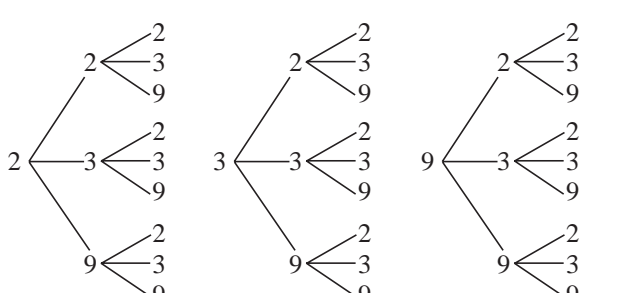


<p><b>Y4</b></p>	<p>R: Mental calculation  <b>C: Revision: numbers to 1000. Writing and ordering. Rounding</b>                  E: Numbers up to 2000</p>	<p style="text-align: center;"><i>Lesson Plan</i> <b>1</b></p>
<p><b>Activity</b> <b>1</b></p>	<p><b>Combinatorics</b></p> <p>In how many different ways can we write the word 'ONE' if we can read the letters by taking one step to the right or 1 step down?</p> <p>Ps come to BB to show the different ways. Who agrees? Who can think of another way? etc. Agree that there are 4 ways.</p> <p>BB:</p> <p>a) ONE <math>\left[ \begin{array}{cccc} \text{ONE} &amp; \text{ON} &amp; \text{O} &amp; \text{O} \\ &amp; \text{E} &amp; \text{NE} &amp; \text{N} \\ &amp; &amp; &amp; \text{E} \end{array} \right]</math> 4 different ways</p> <p>We can show them as one diagram like this. BB: <math>\begin{array}{c} \text{ONE} \\ \text{NE} \\ \text{E} \end{array}</math>                  Class checks that all the 4 possible ways are shown.</p> <p>Let's think of how many different ways we can get to each position. T points to each letter in turn and Ps say how many different ways they can get to it. T writes as numbers on BB. T circles the 'end' numbers and writes it as an addition.</p> <p>BB:</p> $\begin{array}{ccc} \text{ONE} & 1 & 1 & 1 \\ \text{NE} & & 1 & 2 \\ \text{E} & & & 1 \end{array} \quad 1 + 2 + 1 = 4$ <p>Repeat for 4-letter and 5-letter words, e.g.</p> <p>b) MORE <math>\begin{array}{cccc} \text{MORE} &amp; 1 &amp; 1 &amp; 1 &amp; 1 \\ \text{ORE} &amp; &amp; 1 &amp; 2 &amp; 3 \\ \text{RE} &amp; &amp; &amp; 1 &amp; 3 \\ \text{E} &amp; &amp; &amp; &amp; 1 \end{array} \quad 1 + 3 + 3 + 1 = 8 \text{ (different ways)}</math></p> <p>c) SUGAR <math>\begin{array}{ccccc} \text{SUGAR} &amp; 1 &amp; 1 &amp; 1 &amp; 1 &amp; 1 \\ \text{UGAR} &amp; &amp; 1 &amp; 2 &amp; 3 &amp; 4 \\ \text{GAR} &amp; &amp; &amp; 1 &amp; 3 &amp; 6 \\ \text{AR} &amp; &amp; &amp; &amp; 1 &amp; 4 \\ \text{R} &amp; &amp; &amp; &amp; &amp; 1 \end{array} \quad 1 + 4 + 6 + 4 + 1 = 16 \text{ (different ways)}</math></p> <p style="text-align: right;">9 min</p>	<p style="text-align: center;"><b>Notes</b></p> <p>Whole class activity</p> <p>Words written on BB or letters on cards stuck to BB.</p> <p>Agreement, praising</p> <p>Ps may notice the easiest way of calculation of the possible cases by themselves.</p> <p>The numbers show the number of routes to that place.</p> <p>Ps could suggest the words.</p>
<p><b>2</b></p>	<p><b>Problems</b></p> <p>Listen to the problem. Think about how you would work out the answer.</p> <p>a) <i>I divided 10 into two parts, then I divided one part by the other part. The quotient is 4. What are the two numbers?</i></p> <p>T asks several Ps what they think (or the numbers could be written on slates and shown in unison). P answering correctly explains method of solution to the others. Who did the same? Who did it a different way? etc. e.g.</p> <p>i) <i>Trial and error 1:</i> <math>10 = 7 + 3</math> but <math>7 \div 3 \neq 4</math>  <math>= 8 + 2</math> and <math>8 \div 2 = 4</math> ✓</p> <p>ii) <i>Trial and error 2:</i>                  Rule: <math>b = 4 \times a</math> <math>\begin{array}{r l} a &amp; 1 \quad 2 \quad 3 \\ b &amp; 4 \quad 8 \quad 12 \end{array}</math> Check: <math>2 + 8 = 10</math></p> <p>iii) <i>Equation:</i> <math>a + 4 \times a = 10</math>  <math>5a = 10</math>  <math>a = 2</math>                  so one number is 2 and the other is <math>10 - 2 = 8</math> (or <math>4 \times a = 8</math>)</p>	<p>Whole class activity (or individual trial first if Ps wish)</p> <p>Give Ps time to think.</p> <p>Discussion. Ps come to BB or dictate what T should write.</p> <p>Reasoning, agreement, praising</p> <p>Accept all correct methods but stress most logical method using an equation.</p> <p>T shows it if no P suggests it.</p>

<h1>Y4</h1>		<p><i>Lesson Plan 1</i></p>						
<p><b>Activity</b></p>	<p>b) <i>I subtracted an even number from an odd number. Then I multiplied the difference by thirteen. Next I doubled the product. Was the result an even or an odd number?</i></p> <p>T asks several Ps what they think. Why do you think so? Who agrees? Who thinks something else? etc.</p> <p>(It must be even as any number multiplied by 2 has an even result. Only the last step (doubling) is important!)</p> <p>Ps may check it if they wish. e.g.</p> <p>BB: <math>9 - 6 = 3</math>, <math>3 \times 13 = 39</math>, <math>39 \times 2 = 78</math>, which is <u>even</u>.</p> <p style="text-align: right;"><i>18 min</i></p>	<p><b>Notes</b></p> <p>Whole class activity</p> <p>Give Ps time to think.</p> <p>Discussion, reasoning, agreement, checking, praising</p> <p>Extra praise if Ps notice this without help.</p>						
<p><b>3</b></p>	<p><b>Making 3-digit numbers</b></p> <p>a) Let's make 3-digit numbers from these number cards. BB: <span style="border: 1px solid black; padding: 2px;">3</span> <span style="border: 1px solid black; padding: 2px;">9</span> <span style="border: 1px solid black; padding: 2px;">2</span></p> <p>Let's write them in increasing order. Ps dictate to T:</p> <p>BB: <math>239 &lt; 293 &lt; 329 &lt; 392 &lt; 923 &lt; 932</math></p> <p>Agree that there are 3 possible hundreds digits, then for every hundreds digit there are 2 possible tens digits, then for every tens digit there is only one possible units digit, i.e. <math>3 \times 2 \times 1 = 6</math> possible numbers.</p> <p>b) How many 3-digit numbers can we make from 3 digits if we can use a digit more than once? What kind of diagram can we draw to help us? (<u>Tree diagram</u>) Who remember how to draw it?</p> <p>BB:</p> <div style="display: flex; justify-content: space-around; align-items: center;">  </div> <p>Agree that there are <u>27</u> possible numbers. Could we have reasoned <u>without</u> drawing the tree diagram? (We had 3 possible choices for the hundreds digit, then 3 choices for the tens digit, then 3 choices for the units digit, i.e. <math>3 \times 3 \times 3 = 27</math>.) T shows in table on BB.</p> <p>Who can think of questions to ask about these numbers? e.g.</p> <ul style="list-style-type: none"> <li>• How many are even (odd)? (9, 18)</li> <li>• What fraction of them are even (odd)? (1 third, 2 thirds)</li> <li>• How many have all 3 digits the same? (3) Discuss place value and real value. e.g. <math>222 = 200 + 20 + 2</math></li> <li>• How many are divisible by 3 (4)? (8, 6)</li> </ul> <p style="text-align: right;"><i>24 min</i></p>	<p>Whole class activity</p> <p>Number cards stuck on BB (Ps could have the number cards on desk too.)</p> <p>Reasoning, agreement, praising</p> <p>Ps suggest strategy and draw it on BB and in <i>Ex. Bks.</i> with T's help if necessary.</p> <p>At a good pace</p> <p>Reasoning, agreement, praising</p> <p>BB: <table style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="border-right: 1px solid black; padding: 0 5px;">H</td> <td style="border-right: 1px solid black; padding: 0 5px;">T</td> <td style="padding: 0 5px;">U</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 0 5px;"><math>3 \times</math></td> <td style="border-right: 1px solid black; padding: 0 5px;"><math>3 \times</math></td> <td style="padding: 0 5px;"><math>3</math></td> </tr> </table></p> <p>T gives hints if Ps cannot think of any.</p> <p>Praise all contributions.</p> <p>Extra praise for clever questions.</p>	H	T	U	$3 \times$	$3 \times$	$3$
H	T	U						
$3 \times$	$3 \times$	$3$						
<p><b>4</b></p>	<p><b>PbY4a, page 1</b></p> <p>Q.1 Read: <i>Write the numbers in the place value table.</i></p> <p>Review at BB with whole class. Ps come out to write in the numbers, explaining reasoning. Who made a mistake? What kind of mistake? Deal with all cases.</p> <p>Lets read the numbers in increasing (decreasing) order.</p> <p style="text-align: right;"><i>29 min</i></p>	<p>Individual work, monitored (helped)</p> <p>Use enlarged copy master/OHP</p> <p>Agreement, self-correction, praising</p> <p>In unison, at speed</p> <p>Feedback for T</p>						

