <p>Discussion, agreement, checking, self-correcting</p> <p>BB: A: 4 cm, B: 2 cm, C: 1 cm, D: 3 cm</p> <p>A: $4 \times 4 \text{ cm} = 16 \text{ cm}$</p> <p>B: $4 \times 2 \text{ cm} = 8 \text{ cm}$</p> <p>C: $4 \times 1 \text{ cm} = 4 \text{ cm}$</p> <p>D: $4 \times 3 \text{ cm} = 12 \text{ cm}$</p> <p>A, B, C and D are <u>similar</u> shapes</p> <p>In unison</p> <p>BB: <u>tessellate</u></p> <p>Discussion, visualisation, agreement, checking (by calculation, or drawing or demonstrating with cut-out squares)</p> <p>Praising</p>
<p>8</p>	<p><i>PbY2b, page 117, Q.4</i></p> <p>Listen carefully and show me the answer with number cards when I say. Write an equation in your <i>Pb</i> to help you.</p> <p><i>A square has a perimeter of length 40 cm. What is the length of each side?</i></p> <p>Show me . . . now! (10)</p> <p>X, come and explain how you worked out the answer. Who agrees? Who thinks something else? Let's check.</p> <p>Demonstrate with diagram on BB if problems.</p>  <p style="text-align: center;">45 min</p>	<p>Whole class activity</p> <p>T (or P) repeats slowly</p> <p>In unison</p> <p>Reasoning, agreement, checking, praising</p> <p>BB: $40 \text{ cm} \div 4 = 10 \text{ cm}$</p> <p>Check: $10 \text{ cm} \times 4 = 40 \text{ cm}$</p>

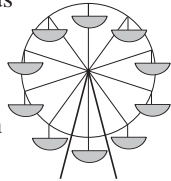
<h1>Y2</h1>	<p>R: Practice in calculation C: Geometry: reflection, enlargement E: Creative problem</p>	<h2>Lesson Plan 118</h2>
Activity		Notes
1	<p>Practice in calculation</p> <p>Ps come out to front in groups of 4 or 5. T says an addition/subtraction/multiplication/division and Ps sit down if they are <u>first</u> to answer correctly. When one P is left, another 4 Ps come out to join him/her. Continue until all Ps have been out to front. Differentiate questions so that low ability Ps are not left at the end.</p> <p style="text-align: right;">5 min</p>	<p>Whole class activity Turnover of Ps and questioning done at speed All in good humour! Praising only. Encouragement of Ps who answer incorrectly</p>
2	<p>Mirror images using the logic set</p> <p>Place e.g. the large black triangle from 1 set on your desk like this. T demonstrates on BB. Use a pencil as the mirror line. (T draws in the mirror line on BB.) Now lay down its mirror image from the other set. P comes out to show mirror image on BB. Discuss whether it is the correct shape, colour, size, orientation and distance from mirror line. Repeat for other shapes. 1st P in pair lays down a shape, 2nd P lays down its mirror image, then vice versa.</p> <p style="text-align: right;">10 min</p>	<p>Paired work, monitored, helped BB: e.g.</p>  <p>Discussion, agreement, correcting Praising creativity</p>
3	<p>Symmetry</p> <p>Ps have 2 sheets of coloured paper and scissors on desks. Ps fold 1st sheet in half and cut out (or tear) a shape from folded edge. Ps unfold paper and show to T on command. T chooses some 'creative' shapes for Ps show to class. Repeat for 2nd sheet but folded into quarters. Discuss not only symmetry of shapes but also of patterns. (2 lines of symmetry)</p> <p style="text-align: right;">16 min</p>	<p>Individual work, monitored, helped. T demonstrates if necessary</p> <p>e.g.</p>  <p>Exhibition on wall of classroom</p>
4	<p>PbY2b, page 118</p> <p>Q.1 Read: <i>Colour 8 grid squares in different ways so that the shape is symmetrical. Draw the mirror line too.</i></p> <p>It might be easier for some Ps to draw the mirror line first. Quick, creative Ps can carry on in Ex. Bks.</p> <p>T chooses Ps to show their designs on grid on BB. Class decides whether or not the design is symmetrical.</p> <p>e.g.</p>  <p>What part of of each square (rectangle) is coloured? (1 half: 8 out of 16 grid squares; 1 third: 8 out of 24 grid squares)</p> <p style="text-align: right;">23 min</p>	<p>Individual work, monitored, helped, corrected Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, agreement, checking, praising</p> <p>T asks several Ps what they think and why.</p>
5	<p>Interlude</p> <p>Song, rhyme, exercises</p> <p style="text-align: right;">25 min</p>	<p>Whole class in unison</p>
6	<p>Similar shapes</p> <p>T sticks various pictures or shapes on BB, some similar (reductions, enlargements, differently coloured) and some completely different. Ps come out to join up those which are similar, explaining reasoning. Class agrees/disagrees. Revise that 'similar' in mathematics means 'the same shape' (i.e. smaller or larger but in the same proportion) Discussion on enlargement and reduction (e.g. maps, plans, photos)</p> <p style="text-align: right;">30 min</p>	<p>Whole class activity Pictures photocopied from magazines or use copy master, enlarged, coloured and shapes cut out. Discussion, reasoning, agreement, checking, praising</p>

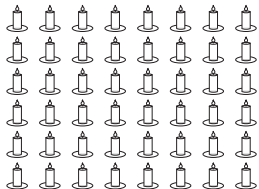
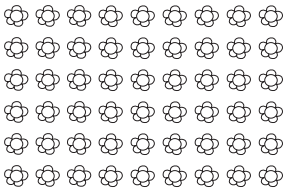
Y2		<i>Lesson Plan 118</i>
<p>Activity</p> <p>7</p> <p><i>Erratum:</i> 5 in <i>Pb</i> is not accurate. Use copy master to confirm by magnification</p>	<p><i>PbY2b, page 118</i></p> <p>Q.2 Read: <i>Colour the similar shaped cupboards in the same colour.</i></p> <p>Ps discuss with neighbours which cupboards to colour.</p> <p>Review at BB with whole class, with pairs of Ps explaining reason for choice (e.g. 6 is similar to 1 or 3 (6 ~ 1, 6 ~ 3) as it is the same shape but smaller, 4 is similar to 5 (4 ~ 5) because it is the same shape but larger, 2 is on its own.)</p> <p>Show me with number cards when I say the 2 cupboards which are <u>exactly</u> the same (identical).</p> <p>Show me . . . now! (1 and 3) Let's check. (By measuring, tracing, cutting out, photocopying onto transparency)</p> <p style="text-align: right;">35 min</p>	<p>Notes</p> <p>Paired work to start, monitored, helped</p> <p>Use enlarged copy master or OHP for demonstration</p> <p>Discussion, agreement</p> <p>(If possible, T could have magnifying glass to check similarity of 3, 6 and 4, 5)</p> <p>In unison</p> <p>Praising</p>
<p>8</p>	<p><i>PbY2b, page 118</i></p> <p>Q.3 Read: <i>Colour similar shapes in the same colour.</i></p> <p>Ps explain what 'similar' means in maths (same shape but could be smaller or larger; if smaller shape was enlarged, or larger shape was reduced, by the correct amount, it would fit over the other exactly.) Encourage Ps to work logically.</p> <p>Review at BB with whole class, with Ps explaining reason for choice (e.g. 6 ~ 9 ~ 11 ~ 13 because all are squares; 3 ~ 4 ~ 10 because they are all triangles with 2 sides of equal length; 1 ~ 2 because they are rectangles which are twice as long as they are high; 8 and 12 are on their own, N.B. although both are triangles, they are not in the same proportion, so even if the smaller was magnified, it would never cover the other exactly.)</p> <p>Show me with number cards when I say the 2 shapes which are <u>exactly</u> the same (identical).</p> <p>Show me . . . now! (5 and 7) How can we check? (By counting the unit squares: $3 \times 2 = 2 \times 3 = 6$ unit squares, or by rotation, or by cutting out, etc.)</p> <p style="text-align: right;">40 min</p>	<p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP (or shapes enlarged, cut out from copy master and stuck to BB) for demonstration only</p> <p>Discussion, reasoning, agreement, checking</p> <p>(If possible, T (or Ps) could have magnifying glass to check similarity)</p> <p>In unison</p> <p>Discussion, checking, praising</p>
<p>9</p>	<p><i>PbY2b, page 118</i></p> <p>Q.5 Let's see how many of these you can do correctly in 3 minutes!</p> <p>Start . . . now! . . . Stop! Review orally round the class.</p> <p>Ask for the inverse operation as a check in some cases, e.g. $45 \div 5 = 9$, because $9 \times 5 = 45$)</p> <p>Ps correct own (or neighbour's) work and count how many correct out of 24 ($6 \times 4 = 24$).</p> <p>Who had all correct? Who made 1 mistake? What was it?</p> <p>Who made the same mistake? Who made a different one? etc.</p> <p>Who did not finish them all? How far did you get?</p> <p style="text-align: right;">45 min</p>	<p>Individual work, monitored (Can be done as a competition between teams)</p> <p>Reasoning, agreement, checking, praising</p> <p>T notes Ps having difficulties, e.g. working too slowly, insufficient knowledge of addition/multiplication facts</p> <p>Praising, encouragement only</p>




Y2	<p>R: Practice in calculation C: Geometry: reflection, enlargement E: <i>Problem solving</i></p>	<i>Lesson Plan</i> 119
Activity		Notes
1	<p>Oral practice</p> <p>T says a number, e.g. 15 (36, 80). T chooses Ps to describe the number in different ways. Class agrees on validity of description.</p> <p style="text-align: right;">5 min</p>	<p>Whole class activity</p> <p>At speed</p> <p>Agreement, praising</p>
2	<p>Logic set</p> <p>T asks Ps to find all the shapes in their set which are <u>similar</u> to the shape the T holds up. (circle, triangle, square, pentagon, hexagon)</p> <p>Elicit that there are 8 of each shape. (small/large, white/black, plain/with centre point; i.e. $2 \times 2 \times 2 = 8$)</p> <p style="text-align: right;">12 min</p>	<p>Whole class activity</p> <p>Demonstrate on BB too</p> <p>Agreement, checking, praising</p>
3	<p>Similar shapes</p> <p>T has 4 of each 4 shapes stuck to BB. Who can come and make a similar shape with them? e.g.</p> <p>BB: a)  b)  c)  d) </p> <p>unit shapes</p> <p>similar shape:    </p> <p>similar shape:</p> <p>Class agrees/disagrees on whether final shape is similar. Elicit that in the larger shapes:</p> <p>a) the number of unit shapes used is <u>4</u> times more, b) the length of each side is <u>2</u> times more.</p> <p>Extension Discuss ratio in the context of how much bigger something is:</p> <p>a) the <u>area</u> (space covered) by the larger shape is 4 times as big, so is in the ratio 4:1, but b) the <u>enlargement</u> is in the ratio 2:1 (length of sides twice as long)</p> <p style="text-align: right;">20 min</p>	<p>Whole class activity</p> <p>Use copy master, enlarged, cut out and shapes stuck to BB</p> <p>Ps come out to try. If P cannot do it, another P may help</p> <p>Discussion, agreement, checking, praising only</p> <p>(Or done as individual work, with each P having copies of shapes from copy master on desk)</p> <p>Introduction to ratio</p> <p>BB: <u>Ratio of area</u></p> <p> 4 : 1 </p> <p><u>Ratio of enlargement</u></p> <p>2 : 1</p>
4	<p>Interlude</p> <p>Song, rhyme, exercises</p> <p style="text-align: right;">22 min</p>	<p>Whole class in unison</p>
5	<p>PbY2b, page 119, Q.1</p> <p>a) Read: <i>Colour similar shapes in the same colour.</i></p> <p>Let's do it logically and start with shape 1. A, come and point to it. What can you say about it? (triangle, all sides of equal length). Which shape is similar to shape 1? (e.g. shape 5) Who agrees? Who thinks another one? (shape 7) etc. Let's colour them in the same colour. Deal with other shapes in a similar way.</p> <p><i>Solution:</i> 1 ~ 5 ~ 7; 2 ~ 9; 3 ~ 4 ~ 8; 6, 10 and 11 stand alone</p> <p>b) Read: <i>Write inside each shape the number of unit triangles it covers.</i></p> <p>Ps write in <i>Pbs</i>. Review orally round class. T writes in responses. Which shape has the smallest (largest) area? (1, 8) Which shapes have equal areas? (5, 6) [Discuss ratio of length of sides (enlargement) and ratio of area if Ps understood in activity 3.]</p> <p>c) Read: <i>Draw mirror lines on the shapes which are symmetrical.</i></p> <p>Deal with shapes in logical order. Ps come out to draw mirror lines.</p>	<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP.</p> <p>Discussion, agreement, checking, praising</p> <p>Ps colour in <i>Pbs</i> too.</p> <p>Individual work, monitored</p> <p>Agreement, checking, praising</p> <p>Whole class activity</p> <p>Symmetric shapes: 1, 2, 3, 4, 5, 7, 8, 9, 11</p> <p>Discussion, agreement, praising</p>

<p>Y2</p>		<p><i>Lesson Plan 119</i></p>
<p>Activity</p>	<p>Which shapes could be used to tessellate (tile or cover exactly) which other shapes? Ps come out to choose. Class agrees/disagrees. Let's check.</p> <p>e.g. 1 can be used to tessellate all the othershapes 2 can be used to tessellate 6, 9, 10 and 11 3 can be used to tessellate 4, 7, 8, 10 and 11 5 can be used to tessellate 9 6 can be used to tessellate 9 and 10 7 can be used to tessellate 8</p> <p style="text-align: right;">32 min</p>	<p>Notes</p> <p>Whole class activity</p> <p>T has cut-out unit shapes already prepared</p> <p>Discussion, agreement, checking, praising</p> <p>(Or Ps have own unit shapes on desks cut from copy master)</p>
<p>6</p>	<p>PbY2b, page 119</p> <p>Q.2 Read: <i>Colour each single shape in a different colour.</i> <i>If you put similar shapes one on top of the other, colour the shape you would see from above.</i></p> <p>T explains task and demonstrates. Do part a) with whole class on BB if Ps still do not understand.</p> <p>Review at BB with whole class. Demonstrate if necessary with enlarged, coloured, cut-out shapes or overhead transparencies.</p> <p><i>Solution:</i> e.g.</p> <p>a) </p> <p>b) </p> <p>c) </p> <p style="text-align: right;">40 min</p>	<p>Individual work, monitored, helped</p> <p>Use copy master, enlarged, coloured and cut out, or OHP</p> <p>Discussion, agreement, checking, praising</p> <p>It will be easier to review if Ps all use the same colour for each single shape (agreed by class or instructed by T)</p>
<p>7</p>	<p>PbY2b, page 118</p> <p>Q.3 Let's see how many of these you can do correctly in 3 minutes! Start . . . now! . . . Stop! Review orally round the class. Ask for the inverse operation as a check in some cases, e.g. $27 \div 3 = 9$, because $9 \times 3 = 27$.</p> <p>Ps correct own (or neighbour's) work and count how many correct out of 15 ($3 \times 5 = 15$).</p> <p>Who had all correct? Who made 1 mistake? What was it? Who made the same mistake? Who made a different one? etc. Who did not finish them all? How far did you get?</p> <p style="text-align: right;">45 min</p>	<p>Individual work, monitored (Diagnostic feedback to T)</p> <p>Reasoning, agreement, checking, praising</p> <p>T notes Ps having difficulties, e.g. working too slowly, insufficient knowledge of addition/multiplication facts</p> <p>Praising, encouragement only</p>

Y2		<i>Lesson Plan</i> 120
<i>Activity</i>	Calculation and tables practice, revision, activities, consolidation <i>PbY2b, page 120</i>	<i>Notes</i>