<h1>Y4</h1>		<p><i>Lesson Plan 1</i></p>																																																
<p><b>Activity</b></p> <p><b>5</b></p>	<p><i>PbY4a, page 1</i></p> <p>Q.2 Read: <i>Write these numbers as digits and list them in increasing order.</i></p> <p>T could choose a P to read each number aloud and Ps could write as digits above the words. Then Ps list in order.</p> <p>Review at BB with whole class. Ps dictate what T should write. Mistakes discussed and corrected</p> <p>BB: 98 &lt; 560 &lt; 605 &lt; 777 &lt; 1418</p> <p><b>Extension</b></p> <p>Let's round the numbers to the nearest hundred (ten). T points to each number in turn and Ps say the rounded value.</p> <p style="text-align: right;"><i>34 min</i></p>	<p><b>Notes</b></p> <p>Individual work, monitored, helped</p> <p>Agreement, self-correction, praising</p> <p>Ps chosen at random. At speed. Class points out errors.</p>																																																
<p><b>6</b></p>	<p><i>PbY4a, page 1</i></p> <p>Q.3 Read: <i>Write these numbers in the correct sets.</i></p> <p>Deal with one part at a time. Set a time limit. Review at BB with whole class. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>{6, 10, 54, 109, 468, 893, 1000, 1302, 1517, 1999}</p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <p>a)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>6</td><td>1000</td><td>109</td></tr> <tr><td>10</td><td>1302</td><td>893</td></tr> <tr><td>54</td><td></td><td>1517</td></tr> <tr><td>468</td><td></td><td>1999</td></tr> </table> <p style="text-align: center;"><i>Even numbers Odd numbers</i></p> </div> <div style="width: 50%;"> <p>b)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1000</td><td>6</td><td>109</td></tr> <tr><td>1302</td><td>10</td><td>468</td></tr> <tr><td>1517</td><td>54</td><td>893</td></tr> <tr><td>1999</td><td></td><td></td></tr> </table> <p style="text-align: center;"><i>4-digits Not 4-digits</i></p> </div> <div style="width: 50%;"> <p>c)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>10</td><td>1999</td><td>6</td></tr> <tr><td>1000</td><td>109</td><td>54</td></tr> <tr><td>1302</td><td></td><td>468</td></tr> <tr><td>1517</td><td></td><td>893</td></tr> </table> <p style="text-align: center;"><i>Has the digit 1 Has no digit 1</i></p> </div> <div style="width: 50%;"> <p>d)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>6</td><td>468</td><td>1302</td></tr> <tr><td>10</td><td>893</td><td>1517</td></tr> <tr><td>54</td><td></td><td>1999</td></tr> <tr><td>109</td><td>1000</td><td></td></tr> </table> <p style="text-align: center;"><i>Not greater than 1000 Greater than 1000</i></p> </div> </div> <p style="text-align: right;"><i>40 min</i></p>	6	1000	109	10	1302	893	54		1517	468		1999	1000	6	109	1302	10	468	1517	54	893	1999			10	1999	6	1000	109	54	1302		468	1517		893	6	468	1302	10	893	1517	54		1999	109	1000		<p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, agreement, self-correction</p> <p>Praising only for numbers beyond 1000.</p>
6	1000	109																																																
10	1302	893																																																
54		1517																																																
468		1999																																																
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<p><b>7</b></p>	<p><i>PbY4a, page 1, Q.4</i></p> <p>Read: <i>Study the numbers. Are the statements true or false? Write T or F in each box.</i></p> <p>T chooses a P to read statement aloud. Is it true or false? Show me . . . now! (on slates or scrap paper)</p> <p>a) There is at least one number which is odd. (T)</p> <p>b) All the numbers are even. (F)</p> <p>c) None of the numbers is more than 1500. (T)</p> <p>d) There are no whole tens. (F)</p> <p>e) Not every number is odd. (T)</p> <p>Who can think of another statement which means the same as (i.e. is <u>equivalent</u> to) this one? T points to each in turn. Ps suggest statements. Class decides whether it is equivalent.</p> <p>e.g. a) There is at least one number which is odd. (Not every number is even.)</p> <p style="text-align: right;"><i>45 min</i></p>	<p>Whole class activity (or individual work if Ps wish)</p> <p>In unison. Ps give reasons for their answers.</p> <p>(e.g. 23 is odd) (e.g. 23 is not even) (the largest, 1499 &lt; 1500) (e.g. 1240 is a whole ten) (e.g. 802 is even)</p> <p>BB: <u>equivalent</u> (means the same)</p> <p>N.B. 0 is even and can be thought of as no whole ten.</p>																																																



<b>Y4</b>		<i>Lesson Plan 2</i>
<b>Activity</b> <b>5</b>	<p><b>Sum of digits is 2</b></p> <p>In your <i>Ex. Bks.</i> write all the numbers up to 1000 which have 2 as the sum of their digits. Ps dictate their numbers and T writes them on BB.</p> <p>BB: 2, 11, 20, 101, 110, 200 Are there any more? (No)</p> <p>Now write all the numbers from 1000 to 2000 which have 2 as the sum of their digits. Ps dictate their numbers and T writes them on BB.</p> <p>BB: 1001, 1010, 1100, 2000</p> <p style="text-align: right;">27 min</p>	<p><b>Notes</b></p> <p>Individual trial in <i>Ex. Bks</i> first then whole class review.</p> <p>Ps correct wrong numbers or add those missed.</p> <p>Agreement, praising</p> <p>Or done as a whole class activity. Agreement, praising</p>
<b>6</b>  <b>Extension</b>	<p><b>PbY4a, page 2</b></p> <p>Q.3 Read: Write the whole numbers up to 1000 which have the sum of their digits as 3.</p> <p>Review at BB with whole class. Ps dictate numbers or come to BB. Class agrees/disagrees. Mistakes discussed/corrected.</p> <p>BB: 3, 12, 21, 30, 102, 111, 120, 201, 210, 300</p> <p>Repeat for 1000 to 2000: 1002, 1011, 1020, 1101, 1110, 1200</p> <p style="text-align: right;">32 min</p>	<p>Individual work, monitored</p> <p>Ps correct wrong numbers or add those missed.</p> <p>Agreement, praising</p> <p>Whole class activity, with Ps dictating numbers to T to write on BB.</p>
<b>7</b>	<p><b>Equal values</b></p> <p>Study these numbers. Let's join up the equal values.</p> <p>Ps come to BB to draw joining lines and to explain reasoning.</p> <p>Class points out errors.</p> <div style="text-align: center;"> </div> <p>Quick revision of Roman numerals. Let's see what you remember! (I = 1, V = 5, X = 10, L = 50, C = 100, D = 500, M = thousand; VI = V + 1 = 6; IV = V - 1 = 4, etc.)</p> <p>a) T writes Roman numbers on BB and Ps say them as Arabic numbers. (e.g. LVII, CCXXXI, XLIX, etc.)</p> <p>b) T (or P) says Arabic numbers and Ps write them as Roman numerals. (e.g. 79, 458, 950, 1555, etc.)</p> <p style="text-align: right;">36 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>Agreement, praising</p> <p>Discussion. Involve several Ps. Allow Ps to tell class what they know.</p> <p>T chooses Ps at random. Class points out errors.</p> <p>At a good pace</p> <p>Agreement, praising</p>
<b>8</b>	<p><b>PbY4a, page 2</b></p> <p>Q.4 Read: Write the Roman numerals as Arabic numbers.</p> <p>Set a time limit. Review at BB with whole class. Ps come to BB to fill in numbers, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected. Details shown on BB if problems.</p> <p><i>Solution:</i></p> <p>a) CV = <u>105</u>                      b) CXXXIX = <u>139</u></p> <p>c) CXLVIII = <u>148</u>                d) DCLX = <u>660</u></p> <p>e) CMIX = 909                      f) MCMXCVIII = 1998</p> <p>(Or done as a whole class activity if Ps are still unsure.)</p> <p style="text-align: right;">40 min</p>	<p>Individual work, monitored, helped</p> <p>Differentiation by time limit</p> <p>T has BB or SB or OHT already prepared</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Details: e.g.</p> <p>DCLX = 500 + 100 + 50 + 10 = 600 + 60 = 660</p> <p>CMIX = 1000 - 100 + 10 - 1 = 900 + 9 = 909</p>

<b>Y4</b>		<i>Lesson Plan 2</i>
<p><b>Activity</b></p> <p><b>9</b></p> <p><b>Extension</b></p>	<p><i>PBY3a, page 2</i></p> <p>Q.5 Read: <i>Write the numbers which have:</i></p> <p>a) <i>an even digit as their hundreds digit and 500 as their nearest ten.</i></p> <p>b) <i>an odd digit as their hundreds digit and 500 as their nearest ten.</i></p> <p>c) <i>the smallest even digit as their tens digit and 1010 as their nearest ten.</i></p> <p>Deal with one part at a time. Ps write numbers in <i>Pbs</i>. Review at BB with whole class. <b>A</b>, what numbers did you write? Who agrees? Who thinks another number? Let's check them! Mistakes corrected and omissions added.</p> <p><i>Solution:</i></p> <p>a) 495, 496, 497, 498, 499</p> <p>b) 500, 501, 502, 503, 504</p> <p>c) 1005, 1006, 1007, 1008, 1009</p> <p>Who could write the solution to each part as an inequality?</p> <p style="text-align: right;"><i>45 min</i></p>	<p><b>Notes</b></p> <p>Individual trial first, monitored, helped (or whole class activity if time is short)</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>In part c) agree beforehand that 0 is the smallest even digit.</p> <p>e.g. a) <math>495 \leq n &lt; 500</math> Agreement, praising</p>

<b>Y4</b>	R: Mental calculation C: <b>Numbers up to 1000. Comparison. Rounding. Sequences</b> E: <i>Numbers up to 2000</i>	<i>Lesson Plan</i> <b>3</b>
<i>Activity</i>		<i>Notes</i>
<b>1</b>	<p><b>Numbers with digit 1</b></p> <p>Let's list the numbers which have 1 as one of their digits. Let's list them in increasing order. Ps dictate numbers to T who writes on BB.</p> <p>BB: 1, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 31, 41, 51, 61, 71, 81, 91, 100, 101, 102, 103, ...</p> <p>Extra praise when Ps realise that all numbers with 1 in the units, tens, hundreds and/or thousands columns will be included!</p> <p style="text-align: right;"><i>5 min</i></p>	<p>Whole class activity</p> <p>At speed round class</p> <p>Agreement, praising</p> <p>T decides when to stop!</p> <p>Discussion on general case.</p>
<b>2</b>	<p><b>Sequences</b></p> <p>T says first few terms of a sequence and Ps continue it. What is the rule?</p> <p>a) 777, 766, 755, (744, 733, 722, 711, 700, 689, 678, 667, ...)        [ <i>Rule: - 11</i> ]</p> <p>b) 32, 182, 332, (482, 632, 782, 932, 1082, ... ) [ <i>Rule: + 150</i> ]</p> <p>c) 1, 3, 7, 15, 31, (63, 127, 255, 511, 1023, 2047, ... )        [ <i>Rule: 2 times the previous term plus 1</i> ]</p> <p>(For T only: <math>a_{n+1} = a_n \times 2 + 1</math>)</p> <p style="text-align: right;"><i>12 min</i></p>	<p>Whole class activity</p> <p>At speed round class</p> <p>If a P makes a mistake, next P corrects it.</p> <p>Discussion/agreement on the rule.</p> <p>Ps can write terms in their <i>Ex. Bks.</i> if they cannot keep them in mind.</p> <p>Praising, encouragement only</p>
<b>3</b>	<p><b>PbY4a, page 3</b></p> <p>Q.1 Read: <i>The rule for the next term in the sequence is: 3 times the previous term plus 2.</i></p> <p>a) <i>Write the first six terms of the sequence if the first term is 2.</i></p> <p>b) <i>Write the first six terms of the sequence if the first term is 3.</i></p> <p>Set a time limit. Ps can do calculations in <i>Ex. Bks</i> if necessary.</p> <p>Review at BB with whole class. Ps come to BB or dictate terms to T. Class agrees/disagrees. Mistakes corrected.</p> <p><i>Solution:</i></p> <p>a) 2, 8, 26, 80, 242, 728 (All terms are even numbers)</p> <p>b) 3, 11, 35, 107, 322, 971 (All terms are odd)</p> <p style="text-align: right;"><i>18 min</i></p>	<p>Individual work, monitored, helped</p> <p>Differentiation by time limit</p> <p>Or if class is less able, deal with one part at a time.</p> <p>Discussion, agreement, self-correction, praising</p> <p>Details of calculations written on BB if problems, e.g.</p> $242 \times 3 = 600 + 120 + 6 = 726$ <p>What do you notice about the terms in each sequence?</p>
<b>4</b>	<p><b>Which digits?</b></p> <p>T writes a string of digits on BB. Which 3 digits would you cross out so that the remaining digits make as great a number as possible without changing the order?</p> <p>Ps can try it in <i>Ex. Bks</i> first if they wish. <b>X</b>, come and show us which digits you think should be crossed out. What number is left? Class reads it in unison. Who agrees with <b>X</b>? Who thinks something else? etc. Repeat for other strings of digits. e.g.</p> <p>BB: a) 987987 → <del>987</del>987 → 998 (Smallest: 787)</p> <p>b) 454532 → <del>454</del>532 → 553 432</p> <p>c) 1100345 → <del>1100</del>345 → 1345 1003)</p> <p><b>Extension</b> Which digits would you cross out if you wanted to make the smallest number possible?</p> <p style="text-align: right;"><i>25 min</i></p>	<p>Whole class activity</p> <p>T could demonstrate on BB first if Ps do not understand what to do.</p> <p>Reasoning, agreement, praising</p> <p>Ps could dictate strings of digits too!</p> <p>Agreement, praising</p>



# Y4

## Lesson Plan 3

### Activity

5

*PbY4a, page 3*

Q.2 Read: *Complete the tables.*

Do first 2 lines of each table with whole class first if necessary (or deal with one part at a time). Set a time limit.

Review at BB with whole class. Ps come to BB or dictate to T. Mistakes discussed and corrected. If problems, show on relevant part of number line (drawn on BB).

*Solution:*

Number	Next 10		Rounded to nearest 10
	smaller	greater	
3	0	10	0
27	20	30	30
86	80	90	90
105	100	110	110
341	340	350	340
450	440	460	450
500	490	510	500
996	990	1000	1000

Number	Next 100		Rounded to nearest 100
	smaller	greater	
3	0	100	0
27	0	100	0
86	0	100	100
105	100	200	100
341	300	400	300
450	400	500	500
500	400	600	500
996	900	1000	1000

35 min

### Notes

Individual work, monitored (helped)

Tables drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

Agree that:

5 is rounded up to nearest 10

50 is rounded up to nearest 100

Feedback for T

6

*PbY4a, page 3*

Q.3 Read: *Mark the numbers with a dot and a letter on a suitable number line.*

Talk about each number line first. Elicit what the 'ticks' mean.  
 (e.g. *top number line:* 200 to 300, small tick at every 1;  
*middle number line:* 400 to 500, small tick at every 5;  
*bottom number line:* 600 to 1600, tick at every 100)

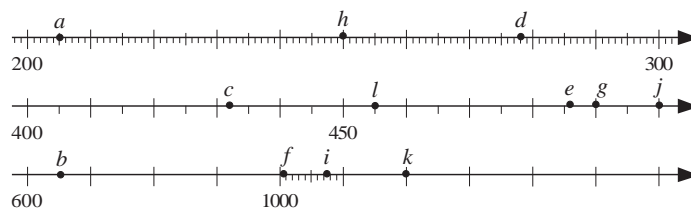
Make sure that Ps know to write only the letter above each dot and that some dots need only be approximate. Set a time limit.

Review at BB with whole class. Ps come to BB to draw dots and write letters, explaining reasoning. Class agrees/disagrees.

Who made a mistake? What was your mistake? Who did the same? etc. Mistakes corrected.

*Solution:*

a = 205    b = 640    c = 432    d = 278    e = 486    f = 1005  
 g = 490    h = 250    i = 1075    j = 500    k = 1200    l = 455



40 min

Individual work, monitored, helped (or whole class activity if Ps prefer)

Drawn on BB or use enlarged copy master or OHP

Discussion on distance between 'ticks' on the number lines

Do *a* and *b* with whole class first if Ps are unsure.

Differentiation by time limit

At a good pace

Reasoning, agreement, self-correcting, praising


#### Extension

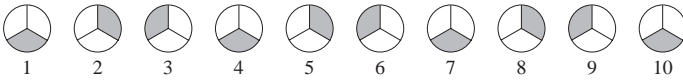

- T (or P) points to a tick on a number line and Ps say the number.
- T (or P) says a number and chooses a P to point to its position on a suitable number line.

In good humour!



<b>Y4</b>		<i>Lesson Plan 3</i>									
<b>Activity</b> <b>7</b>	<p><b>PbY4a, page 3, Q.4</b></p> <p>Read: <i>Write the numbers in the set diagram.</i></p> <p>Elicit that 'divisible by 5' means that there is no remainder when that number is divided by 5. Let's see how quickly we can do this!</p> <p>Ps come to BB to choose a number, cross it off the list and write it in correct set, explaining reasoning. Class agrees/disagrees.</p> <p><i>Solution:</i></p> <table border="1"> <thead> <tr> <th>The number is</th> <th>even</th> <th>odd</th> </tr> </thead> <tbody> <tr> <td>divisible by 5</td> <td>100 60 900 1000 0 1780</td> <td>5 1215 1605</td> </tr> <tr> <td>not divisible by 5</td> <td>352 834 78</td> <td>909 217 13</td> </tr> </tbody> </table> <p>T (P) points to each set in turn and Ps think of other numbers which could belong in that set.</p> <p style="text-align: right;"><i>45 min</i></p>	The number is	even	odd	divisible by 5	100 60 900 1000 0 1780	5 1215 1605	not divisible by 5	352 834 78	909 217 13	<p><b>Notes</b></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, correcting, praising</p> <p>Ps can write numbers in table in <i>Pbs</i> too.</p> <p>(Or individual work if Ps prefer, reviewed at BB with whole class)</p> <p>In good humour! Praising only!</p>
The number is	even	odd									
divisible by 5	100 60 900 1000 0 1780	5 1215 1605									
not divisible by 5	352 834 78	909 217 13									

<b>Y4</b>	<p>R: Calculation</p> <p>C: <b>Numbers up to 1000</b></p> <p>E: <i>Numbers up to 2000</i></p>	<i>Lesson Plan</i> <b>4</b>
<b>Activity</b> <b>1</b>	<p><b>Reading and marking numbers</b></p> <p>T has numbers written as words on BB or SB or OHT. T chooses a P to read each number, then to come to BB to write it as digits and mark its position on the number line. Class agrees/disagrees.</p> <p>BB: e.g. forty five, one hundred and fifty, four hundred and eighty, three hundred and twenty, eight hundred and five, seven hundred and ninety, one thousand and ten, etc.</p>  <p style="text-align: center;">5 min</p>	<b>Notes</b>
<b>2</b>	<p><b>Divisibility by 5</b></p> <p>a) Let's list the 3-digit numbers which have 5 as the <u>sum</u> of their digits. First let's think of the possible 3-term additions. T writes on BB what Ps suggest. (e.g. BB: <math>1 + 4 + 0 = 5</math>, <math>1 + 3 + 1 = 5</math>, <math>1 + 2 + 2 = 5</math>, <math>2 + 3 + 0 = 5</math>, <math>5 + 0 + 0 = 5</math>)</p> <p>Now we can think of the possible numbers more easily. T writes on BB what Ps suggest.</p> <p>BB: 104, 140, 401, 410; 113, 131, 311; 122, 212, 221; 203, 230, 302, 320; 500</p> <p>Which of them are even numbers? Which of them are divisible by 5? Agree that any number which has 0 in the units column is divisible by 5.</p> <p>b) Lets list the 3-digit numbers which have 5 as the <u>product</u> of their digits. First let's think of the possible multiplications.</p> <p>What are the factors of 5? (only 1 and 5) T tells or elicits that numbers which have only 1 and the number itself as factors are called <u>prime numbers</u>. (BB)</p> <p>Elicit that the only possible multiplication is <math>1 \times 5 \times 1</math> and that the order does not matter in multiplication.</p> <p>What 3-digit numbers have only 1, 1 and 5 as digits? Ps come to BB to write them. Class agrees/ disagrees. BB: 115, 151, 511</p> <p>Which of them are divisible by 5? (115) Agree that all numbers which have either 5 or 0 in the units column are divisible by 5.</p> <p style="text-align: center;">10 min</p>	<p>Whole class activity</p> <p>Discussion on strategy</p> <p>Involve several Ps.</p> <p>Elicit that order in addition does not matter.</p> <p>Agreement, praising</p> <p>Elicit that none of the odd numbers are divisible by 5.</p> <p>Discussion on strategy</p> <p>Some Ps might remember this from previous years.</p> <p>BB: <u>Prime number</u></p> <p>factors: only 1 and itself</p> <p>Discussion, agreement, praising</p>