Y2	<p>R: Mental calculation C: Multiplication and division table for 6 E: <i>Relationship with the 2 and 3 times tables</i></p>	<p style="text-align: right;"><i>Lesson Plan</i> 121</p>
<p>Activity</p> <p>1</p>	<p>Problem</p> <p>Listen carefully, picture the story in your head and think what calculation you would do to work out the answer.</p> <p><i>In an amusement park, the best ride is a ferris wheel. The ferris wheel has 10 cabins, each able to hold 6 people at most. What is the greatest number of people who can ride on the ferris wheel at a time?</i></p> <p>Who has seen a ferris wheel? Who has had a ride on one? (Talk about the 'London Eye'). Let's draw a diagram. (T draws on BB with Ps' help.)</p> <p>A, come and write an equation about it on the BB. Who agrees? Who thinks something else?</p> <p>BB: $6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 = \underline{60}$ or $10 \times 6 = 6 \times 10 = \underline{60}$</p> <p>What equation would we write if there was <u>nobody</u> on the big wheel?</p> <p>BB: $10 \times 0 = \underline{0}$ or $0 \times 10 = \underline{0}$</p> <p style="text-align: right;">5 min</p>	<p style="text-align: center;">Notes</p> <p>Whole class activity</p> <p>T repeats slowly and P repeats in own words</p> <p>BB:  rough diagram</p> <p>Agreement, checking, praising</p> <p>T asks several Ps what they think. Agreement, praising</p>
<p>2</p> <p>Extension</p>	<p>Dividing up 18</p> <p>T calls 18 Ps to stand in a long line holding hands at front of class. Now divide yourselves up into 2 equal groups.</p> <p>Who can come and write an equation about it? Who agrees? Who thinks something else?</p> <p>BB: e.g. 2 groups: $2 \times 9 = 18$, $18 \div 2 = 9$</p> <p>Now divide yourselves up into 3 (6) equal groups.</p> <p>3 groups: $3 \times 6 = 18$, $18 \div 3 = 6$ 6 groups: $6 \times 3 = 18$, $18 \div 6 = 3$</p> <p>What other way could we divide 18 up into equal groups? (18)</p> <p>18 groups: $18 \times 1 = 18$, $18 \div 18 = 1$</p> <p style="text-align: right;">15 min</p>	<p>Whole class activity</p> <p>With T's help</p> <p>Reasoning, agreement, checking, pausing</p> <p>With T's help</p> <p>Ps write equations in <i>Ex. Bks</i> too</p> <p>Extra praise if Ps think of this by themselves</p>
<p>3</p>	<p>PbY2b, page 121</p> <p>Q.1 Read: <i>The dog starts at 0 and jumps 6 units at a time. The cat also starts at 0 but jumps 3 units at a time. Draw their jumps on the number lines.</i></p> <p>Ps draw jumps in <i>Pbs</i>. How many jumps of 6 (3) units did you draw for the dog (cat)? (10, 20)</p> <p>Read: <i>Fill in the table to show how far they have gone after these jumps.</i></p> <p>Ps come to BB one after another to fill in a column each and say the relevant multiplications, (e.g. '2 \times 6 = 12', and '2 \times 3 = 6').</p> <p>Read: <i>Who made shorter jumps (fewer jumps)? (cat, dog)</i></p> <p>How much shorter? How many fewer? Elicit that:</p> <ul style="list-style-type: none"> The cat jumps half as far each time so needs twice as many jumps to cover the same distance as the dog, or the dog jumps twice as far so needs half as many jumps to cover the same distance as the cat. <p>Let D = length of dog's jumps and C = length of cat's jumps</p> <p>Who can come and write an equation about the two rows in the table? Who agrees? Who can write it another way?</p> <p style="text-align: right;">20 min</p>	<p>Individual work in drawing jumps, monitored</p> <p>Use enlarged copy master or OHP</p> <p>Whole class activity in filling in the table.</p> <p>Ps fill in table in <i>Pbs</i> too</p> <p>Discussion, agreement, checking, praising</p> <p>BB: $D = 2 \text{ times } C$ $C = \text{half of } D$</p> <p>(Class recites both in unison)</p>

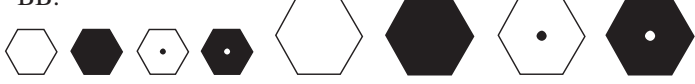
Y2		<i>Lesson Plan 121</i>
Activity		Notes
4	Interlude Song, rhyme, exercises _____ 22 min _____	Whole class in unison
5	PbY2b, page 121 Q.2 Read: <i>A butterfly has 2 feelers and 6 legs.</i> <i>Fill in the table. Compare the rows.</i> Ask Ps what each row of table means (middle row is 2 times top row; bottom row is 6 times top row or 3 times middle row). Ps fill in table in <i>Pbs</i> . Review at BB with whole class. Mistakes corrected. Let's compare the rows in the table. Who can come and write the rule about the Legs (Feelers, Butterflies)? Who agrees? Who can write it in a different way? BB: $L = 6 \times B$ $F = 2 \times B$ $B = F \div 2$ $L = 3 \times F$ $F = L \div 3$ $B = L \div 6$ _____ 28 min _____	Individual work, monitored helped Drawn on BB or use enlarged copy master or OHP Discussion, agreement, checking, praising Reasoning, agreement Check with values from table Praising only
6	Problems a) T calls 6 girls out to front of class and gives each of them 7 pencils to hold. How many pencils do they have altogether? Ps come out to BB to write it as an addition and a multiplication. Who agrees? b) Seven boys have 6 marbles each. How many marbles do they have altogether? Show me the answer with number cards . . . now! (42) C , come and explain to us how you worked out the answer. Is C correct? Demonstrate with 7 boys at front of class if necessary. _____ 33 min _____	Whole class activity Demonstration, reasoning, agreement, checking BB: 6×7 pencils = 42 pencils In unison Reasoning, agreement, checking BB: 7×6 marbles = 42 marbles Praising
7	Multiplications and divisions Let's make multiplications and divisions about the pictures. BB: a)  b)  What can you say about the picture in part a)? (6 rows of candles, 8 candles in each row, 48 candles altogether) Who can come and write a multiplication (division) about it? Who agrees? Who can think of another one? etc. Repeat in similar way for flowers in part b). _____ 38 min _____	Whole class activity Drawn on BB or use enlarged copy master or OHP BB: a) $6 \times 8 = 8 \times 6 = 48$ $48 \div 6 = 8, 48 \div 8 = 6$ b) $6 \times 9 = 9 \times 6 = 54$ $54 \div 6 = 9, 54 \div 9 = 6$ Praise if Ps think of other correct multiplications or divisions e.g. $4 \times 12 = 48, 48 \div 2 = 24$
8	PbY2b, page 121, Q.3 Read: <i>Write the multiples of 6 in the table in red.</i> <i>Learn the multiples of 6 by heart.</i> Point to the row and column for 6 in your table. What do you notice? (Some numbers are already filled in because they are also multiples of 2, 3, 4, 5 or 10.) Ps fill in the missing multiples of 6. Review at BB with whole class. Mistakes corrected. Ps given time to learn by heart.. Close your <i>Pbs</i> and let's say the multiples of 6 together. _____ 45 min _____	Whole class discussion at first Drawn on BB or use enlarged copy master or <i>OHT 14</i> Ps come out to point and explain Individual work, monitored Agreement. T insists on quiet In unison, in both directions

<h1>Y2</h1>	<p>R: Mental calculation C: Multiplication and division table for 6 E: Relationship with the 2 and 4 times tables. Factorisation</p>	<h2>Lesson Plan 122</h2>																																																																								
<p>Activity</p> <p>1</p>	<p>Equations competition</p> <p>T divides the class into 3 teams (A, B and C all with a roughly equal ability range). T gives each team a number, e.g. 12, 25 and 30.</p> <p>Ps from all 3 teams come out in relay to BB to write operations beside (beneath) their number. T says 'start' . . . and 'stop' after 2 minutes. e.g. $12 = 2 \times 6 = 3 \times 4 = 5 \times 3 - 3 = 30 \div 6 + 7 = 40 - 28 = 5 \times 2 + 2 \dots$</p> <p>The winner is the team with the most correct, different operations.</p> <p style="text-align: right;">5 min</p>	<p>Notes</p> <p>Whole class activity</p> <p>T encourages creativity</p> <p>At speed. Ps still seated point out incorrect or repeated equations to help their team</p> <p>Quick review/counting</p> <p>Stars/stickers, etc. awarded</p>																																																																								
<p>2</p>	<p>Sequences relay</p> <p>T starts a sequence and Ps continue it.</p> <p>a) 0, 6, 12, . . . b) 2, 8, 14, . . . c) 5, 11, 17, . . . d) 55, 49, 43, . . . e) 58, 52, 46, . . . f) 57, 51, 45, . . .</p> <p style="text-align: right;">10 min</p>	<p>Whole class activity</p> <p>At speed in relay round class</p> <p>Self-correction</p> <p>Praising</p>																																																																								
<p>3</p>	<p>PbY2b, page 122</p> <p><i>Q.1 Read: A dragonfly has 2 feelers, 4 wings and 6 legs. Complete the table. Compare the rows and write equations about them.</i></p> <p>Who can explain why the first column is all zeros? (If there are no dragonflies, then there are no feelers, wings or legs.)</p> <p>From 2nd column, elicit that 2nd row is twice 1st row, 3rd row is 4 times 1st row or 2 times 2nd row, and 4th row is 6 times top row or 3 times 2nd row).</p> <p>Do columns headed 4, 6, 8 and 10 with the whole class. Ps come out to fill in a box and explain reasoning. Class agrees/disagrees.</p> <p>Ps fill in columns headed 9, 7, 5, 3, and 1 in <i>Pbs</i>, using \times table if necessary. Review at BB with whole class. Mistakes corrected.</p> <p>Then complete the table at BB with whole class. T asks questions such as, 'How many dragonflies are there if you can see 20 feelers?'</p> <p><i>Solution:</i></p> <p>Number of</p> <table border="1" data-bbox="379 1473 1070 1626"> <tr> <td></td> <td>0</td><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td><td>9</td><td>7</td><td>5</td><td>3</td><td>1</td><td>10</td><td>9</td><td>3</td><td>2</td><td>6</td><td>7</td> </tr> <tr> <td>Feelers</td> <td>0</td><td>4</td><td>8</td><td>12</td><td>16</td><td>20</td><td>18</td><td>14</td><td>10</td><td>6</td><td>2</td><td>20</td><td>18</td><td>6</td><td>4</td><td>12</td><td>14</td> </tr> <tr> <td>Wings</td> <td>0</td><td>8</td><td>16</td><td>24</td><td>32</td><td>40</td><td>36</td><td>28</td><td>20</td><td>12</td><td>4</td><td>40</td><td>36</td><td>12</td><td>8</td><td>24</td><td>28</td> </tr> <tr> <td>Legs</td> <td>0</td><td>12</td><td>24</td><td>36</td><td>48</td><td>60</td><td>54</td><td>42</td><td>30</td><td>18</td><td>6</td><td>60</td><td>54</td><td>18</td><td>12</td><td>36</td><td>42</td> </tr> </table> <p>Let's compare the rows in the table.</p> <p>Who can come and write an equation about the Legs (Feelers, Wings, Dragonflies)? Who agrees? Who can write it in a different way?</p> <p>BB: $L = D \times 6,$ $L = F \times 3,$ $(L = F + W)$ $(W = L - F),$ $W = 2 \times F,$ $W = 4 \times D$ $F = L \div 3,$ $F = L - W,$ $F = W \div 2$ $D = L \div 6,$ $D = W \div 4,$ $D = F \div 2$</p> <p style="text-align: right;">20 min</p>		0	2	4	6	8	10	9	7	5	3	1	10	9	3	2	6	7	Feelers	0	4	8	12	16	20	18	14	10	6	2	20	18	6	4	12	14	Wings	0	8	16	24	32	40	36	28	20	12	4	40	36	12	8	24	28	Legs	0	12	24	36	48	60	54	42	30	18	6	60	54	18	12	36	42	<p>Whole class activity to start</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>BB: $0 \times 2 = 0 \times 4 = 0 \times 6 = 0$</p> <p>Discussion, agreement</p> <p>Reasoning, agreement, checking, praising</p> <p>Individual work, monitored, helped. Self-correction</p> <p>Reasoning, agreement, checking, praising</p> <p>Ps complete table in <i>Pbs</i> too.</p> <p>Ps might notice patterns as columns are completed</p> <p>Discussion, agreement</p> <p>Check each suggestion with values from table</p> <p>Praising only</p> <p>Extra praise if Ps write the bracketed equations</p>
	0	2	4	6	8	10	9	7	5	3	1	10	9	3	2	6	7																																																									
Feelers	0	4	8	12	16	20	18	14	10	6	2	20	18	6	4	12	14																																																									
Wings	0	8	16	24	32	40	36	28	20	12	4	40	36	12	8	24	28																																																									
Legs	0	12	24	36	48	60	54	42	30	18	6	60	54	18	12	36	42																																																									
<p>4</p>	<p>Interlude</p> <p>Relaxation with music playing</p> <p style="text-align: right;">22 min</p>	<p>Whole class resting</p>																																																																								

Y2		<i>Lesson Plan 122</i>
Activity 5	<p>Problem</p> <p>T has 24 flowers (real, plastic or paper) and 6 vases (or Ps) at the front of the class.</p> <p>a) We want to put 6 flowers into each vase. How many vases will we fill? How could we do it? (Put 6 flowers in one vase, then 6 in another, until all the flowers are used up.)</p> <p>A, come and fill the vases. How many vases has A filled? (4)</p> <p>Who can come and write a division about it? Who agrees? Who thinks something else? How can we check it? (with a multiplication)</p> <p>Ps write equations in <i>Ex. Bks</i> too.</p> <p>b) T collects flowers back into one bunch. This time we want to put the flowers in 6 vases so that there is an equal number of flowers in each vase. How could we do it? (Put 1 flower in each of the 6 vases, then another, then another until all the flowers are used up.)</p> <p>Y, come and fill the vases. How many flowers has Y put in each? (4)</p> <p>Who can come and write a division about it? Who agrees? Who thinks something else? How can we check it? (with a multiplication)</p> <p>Ps write equations in <i>Ex. Bks</i> too.</p> <p style="text-align: right;">28 min</p>	<p style="text-align: center;">Notes</p> <p>Whole class activity (Or flowers could be brought into class by previous arrangement to add excitement!)</p> <p>Ask several Ps</p> <p>BB: 24 flowers \div 6 flowers = 4 (times)</p> <p><i>Check:</i> 4 \times 6 flowers = 24 flowers</p> <p>Ask several Ps what they think</p> <p>BB: 24 flowers \div 6 = 4 flowers</p> <p><i>Check:</i> 6 \times 4 flowers = 24 flowers</p> <p>Praising</p>
6	<p>PbY2b, page122</p> <p>Q.2 Read: <i>Write the additions and subtractions in a shorter way. Write the answers too.</i></p> <p>Deal with one part at a time. Do first row with whole class first, then Ps complete in <i>Pbs</i>. Review at BB with whole class.</p> <p>BB: a) $6 + 6 + 6 + 6 + 6 + 6 = 6 \times 6 = 36$, etc. b) $54 - 6 - 6 - 6 - 6 - 6 - 6 - 6 - 6 - 6 = 54 - 54 = 0$, etc. (9 \times 6)</p> <p style="text-align: right;">33 min</p>	<p>Whole class activity for 1st example in each part</p> <p>BB already prepared</p> <p>Individual work, monitored, helped</p> <p>Discussion, agreement, checking, praising</p>
7	<p>PbY2b, page 122</p> <p>Q.3 a) Read: <i>Divide the 42 coins equally among the 6 purses.</i></p> <p>Ps can either join up one coin at a time to each purse in turn or colour the purses in different colours and then colour the coins to match the purses.</p> <p>Review at BB with whole class. Demonstrate if necessary.</p> <p>b) Read: <i>Circle the coins in groups of 6 p. 6 p is contained in 42 p 'something' times.</i></p> <p>Ps draw circles around coins in <i>Pbs</i> and write in answer.</p> <p>Show me the answer with number cards . . . now! (7)</p> <p>P who answered correctly explains to Ps who were wrong.</p> <p style="text-align: right;">40 min</p>	<p>Individual work, monitored, helped</p> <p>Use enlarged copy master or OHP (or demonstrate with cut-out coins and real purses or containers)</p> <p>Discussion, agreement, checking</p> <p>BB: a) $42 \text{ p} \div 6 = 7 \text{ p}$ <i>Check:</i> $6 \times 7 \text{ p} = 42 \text{ p}$</p> <p>b) $42 \text{ p} \div 6 \text{ p} = 7$ (times) <i>Check:</i> $7 \times 6 \text{ p} = 42 \text{ p}$</p>
8	<p>Factorisation</p> <p>T revises what the 'factors' of a number are. (Numbers which multiply together to make that number) T writes '18' on the BB.</p> <p>Let's break down this number into its lowest <u>factors</u> (other than 1, which is a factor of <u>every</u> number). Ps come out to show the 2 possible ways. We will draw a box round the number if it has no more factors (except 1 and itself). Note that both have the same end result: $2 \times 3 \times 3$, when the factors are put in increasing order. Repeat for 24 and 30 if time.</p> <p style="text-align: right;">45 min</p>	<p>Whole class activity</p> <p>Discussion, agreement</p> <p>BB:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>2×9 3×3</p> </div> <div style="text-align: center;"> <p>3×6 2×3</p> </div> </div> <p>$2 \times 3 \times 3$ $3 \times 2 \times 3$</p> <p>(Preparation for prime numbers)</p>