<h1>Y4</h1>		<p><i>Lesson Plan 4</i></p>
<p><b>Activity</b></p> <p><b>3</b></p>	<p><b>PbY4a, page 4</b></p> <p>Q.1 Read: <i>Continue the pattern. Colour the correct part of the circles in the flow chart.</i></p> <p>Ps continue the pattern first, then try to understand what the flow diagram means. T explains ordinal numbers if necessary.</p> <p>Review at BB with whole class. Who can explain the flow chart to us? Who knows how to colour the circles? Who agrees? Who thinks something else?</p> <p>T leads the whole class through the flow chart, explaining clearly and relating to the 3 types of numbers.</p> <p><i>Solution:</i></p>  <pre> graph TD     Start([Start]) --&gt; Input[/Input ordinal number/]     Input --&gt; Divide[Divide it by 3]     Divide --&gt; Rem1{Is there a remainder?}     Rem1 -- NO --&gt; Rem2{Is the remainder 1?}     Rem1 -- YES --&gt; Rem2     Rem2 -- YES --&gt; Circle1[Circle with 1 sector shaded]     Rem2 -- NO --&gt; Circle2[Circle with 2 sectors shaded]     Circle1 --&gt; End([End])     Circle2 --&gt; End     </pre> <p style="text-align: right;"><i>16 min</i></p>	<p><b>Notes</b></p> <p>Individual work, monitored (or whole class activity)</p> <p>Drawn on BB or use enlarged copy master or OHP (position in an order)</p> <p>Discussion, agreement, checking, self-correction, praising</p> <p>Demonstration of, e.g. 15, 22, 29</p> <p>T says a number and Ps come to BB to show how its circle would be shaded.</p> <p>e.g. What would the 413th shape be?</p> $413 = 300 + 90 + 21 + \textcircled{2}$ <p style="text-align: center;">✓   ✓   ✓</p> <p>so shape would be </p>
<p><b>4</b></p>	<p><b>Roman numerals</b></p> <p>Who can write these Roman numerals as Arabic numbers?</p> <p>Ps come to BB to write numbers, explaining reasoning in detail. Class agrees/disagrees. Revise Roman numerals if necessary.</p> <p>BB: CCL = (250)   CCLXXXI = (281)   CCCLXIV = (364)          CDVI = (406)   DCCLIII = (753)</p> <p style="text-align: right;"><i>20 min</i></p>	<p>Whole class activity</p> <p>Written on BB or SB or OHT</p> <p>At a good pace</p> <p>Details: e.g.  <math>CDVI = 500 - 100 + 5 + 1 = 400 + 6 = \underline{406}</math></p> <p>Agreement, praising</p>
<p><b>5</b></p>	<p><b>PbY4a, page 4</b></p> <p>Q.2 Read: <i>Continue the sequences using Roman numerals.</i></p> <p>Set a time limit. Review at BB with whole class. Ps come to BB to write their sequence, explaining reasoning and rule.</p> <p>Who agrees? Who thinks something else? etc. All mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) XLVII, LXVII, LXXXVII, (CVII, CXXVII, CXLVII, 47, 67, 87, 107, 127, 147, CLXVII, CLXXXVII, CCVII, ...) [Rule: + 20]          167, 187, 207</p> <p>b) CMI, DCCCI, DCCI, (DCI, DI, CDI, CCCI, CCI, 901, 801, 701, 601, 501, 401, 301, 201, CI, I) [Rule: - 100]          101, 1</p> <p style="text-align: right;"><i>25 min</i></p>	<p>Individual work, monitored, helped</p> <p>Differentiation by time limit</p> <p>Discussion on the rule, reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p>



<h1>Y4</h1>		<p><i>Lesson Plan 4</i></p>
<p><b>Activity</b></p> <p>9</p>	<p>(Continued)</p> <p>We could show the table in a different way using a <u>Venn diagram</u>.</p> <p>BB:</p> <p>A: 3-digit numbers C: Even numbers</p> <p>T explains that <u>Natural numbers</u> are all the positive, whole numbers (1, 2, 3, 4, 5, . . .)</p> <p>Who can explain where the different parts of the table are in the Venn diagram? What do A and C mean? Where are the numbers in D shown? Where would we put the 9 extra numbers? etc.</p> <p style="text-align: right;">45 min</p>	<p><b>Notes</b></p> <p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>(If class is very able, construct the Venn diagram from scratch with Ps' help.)</p> <p><b>Bold</b> numbers are added.</p> <p>e.g. 0, -6, 1 quarter, 3 and a half are <u>not</u> Natural numbers</p> <p>Ps come to BB to explain, point and write.</p> <p>Discussion, agreement, praising</p>

<b>Y4</b>		<i>Lesson Plan</i> <b>5</b>
<i>Activity</i>	Calculation practice, revision, activities, consolidation <i>PbY4a, page 5</i>	<i>Notes</i>

<h1>Y4</h1>	<p>R: Calculation  <b>C: Operations with numbers up to 1000. Addition, subtraction</b>                  E: Numbers up to 2000</p>	<h2>Lesson Plan</h2> <h1>6</h1>																																																																																												
<p><b>Activity</b></p> <p><b>1</b></p>	<p><b>Mental practice</b></p> <p>T says an addition, P says sum. If a P makes a mistake, the next P must correct it. e.g.                  20 + 90 (= 110), 31 + 50 (= 81), 150 + 400 (= 550), 7 + 16 (= 23), 45 + 47 (= 92), 132 + 68 (= 200), 435 + 435 (= 870), etc.</p> <p style="text-align: right;">5 min</p>	<p><b>Notes</b></p> <p>Whole class activity                  In order round class                  At speed                  Ps can think of additions too!                  Praising</p>																																																																																												
<p><b>2</b></p>	<p><b>Money models</b></p> <p>a) Let's calculate how much money these two people have altogether.</p> <p>Ps come to BB to write amounts in the place value table, explaining reasoning. Class agrees/disagrees.</p> <p>What should we do before we start the calculation? (Estimate)</p> <p>Ps estimate the total mentally and come to BB to do the calculation, explaining reasoning in detail. Class agrees/disagrees.</p> <p>BB:</p> <p>Finlay: <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>100</td><td>100</td><td>10</td><td>10</td></tr><tr><td>100</td><td>100</td><td>10</td><td></td></tr></table> <math>\text{\textcircled{1}} \text{\textcircled{1}} \text{\textcircled{1}}</math> <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>H</td><td>T</td><td>U</td></tr><tr><td>4</td><td>3</td><td>6</td></tr></table></p> <p>Glen: <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>100</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>100</td><td>100</td><td>10</td><td>10</td><td>10</td></tr></table> <math>\text{\textcircled{1}} \text{\textcircled{1}} \text{\textcircled{1}}</math> + <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>H</td><td>T</td><td>U</td></tr><tr><td>3</td><td>8</td><td>7</td></tr><tr><td>8</td><td>2</td><td>3</td></tr><tr><td>1</td><td>1</td><td></td></tr></table></p> <p>E: <math>440 + 390 = 830</math></p> <p>Horizontal methods: <math>436 + 387 = 700 + 110 + 13 = 823</math>                  or <math>436 + 387 = 736 + 87 = 816 + 7 = 823</math></p> <p>b) Let's calculate how much money Helen had left after she had been shopping.</p> <p>Ps come to BB to write amounts in the place value table, explaining reasoning. Class agrees/disagrees.</p> <p>What should we do before we start the calculation? (Estimate)</p> <p>Ps estimate the total mentally and come to BB to do the calculation, explaining reasoning in detail. Class agrees/disagrees.</p> <p>BB:</p> <p>Had: <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>100</td><td>100</td></tr><tr><td>100</td><td>100</td></tr><tr><td>100</td><td>100</td></tr><tr><td>10</td><td>10</td></tr><tr><td>10</td><td>10</td></tr></table> <math>\text{\textcircled{1}}</math> <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>H</td><td>T</td><td>U</td></tr><tr><td>8</td><td><sup>10</sup>4</td><td><sup>10</sup>3</td></tr></table></p> <p>Spent: <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>100</td><td>100</td><td>10</td><td>10</td><td>10</td></tr><tr><td>100</td><td>100</td><td>100</td><td>10</td><td>10</td></tr></table> <math>\text{\textcircled{1}} \text{\textcircled{1}}</math> - <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>5</td><td>5</td><td>5</td></tr><tr><td>2</td><td>8</td><td>8</td></tr></table></p> <p>E: <math>840 - 560 = 280</math></p> <p>Horizontal method: <math>843 - 555 = 700 + 130 + 13 - 555</math>                  e.g. <math>= 700 - 500 + 130 - 50 + 13 - 5</math>  <math>= 200 + 80 + 8 = 288</math></p> <p>or mentally: <math>843 - 555 = 843 - 543 - 12 = 300 - 12 = 288</math></p> <p style="text-align: right;">13 min</p>	100	100	10	10	100	100	10		H	T	U	4	3	6	100	10	10	10	10	100	100	10	10	10	H	T	U	3	8	7	8	2	3	1	1		100	100	100	100	100	100	10	10	10	10	H	T	U	8	<sup>10</sup> 4	<sup>10</sup> 3	100	100	10	10	10	100	100	100	10	10	5	5	5	2	8	8	<p>Whole class activity                  Drawn or stuck on BB or use enlarged copy master or OHP</p> <p>(Or T could have 2 purses already prepared and ask 2 Ps to come to front of class, open their purse and stick model money on BB. Names on BB would then be the Ps' names.)</p> <p>Details: e.g.  <math>6U + 7U = 13U = 1T + 3U</math>  <math>3T + 8T + 1T = 12T = 1H + 2T</math>  <math>4H + 3H + 1H = 8H</math></p> <p>Revision of mental and written procedures</p> <p>Whole class activity                  Drawn or stuck on BB or use enlarged copy master or OHP</p> <p>(Or use name of a P in class)</p> <p>Accept any correct reasoning e.g. adding same amount to reductant and subtrahend, as in main diagram, or changing 1H to 10T and 1T to 10U:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>H</td><td>T</td><td>U</td></tr> <tr><td>7<sup>8</sup></td><td><sup>10</sup>3<sup>4</sup></td><td><sup>10</sup>3</td></tr> <tr><td>-</td><td>5</td><td>5</td></tr> <tr><td></td><td>2</td><td>8</td></tr> </table> <p>or</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>H</td><td>T</td><td>U</td></tr> <tr><td>7</td><td>13</td><td>13</td></tr> <tr><td>-</td><td>5</td><td>5</td></tr> <tr><td></td><td>2</td><td>8</td></tr> </table> <p>T stresses preferred method.</p>	H	T	U	7 <sup>8</sup>	<sup>10</sup> 3 <sup>4</sup>	<sup>10</sup> 3	-	5	5		2	8	H	T	U	7	13	13	-	5	5		2	8
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# Y4

## Lesson Plan 6

### Activity

3

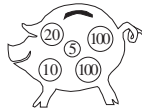
#### Problems

Listen carefully, write the data and do the calculations in your *Ex. Bks.* Show me the answer when I say.