Y2	R: Mental calculation C: Multiplication and division by 6 E: Relationship to 2 and 3 times tables	<i>Lesson Plan</i> 123																																																																		
Activity 1	Chain operations T says a sequence of operations, pausing after each one. Ps nod their heads when they have calculated the result. Final answer shown with number cards on command. e.g. T: '4 × 6' ... '÷ 2' ... '- 5' ... '× 6' = ? Show me ... now! (42) A , tell us how you got your answer. What can you tell me about the number 42? (e.g. 2-digit, even, 2 more than 40, 3 less than 45, 4 × 10 + 2, 50 – 8, etc.) <p style="text-align: right;">5 min</p>	Notes Whole class activity (Exercises memory and concentration) Wait until majority of Ps have nodded their heads In unison. Reasoning, agreement, checking, praising Involve several Ps. Praising																																																																		
2	Number strips (or Cuisenaire rods, or multilink cubes) T has table headings prepared on BB and enlarged number strips (or large Cuisenaire rods) for demonstration. BB: <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td style="width: 40px;">1</td><td>1</td><td>2</td><td>4</td><td>10</td><td>9</td><td>6</td><td>3</td><td>8</td><td>5</td><td>7</td></tr> <tr><td>2</td><td>2</td><td>4</td><td>8</td><td>20</td><td>18</td><td>12</td><td>6</td><td>16</td><td>10</td><td>14</td></tr> <tr><td>3</td><td>3</td><td>6</td><td>12</td><td>30</td><td>27</td><td>18</td><td>9</td><td>24</td><td>15</td><td>21</td></tr> <tr><td>4</td><td>4</td><td>8</td><td>16</td><td>40</td><td>36</td><td>24</td><td>12</td><td>32</td><td>20</td><td>28</td></tr> <tr><td>5</td><td>5</td><td>10</td><td>20</td><td>50</td><td>45</td><td>30</td><td>15</td><td>40</td><td>25</td><td>35</td></tr> <tr><td>6</td><td>6</td><td>12</td><td>24</td><td>60</td><td>54</td><td>36</td><td>18</td><td>48</td><td>30</td><td>42</td></tr> </table> Bold numbers already given. Ps fill in the rest T explains columns by starting with the '1 unit' strip (rod). T holds up each number strip in turn (continuing with 2, 3, ... 6) and Ps come out to stick on LHS of table in relevant row and write appropriate number in strip and in 1st column. Ps come out to complete other columns, explaining their reasoning, e.g. '1 × 2 = 2', '2 × 2 = 4', '4 × 2 = 8', etc. Class points out errors. Let's compare the rows. What do you notice? (e.g. 4th row is 2 times 2nd row, 3rd row is half of 6th row, etc.) <p style="text-align: right;">15 min</p>	1	1	2	4	10	9	6	3	8	5	7	2	2	4	8	20	18	12	6	16	10	14	3	3	6	12	30	27	18	9	24	15	21	4	4	8	16	40	36	24	12	32	20	28	5	5	10	20	50	45	30	15	40	25	35	6	6	12	24	60	54	36	18	48	30	42	Whole class activity Table drawn on BB and strips enlarged and cut out from Y1 copy master <i>LP 8/3</i> , or use enlarged copy master or OHP with differently coloured cut-out strips If possible, Ps could have own sets on desks too as a check or in case there are problems Reasoning, agreement, checking praising Demonstrate where necessary Ask several Ps
1	1	2	4	10	9	6	3	8	5	7																																																										
2	2	4	8	20	18	12	6	16	10	14																																																										
3	3	6	12	30	27	18	9	24	15	21																																																										
4	4	8	16	40	36	24	12	32	20	28																																																										
5	5	10	20	50	45	30	15	40	25	35																																																										
6	6	12	24	60	54	36	18	48	30	42																																																										
3	PbY2b, page 123 Q.1 Read: <i>How many 6-pack cans of lemonade can you make from</i> <i>a) 18 cans, b) 12 cans, c) 30 cans?</i> If possible, T could show such a pack to the class. (If necessary, go over part a) with the whole class first.) Review at BB with whole class. Mistakes corrected. BB: a) $18 \div 6 = \underline{3}$ Check: $\underline{3} \times 6 = 18$ b) $12 \div 6 = \underline{2}$ Check: $\underline{2} \times 6 = 12$ c) $30 \div 6 = \underline{5}$ Check: $\underline{5} \times 6 = 30$ <p style="text-align: right;">20 min</p>	Individual work, monitored, helped Discussion, agreement, checking, praising Demonstration if necessary with empty cans (or pencils, etc.) tied in bundles of 6 If necessary, Ps could use items from their collection																																																																		
4	Interlude Physical exercises <p style="text-align: right;">22 min</p>	Whole class in unison																																																																		

Y2		Lesson Plan 123
Activity 5	<p>PbY2b, page 123</p> <p>Q.2 Read: <i>Grandma has been picking plums from her tree. Help her to share out the plums equally among her 6 grandchildren.</i></p> <p>Demonstrate part a) at front of class with a P sharing out 24 'plums' (cubes, etc.) to 6 Ps at front of class.</p> <p>How many plums does each P have? (4) How many plums remain? (none)</p> <p>B, come and write an equation about it? Who agrees? Who thinks something else? How can we check? (with multiplication)</p> <p>Do parts b) and c) at BB with whole class (if possible <u>without</u> demonstration). Parts d) to f) done as individual work.</p> <p>Ps may use items from their collection, or their multiplication table to help them if necessary.</p> <p>Review at BB with whole class. Ps come out to write equations, explaining reasoning. Mistakes corrected.</p> <p style="text-align: right;">28 min</p>	<p style="text-align: center;">Notes</p> <p>Whole class activity to start Drawn on BB or use enlarged copy master or OHP Demonstration, discussion BB:</p> <p>a) $24 \text{ (plums)} \div 6 = 4 \text{ (plums)}$ Check: $4 \times 6 = 24$</p> <p>b) $36 \div 6 = 6$ Check: $6 \times 6 = 36$</p> <p>c) $44 \div 6 = 7$, remainder 2 Check: $7 \times 6 + 2 = 44$</p> <p>d) $48 \div 6 = 8$ Check: $8 \times 6 = 48$</p> <p>e) $54 \div 6 = 9$ Check: $9 \times 6 = 54$</p> <p>f) $29 \div 6 = 4$, remainder 5 Check: $4 \times 6 + 5 = 29$</p>
6	<p>PbY2b, page 123</p> <p>Q.3 Read: <i>Write in the missing numbers. Learn the <u>new</u> facts in the 6 times table.</i></p> <p>Deal with one column at a time. Review orally round class. Elicit that the answers to the multiplications (products) are the same as the first numbers in the divisions.</p> <p>In the next 2 minutes try to learn the multiplications by heart and then we will try to say them without looking at the books!</p> <p>Close your <i>Pbs</i> and let's say the 6 times table together. 'zero times six equals zero, one times six equals six, . . .'</p> <p>Let's say it another way in a relay, starting with '6 times zero'</p> <p>Now let's say the divisions for 6: 'zero divided by six equals zero, . . .'</p> <p>(Demonstrate this first division if necessary.)</p> <p style="text-align: right;">35 min</p>	<p>Individual work, monitored (helped)</p> <p>Class points out mistakes Ps correct their errors</p> <p>T asks for quiet so that everyone can concentrate</p> <p>In unison, at speed</p> <p>One P after another, at speed</p> <p>In unison, at a good pace, with T's help. Praising</p>
7	<p>One operation instead of two</p> <p>T has BB already prepared:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>a)</p> $6 \xrightarrow{\times 2} \boxed{} \xrightarrow{\times 3} \boxed{}$ $\boxed{}$ </div> <div style="text-align: center;"> <p>b)</p> $48 \xrightarrow{\div 2} \boxed{} \xrightarrow{\div 3} \boxed{}$ $\boxed{}$ </div> </div> <p>Ps come out to write in the missing numbers and signs, explaining reasoning. Class agrees/disagrees. Elicit that:</p> <ul style="list-style-type: none"> • multiplying by 2 and then by 3 is the same as multiplying by 6, • dividing by 2 and then by 3 is the same as dividing by 6. <p>What single operation could we do instead of, e.g. $\times 2$ and $\times 2$? ($\times 4$) $\div 2$ and $\div 5$? ($\div 10$) Who can tell us another example?</p> <p style="text-align: right;">40 min</p>	<p>Whole class activity Drawn on BB or use enlarged copy master or OHP Reasoning, agreement, praising BB:</p> <p>a) $6 \times 2 = 12$, $12 \times 3 = 36$ $6 \times 6 = 36$</p> <p>b) $48 \div 2 = 24$, $24 \div 3 = 8$ $48 \div 6 = 8$</p> <p>Praise creativity</p>
8	<p>Multiplication Table</p> <p>Look at your multiplication table. Check that you really know the products you have coloured. Colour any new products you are <u>sure</u> you know by heart. Let's check! T says multiplications/divisions.</p> <p style="text-align: right;">45 min</p>	<p>Individual work in checking/colouring/learning facts T monitors, checks individuals Class answers in unison</p>

Y2	R: Mental calculation C: Multiplication and division by 6 E: <i>Remainders. Order of operations (i)</i>	<i>Lesson Plan</i> 124
Activity 1	Logic set Take out all the hexagons from your set and count them. How many are there altogether? (8) Let's put them in a logical order. Which one should I start with? Ps suggest which to put next. e.g. BB:  <ul style="list-style-type: none"> • How many sides (vertices, i.e. corners) does each hexagon have? (6) • How many vertices do the large plain hexagons have altogether? (12) • How many vertices and sides do the hexagons with centre points have altogether? (48) • Which hexagons have 24 sides altogether? (4 of any description) T (or P) writes multiplications/divisions on BB and Ps write in <i>Ex. Bks.</i> <p style="text-align: right;">_____ 5 min _____</p>	Notes Whole class activity Class responds in unison Ask several Ps what they think Ps copy pattern on desks Class responds in unison BB $2 \times 6 = \underline{12}$ $4 \times 6 + 4 \times 6 = 24 + 24 = \underline{48}$ $24 \div 6 = \underline{4}$ Praising
2	Finding the rule Look at these columns of numbers in the table. Who can tell us the rule? (increasing by 6 each time) What else do you notice about the numbers in each column? (1st column are multiples of 6, i.e. divisible by 6 exactly; 2nd column have remainder 1 when divided by 6; 3rd column have remainder 2 when divided by 6, etc.) T gives hint if nobody notices. Who can find other sequences in the table with other rules? (diagonal) <p style="text-align: right;">_____ 10 min _____</p>	Whole class activity Drawn on BB or use enlarged copy master or OHP Ps come to BB to point/explain Agreement, checking, praising e.g. 5, 10, 15, ... (+ 5) 12, 19, 26, ... (+ 7)
3 Extension	PbY2b, page 124 Q.1 Read: <i>Write in the missing numbers and signs.</i> Review at BB with whole class. Mistakes corrected. What are these questions about? (replacing 1 operation with 2) Who can think of other examples? <p style="text-align: right;">_____ 15 min _____</p>	Individual work, monitored, helped Written on BB or use enlarged copy master or OHP Discussion, checking, agreement, praising
4	PbY2b, page 124, Q.2 a) Read: <i>Henry Hedgehog collected 25 strawberries. He ate 7 of them but then found 3 more. How many strawberries did he then have?</i> Ps come out to write missing numbers in the boxes: Collected: 25 Ate: 7 Found: 3 Let's write the calculation together. What number should we begin with? (25) Then what should we do? (subtract 7, then add 3) Calculation: $25 - 7 + 3 = 18 + 3 = \underline{21}$ \longrightarrow If there are only additions and subtractions in an equation, we <u>usually</u> do the calculations in order from left to right.	Whole class activity Ps read out question Written on BB Class agrees/disagrees T writes what Ps dictate Ps read equation in unison T could give easy examples for Ps to calculate mentally: (e.g. $7 + 3 - 5$, $15 - 5 + 2$)

Y2		<i>Lesson Plan 124</i>
Activity	<p>b) Read: <i>From Monday to Saturday, Holly Hedgehog collected 9 raspberries each day. On Sunday she ate half of them. How many raspberries did she then have?</i></p> <p>Ps come out to write relevant numbers in the boxes: <i>Number of days: 6 Collected each day: 9</i> <i>Collected altogether: $6 \times 9 = 54$ Ate: $27 (54 \div 2)$</i></p> <p>Let's write it as one calculation. What number should we begin with? (6) Then what should we do? (multiply by 9, then divide by 2)</p> <p><i>Calculation: $6 \times 9 \div 2 = 54 \div 2 = 27$</i></p> <p>If there are only multiplications and divisions in an equation, we <u>usually</u> do the calculations in order from left to right.</p> <p>If Holly Hedgehog ate 27 raspberries, how many does she have left? (27: same as the number she ate; she ate half and half were left, so there is no need to do the calculation, $54 - 27 = 27$)</p> <p style="text-align: right;"><i>23 min</i></p>	<p style="text-align: center;">Notes</p> <p>Whole class activity Ps read question</p> <p>Written on BB Class agrees/disagrees</p> <p>T writes what Ps dictate Ps read equation in unison</p> <p>T could give easy examples for Ps to calculate mentally: (e.g. $2 \times 6 \div 3$, $10 \div 5 \times 3$)</p> <p>Discussion, agreement Praising</p>
5	<p>Interlude Action song/rhyme</p> <p style="text-align: right;"><i>25 min</i></p>	<p>Whole class in unison</p>
6	<p>PbY2b, Page 124 Q.3 Read: <i>Practise calculation.</i></p> <p>Let's see how quickly you can do these! Sit up with your arms folded when you have finished.</p> <p>Review orally round class. Mistakes corrected at number line or using multiplication table.</p> <p style="text-align: right;"><i>30 min</i></p>	<p>Individual work, monitored Encourage quick, accurate calculation and checking Agreement, self-correction, praising</p>
7	<p>Mental calculation T has 12 cards stuck to side of BB. Ps come out to chose pairs of cards with same result, explaining reasoning.</p> <p style="text-align: center;"> $38 + 20 + 7 = 65$ $5 \times 4 \div 2 = 10$ $75 - 20 + 13 = 68$ $81 - 20 + 7 = 68$ $17 + 8 + 40 = 65$ $4 \div 4 \times 9 = 9$ $6 \times 6 \div 3 = 12$ $82 - 6 - 20 = 56$ $45 - 27 - 6 = 12$ $5 \times 9 \div 5 = 9$ $4 \times 7 \times 2 = 56$ $12 \div 6 \times 5 = 10$ </p> <p>Class agrees/disagrees. Emphasise correct order of calculation.</p> <p style="text-align: right;"><i>37 min</i></p>	<p>Whole class activity</p> <p>Use copy master, enlarged and cut out</p> <p>Reasoning, agreement, checking, praising i.e. calculate from left to right</p>
8	<p>Order of calculation T has BB ready prepared. In which order would you do the calculations?</p> <p>BB: $38 + 17 + 12 =$ $8 \times 3 \times 2 =$ $27 + 14 + 26 =$ $29 + 37 - 17 =$ $15 \times 2 \div 3 =$ $56 - 26 - 17 =$ $52 - 17 + 15 =$ $8 \times 6 \div 4 =$ $42 - 35 + 36 =$ $95 - 38 - 15 =$ $60 \div 6 \div 2 =$ $37 + 23 - 13 =$</p> <p>Revise <u>usual</u> order of operations but hint that sometimes it is easier to calculate in a different order. Go through each of the above in turn, asking Ps which order they think would be easiest, and then checking that the result is the same as that using the conventional order.</p> <p><i>Conclusion:</i> The order of calculation may be varied as long as the result is the same as if it had been calculated from left to right.</p> <p style="text-align: right;"><i>45 min</i></p>	<p>Whole class activity Written on BB</p> <p>(First optimal calculation underlined)</p> <p>Ps suggest easiest order of calculation. Class agrees/disagrees.</p> <p>Check result is the same done from left to right</p> <p>Praise if Ps suggest correct optimal order of calculation</p>

Y2		<i>Lesson Plan 125</i>
<i>Activity</i>	Tables practice, revision, activities, investigations, consolidation <i>PbY2b, page 125</i>	<i>Notes</i>