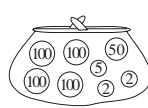
Ps who respond correctly come to BB to explain reasoning. Who agrees? Who did it another way? Who made a mistake? What kind of mistake? etc.

- a) *Gina has £2.35 in her piggy bank and £4.59 in her purse. How much money does she have altogether?*

BB:



$$£2.35 = 235 \text{ p}$$



$$£4.59 = 459 \text{ p}$$

H	T	U
2	3	5
4	5	9
6	9	4
1		

Answer: Gina has £6.94 altogether.

- b) *How much money would Gina have if her father were to put another £2.00 in her piggy bank?*  
Show me . . . now! (£8.94)
- c) *How much money would Gina have if she took £3.00 from her purse and spent it?*  
Show me . . . now! (£3.94)
- d) *How much money would Gina have if she took £4.00 out of her purse and put it in her piggy bank?*  
Show me . . . now! (£6.94)

21 min

### Notes

Individual work in *Ex. Bks* but class kept together, then whole class review

Give Ps time to think and do calculations, then responses shown in unison.

Drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

BB: 694 p = £6.94

BB: £6.94 + £2.00 = £8.94  
(or £4.35 + £4.59 = £8.94)

BB: £6.94 – £3.00 = £3.94  
(or £2.35 + £1.59 = £3.94)

There would be no change, as she only moved money from one place to the other.

4

#### PbY4a, page 6

Q.1 Read: *Write your estimation in detail. Calculate the exact sum.*  
Deal with one part at a time. Review at BB with whole class.  
Ps give details of calculation. Mistakes discussed and corrected.  
*Solution:*

a) **263 + 526**

E: 300 + 500 = 800, or 260 + 530 = 790

C:

2	6	3
+	5	2
	8	9

b) **354 + 419**

E: 400 + 400 = 800, or 350 + 420 = 770

C:

3	5	4
+	4	1
	7	7
1		

c) **475 + 53 + 419**

E: 500 + 100 + 400 = 1000,  
or 480 + 50 + 420 = 950

C:

4	7	5
	5	3
+	4	1
	9	4
1		

28 min

Individual work, monitored, helped

Written on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

Details: e.g.

c) 5U + 3U + 9U = 17U  
= 1T + 7U

7T + 5T + 1T + 1T  
= 14T = 1H + 4T

4H + 4H + 1H = 9H

Feedback for T

# Y4

## Lesson Plan 6

### Activity

5

**PbY4a, page 6**

Q.2 Read: *How much money do we have left? Estimate, calculate and check the result.*

How much money did we have? (£645) How can we check our calculation? (addition and subtraction) Set a time limit.

Review at BB with whole class. Ps give details of calculations. Class agrees/disagrees. Mistakes discussed and corrected.

Solution:

£645

We had: 

100	100	100	20
100	100	100	20

 $\textcircled{1}$   $\textcircled{1}$   $\textcircled{1}$     We bought: 

200	0	0	0
0	0	0	0

 $\textcircled{1}$   $\textcircled{1}$

E: 

6	5	0	-	2	3	0	=	4	2	0
---	---	---	---	---	---	---	---	---	---	---

2	0	0	0
---	---	---	---

C: 

6	4	5
-	2	3
4	1	3

    Check: 

4	1	3
+	2	3
6	4	5

6	4	5
-	4	1
2	3	2

 ✓

34 min

### Notes

Individual work, monitored, helped

Drawn (or stuck) on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

Feedback for T

6

**PbY4a, page 6**

Q.3 Read: *What is the difference between 743 and 558? Estimate, calculate and check the result.*

What kind of operation is it? (subtraction) How can we check it? (addition and subtraction)

Review at BB with whole class. Ps give details of calculations.

Who did the same? Who calculated in a different way?

Mistakes discussed and corrected.

Solution:

E: 

7	0	0	-	6	0	0	=	1	0	0
---	---	---	---	---	---	---	---	---	---	---

  
or 

7	4	0	-	5	6	0	=	1	8	0
---	---	---	---	---	---	---	---	---	---	---

C: 

7	4	3
-	5	5
1	8	5

    Check: 

1	8	5
+	5	5
7	4	3

7	4	3
-	1	8
5	5	8

Who could write it as an inequality? Who agrees? etc.

38 min

Individual work, monitored, helped

Written on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

Details: e.g.

I cannot subtract 8U from 3U, so I add 10U to reductant and 1T to subtrahend:

$$10U + 3U = 13U$$

$$13U - 8U = 5U$$

5T + 1T = 6T, but I cannot subtract 6T from 4T, so I add 10T to reductant and 1H to subtrahend, etc

$$\text{BB: } 743 > 558$$

7

**PbY4a, page 6, Q.4**

Read: *Fill in the missing numbers and write above the dotted and dashed arrows what they mean if the solid arrow means + 180 and the double arrow means - 75.*

Ps come to BB to write the operations beside the arrows and to fill in the missing numbers. Ps explaining reasoning in detail. Rest of class check that they are correct.

Solution:

If the arrows pointed in the opposite direction, what would they mean?

45 min

Whole class activity (or individual work if Ps wish)

Drawn on BB or use enlarged copy master or OHP

Involve several Ps.

At a good pace

Ps write solution in Pbs too.

Agree that both dotted and dashed arrows mean the same (+ 105) so only one arrow is necessary.

Agreement, praising

<p><b>Y4</b></p>	<p>R: Calculation                  C: <b>Operations with numbers up to 1000</b>                  E: <i>Operations with numbers up to 2000</i></p>	<p><i>Lesson Plan</i>  <b>7</b></p>									
<p><b>Activity</b>  <b>1</b></p>	<p><b>Mental practice</b>                  T says an operation, Ps say result.                  a) Addition and subtraction:                  e.g. <math>5 + 8</math>, <math>11 + 7</math>, <math>38 - 5</math>, <math>76 + 22</math>, <math>400 + 500</math>, <math>680 - 80</math>, <math>76 + 9</math>,  <math>96 - 7</math>. <math>42 + 49</math> (<math>= 42 + 40 + 9 = 82 + 9 = 91</math>),  <math>64 - 38</math> (<math>= 64 - 30 - 8 = 34 - 8 = 26</math>), etc.                  b) Multiplication and division:                  e.g. <math>3 \times 4</math>, <math>8 \times 7</math>, <math>6 \times 9</math>, <math>7 \times 6</math>, <math>5 \times 20</math>, <math>81 \div 9</math>, <math>42 \div 2</math>,  <math>250 \div 2</math>, <math>640 \div 80</math>, <math>50 \times 3</math>, <math>50 \times 30</math>, <math>34 \times 10</math>, <math>450 \div 9</math>, etc.</p> <p style="text-align: right;">6 min</p>	<p><b>Notes</b>                  Whole class activity                  At speed round class (or T chooses Ps at random)                  If a P makes a mistake, the next P corrects it.                  If problems, write details of calculation on BB.                  Reasoning, agreement, praising</p>									
<p><b>2</b></p>	<p><b>Secret number 1</b>                  I am thinking of a 2-digit number. I will give you clues and you must tell me what number I could be thinking of.                  1) <i>The difference between its digits is 3. What number could I be thinking of?</i>                  Ps write possible numbers in <i>Ex. Bks.</i> Ps dictate numbers to T.                  BB: 14, 25, 36, 47, 58, 69, 30, 41, 52, 63, 74, 85, 96                  2) <i>It is also divisible by 6. What number could it be?</i>                  Ps show possible numbers on command. BB: 30, 36 or 96                  3) <i>Also, the number in reverse order is divisible by 7.</i>                  Show me the number . . .now! (36) [63 is divisible by 7]</p> <p style="text-align: right;">10 min</p>	<p>Whole class activity                  Give Ps time to think and write.                  Agreement, praising                  Responses shown on scrap paper or slates in unison                  In unison. Praising</p>									
<p><b>3</b></p>	<p><b>Secret number 2</b>                  Think of a 1-digit number. Multiply it by 9. If you tell me the units digit of the product, I will tell you the number you first thought of.                  T asks several Ps for units digits and tells them their original number.                  e.g. P<sub>1</sub>: the units digit of my product is 3. T: your number is 7.                  P<sub>2</sub>: the units digit of my product is 8. T: your number is 2.                  Who knows how I do it? Ask several Ps what they think. Reason with reference to the 9 times table. e.g. <math>7 \times 9 = 63</math>, <math>2 \times 9 = 18</math>                  BB: 0, 9, 18, 27, 36, 45, 54, 63, 72, 81                  0 1 2 3 4 5 6 7 8 9</p> <p style="text-align: right;">15 min</p>	<p>Whole class activity                  Ps could stand up when they know how it is done.                  Let them try too before discussing strategy with the class.                  Reasoning, agreement, praising</p>									
<p><b>4</b></p>	<p><b>Problems</b>                  Listen carefully, write the data and do the calculations in your <i>Ex. Bks.</i> Show me the answer when I say. (On scrap paper or slates)                  Ps who respond correctly come to BB to explain reasoning. Who agrees? Who did it another way? Who made a mistake? What kind of mistake? etc.                  a) <i>Dan had £925 in his bank account. He bought a computer for £458. How much does he have left in his account?</i>                  BB: <math>925 - 458 = 525 - 58 = 475 - 8 = 467</math> or                  Answer: Dan has £467 left.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>9</td> <td><sup>10</sup>2</td> <td><sup>10</sup>5</td> </tr> <tr> <td>4</td> <td>5</td> <td>8</td> </tr> <tr> <td>4</td> <td>6</td> <td>7</td> </tr> </table> <p>Use this result to help you answer the following questions.</p>	9	<sup>10</sup> 2	<sup>10</sup> 5	4	5	8	4	6	7	<p>Individual work in <i>Ex. Bks</i> but class kept together, then whole class review                  Give Ps time to think and do calculations, then responses shown in unison.                  Reasoning, agreement, self-correction, praising</p>
9	<sup>10</sup> 2	<sup>10</sup> 5									
4	5	8									
4	6	7									

# Y4

## Lesson Plan 7

### Activity

4

(Continued)

b) How much money would Dan have left if he had £200 less in his account before he bought the computer?

Show me . . . now! (£267) BB:  $467 - 200 = \underline{267}$  or

c) How much money would Dan have left if he had spent £200 less?

Show me . . . now! (£667) BB:  $467 + 200 = \underline{667}$  or

d) How much money would Dan have left if he had £300 more in his account before he bought the computer?

Show me . . . now! (£767) BB:  $467 + 300 = \underline{767}$  or

e) How much money would Dan have left if he had spent £300 more?

Show me . . . now! (£167) BB:  $467 - 300 = \underline{167}$  or

f) How much money would Dan have left if he had £400 more in his account before he bought the computer and the computer cost £400 more?

Show me . . . now! (£467) BB:  $467 + 400 - 400 = \underline{467}$  or

or 'If you have £400 more but spend £400 more, the amount left stays the same.'

25 min

### Notes

BB: 
$$\begin{array}{r} 7 \ 2 \ 5 \\ - 4 \ 5 \ 8 \\ \hline 2 \ 6 \ 7 \end{array}$$

BB: 
$$\begin{array}{r} 9 \ 2 \ 5 \\ - 2 \ 5 \ 8 \\ \hline 6 \ 6 \ 7 \end{array}$$

BB: 
$$\begin{array}{r} 1 \ 2 \ 2 \ 5 \\ - 4 \ 5 \ 8 \\ \hline 7 \ 6 \ 7 \end{array}$$

BB: 
$$\begin{array}{r} 9 \ 2 \ 5 \\ - 7 \ 5 \ 8 \\ \hline 1 \ 6 \ 7 \end{array}$$

BB: 
$$\begin{array}{r} 1 \ 3 \ 2 \ 5 \\ - 8 \ 5 \ 8 \\ \hline 4 \ 6 \ 7 \end{array}$$

Extra praise if Ps deduce this without help.

5

### PbY4a, page 7

Q.1 Read: Practise addition. Estimate the sum first.

Set a time limit. Remind Ps to check their results mentally by adding in opposite direction and also by comparing with estimate.

Review at BB with whole class. Ps come to BB or dictate to T, explaining reasoning. Mistakes discussed and corrected.

Solution:

a)  $263 + 526$

E:  $\begin{array}{|c|c|c|} \hline 8 & 0 & 0 \\ \hline \end{array}$

$$\begin{array}{|c|c|c|} \hline 2 & 6 & 3 \\ + & 5 & 2 & 6 \\ \hline 7 & 8 & 9 \\ \hline \end{array}$$

b)  $493 + 174$

E:  $\begin{array}{|c|c|c|} \hline 7 & 0 & 0 \\ \hline \end{array}$

$$\begin{array}{|c|c|c|} \hline 4 & 9 & 3 \\ + & 1 & 7 & 4 \\ \hline 6 & 6 & 7 \\ \hline \end{array}$$

c)  $278 + 426$

E:  $\begin{array}{|c|c|c|} \hline 7 & 0 & 0 \\ \hline \end{array}$

$$\begin{array}{|c|c|c|} \hline 2 & 7 & 8 \\ + & 4 & 2 & 6 \\ \hline 7 & 0 & 4 \\ \hline \end{array}$$

30 min

Individual work, monitored (helped)

Written on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

### Extension

Think of a subtraction for each addition.

T chooses Ps at random. e.g.

a)  $879 - 523 = 356$

Orally at speed

6

### PbY4a, page 7

Q.2 Read: Practise subtraction. Estimate the difference first.

Check your result in two ways.

Set a time limit. Remind Ps to compare results with estimates.

Review at BB with whole class. Ps come to BB or dictate to T, explaining reasoning in detail. Mistakes discussed and corrected.

Solution:

a)  $978 - 426$

E:  $\begin{array}{|c|c|c|} \hline 6 & 0 & 0 \\ \hline \end{array}$

C: 
$$\begin{array}{|c|c|c|} \hline 9 & 7 & 8 \\ - & 4 & 2 & 6 \\ \hline 5 & 5 & 2 \\ \hline \end{array}$$

Check:

$$\begin{array}{|c|c|c|} \hline 5 & 5 & 2 \\ + & 4 & 2 & 6 \\ \hline 9 & 7 & 8 \quad \checkmark \\ \hline \end{array}$$

Check:

$$\begin{array}{|c|c|c|} \hline 9 & 7 & 8 \\ - & 4 & 2 & 6 \\ \hline 5 & 5 & 2 \\ \hline \end{array} \quad \checkmark$$

b)  $803 - 576$

E:  $\begin{array}{|c|c|c|} \hline 2 & 0 & 0 \\ \hline \end{array}$

C: 
$$\begin{array}{|c|c|c|} \hline 8 & 0 & 3 \\ - & 5 & 7 & 6 \\ \hline 2 & 2 & 7 \\ \hline \end{array}$$

Check:

$$\begin{array}{|c|c|c|} \hline 2 & 2 & 7 \\ + & 5 & 7 & 6 \\ \hline 8 & 0 & 3 \quad \checkmark \\ \hline \end{array}$$

Check:

$$\begin{array}{|c|c|c|} \hline 8 & 0 & 3 \\ - & 5 & 7 & 6 \\ \hline 2 & 2 & 7 \\ \hline \end{array} \quad \checkmark$$

35 min

Individual work, monitored, helped

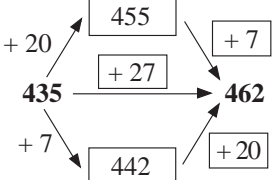
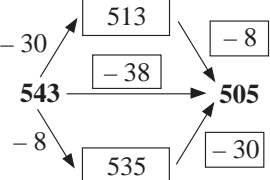
Written on BB or use enlarged copy master or OHP

Differentiation by time limit

Reasoning, agreement, self-correction, praising

T helps with spoken details of subtraction if necessary.

<b>Y4</b>		<i>Lesson Plan 7</i>																																							
<b>Activity</b>  <b>7</b>	<p><b>PbY3a, page 7</b></p> <p>Q.3 Read: <i>Complete the additions and subtractions.</i></p> <p>Set a time limit. Set simpler tasks (without crossing tens) for less able Ps if necessary. Ps check their results by doing the calculations again mentally.</p> <p>Review at BB with whole class. Ps come to BB to do calculations, explaining reasoning in detail. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) <table border="1" style="display: inline-table; margin-right: 10px;"><tr><td>6</td><td>3</td><td>8</td></tr><tr><td>+</td><td>4</td><td>3</td></tr><tr><td>1</td><td>0</td><td>7</td></tr></table> b) <table border="1" style="display: inline-table; margin-right: 10px;"><tr><td>3</td><td>4</td><td>8</td></tr><tr><td>+</td><td>2</td><td>5</td></tr><tr><td>6</td><td>0</td><td>5</td></tr></table> c) <table border="1" style="display: inline-table; margin-right: 10px;"><tr><td>9</td><td>1</td><td>5</td></tr><tr><td>-</td><td>7</td><td>4</td></tr><tr><td>1</td><td>7</td><td>3</td></tr></table> d) <table border="1" style="display: inline-table;"><tr><td>1</td><td>1</td><td>4</td><td>0</td></tr><tr><td>-</td><td>4</td><td>8</td><td>7</td></tr><tr><td></td><td>6</td><td>5</td><td>3</td></tr></table></p> <p style="text-align: right;"><i>40 min</i></p>	6	3	8	+	4	3	1	0	7	3	4	8	+	2	5	6	0	5	9	1	5	-	7	4	1	7	3	1	1	4	0	-	4	8	7		6	5	3	<p style="text-align: center;"><b>Notes</b></p> <p>Individual work, monitored, helped</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Differentiation by time limit (or by task)</p> <p>Reasoning, agreement, self-correction, praising</p> <p>T helps with details of reasoning where necessary.</p>
6	3	8																																							
+	4	3																																							
1	0	7																																							
3	4	8																																							
+	2	5																																							
6	0	5																																							
9	1	5																																							
-	7	4																																							
1	7	3																																							
1	1	4	0																																						
-	4	8	7																																						
	6	5	3																																						
<b>8</b>	<p><b>PbY3a, page 7, Q.4</b></p> <p>Read: <i>I thought of a number, then added 900.</i> <i>The result was a number less than 1000.</i></p> <p>T (or P) reads each statement, then Ps show decision on whether true or false by pre-agreed actions (e.g. hands in the air if true or knock on the desk if false) or by writing T or F (or ✓ or ✗) on scrap paper or slates.</p> <p>a) <i>The number I first thought of must be less than 100.</i> Show me . . . now! (T) (<math>100 + 900 = 1000</math>)</p> <p>b) <i>The number I first thought of must be less than 99.</i> Show me . . . now! (F) (<math>99 + 900 = 999 &lt; 1000</math>)</p> <p>c) <i>The number I first thought of could be equal to 99.</i> Show me . . . now! (T)</p> <p>d) <i>The number I first thought of cannot be more than 99.</i> Show me . . . now! (T)</p> <p>e) <i>The number I first thought of could be equal to 10.</i> Show me . . . now! (T) (<math>10 + 900 = 910 &lt; 1000</math>)</p> <p>f) <i>The number I first thought of cannot be 100.</i> Show me . . . now! (T)</p> <p style="text-align: right;"><i>45 min</i></p>	<p>Whole class activity (or individual trial first if Ps wish)</p> <p>Statements written on BB or SB or OHT (or use enlarged copy master)</p> <p>Ps decide on actions, if used.</p> <p>Responses shown in unison on command.</p> <p>Ps give examples or counter examples to support their responses (especially incorrect ones!)</p> <p>In good humour!</p> <p>Discussion, reasoning, agreement (self-correction in Pbs if done individually first)</p> <p>Praising, encouragement only</p> <p>Feedback for T</p>																																							