<h1>Y2</h1>	<p>R: Mental calculation C: Multiplication and division table for 9 E: Relationship with the 3 and 6 times tables</p>	<h2>Lesson Plan 126</h2>																																																																											
<p>Activity 1</p>	<p>Sequences T starts a sequence and Ps continue it. T asks for rule in each case. a) 0, 7, 14, 21, ... (Rule: + 7) b) 0, 8, 16, 24, ... (Rule: + 8) c) 0, 9, 18, 27, ... (Rule: + 9) d) 90, 81, 72, ... (Rule: - 9)</p> <p style="text-align: right;">5 min</p>	<p>Notes Whole class activity T chooses Ps at random At speed. Class points out errors Agreement, checking, praising</p>																																																																											
<p>2</p>	<p>Problem Listen carefully and think about how you would calculate the answer. <i>Each of 4 children has 3 matchboxes and each matchbox contains 3 marbles. How many marbles do they have altogether?</i> (Demonstrate with 4 Ps at front of class if necessary.) T writes equations on BB as dictated by Ps (or Ps come out to BB to write them) for total number of boxes, then total number of marbles. Who can come and write it as one calculation? Who agrees? etc. Answer: They have 36 marbles altogether. Ps copy equation and answer into <i>Ex Bks</i>. (Heading: lesson number and date)</p> <p style="text-align: right;">10 min</p>	<p>Whole class activity Ps repeat in own words Ps suggest what to write BB: $4 \times 3 = 12$ boxes $12 \times 3 = 12 + 12 + 12 = 36$ marbles $4 \times 3 \times 3 = 4 \times 9 = 36$ Reasoning, agreement, checking, praising</p>																																																																											
<p>3</p>	<p>PbY2b, page 126 Q.1 Read: <i>Fill in the answers.</i> Let's see how many of these you can do in 3 minutes! Review orally round class. Mistakes corrected at number line. T asks two Ps who answered correctly to explain last two equations to Ps who answered incorrectly. BB: $110 - 11 = 110 - 10 - 1 = 100 - 1 = 99$ $120 - 12 = 120 - 10 - 2 = 110 - 2 = 108$ What do you notice about the subtractions? (the number of units subtracted is the same as the number of tens subtracted from.)</p> <p style="text-align: right;">15 min</p>	<p>Individual work, monitored Keep to time limit! (Practice in quick, accurate calculation) Some Ps may use number lines if necessary Discussion, agreement, checking, praising Extra praise if Ps notice this</p>																																																																											
<p>4</p>	<p>Comparison with 3 and 6 Look at this diagram. What shapes can you see? (triangle inside a hexagon) How many sides does the triangle (hexagon) have? (3, 6) How many sides can you see altogether? (9) What could we do to show how many sides we could see if we had several such diagrams? (make a table) T draws table on BB with help of Ps and Ps draw in <i>Ex. Bks</i> (using rulers to draw the lines).</p> <table border="1" style="margin-left: 20px;"> <tr> <td>Number of:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> shapes</td> <td>0</td> <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> <td></td> <td></td> <td></td> </tr> <tr> <td>sides of s</td> <td>0</td> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>sides of s</td> <td>0</td> <td>6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>sides altogether</td> <td>0</td> <td>9</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>Ps come out one at a time to fill in the columns. Class agrees/disagrees. What can you say about the rows? (e.g. numbers in 2nd row are multiples of 3, 3rd row multiples of 6, 4th row multiples of 9) Let's compare them. Use letters suggested by Ps to make writing the equations easier (or just do orally, e.g. 4th row = 3 × 2nd row) Let D = number of <u>d</u>igrams, T = number of sides in <u>t</u>riangles H = number of sides in <u>h</u>exagons A = number of sides <u>a</u>ltogether.</p> <p style="text-align: right;">23 min</p>	Number of:															shapes	0	1	2	3	4	5	6	7	8	9	10				sides of s	0	3													sides of s	0	6													sides altogether	0	9													<p>Whole class activity Drawn on BB or used enlarged copy master or OHP BB: Ps suggest what to write/draw Reasoning, agreement, checking, praising Ps complete table in <i>Ex. Bks</i> too BB: e.g. $D = A \div 9$ $T = 3 \times D$ $H = 6 \times D = 2 \times T$ $A = T + H$ etc. Extra praise for Ps who write correct equations</p>
Number of:																																																																													
shapes	0	1	2	3	4	5	6	7	8	9	10																																																																		
sides of s	0	3																																																																											
sides of s	0	6																																																																											
sides altogether	0	9																																																																											

Y2		<i>Lesson Plan 126</i>																																	
Activity		Notes																																	
5	Interlude Song or rhyme 25 min	Whole class in unison																																	
6	PbY2b, page 126, Q.2 Read: <i>Complete the table Look for connections between the rows.</i> What can you say about the picture? (10 rows, 10 circles in each row, in each row 9 circles are white and 1 is black) Who can explain to us what the table has to do with the picture? Ps come out to fill in the table, explaining reasoning. Class agrees/ disagrees. Ps may complete table in <i>Pbs</i> too. Who notices a connection between the rows? B , what do you think? Come and write it as an equation. Who agrees? etc. Elicit that 2nd row contains multiples of 10 and bottom row contains multiples of 9. Class recites them in unison. 32 min	Whole class activity Draw on BB or use enlarged picture or OHP Reasoning, agreement, checking, praising BB: $\bigcirc = \bullet \times 9 = R \times 9$ $C = R \times 10 = \bullet \times 10$ $R = \bullet = C \div 10 = \bigcirc \div 9$ $C = \bigcirc + \bullet, \bigcirc = C - \bullet$																																	
7	PbY2b, page 126 Q.3 Read: <i>A blue strip measures 9 cm, a red strip 3 cm and a yellow strip 1 cm.</i> <i>How many red and how many yellow strips would be needed to cover the same length as several blue strips laid end to end? Complete the table.</i> T demonstrates on BB with ready prepared strips (or multilink cubes). Make sure that Ps know what each row in table refers to. Review at BB with whole class. Mistakes corrected <i>Solution.</i> Number of: <table border="1" data-bbox="507 1261 1007 1368"> <tbody> <tr> <td>Blue strips</td> <td>1</td> <td>3</td> <td>7</td> <td>2</td> <td>5</td> <td>4</td> <td>8</td> <td>9</td> <td>6</td> <td>10</td> </tr> <tr> <td>Red strips</td> <td>3</td> <td>9</td> <td>21</td> <td>6</td> <td>15</td> <td>12</td> <td>24</td> <td>27</td> <td>18</td> <td>30</td> </tr> <tr> <td>Yellow strips</td> <td>9</td> <td>27</td> <td>63</td> <td>18</td> <td>45</td> <td>36</td> <td>72</td> <td>81</td> <td>54</td> <td>90</td> </tr> </tbody> </table> Let's compare the rows. Who can come and write an equation about one of the rows? Who agrees? etc. 39 min	Blue strips	1	3	7	2	5	4	8	9	6	10	Red strips	3	9	21	6	15	12	24	27	18	30	Yellow strips	9	27	63	18	45	36	72	81	54	90	Individual work, monitored, helped Ps can have strips (cubes) on desks too Drawn on BB or use enlarged copy master or OHP Discussion, reasoning, agreement, checking, self-correcting BB: $B = R \div 3 = Y \div 9$ $R = 3 \times B = Y \div 3$ $Y = 9 \times B = 3 \times R$ $Y \div R = 3$, etc. Praising
Blue strips	1	3	7	2	5	4	8	9	6	10																									
Red strips	3	9	21	6	15	12	24	27	18	30																									
Yellow strips	9	27	63	18	45	36	72	81	54	90																									
8	PbY2b, page 126, Q.4 Read: <i>Write the multiples of 9 in the table in red.</i> <i>Learn the multiples of 9 by heart.</i> Point to the row and column for 9 in your table. What do you notice? (Some numbers are already filled in because they are also multiples of 2, 3, 4, 5, 6 or 10.) Ps fill in the missing multiples of 9. Review at BB with whole class. Mistakes corrected. Ps given time to learn by heart.. Close your <i>Pbs</i> and let's say the multiples of 9 together. T says a number and Ps find it in different places in the table. Ps come out to point to its positions on copy master, saying the multiplication facts shown, e.g. $18 = 2 \times 9 = 3 \times 6 = 6 \times 3 = 9 \times 2$ $36 = 4 \times 9 = 6 \times 6 = 9 \times 4$ 45 min	Whole class discussion at first Drawn on BB or use enlarged copy master or <i>OHT 14</i> Ps come out to point and explain Individual work, monitored Agreement. T insists on quiet In unison, in both directions Class agrees/disagrees Ps can choose the numbers too Elicit that these numbers are <u>factors</u> of 18 (36)																																	

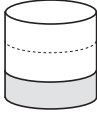
<h1>Y2</h1>	<p>R: Calculation practice C: Multiplication and division table for 9 E: <i>Relationship with 3 and 6 times tables. Order of operations (ii)</i></p>	<h2>Lesson Plan 127</h2>
Activity		Notes
<p>1</p>	<p>Oral work</p> <p>Tell me different ways to describe this number. e.g. 20 (72, 80) (e.g. $80 = 8 \times 10 = 9 \times 9 - 1 = 9 \times 8 + 8 = 3 \times 20 + 20$, etc).</p> <p style="text-align: right;">5 min</p>	<p>Whole class activity At speed, in relay Praise creativity</p>
<p>2</p>	<p>Problems</p> <p>Listen carefully and think about how you would calculate the answers.</p> <p>a) <i>The farmer's wife had 8 eggs. Then the farmer brought her 9 boxes of eggs, 6 eggs in each box.</i></p> <p><i>How many eggs did the farmer's wife have then?</i></p> <p>How many eggs did she have at first? How many eggs did the farmer give her? How many eggs did she then have?</p> <p>BB: Had: 8 eggs Was given: $9 \times 6 = 54$ eggs She then had: $54 + 8 = 62$ eggs</p> <p>How could we write it as one equation? T writes equation on BB as directed by Ps. Which calculation should we do first? Let's check that we have the correct answer. <i>Answer:</i> She then had 62 eggs.</p> <p>b) <i>Edith had 80 p. Edith and each of her 8 friends put equal amounts of money into a kitty to spend on sweets. The kitty was 45 p.</i></p> <p><i>How much money did Edith have left?</i></p> <p>How much money did Edith have at first? How much did she spend on the kitty? How much did she have left?</p> <p>BB: Had: 80 p Spent: $45 \text{ p} \div 9 = 5 \text{ p}$ Had left: $80 \text{ p} - 5 \text{ p} = 75 \text{ p}$</p> <p>How could we write it as one equation? T writes equation on BB as directed by Ps. Which calculation should we do first? Let's check that we have the correct answer. <i>Answer:</i> She had 75 p left.</p> <p>T confirms that if an equation contains additions or subtractions and also multiplications or divisions, then the multiplications and divisions should be calculated <u>first</u>.</p> <p style="text-align: right;">10 min</p>	<p>Whole class activity Ps repeat in own words</p> <p>Ps come to BB to write/explain. Class agrees/disagrees.</p> <p>BB: $8 + 9 \times 6 = 8 + 54 = 62$</p> <p>T (or P) explains what a 'kitty' is</p> <p>Ps repeat in own words Ps come to BB to write/explain. Class agrees/disagrees.</p> <p>BB: $80 - 45 \div 9 = 80 - 5 = 75$</p> <p>Check Ps' understanding with simple operations: e.g. $2 + 3 \times 3$, $4 - 12 \div 6$</p>
<p>3</p>	<p>PbY2b, page 127</p> <p>Q.1 a) Read: <i>Divide the 27 coins equally among the 9 purses.</i></p> <p>Ps can either join up one coin at a time to each purse in turn or colour the purses in different colours and then colour the coins to match the purses.</p> <p>Review at BB with whole class. Demonstrate if necessary.</p> <p>b) Read: <i>Put the 36 coins into groups of 9.</i></p> <p><i>How many groups are there?</i></p> <p>Ps draw circles around coins in Pbs and fill in numbers.</p> <p>Show me the answer with number cards . . . now! (4) P who answered correctly explains to Ps who were wrong.</p> <p style="text-align: right;">16 min</p>	<p>Individual work, monitored, helped</p> <p>Use enlarged copy master or OHP (or demonstrate with cut-out coins and real purses or containers)</p> <p>Discussion, agreement, checking</p> <p>BB: a) $27 \text{ p} \div 9 = 3 \text{ p}$ <i>Check:</i> $9 \times 3 \text{ p} = 27 \text{ p}$</p> <p>b) $36 \text{ p} \div 9 \text{ p} = 4$ (times) <i>Check:</i> $4 \times 9 \text{ p} = 36 \text{ p}$</p>
<p>4</p>	<p>Interlude</p> <p>Ps close their eyes, lay heads on hands on desks and practice saying the multiples of 9 from 0 to 90, and then from 90 to 0 in their heads.</p> <p style="text-align: right;">18 min</p>	<p>Whole class counting mentally</p>

Y2		<i>Lesson Plan 127</i>
Activity 5	<p>PbY2b, page 127</p> <p>Q.2 Read: <i>Aunt Sally has picked some strawberries from her garden. She shares them out equally among her 9 grandchildren. How many strawberries will each child get and how many will remain if Aunt Sally picked:</i></p> <p>a) 36 strawberries, b) 39 strawberries, c) 40 strawberries?</p> <p>a) How many strawberries will each child have? (4) How many strawberries remain? (none) B, come and write an equation about it? Who agrees? Who thinks something else? How can we check it? (with a multiplication)</p> <p>Parts b) and c) done as individual work.</p> <p>(Ps may use items from their collection, or multiplication tables, to help them if necessary.)</p> <p>Review at BB with whole class. Ps come out to write equations, explaining reasoning. Mistakes discussed/corrected.</p> <p style="text-align: right;">27 min</p>	<p style="text-align: center;">Notes</p> <p>Whole class activity to start Do part a) at BB with whole class first.</p> <p>If necessary, demonstrate with a P sharing out 36 'strawberries' (counters) to 9 Ps at front of class.</p> <p>BB: a) $36 \div 9 = 4$</p> <p style="padding-left: 20px;"><i>Check:</i> $9 \times 4 = 36$</p> <p>Discussion, agreement, checking, praising</p> <p>Individual work, monitored, helped</p> <p>b) $39 \div 9 = 4$, remainder 3 <i>Check:</i> $9 \times 4 + 3 = 39$</p> <p>c) $40 \div 9 = 4$, remainder 4 <i>Check:</i> $9 \times 4 + 4 = 40$</p>
6	<p>PbY2b, page127</p> <p>Q.3 Read: <i>Shorten the additions to a multiplication. Write a division about it too.</i></p> <p>Deal with one part at a time. Do first row with whole class first, then Ps complete in Pbs. Review at BB with whole class.</p> <p>BB: a) $9 + 9 + 9 + 9 + 9 + 9 + 9 = 7 \times 9 = 63$ $63 \div 9 = 7$ etc.</p> <p>T uses mathematical names of components (product, dividend, divisor, quotient, remainder).</p> <p style="text-align: right;">32 min</p>	<p>Whole class activity for 1st example</p> <p>BB already prepared</p> <p>Individual work, monitored, helped</p> <p>Discussion, agreement, checking, praising</p> <p>Ps do not need to learn them, just become familiar with them</p>
7	<p>Factorising</p> <p>T revises what the 'factors' of a number are. (Numbers which multiply together to make that number) T writes '72' on the BB.</p> <p>Let's break down this number into its lowest factors (other than 1, which is a factor of <u>all</u> numbers).</p> <p>Ps come out to write the factors on BB. Class agrees/disagrees.</p> <p>Let's draw a circle round a number if it has no other factors apart from 1 and itself. Let's write out the factors in increasing order. (BB)</p> <p>Ps copy into <i>Ex. Bks.</i> Repeat for other numbers if time. (e.g. 45, 90)</p> <p>N.B. Similar exercise given on <i>PbY2b, page130, Q.2.</i> Ps write missing factors in the blank circles. Lowest factors can be shown by colouring.</p> <p style="text-align: right;">39 min</p>	<p>Whole class activity Discussion, agreement</p> <p>BB: e.g.</p> <div style="text-align: center;"> </div> <p>$72 = 2 \times 2 \times 2 \times 3 \times 3$ (Preparation for prime numbers)</p>
8	<p>Problem</p> <p>Listen carefully and think about how you would calculate the answer.</p> <p><i>Ann has 4 dolls with 3 dresses each. Sarah has 9 dolls with 2 dresses each. How many dresses do their dolls have altogether?</i></p> <p><i>Plan:</i> Ann: $4 \times 3 = 12$ (dresses) Sarah: $9 \times 2 = 18$ dresses</p> <p>How could we write it as one equation? What should we do first? (\times)</p> <p><i>Answer:</i> Their dolls have <u>30</u> dresses altogether.</p> <p style="text-align: right;">45 min</p>	<p>Whole class activity Ps dictate what to write. T works at BB, Ps in <i>Ex. Bks.</i></p> <p>Discussion, agreement, checking praising</p> <p>BB: $4 \times 3 + 9 \times 2 = 30$</p> <div style="text-align: center;"> </div>

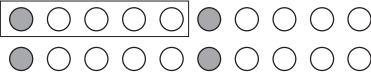
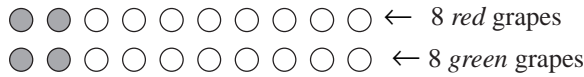
Y2	R: Calculation practice C: Multiplication and division by 9 E: <i>Remainders. Order of operations</i>	<i>Lesson Plan</i> 129
<i>Activity</i>	<i>Notes</i>	
1 Sequences T says the first 3 terms of a sequence. Ps continue it. a) 6, 15, 24, ... ; b) 96, 87, 78, ... ; 7, 16, 25, ... ; 91, 82, 73, ... ; 8, 17, 26, ... ; 95, 86, 77, ... ; Let's find the numbers in this table. What rule have we used? a) increasing by 9 (+9) b) decreasing by 9 (-9) What is their remainder when divided by 9? <div style="text-align: right;"><i>6 min</i></div>	Whole class activity T asks Ps at random Ps may use number line if necessary Class points out errors Use enlarged copy master or OHP from <i>LP 128/1</i> Discussion, agreement Praising	
2 Multiplication and division practice T says, e.g. '4 × 8', P ₁ says '32'; T says '25 ÷ 5', P ₂ says '5', etc. Use mixed operations too, e.g. T says '9 × 4 ÷ 6', P ₃ says '6', etc. <div style="text-align: right;"><i>10 min</i></div>	Whole class activity T uses feedback from <i>LP 128</i> Praising/encouragement only	
3 Equations competition T divides the class into 3 teams (A, B and C all with a roughly equal ability range). T gives each team a number, e.g. 55, 81 and 40. Ps from all 3 teams come out in relay to BB to write operations beside (beneath) their number. T says 'start' . . . and 'stop' after 2 minutes. e.g. $81 = 5 \times 8 + 41 = 9 \times 9 = 9 \times 10 - 9 = 10 \times 8 + 1 = 100 - 19, \dots$ The winner is the team with the most correct, different equations. <div style="text-align: right;"><i>15 min</i></div>	Whole class activity T encourages creativity At speed. Ps still seated point out incorrect or repeated equations to help their team Quick review/counting Stars/stickers, etc. awarded	
4 PbY2b, page 129, Q.1 Read: <i>Choose the easiest order of calculation.</i> T revises usual order of calculation (from left to right if only additions/subtractions <u>or</u> multiplications/divisions). Ps come out one after another to say what they think is the easiest order and why. Class checks that the answer is correct. BB: e.g. a) $46 + 18 + 24 = 70 + 18 = 88$ b) $7 \times 3 \times 3 = 7 \times 9 = 63$ $63 + 45 - 15 = 63 + 30 = 93$ $25 \times 2 \div 5 = 5 \times 2 = 10$ $31 - 18 + 27 = 58 - 18 = 30$ $6 \times 9 \div 3 = 6 \times 3 = 18$ $73 - 32 - 23 = 50 - 32 = 18$ $90 \div 9 \div 5 = 10 \div 5 = 2$ T points out that although it is easier sometimes to do such calculations in a different order, we must be careful! The result should be the same as if we had done it the usual way. e.g. $8 - 4 - 2 \neq 8 - 2$ and $20 \div 10 \div 2 \neq 20 \div 5$ <div style="text-align: right;"><i>20 min</i></div>	Whole class activity Written on BB or use enlarged copy master or OHP Discussion, reasoning, checking, agreement, praising Discussion, demonstration, agreement T could introduce the need for the use of brackets here.	
5 Interlude Song, rhyme, exercises <div style="text-align: right;"><i>22 min</i></div>	Whole class in unison	

Y2		Lesson Plan 129																																																									
Activity 6	Inequalities Which numbers make the inequality true? (BB already prepared) BB: $9 \times 3 < a < 9 \times 4$ $10 \times 6 > b > 9 \times 6$ $7 \times 5 < c \leq 8 \times 5$ Deal with one part at a time. Class reads the inequality together. Two Ps come out to write results above operations on LHS and RHS of inequality. Another P lists the numbers which make the inequality true. Class /disagrees. Solution checked on class number line.	Notes Whole class activity Written on BB Discussion, agreement, checking praising Ps write it in <i>Ex. Bks</i> too (Heading: lesson number and date)																																																									
7	PbY2b, page 129 Q.2 Read: <i>Practise calculation.</i> What do you notice about the equations? (3 columns, 8 in each column, 24 altogether; multiplying and dividing by 9; 12 multiplications and 12 divisions) Deal with one column at a time. Set a time limit. Review orally round the class, with Ps reading out the whole equation. Class points out errors. Who had all correct? Who made a mistake? What kind of mistake? Who did the same? Who made a different one? etc.	Individual work, monitored, (helped) Ps may use multiplication tables to help them Agreement, checking, self-correction Praising/encouragement only																																																									
8	PbY2b, page 129 Q.3 Read: <i>Colour the equal values in the same colour.</i> Reminds Ps that multiplications or divisions should be done <u>before</u> additions or subtractions. Ps write in results and colour rectangles. Review at BB with whole class. Mistakes corrected. (Praise if Ps notice that, e.g. $3 \times 9 + 2 \times 9 = 5 \times 9 = 45$) Solution: $5 \times 10 - 5 = 45$ $5 \times 8 + 5 = 45$ $3 \times 9 + 2 \times 9 = 45$ $10 \times 9 - 1 \times 9 = 81$ $9 \times 2 + 9 \times 6 = 72$ $6 \times 9 - 9 = 45$ $4 \times 7 + 4 \times 2 = 36$ $10 \times 8 - 8 = 72$ $4 \times 9 + 4 \times 9 = 72$	Individual work, monitored, helped Ps may use multiplication tables to help them Agreement, checking, self-correction, praising (Or done as whole class activity using copy master, enlarged, cut out and rectangles stuck to BB)																																																									
9	PbY2b, page 129, Q.4 Read: <i>Colour the shapes on the grid and write the numbers in the shapes. The product of the numbers in each shape is 36.</i> T explains task. Ps come out one at a time to choose a shape and find it in the grid, writing and saying the multiplication. Solution: <table style="display: inline-table; border-collapse: collapse; margin: 10px;"> <tr><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">5</td><td style="border: 1px solid black; padding: 2px;">7</td><td style="border: 1px solid black; padding: 2px;">4</td><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">9</td><td style="border: 1px solid black; padding: 2px;">3</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">9</td><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">8</td><td style="border: 1px solid black; padding: 2px;">7</td><td style="border: 1px solid black; padding: 2px;">6</td><td style="border: 1px solid black; padding: 2px;">5</td><td style="border: 1px solid black; padding: 2px;">2</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">7</td><td style="border: 1px solid black; padding: 2px;">0</td><td style="border: 1px solid black; padding: 2px;">1</td><td style="border: 1px solid black; padding: 2px;">9</td><td style="border: 1px solid black; padding: 2px;">0</td><td style="border: 1px solid black; padding: 2px;">8</td><td style="border: 1px solid black; padding: 2px;">9</td><td style="border: 1px solid black; padding: 2px;">6</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">6</td><td style="border: 1px solid black; padding: 2px;">5</td><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">7</td><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">6</td><td style="border: 1px solid black; padding: 2px;">5</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">6</td><td style="border: 1px solid black; padding: 2px;">8</td><td style="border: 1px solid black; padding: 2px;">9</td><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">5</td><td style="border: 1px solid black; padding: 2px;">4</td><td style="border: 1px solid black; padding: 2px;">9</td></tr> </table> <table style="display: inline-table; border-collapse: collapse; margin: 10px;"> <tr><td style="border: 1px solid black; padding: 2px;">4</td><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">3</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">4</td><td style="border: 1px solid black; padding: 2px;">9</td></tr> </table> <table style="display: inline-table; border-collapse: collapse; margin: 10px;"> <tr><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">3</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">3</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">6</td><td style="border: 1px solid black; padding: 2px;">3</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">6</td><td style="border: 1px solid black; padding: 2px;">3</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">6</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">9</td></tr> </table> (Or done as individual work, reviewed at BB with whole class.)	2	5	7	4	3	3	9	3	2	9	3	8	7	6	5	2	7	0	1	9	0	8	9	6	6	5	2	3	7	2	6	5	6	8	9	2	3	5	4	9	4	3	3	4	9	2	3	2	3	6	3	6	3	2	6	2	9	Whole class activity Drawn on BB or use enlarged copy master or OHP Ps may work in <i>Pbs</i> too. Reasoning, agreement, checking, praising BB: $2 \times 2 \times 9 = 36$ $6 \times 6 = 36$ $2 \times 3 \times 2 \times 3 = 36$ $3 \times 2 \times 6 = 36$ $4 \times 3 \times 3 = 36$ $4 \times 9 = 36$
2	5	7	4	3	3	9	3																																																				
2	9	3	8	7	6	5	2																																																				
7	0	1	9	0	8	9	6																																																				
6	5	2	3	7	2	6	5																																																				
6	8	9	2	3	5	4	9																																																				
4	3	3																																																									
4	9																																																										
2	3																																																										
2	3																																																										
6	3																																																										
6	3																																																										
2	6																																																										
2	9																																																										

Y2		<i>Lesson Plan</i> 130
<i>Activity</i>	Tables practice, revision, activities, consolidation <i>PbY2b, page 130</i>	<i>Notes</i>

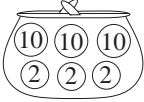
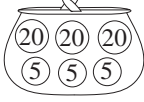
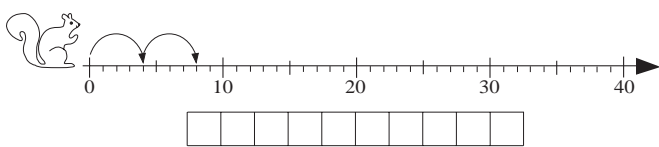
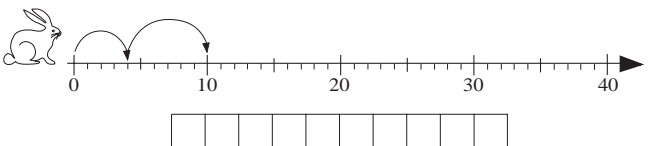
Y2	R: Practice in calculation C: Operations in context E: <i>Problem solving</i>	<i>Lesson Plan</i> 131
Activity 1	Finger counting Show me with you fingers twice as many as I show you with mine. e.g. T holds up 3 fingers. Show me . . . now! Ps hold up 6 fingers. (If answer is more than 10, Ps can show with number cards.) Repeat for 3 times, one half, one third. Give impossible problems too! (e.g. one third of 5) <i>8 min</i>	Notes Whole class activity Quick feedback for T Ps show in unison on command For fun!
2	Problem 1 Listen carefully and try to picture the story in your head. Think how you could work out the answer. <i>Pooh Bear licked two thirds of the honey out of a jar. Only 5 litres of honey remained. How many litres of honey were in the jar to start with?</i> What could we do first? (Draw a diagram)  5 litres T draws on BB with suggestions from Ps. <i>Plan:</i> Amount at first: 3 thirds Amount eaten: 2 thirds Amount left: 1 third = 5 litres Who can come and write a calculation for 3 thirds, the whole amount? Who agrees? Who thinks something else? etc. <i>Answer:</i> There were 15 litres of honey in the jar to start with. <i>13 min</i>	Whole class activity T repeats slowly. P repeats in own words. Discussion, reasoning, agreement, checking, praising Ps draw/write in <i>Ex. Bks</i> too. BB: $5 \text{ litres} + 5 \text{ litres} + 5 \text{ litres} = 15 \text{ litres}$ $3 \times 5 \text{ litres} = 15 \text{ litres}$ <i>Check:</i> $15 \text{ litres} \div 3 = 5 \text{ litres}$
3	Problem 2 Listen carefully and try to picture the story in your head. Think how you could work out the answer. <i>Peter reads 2 pages each day from his book. He finishes the book in 17 days. How many pages are in his book?</i> Who can suggest how to work out the answer? Who agrees? etc. BB: 1 day \rightarrow 2 pages; $17 \text{ days} \rightarrow 2 + 2 + 2 + 2 + \dots + 2 = 2 \times 17 = 17 + 17 = 34 \text{ pages}$ (or $2 \times 17 = 2 \times 10 + 2 \times 7 = 20 + 14 = 34 \text{ pages}$) <i>Answer:</i> There are 34 pages in Peter's book. <i>18 min</i>	Whole class activity T repeats slowly and asks Ps to repeat in own words. Discussion on strategy for solution. Involve several Ps Reasoning, agreement, checking, praising Ps write calculation in <i>Ex. Bks</i> too
4	Interlude Song or rhyme <i>20 min</i>	Whole class in unison
5	PbY2b, page 131 Q.1 Read: <i>Three friends are collecting stamps. Rob has 36 stamps. Alex has twice as many as Rob and Tom has half as many as Rob.</i> <i>How many stamps does Alex and Tom each have?</i> <i>Plan:</i> R: 36 A: twice R T: half of R <i>Calculation:</i> A: $2 \times 36 = 36 + 36 = 72 \text{ stamps}$ T: $36 \div 2 = 20 \div 2 + 16 \div 2 = 10 + 8 = 18 \text{ stamps}$ <i>Answer:</i> Alex has 72 stamps and Tom has 18 stamps. <i>25 min</i>	Individual work, monitored helped Review at BB with whole class Reasoning, agreement, checking, praising [Practice in \times and \div of 2-digit numbers]

Y2	R: Calculation C: Operations in context E: Brackets	<i>Lesson Plan</i> 132
Activity		Notes
1	Sequences Whoever I throw the ball to must say the <ul style="list-style-type: none"> • next element in the 2 times table. e.g. T throws ball to P saying: '2, 4, 6, 8, . . .,' P throws ball back to teacher saying '10'. • previous element in the 3 times table. e.g. T throws ball to P saying: '30, 27, 24, . . .,' P throws ball back to teacher saying '21'. Repeat for other multiplication tables. (4, 5, 6, 9 and 10). <div style="text-align: right;"><i>8 min</i></div>	Whole class activity At speed in relay [Fixes the sequences in Ps' minds] Praising/encouragement only
2	Problem Listen carefully and think how you would work out the answer. <i>Nine peaches weigh 1 kg. How many kg would 81 peaches weigh?</i> T writes on BB as dictated by Ps. <i>Plan:</i> 9 peaches → 1 kg 81 peaches → <input type="text"/> kg How many groups of 9 peaches are there in 81 peaches? Who can come and write a calculation about it? Who agrees? etc. <i>Calculation:</i> 81 (peaches) ÷ 9 (peaches) = 9 (groups) 9 × 1 kg = <u>9 kg</u> <i>Answer:</i> 81 peaches would weigh 9 kg. <div style="text-align: right;"><i>13 min</i></div>	Whole class activity P repeats in own words Discussion, reasoning, agreement, checking, praising Ps write in <i>Ex. Bks</i> too. (Demonstrate if problems by drawing dots on BB or by using counters/cubes)
3	PbY2b, page 132 Q.1 a) Read: <i>Andrew has £63, which is £9 more than Ben. How much money does Ben have?</i> Review at BB with whole class. e.g. <i>Plan:</i> A = £63 £9 > B <i>Calculation:</i> B = 63 – 9 = <u>54</u> <i>Answer:</i> Ben has £54. b) Read: <i>Rachel has 63 postcards, which is 9 times more than Sarah has. How many postcards does Sarah have?</i> Review at BB with whole class. e.g. <i>Plan:</i> R = 63 = 9 × S <i>Calculation:</i> S = 63 ÷ 9 = <u>7</u> <i>Answer:</i> Sarah has 7 postcards. What do you notice about the two problems? (Compare the wording, numbers involved and operations required.) <div style="text-align: right;"><i>20 min</i></div>	Individual work, monitored helped P explains reasoning. Class agrees/disagrees. Discuss alternative methods and any mistakes made. Praising only Individual work, monitored helped P explains reasoning. Class agrees/disagrees. Discuss alternative methods and any mistakes made. Praising only Discussion. Praising
4	Interlude Exercises or action song <div style="text-align: right;"><i>22 min</i></div>	Whole class in unison
5	Problem Listen carefully and picture the problem in your head.. Draw a diagram if you need to and write a plan in your <i>Ex. Bks</i> . Write out the calculation, solve it and write the answer in a sentence. <i>There are 5 tables in the school hall. There are 6 books on each table. How many books are on the 5 tables altogether?</i> Review at BB with whole class. Demonstrate at front of class if necessary. <div style="text-align: right;"><i>28 min</i></div>	Individual work, monitored (helped) Agreement, checking, praising BB: 6 + 6 + 6 + 6 + 6 = <u>30</u> or 5 × 6 = <u>30</u> <i>Answer:</i> There are 30 books altogether.