<h1>Y4</h1>	<p>R: Mental calculation  <b>C: Operations with numbers up to 1000</b>                  E: Numbers up to 2000</p>	<h2>Lesson Plan</h2> <h1>8</h1>																						
<p><b>Activity</b></p> <p><b>1</b></p>	<p><b>Missing numbers</b></p> <p>Study the diagrams. Let's fill in the missing numbers and signs.</p> <p>Ps come to BB to fill in a box, explaining reasoning. Class agrees/ disagrees. Calculations can be done at side of BB if necessary.</p> <p>BB: a)  b) </p> <p>[Revision of crossing tens in addition and subtraction]</p> <p style="text-align: right;">5 min</p>	<p><b>Notes</b></p> <p>Whole class activity                  Drawn on BB or use enlarged copy master or OHP                  At a good pace                  Reasoning, agreement, praising                  Calculations, e.g.</p> <p>a) <table border="1"> <tr><td>4</td><td>3</td><td>5</td></tr> <tr><td>+</td><td>2</td><td>7</td></tr> <tr><td>4</td><td>6</td><td>2</td></tr> </table>                  b) <table border="1"> <tr><td>5</td><td>4</td><td><sup>10</sup>3</td></tr> <tr><td>-</td><td>3</td><td>8</td></tr> <tr><td>5</td><td>0</td><td>5</td></tr> </table></p>	4	3	5	+	2	7	4	6	2	5	4	<sup>10</sup> 3	-	3	8	5	0	5				
4	3	5																						
+	2	7																						
4	6	2																						
5	4	<sup>10</sup> 3																						
-	3	8																						
5	0	5																						
<p><b>2</b></p>	<p><b>Competition</b></p> <p>T divides class into 2 teams (of roughly equal ability).                  T gives a number to each team (e.g. 800 and 650) I will give you 3 minutes to write your number in as many different ways as you can. Start . . . now! . . . Stop!</p> <p>Each team checks the other's descriptions. Team with most correct descriptions is the winner! If both the same, T chooses team with the most creative descriptions.</p> <p>e.g. <math>800 = 135 + 665 = 200 + 600 = 915 - 115 = 400 \times 2 = 1000 - 200 = 1600 \div 2 = 2 \times 2 \times 2 \times 10 \times 10</math>, etc.  <math>650 = 500 + 150 = 10 \times 65 = 1000 - 350 = 5 \times 130 = 1300 \div 2 = (76 - 11) \times 10 = 12 \times 50 + 200 \div 4</math>, etc.</p> <p style="text-align: right;">10 min</p>	<p>Whole class activity                  BB divided into two parts (or numbers written on SBs or large sheets of paper on different walls of classroom)</p> <p>Ps from each team come to BB one after the other.</p> <p>At speed                  Rest of team check their responses for repeats or incorrect descriptions.                  Class applauds the winner!</p>																						
<p><b>3</b></p>	<p><b>Secret number</b></p> <p>I am thinking of a number. Try to find out what it is by asking me questions about it. I can answer only yes or no and your question must be different from the previous one.</p> <p>e.g. <table border="0"> <tr><td>• Is it more than 1000?</td><td>No</td></tr> <tr><td>• Does it have 3 digits?</td><td>Yes</td></tr> <tr><td>• Is it less than 500?</td><td>No</td></tr> <tr><td>• Does it have an even digit in the hundreds column?</td><td>Yes</td></tr> <tr><td>• Is it more than 700?</td><td>Yes</td></tr> <tr><td>• Is its tens digit less than 5?</td><td>Yes</td></tr> <tr><td>• Is it less than 820?</td><td>Yes</td></tr> <tr><td>• Does it have two digits the same?</td><td>Yes</td></tr> <tr><td>• Is it more than 810?</td><td>Yes</td></tr> <tr><td>• Is it odd?</td><td>No</td></tr> <tr><td>• Is it <u>818</u>?</td><td>Yes</td></tr> </table></p> <p style="text-align: right;">15 min</p>	• Is it more than 1000?	No	• Does it have 3 digits?	Yes	• Is it less than 500?	No	• Does it have an even digit in the hundreds column?	Yes	• Is it more than 700?	Yes	• Is its tens digit less than 5?	Yes	• Is it less than 820?	Yes	• Does it have two digits the same?	Yes	• Is it more than 810?	Yes	• Is it odd?	No	• Is it <u>818</u> ?	Yes	<p>Whole class activity                  T chooses Ps at random to ask a question.</p> <p>Encourage Ps to ask logical questions and to keep in mind clues already found out from previous questions.</p> <p>Ps can make notes in <i>Ex. Bks.</i></p> <p>At a good pace                  Extra praise for clever questions</p> <p>Repeat with another number if time (or P comes to front to think of a number and to answer questions.)</p>
• Is it more than 1000?	No																							
• Does it have 3 digits?	Yes																							
• Is it less than 500?	No																							
• Does it have an even digit in the hundreds column?	Yes																							
• Is it more than 700?	Yes																							
• Is its tens digit less than 5?	Yes																							
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• Does it have two digits the same?	Yes																							
• Is it more than 810?	Yes																							
• Is it odd?	No																							
• Is it <u>818</u> ?	Yes																							



<b>Y4</b>		<i>Lesson Plan 8</i>																																
<p><b>Activity</b></p> <p><b>4</b></p>	<p><b>PBY4a, page 8</b></p> <p>Q.1 Read: <i>The sum of any two adjacent numbers is the number directly above them. Fill in the missing numbers.</i></p> <p>Set a time limit. Review at BB with whole class. Ps come to BB to fill in numbers or dictate to T, explaining reasoning. Class agrees/disagrees. Mistakes corrected.</p> <p><i>Solution:</i></p> <p>a) <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td colspan="4" style="text-align: center;">1000</td></tr> <tr><td colspan="2" style="text-align: center;">615</td><td colspan="2" style="text-align: center;">385</td></tr> <tr><td style="text-align: center;">325</td><td style="text-align: center;">290</td><td style="text-align: center;">95</td><td></td></tr> <tr><td style="text-align: center;">90</td><td style="text-align: center;">235</td><td style="text-align: center;">55</td><td style="text-align: center;">40</td></tr> </table></p> <p>b) <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td colspan="4" style="text-align: center;">2000</td></tr> <tr><td colspan="2" style="text-align: center;">600</td><td colspan="2" style="text-align: center;">1400</td></tr> <tr><td style="text-align: center;">200</td><td style="text-align: center;">400</td><td style="text-align: center;">1000</td><td></td></tr> <tr><td style="text-align: center;">0</td><td style="text-align: center;">200</td><td style="text-align: center;">200</td><td style="text-align: center;">800</td></tr> </table></p> <p style="text-align: right;">20 min</p>	1000				615		385		325	290	95		90	235	55	40	2000				600		1400		200	400	1000		0	200	200	800	<p><b>Notes</b></p> <p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Calculations done in <i>Ex. Bks</i> or on slates if necessary.</p> <p>Reasoning, agreement, self-correction, praising</p> <p>At a good pace</p> <p><b>Bold</b> numbers are given.</p>
1000																																		
615		385																																
325	290	95																																
90	235	55	40																															
2000																																		
600		1400																																
200	400	1000																																
0	200	200	800																															
<p><b>5</b></p>	<p><b>PBY4a, page 8</b></p> <p>Q.2 Read: <i>Fill in the missing numbers.</i></p> <p>Make sure Ps know that equations must be true both horizontally and vertically. Encourage Ps to calculate mentally and to check their results. Set a time limit.</p> <p>Review at BB with whole class. Ps come to BB or dictate to T, explaining reasoning. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) <math>30 + 120 + 120 = \mathbf{270}</math>    b) <math>260 - 120 + 50 = \mathbf{190}</math></p> <p><math>200 + 150 - 130 = \mathbf{220}</math>    <math>110 + 150 - 100 = \mathbf{160}</math></p> <p><math>110 + 30 + 110 = \mathbf{250}</math>    <math>30 + 230 - 40 = \mathbf{220}</math></p> <p><math>\mathbf{340} - \mathbf{240} + \mathbf{140} = \mathbf{240}</math>    <math>\mathbf{180} - \mathbf{40} + \mathbf{110} = \mathbf{250}</math></p> <p style="text-align: right;">26 min</p>	<p>Individual work, monitored, (helped)</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Differentiation by time limit</p> <p>Discussion, agreement, self-correction, praising</p> <p>Feedback for T</p>																																
<p><b>6</b></p>	<p><b>PbY4a, page 8</b></p> <p>Q.3 Read: <i>Do the additions and subtractions. Look for connections between them.</i></p> <p>Encourage Ps to do calculations mentally. Set a time limit.</p> <p>Review at BB with whole class. Ps dictate results to T or come to BB. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) <math>25 + 40 = 65</math>    <math>725 + 40 = 765</math>    <math>725 + 140 = 865</math></p> <p>b) <math>58 - 40 = 18</math>    <math>658 - 40 = 618</math>    <math>658 - 240 = 418</math></p> <p>c) <math>60 + 17 = 77</math>    <math>60 + 317 = 377</math>    <math>460 + 317 = 777</math></p> <p>d) <math>93 - 63 = 30</math>    <math>393 - 63 = 330</math>    <math>393 - 363 = 30</math></p> <p>What did you notice about them? (e.g. if one of the terms is increased by a certain amount, then the sum will also increase by that amount; if the number being subtracted (subtrahend) is increased by a certain amount, then the difference will decrease by that amount, etc.)</p> <p style="text-align: right;">32 min</p>	<p>Individual work, monitored, (helped)</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Agreement, self-correction, praising</p> <p>Feedback for T</p> <p>Whole class discussion</p> <p>Involve several Ps. Ps come to BB to point and explain.</p> <p>Praise all contributions.</p> <p>T repeats Ps' explanations more clearly if necessary.</p>																																



# Y4

## Lesson Plan 8

### Activity

7

*PbY3a, page 8*

Q.4 Read: *Underline the important data. Write a plan, estimate, calculate and check your result. Write the answer in a sentence. Do the work in your exercise book.*

Deal with one part at a time. Set a time limit. Ps read question themselves and solve it in *Ex. Bks.* Make sure that you do not miss a step! Ps sit up with arms folded when finished.

Review at BB with whole class. Ps come to BB to show solutions, explaining reasoning. Who agrees? Who did it a different way? Who made a mistake? What kind of mistake? etc.

Repeat for each of the other questions.