Y2		Lesson Plan 132
<p>Activity</p> <p>6</p>	<p><i>PbY2b, page 132</i></p> <p>Q.2 a) Read: <i>I have 20 grapes. Some of the grapes are red and 4 times as many are green.</i> <i>How many green grapes do I have?</i> What should we do first? (Draw a diagram.) BB: </p> <p>Elicit that for each grape coloured red, 4 grapes would need to be coloured green, i.e. we need to find how many groups of 5 (1 red and 4 green) are in 20 grapes. T writes calculations as dictated by Ps. <i>Calculation:</i> $20 \text{ (grapes)} \div 5 \text{ (grapes)} = 4 \text{ (groups)}$ <i>Red grapes</i> = $4 \times 1 = 4$, <i>Green grapes</i> = $4 \times 4 = 16$ <i>Check:</i> $16 + 4 = 20$ <i>Answer:</i> I have 16 green grapes.</p> <p>b) Read: <i>I have 20 grapes. There are 4 more red grapes than green grapes.</i> <i>How many green grapes do I have?</i> What should we do first? (Draw a diagram.) BB: </p> <p>Let's colour the 4 more red grapes first. How many grapes are left? (16) Elicit that the 16 grapes remaining must have equal numbers of green and red grapes. T writes calculation as dictated by Ps. e.g. <i>Calculation:</i> $20 - 4 = 16$, $16 \div 2 = 8$ or $(20 - 4) \div 2 = 8$ T points out the use of brackets to show the calculation which has to be done first. <i>Red grapes</i> = $8 + 4 = 12$, <i>Green grapes</i> = 8 <i>Check:</i> $12 + 8 = 20$, $12 - 8 = 4$ <i>Answer:</i> I have 8 green grapes. [N.B. Other methods of solution possible but not as efficient] 35 min</p>	<p>Notes</p> <p>Whole class activity</p> <p>Discussion on methods of solution. Ps suggest what to draw.</p> <p>Ps come out to draw diagram (with T's help)</p> <p>Discussion (with hints from T if needed) Ps come out to colour grapes and then circle in groups of 5 (1 red, 4 green) (Ps draw/write in <i>Ex. Bks</i> too)</p> <p>Agreement, checking, praising</p> <p>Demonstrate with coloured cubes/balls if necessary</p> <p>Whole class activity</p> <p>Discussion on methods of solution. Ps suggest what to draw.</p> <p>Ps come out to draw diagram (with T's help)</p> <p>Discussion (with hints from T if needed) Ps come out to colour the 4 red grapes first and then 8 red and 8 green (Ps draw/write in <i>Ex. Bks</i> too)</p> <p>Agreement, checking, praising</p> <p>Demonstrate with coloured cubes/balls if necessary</p> <p>Class discusses/evaluates any other methods suggested by Ps (e.g. trial and error)</p>
<p>7</p>	<p><i>PbY2b, page 132</i></p> <p>Q. 3 and Q.4 Let's see if you can solve these problems on your own! Deal with one at a time. Review at BB with whole class. Discuss and evaluate methods of solution. Class agrees on 'best' method.</p> <p>Q.3 <i>Calculation:</i> $4 \times 6 + 3 \times 6 = 24 + 18 = 42$, or $(4 + 3) \times 6 = 7 \times 6 = 42$ (Brackets needed) <i>Answer:</i> Sue had 42 marbles altogether.</p> <p>Q.4 <i>Plan:</i> £54 \rightarrow 6 children, so £9 \rightarrow 1 child <i>Calculation:</i> $54 \div 6 = 9$, $9 + 15 = 24$, or $54 \div 6 + 15 = 9 + 15 = 24$ (Brackets not needed) <i>Answer:</i> Each grandchild now has £24. 45 min</p>	<p>Individual trial, monitored, helped if necessary</p> <p>Practice for Ps to read, understand and solve problems on their own (or in pairs)</p> <p>Discussion, agreement, checking, praising</p> <p>Demonstrate with Ps at front of class if necessary</p> <p>Discuss with Ps when brackets are needed and when they are not, i.e. conventional order used.</p>

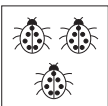
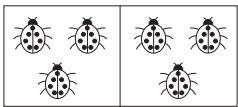
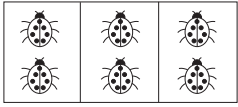
Y2	R: Calculation C: Operations in context E: Brackets	<i>Lesson Plan</i> 133
Activity		Notes
1	Oral work Tell me different ways to describe this number. e.g. 41 (82, 18) (e.g. $41 = 4 \times 10 + 1 = 50 - 10 = 9 \times 5 - 3 = 1 + 20 + 20$, etc). <p style="text-align: right;">5 min</p>	Whole class activity At speed, in relay Praise creativity
2	Chain operations T says a sequence of operations, pausing after each one. Ps nod their heads when they have calculated the result. Ps show final answer with number cards on command. e.g. T: '60 \div 6' ... '+ 20' ... ' \div 5' ... '+ 12' ... '- 9' = ? Show me ... now! (9) A, tell us how you got your answer. Who agrees? etc. Let's write it out on the BB: $\text{BB: } 60 \div 6 + 20 \div 5 + 12 - 9 = 9$ Look very carefully at the way I have written it. Is it correct? (No, because the divisions would have to be done first.) Let's see if this would give a different answer. $\text{BB: } \underbrace{60 \div 6}_{10} + \underbrace{20 \div 5}_{4} + 12 - 9 = 10 + 4 + 12 - 9 = 26 - 9 = 17$ What must we do to make sure we do the operations in the original order? (Draw brackets.) Ps discuss where they should be drawn. Let's check that we get the answer 9. $\begin{aligned} \text{BB: } (60 \div 6 + 20) \div 5 + 12 - 9 &= (10 + 20) \div 5 + 12 - 9 \\ &= 30 \div 5 + 12 - 9 \\ &= 6 + 12 - 9 = 18 - 9 = 9 \end{aligned}$ <p style="text-align: right;">12 min</p>	Whole class activity Wait until majority of Ps have nodded their heads In unison. Reasoning, agreement, checking, praising Involve several Ps. Praising Ask several Ps what they think T gives hints if necessary T writes with help of class Discussion, agreement, checking, praising Revision of conventional order of operations and when use of brackets is needed.
3	Problem 1 Listen carefully and think how you would work out the answer <i>I had 41 football cards. Then I collect another 15 football cards but gave away 7 of them. How many football cards do I have now?</i> T writes on BB as dictated by Ps. <i>Plan:</i> Had: 41 Collected: 15 Gave away: 7 Who can come and write it as one equation? <i>Calculation:</i> $41 + 15 - 7 = 49$, (or $41 - 7 + 15$, or $15 - 7 + 41$) <i>Answer:</i> I have 49 football cards now. <p style="text-align: right;">17 min</p>	Whole class activity P repeats in own words Ps suggest plan Discussion, reasoning, agreement, checking praising Ps write in <i>Ex. Bks</i> too. Order does not matter here as the results are the same.
4	Problem 2 Listen carefully and think how you would work out the answer <i>Mrs Rabbit had grown 18 lettuces and 26 carrots for her family. The rabbit family have already eaten 11 lettuces and 17 carrots. How many vegetables are left in the garden altogether?</i> T writes on BB as dictated by Ps. <i>Plan:</i> Had: $18 + 26 = 44$ Ate: $11 + 17 = 28$ Had left: $44 - 28 = 16$ Who can come and write it as one equation? <i>Calculation:</i> $18 + 26 - 11 - 17 = 18 - 11 + 26 - 17 = 16$ or $18 + 26 - (11 + 17) = 16$ (Brackets needed) <i>Answer:</i> There are 14 vegetables left in the garden. <p style="text-align: right;">22 min</p>	Whole class activity P repeats in own words Ps suggest plan and what calculations should be done Discussion, reasoning, agreement, checking praising Ps write in <i>Ex. Bks</i> too. Discuss need for brackets here otherwise answer would be $42 - 11 + 17 = 38$, which is wrong

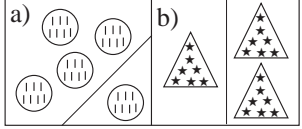

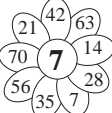
Y2		<i>Lesson Plan 133</i>
Activity		Notes
5	Interlude Relaxation with music playing <p style="text-align: right;">24 min</p>	Whole class relaxing
6	PbY2b, page 133 Q.1 Read: <i>Each child is holding 3 balloons. How many children are holding 15 balloons?</i> Ps circle or colour each group of 3 balloons and draw the children. Then they write the calculation, check it and write out their answer as a sentence. Review at BB with whole class. <i>Calculation:</i> 15 (balloons) \div 3 (balloons) = <u>5</u> (times) <i>Check:</i> $5 \times 3 = 15$ <i>Answer:</i> There are 5 children holding 15 balloons. <p style="text-align: right;">29 min</p>	Individual work, monitored (helped) This might not be necessary for some Ps Reasoning, agreement, checking, praising Demonstrate with balloons and Ps at front of class only if necessary
7	PbY2b, page 133 Q.2 Read: <i>Sammy Squirrel had 47 acorns. He gave 25 acorns to Susy Squirrel but later asked for 8 back. How many acorns does Sammy Squirrel have now? Colour the calculation which answers the question.</i> Review at BB with the whole class. T points to each equation in turn and asks who chose it and why. <i>Solution:</i> $47 - 25 + 8 = 30$ but also accept $47 - (25 - 8) = 30$ with the correct reasoning, i.e. Sammy in the end only really gave $47 - 8$ acorns to Susy. Who worked out the answers to all the equations? Who chose the correct equation without working out the answer? Tell us how you did it. Who thought the same? <p style="text-align: right;">36 min</p>	Individual work, monitored helped Equations written on BB or use enlarged copy master or OHP Reasoning, agreement, checking praising Extra praise for these Ps if reasoning is correct
8	PbY2b, page 133 Q.3 Read: <i>There are 4 rows of fruit in the shop window. In each row there are 5 pears and 3 apples. How many pieces of fruit are there in the window altogether? Do the calculation in 2 different ways.</i> Let Ps try to write in missing numbers without help first. Review at BB with whole class. Mistakes corrected. <i>Solution:</i> a) Number of rows: 4 Pieces of fruit in each row: $(5 + 3)$ Pieces of fruit in 4 rows: $4 \times (5 + 3) = 4 \times 8 = 32$ b) Number of pears: 4×5 Number of apples: 4×3 Number of pieces of fruit altogether: $4 \times 5 + 4 \times 3 = 20 + 12 = 32$ <i>Answer:</i> There are 32 pieces of fruit altogether. <p style="text-align: right;">42 min</p>	Individual work, monitored helped Written on BB or use enlarged copy master or OHP Reasoning, agreement, checking, self-correction Discuss need for use of brackets in part a) Ask Ps which method they think is easiest (like best) and why.
9	Problem Listen carefully and show me the answer with number cards when I say. <i>How many sides do 4 triangles, 4 squares and 4 pentagons have altogether?</i> Show me . . . now! (48) BB: $4 \times (3 + 4 + 5) = 4 \times 12 = 48$ <p style="text-align: right;">45 min</p>	Whole class activity T repeats slowly In unison. Reasoning, agreement

<h1>Y2</h1>	<p>R: Calculation C: Operations in context E: Problem solving. Brackets</p>	<h2 style="text-align: center;">Lesson Plan 134</h2>
<p>Activity</p> <p>1</p>	<p>Multiplication table practice</p> <p>Let's say the multiples of 2 in increasing (decreasing) order to (from) 20, but every 2nd number we will say silently in our heads and clap instead. e.g. '0', clap, '4', clap, '6', clap, . . .</p> <p>Repeat for some other multiplication tables (3, 4, 5, 6, 9 or 10) .</p> <p style="text-align: right;">6 min</p>	<p>Notes</p> <p>Whole class activity In unison, at speed In good humour, praising only Other actions can be used too, e.g. knocking on desks</p>
<p>2</p>	<p>Brackets</p> <p>T has two purses stuck on BB and 6 equations on cards stuck randomly to side of BB.</p> <p>Which equations belong to which purse? Ps come out to choose a card and stick beneath the appropriate purse, explaining reasoning and writing in the answer. Class agrees/disagrees.</p> <p><i>Solution:</i></p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>$3 \times 10 + 3 \times 2 = 36$</p> <p>$3 \times (10 + 2) = 36$</p> </div> <div style="text-align: center;">  <p>$3 \times (20 + 5) = 75$</p> <p>$3 \times 20 + 3 \times 5 = 75$</p> </div> <div style="text-align: center;"> <p>$3 \times 5 + 20 = 35$</p> <p>$3 \times 10 + 2 = 32$</p> <p>↑</p> <p>Do not match either purse!</p> </div> </div> <p style="text-align: right;">12 min</p>	<p>Whole class activity Use copy master, enlarged and cut out (or drawn on BB and Ps join up equations to correct purse)</p> <p>Reasoning, agreement, checking, praising</p> <p>Which coins could be in purses matching each of the other two equations?</p>
<p>3</p>	<p>Jumps along the number line</p> <p>a) Squirrel is jumping along the number line. He jumps 4 units 3 times and then 6 units 3 times.</p> <p>BB: </p> <p>A, come and draw in his jumps. Which number did you reach? (30) B, come and write an equation about it. Who agrees? Who thinks something else? etc.</p> <p>b) Rabbit is jumping along the number line too. He jumps 4 units, then another 6 units, 3 times altogether.</p> <p>BB: </p> <p>C, come and draw in his jumps. Which number did you reach? (30) D, come and write an equation about it. Who agrees? Who thinks something else? Let's compare their jumps.</p> <p style="text-align: right;">18 min</p>	<p>Whole class activity Use enlarged copy master or OHP</p> <p>Ps can use individual number lines to check Ps at BB are correct.</p> <p>Agreement, checking, praising</p> <p>Ps write calculations in <i>Ex. Bks</i> too</p> <p>BB:</p> <p>a) $\underbrace{3 \times 4}_{12} + \underbrace{3 \times 6}_{18} = \underline{30}$</p> <p>b) $3 \times \underbrace{(4 + 6)}_{10} = \underline{30}$</p> <p>Discussion, agreement that $3 \times 4 + 3 \times 6 = 3 \times (4 + 6)$</p>
<p>4</p>	<p>Interlude</p> <p>Action song or rhyme</p> <p style="text-align: right;">20min</p>	<p>Whole class in unison</p>

Y2		<i>Lesson Plan 134</i>
Activity 5	<p>PbY2b, page 134</p> <p>Q.1 a) Read: <i>Who has more fish? Do the calculations and write in the correct sign.</i> <i>Peter has 5 fish tanks, with 5 fish in each tank.</i> <i>Steve has 3 fish tanks, with 8 fish in each tank.</i></p> <p>Review at BB with whole class. Mistakes corrected. <i>Answer:</i> Peter has more fish. (1 more)</p> <p>b) Read: <i>Who has more bags? Do the calculations and write in the correct sign.</i> <i>John has 60 marbles, with 6 marbles per bag.</i> <i>Tim has 48 marbles, with 6 marbles per bag.</i></p> <p>Review at BB with whole class. Mistakes corrected. <i>Answer:</i> John has more bags. (2 more)</p> <p>Do you think we could have written the signs without doing the calculations? (Difficult in a) but possible in b) because the same number of marbles are in each bag.)</p> <p style="text-align: right;">26 min</p>	<p style="text-align: center;">Notes</p> <p>Individual work, monitored helped</p> <p>Discussion at BB</p> <p>Agreement, checking, praising</p> <p>BB: <i>Peter</i> <i>Steve</i> $5 \times 5 = 25$ $>$ $3 \times 8 = 24$</p> <p>Discussion at BB</p> <p>Agreement, checking, praising</p> <p>BB: <i>John</i> <i>Tim</i> $60 \div 6 = 10$ $>$ $48 \div 6 = 8$</p> <p>Demonstrate if necessary with Ps at front of class.</p> <p>Discussion, agreement</p> <p>Extra praise if Ps notice</p>
6	<p>PbY2b, page 134</p> <p>Q.2 Read: <i>On market day the farmer collected 37 eggs from his hens. How many egg-boxes will he fill to sell at the market if each egg-box can hold 6 eggs?</i></p> <p>Ps may draw the egg-boxes and eggs in Pbs if they want to.</p> <p>Review at BB with whole class. Mistakes corrected. <i>Calculation:</i> $37 \text{ (eggs)} \div 6 \text{ (eggs)} = 6 \text{ (times), remainder } 1 \text{ (egg)}$ <i>Check:</i> $6 \times 6 + 1 = 37$</p> <p><i>Answer:</i> The farmer will fill 6 egg boxes.</p> <p>Discuss the fact that the farmer would actually need 7 boxes to hold all the eggs but he could only sell full boxes at the market.</p> <p style="text-align: right;">32 min</p>	<p>Individual work, monitored helped</p> <p>Only rough drawings needed</p> <p>Reasoning, agreement, checking, self-correction</p> <p>Praising</p> <p>Demonstrate with egg boxes and plastic eggs or cubes if there are problems.</p>
7	<p>PbY2b, page 134</p> <p>Q.3 Read: <i>A shop had 21 kg of oranges, packed in 3 kg bags. If 9 kg were sold, how many bags of oranges were left? Underline the calculation which answers the question.</i></p> <p>Review at BB with the whole class. T points to each equation in turn and asks who chose it and why. (4 equations possible) e.g.</p> <p><i>Calculation:</i> $21 \div 3 - 9 \div 3 = 7 - 3 = 4$, so 4 bags were left.</p> <p><i>Check:</i> $4 \times 3 \text{ kg} = 12 \text{ kg}$, $12 \text{ kg} + 9 \text{ kg} = 21 \text{ kg}$</p> <p>Also accept $21 - 9 = 4 \times 3$, $(21 - 9) \div 3 = 4$ and $21 \div 3 - 4 = 9 \div 3$ and discuss the reasoning behind each.</p> <p style="text-align: right;">40 min</p>	<p>Individual trial, monitored helped</p> <p>Equations written on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement, checking, praising</p> <p>or $21 \text{ kg} \div 3 \text{ kg} = 7 \text{ (tines)}$ $9 \text{ kg} \div 3 \text{ kg} = 3 \text{ (times)}$ $7 - 3 = 4 \text{ (bags)}$</p> <p>Demonstrate if necessary with 7 bags, each labelled '3 kg'</p>
8	<p>PbY2b, page 134, Q.4</p> <p>Read: <i>Anne has 50 p. How much money should she give to Donna so that they both have the same amount, if Donna already has:</i> <i>a) 40 p, b) 36 p, c) 42 p?</i></p> <p>Review at BB with whole class. Class agrees on a <u>general</u> solution: BB: $(A - D) \div 2 = \square \text{ p}$ Check it is true for other amounts too.</p> <p style="text-align: right;">45 min</p>	<p>Paired work, monitored, helped</p> <p>Ps use real or cardboard coins</p> <p>BB: a) $50 \text{ p} - 40 \text{ p} = 10 \text{ p}$ $10 \text{ p} \div 2 = 5 \text{ p}$</p> <p><i>Check:</i> A: $50 \text{ p} - 5 \text{ p} = 45 \text{ p}$ D: $40 \text{ p} + 5 \text{ p} = 45 \text{ p}$</p> <p>Similarly for b) 7 p, c) 4 p</p>

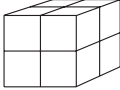
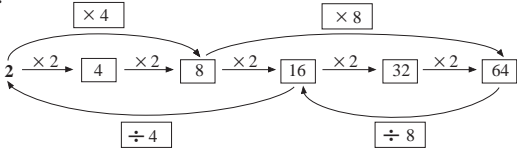
Y2		<i>Lesson Plan</i> 135
<i>Activity</i>	Revision, activities, consolidation <i>PbY2b, page 135</i>	<i>Notes</i>


<h1>Y2</h1>	<p>R: Mental calculation C: Multiplication and division by 7 E: <i>Constructing equations, modelling</i></p>	<h2>Lesson Plan 136</h2>																								
<p>Activity</p> <p>1</p>	<p>Multiples of 7</p> <p>What do the following have in common? e.g. Snow White and the seven dwarfs, the story about a 7-headed dragon, the 7 dots on a ladybird's back, the days of the week. (All contain 7 of something: 7 dwarfs, 7 heads, 7 dots, 7 days)</p> <ul style="list-style-type: none"> Let's count up in 7s from 0: '0, 7, 14, 21, ...' (as far as Ps are able) Let's count back in 7s from 84: '84, 77, 70, ...' (to zero – or into negative numbers if Ps are able). <p style="text-align: right;">6 min</p>	<p>Notes</p> <p>Whole class activity</p> <p>T could ask Ps for other examples of 7 of something</p> <p>T chooses Ps at random Ps may use their number lines Praising only</p>																								
<p>2</p>	<p>PbY2b, page 136, Q.1</p> <p>Read: <i>Kangaroo starts from 0 and jumps along the number line 7 units at a time Draw his jumps on the number line. Complete the table.</i></p> <p>P comes out to BB to draw in Kangaroo's jumps and rest of Ps recite the numbers landed on. How many jumps were needed to reach 70? (10)</p> <p>Let's complete the table to show where Kangaroo has reached after different numbers of jumps. Ask Ps to explain the first 2 columns in table.</p> <p>Ps come to BB one after another to fill in a column each and say the relevant multiplication, (e.g. $3 \times 7 = 21$). (Ps fill in table in <i>Pbs</i> too.)</p> <p>Let's read out the bottom row of the table as fast as we can! What are these numbers? (multiples of 7)</p> <p style="text-align: right;">14 min</p>	<p>Whole class activity</p> <p>Use enlarged copy master or OHP</p> <p>Ps draw jumps in <i>Pbs</i> too</p> <p>Reasoning, agreement, checking praising</p> <p>BB:</p> <table border="1" style="font-size: small;"> <tr> <td>Number of jumps</td> <td>0</td><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>Number reached</td> <td>0</td><td>7</td><td>14</td><td>21</td><td>28</td><td>35</td><td>42</td><td>49</td><td>56</td><td>63</td><td>70</td> </tr> </table> <p>In unison, at speed. Praising</p>	Number of jumps	0	1	2	3	4	5	6	7	8	9	10	Number reached	0	7	14	21	28	35	42	49	56	63	70
Number of jumps	0	1	2	3	4	5	6	7	8	9	10															
Number reached	0	7	14	21	28	35	42	49	56	63	70															
<p>3</p>	<p>Making equations</p> <p>Study these pictures carefully. (T has BB already prepared.)</p> <p>1) How many dots can you see in each picture? Do the calculations in your <i>Ex. Bks.</i> (<i>Heading:</i> Lesson number and date.)</p> <p>BB:</p> <p>a)  $3 \times 7 = \underline{21}$</p> <p>b)  $3 \times 7 + 3 \times 7 = 21 + 21 = 42$ $6 \times 7 = \underline{42}$</p> <p>c)  $2 \times 7 + 2 \times 7 + 2 \times 7 = 14 + 14 + 14 = 42$ $6 \times 7 = \underline{42}$</p> <p>Review at BB with whole class. Ps come to BB to write equations and explain reasoning Who agrees? Who did it a different way? etc.</p> <p>2) How many ladybirds have a) 14 b) 28 dots? Do the calculations in your <i>Ex. Bks.</i> (Ps can use the table from Activity 2 to help them.)</p> <p>Review at BB with whole class. Ps come to BB to write equations and explain reasoning. Class agrees/disagrees.</p> <p style="text-align: right;">20 min</p>	<p>Individual work in <i>Ex. Bks</i>, monitored, helped</p> <p>Pictures drawn on BB or use enlarged copy master or OHP</p> <p>Ps label equations a), b), c) in <i>Ex. Bks</i></p> <p>Discussion, reasoning, agreement, checking, praising</p> <p>BB:</p> <p>a) $14 \text{ (dots)} \div 7 \text{ (dots)} = \underline{2}$ b) $28 \div 7 = \underline{4}$</p> <p>Extra praise</p>																								
<p>4</p>	<p>Interlude</p> <p>Rhyme or song</p> <p style="text-align: right;">22 min</p>	<p>Whole class in unison</p>																								

Y2		Lesson Plan 136
<p>Activity</p> <p>5</p>	<p>PbY2b, page 136</p> <p>Q.2 Read: <i>Draw pictures to show the equations.</i></p> <p>T explains task. Encourage neat, small, simple drawings (circles, crosses, dots, stars, etc.), with lines drawn to separate the different parts of each equation.</p> <p>Review at BB with whole class. T chooses Ps to come out to show drawings, e.g.</p> <p>BB:</p>  <p>Class decides whether they match the equations.</p> <p>Calculations checked. Mistakes corrected</p> <p>Elicit that, e.g. $4 \times 7 + 1 \times 7 = 5 \times 7$.</p> <p style="text-align: right;">28 min</p>	<p style="text-align: center;">Notes</p> <p>Individual work, monitored, helped</p> <p>Ps draw the larger shapes first before adding the 7 elements</p> <p>Discussion, checking, agreement, praising</p> <p>BB:</p> <p>a) $4 \times 7 + 1 \times 7 = 35$</p> <p style="margin-left: 40px;">$\underbrace{\quad}_{28} \quad \underbrace{\quad}_7$</p> <p style="margin-left: 80px;">$5 \times 7 = 35$</p> <p>b) $1 \times 7 + 2 \times 7 = 21$</p> <p style="margin-left: 40px;">$\underbrace{\quad}_7 \quad \underbrace{\quad}_{14}$</p> <p style="margin-left: 80px;">$3 \times 7 = 21$</p>
<p>6</p>	<p>PbY2b, page 136, Q.3</p> <p>Read: <i>Each girl puts 7 plums into a bag. How many bags will each girl need? Write it as an equation.</i></p> <p>T chooses 3 Ps to be Julie, Kate and Laura (or replace names with those of actual Ps). Ps come out to circle their plums in groups of 7 and to write an equation about it.. Class agrees/disagrees.</p> <p>T chooses another 3 Ps to come out to check with multiplications.</p> <p>A, you have 35 plums. How many bags will you need? (5) B, check whether A is correct. Repeat with other Ps and other multiples of 7.</p> <p style="text-align: right;">33 min</p>	<p>Whole class activity</p> <p>Plums drawn (or stuck) on BB or use enlarged copy master or OHP</p> <p>BB: <i>Julie</i>: $21 \div 7 = 3$</p> <p style="margin-left: 40px;"><i>Kate</i>: $14 \div 7 = 2$</p> <p style="margin-left: 40px;"><i>Laura</i>: $28 \div 7 = 4$</p> <p>Orally, at speed. Praising</p>
<p>7</p>	<p>PbY2b, page 136</p> <p>Q.4 Read: <i>Write the missing multiples of 7 in the table. Learn the multiples of 7 by heart.</i></p> <p>Who can be first to tell me how many boxes are still to be filled in the table? Can you write it as an equation? ($4 \times 4 = 16$)</p> <p>Ps fill in the missing multiples of 9. Review at BB with whole class. Mistakes corrected. Ps given time to learn by heart.</p> <p>Close your <i>Pbs</i> and let's say the multiples of 9 together.</p> <p>Who can be first to tell me how many boxes are still to be filled in now? Can you write it as one equation? ($4 + 2 \times 2 + 1 = 9$)</p> <p style="text-align: right;">38 min</p>	<p>Individual work, monitored, helped</p> <p>Praising</p> <p>Use enlarged copy master/OHP</p> <p>Agreement. T insists on quiet</p> <p>In unison, in both directions</p> <p>Extra praise</p>
<p>8</p>	<p>Constructing multiplications and divisions</p> <p>a) Write different multiplications about this flower. Each time start with the '7' in the centre. Do the calculation and write in the result. Review at BB with the whole class. e.g. $7 \times 3 = 21$, etc.</p>  <p>b) Write different divisions about this flower. Each time start with a number on the petals. Do the calculation and write in the result. Review at BB with the whole class. e.g. $42 \div 7 = 6$, etc.</p>  <p>T encourages listing in logical order. Let's read them out together.</p> <p style="text-align: right;">45 min</p>	<p>Individual work in <i>Ex. Bks</i>, monitored (helped if needed)</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Ps may use their \times tables</p> <p>Discussion, agreement, checking with inverse operation, self-correction, praising</p> <p>In unison, at speed</p>

Y2		<i>Lesson Plan 137</i>
Activity 5	<p>Problem</p> <p>Listen carefully and try to picture the story in your head. Think how you could work out the answer.</p> <p><i>Three 7-headed dragons are going to have lunch. They want to share out 42 pears equally.</i></p> <p>a) <i>How many pears will each dragon have?</i></p> <p>Who can suggest how to work out the answer? Who agrees? etc.</p> <p>BB: 3 dragons: 42 pears 1 dragon: $42 \text{ (pears)} \div 3 = 30 \div 3 + 1 \div 3 = 10 + 4 = 14$ <i>Check:</i> $3 \times 14 = 3 \times 10 + 3 \times 4 = 20 + 12 = 42$</p> <p><i>Answer:</i> Each dragon will have 14 pears.</p> <p>b) <i>How many pears will each head have?</i></p> <p>Who can suggest how to work out the answer? Who agrees? Who can think of another way? etc.</p> <p>e.g. BB: 7 heads: 42 pears 1 head: $42 \text{ pears} \div 7 = 6$ pears <i>Check:</i> $2 \times 7 = 14$</p> <p>or Number of heads = $3 \times 7 = 21$ 21 heads: 42 pears, 1 head: $42 \text{ pears} \div 21 = 2$ pears <i>Check:</i> $2 \times 21 = 2 \times 20 + 2 \times 1 = 40 + 2 = 42$</p> <p><i>Answer:</i> Each head will have 2 pears.</p> <p style="text-align: right;"><i>27 min</i></p>	<p style="text-align: center;">Notes</p> <p>Whole class activity</p> <p>T repeats slowly and asks Ps to repeat in own words.</p> <p>Discussion on strategy for solution. Involve several Ps</p> <p>Draw rough diagram if needed</p> <p>Reasoning, agreement</p> <p>Checking with multiplication</p> <p>Discussion on strategy for solution. Involve several Ps</p> <p>Reasoning, agreement</p> <p>Checking with multiplication</p> <p>Ps can write calculations in <i>Ex. Bks</i> too</p>
6	<p>PbY2b, page137</p> <p>Q.2 Read: <i>Write in the missing numbers.</i> <i>Learn and practise the 7 times table.</i></p> <p>Deal with one column at a time. Review orally round class.</p> <p>Elicit that the products and dividends are the same numbers.</p> <p>In the next 2 minutes try to learn the multiplications by heart and then we will try to say them without looking at the books!</p> <p>Ps close <i>Pbs</i> and recite the columns together, with T's help.</p> <p style="text-align: right;"><i>34 min</i></p>	<p>Individual work, monitored (helped)</p> <p>Class points out mistakes Ps correct their errors</p> <p>T asks for quiet so that everyone can concentrate</p> <p>At speed, in unison (or relay)</p>
7	<p>PbY2b, page137, Q.3</p> <p>Read: <i>Snow White was baking cakes. She gave the same number of cakes to each of the 7 dwarfs. How many cakes did each dwarf get and how many remained for Snow White? Complete the table.</i></p> <p>T (or P) explains what each row of table means using the column already completed. (Middle row is top row divided by 7, bottom row is the remainder, top row is 7 times the middle row plus the bottom row.</p> <p>Ps come out to complete the columns. Class points out errors. Alternative answers to final column could be done orally by Ps in 3s.</p> <p style="text-align: right;"><i>40 min</i></p>	<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Initial discussion</p> <p>At speed. Ps give details only where necessary</p> <p>Agreement, checking, praising</p> <p>Demonstrate if problems</p>
8	<p>PbY2b, page137</p> <p>Q.4 Read: <i>Which is more? Write in the correct sign.</i></p> <p>Revise order of operations. (brackets, then \div or \times, then $+$ or $-$)</p> <p>Ps write result below first calculation, then above RHS and LHS, before writing in the correct sign.</p> <p>Review at BB with whole class. Mistakes corrected</p> <p style="text-align: right;"><i>45 min</i></p>	<p>Individual work, monitored, helped</p> <p>BB: $\overbrace{14}^{\quad} \quad \overbrace{50}^{\quad}$</p> <p>a) $7 \times \underbrace{(8-6)}_2 \square \underbrace{7 \times 8 - 6}_{56}$</p> <p>b) $\underbrace{35 \div 7 - 2}_5 \square \underbrace{35 \div (7-2)}_5$</p>

<h1>Y2</h1>	<p>R: Mental calculation C: Multiplication and division by 8 E: <i>Remainders. Modelling</i></p>	<h2 style="text-align: center;">Lesson Plan 138</h2>																																																												
<p>Activity</p> <p>1</p>	<p>Number strips (or Cuisenaire rods or multilink cubes)</p> <p>T sticks/draws on BB an 8 cm strip. How many 4 cm (2 cm) strips laid end to end are needed to cover the same length? (2, 4) (BB)</p> <p>Let's calculate the total length of several such strips in this table.</p> <p>BB: Number of:</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <tr> <td>strips</td> <td>0</td> <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>2 cm strips</td> <td>0</td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> <td>10</td> <td>12</td> <td>14</td> <td>16</td> <td>18</td> <td>20</td> </tr> <tr> <td>4 cm strips</td> <td>0</td> <td>4</td> <td>8</td> <td>12</td> <td>16</td> <td>20</td> <td>24</td> <td>28</td> <td>32</td> <td>36</td> <td>40</td> </tr> <tr> <td>8 cm strips</td> <td>0</td> <td>8</td> <td>16</td> <td>24</td> <td>32</td> <td>40</td> <td>48</td> <td>56</td> <td>64</td> <td>72</td> <td>80</td> </tr> </table> <p>Bold numbers already given. Ps fill in rest</p> <p>Ps come out to fill in the columns, saying the relevant multiplication. Class checks and points out errors. (Or class dictates what T should write.)</p> <p>Let's compare the rows. (e.g. 2nd row is 1 quarter of bottom row, 3rd row is twice 2nd row, etc.)</p> <p>Let's say the numbers in the last row and point to them on our number lines. (T points on class number line too.)</p> <p style="text-align: right;">10 min</p>	strips	0	1	2	3	4	5	6	7	8	9	10	2 cm strips	0	2	4	6	8	10	12	14	16	18	20	4 cm strips	0	4	8	12	16	20	24	28	32	36	40	8 cm strips	0	8	16	24	32	40	48	56	64	72	80	<p style="text-align: center;">Notes</p> <p>Whole class activity (Ps could havestrips/ rods on desks too and work in pairs)</p> <p>BB:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td colspan="4" style="text-align: center;">8 cm</td> </tr> <tr> <td colspan="2" style="text-align: center;">4 cm</td> <td colspan="2" style="text-align: center;">4 cm</td> </tr> <tr> <td style="text-align: center;">2 cm</td> <td style="text-align: center;">2 cm</td> <td style="text-align: center;">2 cm</td> <td style="text-align: center;">2 cm</td> </tr> </table> <p>$8\text{ cm} = 2 \times 4\text{ cm} = 4 \times 2\text{ cm}$</p> <p>Table drawn on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement, checking, praising</p> <p>Involve several Ps. Praising</p> <p>In unison, in both directions</p>	8 cm				4 cm		4 cm		2 cm	2 cm	2 cm	2 cm
strips	0	1	2	3	4	5	6	7	8	9	10																																																			
2 cm strips	0	2	4	6	8	10	12	14	16	18	20																																																			
4 cm strips	0	4	8	12	16	20	24	28	32	36	40																																																			
8 cm strips	0	8	16	24	32	40	48	56	64	72	80																																																			
8 cm																																																														
4 cm		4 cm																																																												
2 cm	2 cm	2 cm	2 cm																																																											
<p>2</p>	<p>PbY2b, page 138</p> <p>Q.1 Read: <i>A spider has 8 legs. Complete the table.</i></p> <p>Talk about spiders being special because most insects have only 6 legs. What else is special about spiders? (Spin webs to catch flies, etc.)</p> <p>Make sure Ps realise that 2nd row is 8 times top row.</p> <p>Review at BB with whole class. Mistakes corrected. Ps give details of some columns if necessary,</p> <p>e.g. $8 + 8 + 8 + 8 + 8 + 8 + 8 + 8 = 8 \times 8 = 64$</p> <p>What are the numbers in the bottom row of the table? (multiples of 8) Let's check them on our multiplication table (or <i>OHT 14</i>).</p> <p>Read: <i>Compare the rows.</i></p> <p>Who could write an equation about a row in the table? Who agrees? Who could write another? Check with values from table.</p> <p style="text-align: right;">18 min</p>	<p>Whole class discussion about spiders. Involve several Ps</p> <p>Individual work, monitored</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Agreement, checking, self-correcting, praising</p> <p>Read out in unison</p> <p>BB: Let number of: Spiders = S, Legs = L $S = L \div 8$ $L = S \times 8$</p> <p>Agreement, checking, praising</p>																																																												
<p>3</p>	<p>PbY2b, page 136</p> <p>Q.2 Read: <i>Write different equations about the picture.</i></p> <p>Who can tell us something about the picture? (e.g. 7 dominoes, each domino has 8 dots with 4 dots (2 rows of 2 dots) in each half; 56 dots altogether)</p> <p>Review at BB with whole class Deal with all cases.</p> <p>BB: e.g. $7 \times 8 = 56$ $56 \div 8 = 7$ $8 \times 7 = 56$ $56 \div 7 = 8$ $8 + 8 + 8 + 8 + 8 + 8 + 8 = 56$ $3 \times 8 + 4 \times 8 = 24 + 32 = 56$, etc.</p> <p style="text-align: right;">23 min</p>	<p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, agreement, checking, self-correction</p> <p>T and Ps applaud creative equations</p>																																																												
<p>4</p>	<p>Interlude</p> <p>Song, rhyme, exercises</p> <p style="text-align: right;">25 min</p>	<p>Whole class in unison</p>																																																												

<h1>Y2</h1>		<p>Lesson Plan 138</p>
<p>Activity</p> <p>5</p>	<p>Building 8-unit cubes</p> <p>T holds up a unit cube. Who can make a large cube from 8 unit cubes? P comes out to build cube and class keeps count of unit cubes used. Class decides whether final shape is indeed a cube.</p>  <p>a) How many unit cubes will we need to build 2 (8, 9) large cubes like this one?</p> <p>What kind of operation should we use? (multiplication, or addition) Let's use multiplication as it is shorter. Ps dictate what to write. T writes on BB, Ps in <i>Ex. Bks.</i></p> <p>b) How many larger cubes can be built from 40 (44, 50) unit cubes? What kind of operation should we use? (division) Ps dictate what to write. T writes on BB, Ps in <i>Ex. Bks.</i></p> <p>How can we check the divisions? (With multiplications + additions) Demonstrate with unit cubes if necessary.</p> <p style="text-align: right;">30 min</p>	<p>Notes</p> <p>Whole class activity</p> <p>Demonstration, agreement, praising</p> <p>Discussion, agreement, checking, praising</p> <p>BB:</p> <p>a) $8 \times 2 = 16$ $8 \times 8 = 64$ $8 \times 9 = 72$</p> <p>b) $40 \div 8 = 5$ $44 \div 8 = 5, \text{ remainder } 4$ $50 \div 8 = 6, \text{ remainder } 2$</p> <p>Check: e.g. $6 \times 8 + 2 = 50$</p> <p>Praising</p>
<p>6</p>	<p>PbY2b, page 138</p> <p>Q.3 Read: <i>Fill in the missing numbers and signs.</i></p> <p>T tells Ps to follow the middle, straight arrows first, writing in the missing numbers. Then Ps write the missing signs on the curved arrows.</p> <p>Deal with one part at a time. Review at BB with whole class.</p> <p><i>Solution:</i></p>  <p>Elicit that:</p> <ul style="list-style-type: none"> • multiplying (dividing) by 2 twice is the same as multiplying (dividing) by 4; • multiplying (dividing) by 2 three times is the same as multiplying (dividing) by 8. <p style="text-align: right;">36 min</p>	<p>Individual work, monitored, helped.</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion at BB</p> <p>Agreement, checking, praising</p> <p>Go through the difficult calculations on BB, e.g.</p> <p>$16 \times 4 = 16 + 16 + 16 + 16 = 64$, or $16 \times 4 = 10 \times 4 + 6 \times 4 = 40 + 24 = 64$</p> <p>Agreement, checking</p>
<p>7</p>	<p>PbY2b, page 138</p> <p>Q.4 Read: <i>Write the new multiples of 8 in the table.</i> <i>Learn the multiples of 8 by heart.</i></p> <p>Who can be first to tell me how many boxes we still have to fill? (5) Which are they? ($8 \times 0, 8 \times 1, 8 \times 8, 0 \times 8, 1 \times 8$)</p> <p>Ps fill in the missing multiples of 9. Review at BB with whole class. Mistakes corrected. Ps given time to learn by heart.</p> <p>Close your <i>Pbs</i> and let's say the multiples of 8 together.</p> <p>Who can be first to tell me how many boxes are still to be filled in now? (4) What are they? ($0 \times 0, 0 \times 1, 1 \times 0, 1 \times 1$)</p> <p style="text-align: right;">41 min</p>	<p>Individual work, monitored, helped</p> <p>Praising</p> <p>Use enlarged copy master/OHP</p> <p>Agreement. T insists on quiet</p> <p>In unison, in both directions</p> <p>Ps may fill these in now if they are <u>sure</u> they know them</p>
<p>8</p>	<p>Comparing equations</p> <p>Which is more? How many more? BB:</p> <p>Ps come out to write result beside each shape, then write the missing sign and number between them.</p> <p style="text-align: right;">45 min</p>	<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master</p> <p>Agreement, checking, praising</p>

Y2	R: Mental calculation C: Multiplication and division by 8 E: <i>0 and 1 in multiplication. Remainders</i>	<i>Lesson Plan</i> 139																																	
Activity 1	Equations Which numbers are missing from these equations to make them correct? BB: a) $5 \times \square = 40$ b) $3 \times \square + 7 = 31$ c) $\square \div 7 = 6$ d) $\square \div 9 = 7 + 1$ Ps come out to BB to write in missing numbers, explaining reasoning and using inverse operations, while other Ps write in <i>Ex. Bks.</i> e.g. b) $3 \times \square = 31 - 7 = 24$, $24 \div 3 = \underline{8}$ Check: $3 \times \underline{8} + 7 = 31 \checkmark$ <div style="text-align: right;">5 min</div>	Notes Whole class activity BB already prepared Done at a good pace Reasoning, agreement, checking, praising <i>Solutions:</i> a) 8, b) 8, c) 42, d) 72																																	
2	Problem Listen carefully, picture the story in your head and calculate the answer in your <i>Ex. Bks.</i> Use what you like or draw a diagram to help if you need it. <i>At a birthday party there were 32 cakes on a plate. The 8 children at the party ate equal amounts. How many cakes did each child eat?</i> Show me the answer with your fingers . . . now! (4) A , come and explain how you got your answer. Who agrees? Who thinks something else? Who made a mistake? What kind of mistake? <i>Plan:</i> 8 children: 32 cakes, 1 child: 32 cakes \div 8 <i>Calculation:</i> 32 \div 8 = 4 <i>Answer:</i> Each child ate 4 cakes. <div style="text-align: right;">10 min</div>	Individual work, monitored, helped T repeats slowly and asks Ps to repeat in own words. In unison Reasoning, agreement, checking, self-correcting Praising Demonstrate if necessary																																	
3	Table of zeros What is this animal? (snail) Who can tell me something about it? How many legs does it have? (0) How many shells does it have? (1) Let's fill in the table for several snails. BB: Number of: <div style="display: flex; align-items: center;">  <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">4</td><td style="padding: 2px 5px;">5</td><td style="padding: 2px 5px;">6</td><td style="padding: 2px 5px;">7</td><td style="padding: 2px 5px;">8</td><td style="padding: 2px 5px;">9</td><td style="padding: 2px 5px;">10</td> </tr> <tr> <td style="padding: 2px 5px;">legs</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td> </tr> <tr> <td style="padding: 2px 5px;">shells</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td><td style="padding: 2px 5px;"></td> </tr> </table> </div> Ps come out to complete each column, saying the relevant multiplication. e.g. 'five times zero equals zero', 'five times 1 equals five', etc. Let's find the rows and columns for 0 and 1 in the multiplication table. Elicit that: <ul style="list-style-type: none"> • any number multiplied by zero and zero times any number is zero. • any number multiplied by 1 and 1 times any number is the number itself. Let's read out the multiplication tables for 0 and 1. '0 \times 0 = 0, 0 \times 1 = 0, . . . <div style="text-align: right;">18 min</div>	0	1	2	3	4	5	6	7	8	9	10	legs	0	0									shells	0	1									Whole class activity Drawn on BB or use enlarged copy master or OHP Discussion about snails (how they move, where they live, slimy trails, etc.) Reasoning, agreement, checking, praising Use <i>OHT 14</i> or copy master Ps can find in own \times tables too. Discussion, agreement In unison, at speed
0	1	2	3	4	5	6	7	8	9	10																									
legs	0	0																																	
shells	0	1																																	
4	Interlude Action song <div style="text-align: right;">20 min</div>	Whole class in unison																																	

Y2		<i>Lesson Plan 139</i>
Activity 5	<p>PbY2b, page 139</p> <p>Q.2 Read: <i>Fill in the missing numbers.</i> <i>Learn and practise the 8 times table.</i></p> <p>Deal with one column at a time. Review orally round class. Elicit that the products and dividends are the same numbers. In the next 2 minutes try to learn the multiplications by heart and then we will try to say them without looking at the books! Ps close <i>Pbs</i> and recite the columns together, with T's help. Let's find the row and column for 8 in our multiplication tables and say them in increasing (decreasing) order. T says a multiplication, e.g. 8×6, P comes out to point to 64; T points to a multiple of 8, e.g. 32, P says 8×4, etc.</p> <p style="text-align: right;">28 min</p>	<p style="text-align: center;">Notes</p> <p>Individual work, monitored (helped)</p> <p>Class points out mistakes Ps correct their errors</p> <p>T asks for quiet so that everyone can concentrate</p> <p>At speed, in unison (or relay)</p> <p>Use <i>OHT 14</i> (or copy master), Ps can use own \times tables</p> <p>At a good pace. Praising</p>
6 Extension	<p>PbY2b, page 139</p> <p>Q.3 Read: <i>Fill in the missing numbers and signs.</i></p> <p>Deal with one part at a time. Review at BB with whole class.</p> <p><i>Solution:</i></p> <div style="text-align: center;"> </div> <p>Elicit that multiplying by 2 and then by 4 (or by 4 and then by 2) is the same as multiplying by 8.</p> <p>If the arrows were pointing in the opposite direction, what would the numbers and signs be?</p> <p style="text-align: right;">33 min</p>	<p>Individual work, monitored, helped.</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, agreement, checking, praising</p> <p>BB: $2 \times 28 = 2 \times 20 + 2 \times 8$ $= 40 + 16 = 56$ </p> <p>Whole class or individual work. Agreement, praising</p>
7	<p>PbY2b, page 139, Q.3</p> <p>Read: <i>Minnie Mouse takes home some worms for her 8 babies. She gives each baby mouse an equal number of worms. How many worms does each baby get and how many remain for Minnie? Complete the table.</i></p> <p>T (or P) explains what each row of table means. (Middle row is top row divided by 8 or 1 eighth of top row, bottom row is the remainder, top row is 8 times the middle row plus the bottom row.)</p> <p>Ps come out to complete the columns. Class points out errors. Ps can fill in table in <i>Pbs</i> too. Demonstrate columns where there are difficulties.</p> <p style="text-align: right;">39 min</p>	<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Initial discussion</p> <p>At a good pace. Ps say the relevant multiplication e.g. $18 = 2 \times 8 + 2$, $6 \times 8 + 2 = 50$, etc.</p> <p>Agreement, checking, praising</p>
8	<p>Mental practice</p> <p>T calls 2 pairs of Ps at a time to front of class. 1st P of one pair says an operation, 2nd P of same pair says another and 2nd pair must say another 2 operations which have the same result.</p> <p>e.g. <i>1st pair:</i> P₁: '4×8', P₂: '$- 2$'; <i>2nd pair:</i> P₃: '6×4', P₄: '$+ 6$';</p> <p>Class calculates mentally and either applauds or shows thumbs down.</p> <p style="text-align: right;">43 min</p>	<p>Whole class activity</p> <p>More able Ps in 2nd pair</p> <p>T writes calculations on BB: $4 \times 8 - 2 = 6 \times 4 + 6 = 30$ </p> <p>Repeat for other pairs if time</p>
9 Extension	<p>PbY2b, page 139</p> <p>Q.4 Let Ps read question and work out answer without help first. Review solution at BB, using inverse calculations. Do a check. BB: $8 \times 8 = 64$, $64 - 24 = 40$, $40 \div 8 = \underline{5}$</p> <p style="text-align: right;">45 min</p>	<p>Individual (or paired) work, monitored</p> <p>Reasoning, agreement, praising</p> <p>BB: $(\underline{5} \times 8 + 24) \div 8 = 8$</p>

Y2		<i>Lesson Plan</i> 140
<i>Activity</i>	Tables practice, revision, activities, consolidation <i>PbY2b, page 140</i>	<i>Notes</i>