*Solution:*

a) *There were 348 boys and 316 girls at a summer camp. How many children were at the camp altogether?*

*Plan:* B + G = 348 + 316      *C:*

3	4	8
3	1	6
6		
6	6	4

*Check:*  $\downarrow \uparrow$   
*Estimation:* 300 + 300 = 600  
 or 350 + 320 = 670

*Answer:* 664 children were at the camp.

b) *417 children were taking part in a concert. If 188 of them were girls, how many boys were there?*

*Plan:* G: 188, B: 417 - 188      *C:*

4	1	7
1	8	8
2		
2	2	9

*Answer:* There were 229 boys.

c) *In an obstacle race, the number of girls taking part was 43 less than the number of boys. If 227 boys took part, how many girls were in the race?*

*Plan:* B: 227, G: 227 - 43      *C:*

2	2	7
	4	3
1		
1	8	4

*Answer:* There were 184 girls in the race.

d) *234 girls took part in a treasure hunt. Eve came second. The number of girls taking part was 109 less than the number of boys.*

*How many boys took part? How many children took part altogether?*

i) *Plan:* G: 234, B: 234 + 109      *C:*

2	3	4
1	0	9
3		
3	4	3

*Estimation:* 230 + 110 = 340

*Answer:* There were 343 boys.

ii) *Plan:* G + B: 234 + 343      *C:*

2	3	4
3	4	3
5		
5	7	7

*Estimation:* 230 + 340 = 570

*Answer:* 577 children took part.

### Notes

Individual work, monitored, helped, but class kept together on questions

Discussion, reasoning, agreement, self-correction, praising

Keep up a good pace throughout

Feedback for T

or  
 BB: 348 + 316 = 648 + 16 = 664

*Check:*  
 e.g. 

2	2	9
1	8	8
4		
4	1	7

 ✓

or use subtraction

or  $G < B$   
<sub>43</sub>

*Check:*  
 e.g. 

1	8	4
	4	3
2		
2	2	7

 ✓

or use subtraction

Agree that Eve coming second is not important.

or  $G < B$   
<sub>109</sub>

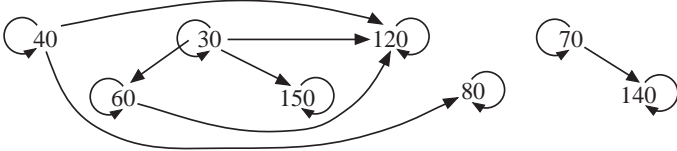
Check by adding in opposite direction.

or 

2	3	4
2	3	4
1	0	9
5		
5	7	7

<b>Y4</b>		<i>Lesson Plan 8</i>																								
<b>Activity</b> 7	<p>(Continued)</p> <p>e) <i>One morning there were <u>664</u> children on the beach. <u>385</u> of them went home for lunch. How many children remained on the beach?</i></p> <p><i>Plan:</i> Were: 664 children    Went home: 385 children            Children remaining: <math>664 - 385</math></p> <p><i>Estimation:</i> <math>700 - 400 = 300</math>                      C: <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>6</td><td><sup>10</sup>6</td><td><sup>10</sup>4</td></tr><tr><td>3</td><td>8</td><td>5</td></tr><tr><td>2</td><td>7</td><td>9</td></tr></table></p> <p>                  or <math>660 - 390 = 260 + 10 = 270</math>    -</p> <p><i>Answer:</i> 279 children remained on the beach.</p> <p>Stand up if you had all 5 problems correct. Let's give them a round of applause!</p> <p style="text-align: right;"><i>45 min</i></p>	6	<sup>10</sup> 6	<sup>10</sup> 4	3	8	5	2	7	9	<p style="text-align: center;"><b>Notes</b></p> <p><i>Check:</i></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>2</td><td>7</td><td>9</td></tr> <tr><td>+</td><td>3</td><td>8</td><td>5</td></tr> <tr><td></td><td>6</td><td>6</td><td>4</td></tr> <tr><td></td><td>1</td><td>1</td><td></td></tr> </table> <p style="text-align: center;">or use subtraction</p> <p style="text-align: center;">Stars, stickers, etc. awarded</p>	2	7	9	+	3	8	5		6	6	4		1	1	
6	<sup>10</sup> 6	<sup>10</sup> 4																								
3	8	5																								
2	7	9																								
2	7	9																								
+	3	8	5																							
	6	6	4																							
	1	1																								

<b>Y4</b>	R: Mental calculation C: <b>Operations up to 1000. Multiplication/division tables</b> E: <i>Numbers up to 2000</i>	<i>Lesson Plan</i> <b>9</b>																											
<b>Activity</b>  <b>1</b>	<b>Multiplication practice</b> Let's practise the multiplication table. Ps say whole equation. $1 \times 0 = 0, 1 \times 1 = 1, 1 \times 2 = 2, \dots 1 \times 10 = 10, (1 \times 11, \dots)$ $2 \times 0 = 0, 2 \times 1 = 2, 2 \times 2 = 4, \dots 2 \times 10 = 20, (2 \times 11, \dots)$ $3 \times 0 = 0, 3 \times 1 = 3, 3 \times 2 = 6, \dots 3 \times 10 = 30, (3 \times 11, \dots)$ $\dots$ $10 \times 0 = 0, 10 \times 1 = 10, 10 \times 2 = 20, \dots 10 \times 10 = 10 (10 \times 11, \dots)$ <p style="text-align: center;"><i>5 min</i></p>	<b>Notes</b>  Whole class activity Some in unison, some in order round class, some where T chooses Ps at random At speed. Praising Less able Ps may use printed tables.																											
<b>2</b>	<b>Division practice</b> Let's practise the division table. T says a division, Ps say quotient. $0 \div 0$ (impossible), $1 \div 0$ (impossible), $7 \div 0$ (impossible) $0 \div 1 = 0, 1 \div 1 = 1, 2 \div 1 = 2, \dots 10 \div 1 = 10, (157 \div 1 = 157)$ $0 \div 2 = 0, 2 \div 2 = 1, 4 \div 2 = 2, 6 \div 2 = 3, 8 \div 2 = 4,$ $10 \div 2 = 5, \dots 20 \div 2 = 10, (68 \div 2 = 34, 1 \div 2 = \frac{1}{2}, 7 \div 2 = 3\frac{1}{2})$ $0 \div 3 = 0, 3 \div 3 = 1, 6 \div 3 = 2, 9 \div 3 = 3, \dots 30 \div 3 = 10,$ $(33 \div 3 = 11, 36 \div 3 = 12, 150 \div 3 = 50, 960 \div 3 = 320, 2 \div 3 = \frac{2}{3},$ $50 \div 3 = 16\frac{2}{3}, 48 \div 3 + 2 \div 3 = 16 + \frac{2}{3} = 16\frac{2}{3})$ $\dots$ $0 \div 10 = 0, 10 \div 10 = 1, 20 \div 10 = 2, \dots, 100 \div 10 = 10,$ $(1500 \div 10 = 150, 1320 \div 10 = 132, 672 \div 10 = 67 + \frac{2}{10} = 67\frac{2}{10} = 67.2)$ <p style="text-align: center;"><i>10 min</i></p>	Whole class activity T chooses Ps at random. Class points out errors. At speed Divisions in brackets are to see what Ps can do and to extend more able Ps. Write on BB if there are problems, especially divisions resulting in fractions. T helps Ps with explanations but stress that Ps will learn it in a later lesson. Praising, encouragement only																											
<b>3</b>	<b>Order of operations</b> Let's see how clever you are at doing calculations! Ps come to BB to do calculations in correct order, explaining reasoning in detail. Other Ps point out errors or suggest easier ways of calculating. BB: a) $89 + 45 - 28 = (106)$ b) $197 - 54 + 28 = (171)$ $89 + (45 - 28) = (106)$ $197 - (54 + 28) = (115)$ $(89 + 45) - 28 = (106)$ $(197 - 54) + 28 = (171)$ c) $360 \div 4 \times 2 = (180)$ d) $120 \times 8 \div 4 = (240)$ $360 \div (4 \times 2) = (45)$ $120 \times (8 \div 4) = (240)$ $(360 \div 4) \times 2 = (180)$ $(120 \times 8) \div 4 = (240)$ <p style="text-align: center;"><i>20 min</i></p>	Whole class activity Written on BB or use enlarged copy master or OHP Discussion, reasoning, agreement, praising Calculations done at side of BB if necessary. BB: details, e.g. $89 + 45 = 90 + 44 = 134$ $360 \div 4 = 90 \div 2 = \underline{45}$ $120 \times 8 = 100 \times 8 + 20 \times 8$ $= 800 + 160 = \underline{960}$																											
<b>4</b>	<b>PbY4a, page 9</b> Q.1 Read: <i>Complete the table using the rule given.</i> Set a time limit. Encourage mental calculation. Review at BB with whole class. Ps come to BB or dictate to T, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected. Solution: <table border="1" style="margin-left: 20px;"> <tr> <td><i>a</i></td> <td>648</td> <td>563</td> <td>437</td> <td>343</td> <td>847</td> <td>358</td> <td>1345</td> <td><b>734</b></td> </tr> <tr> <td><i>b</i></td> <td>342</td> <td>204</td> <td>548</td> <td>285</td> <td>51</td> <td><b>561</b></td> <td><b>284</b></td> <td>814</td> </tr> <tr> <td><i>a + b</i></td> <td><b>990</b></td> <td><b>767</b></td> <td><b>985</b></td> <td><b>628</b></td> <td><b>898</b></td> <td>919</td> <td>1629</td> <td>1548</td> </tr> </table> <p style="text-align: center;"><i>25 min</i></p>	<i>a</i>	648	563	437	343	847	358	1345	<b>734</b>	<i>b</i>	342	204	548	285	51	<b>561</b>	<b>284</b>	814	<i>a + b</i>	<b>990</b>	<b>767</b>	<b>985</b>	<b>628</b>	<b>898</b>	919	1629	1548	Individual work, monitored, helped Drawn on BB or use enlarged copy master or OHP Differentiation by time limit Calculations may be done in <i>Ex. Bks</i> if necessary Reasoning, agreement, self-correction, praising
<i>a</i>	648	563	437	343	847	358	1345	<b>734</b>																					
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Y4		Lesson Plan 9																											
<p><b>Activity</b></p> <p><b>5</b></p>	<p><i>PbY4a, page 9</i></p> <p>Q.2 Read: <i>Complete the table using the rule given.</i></p> <p>Set a time limit. Calculations written in <i>Ex. Bks.</i> if necessary.</p> <p>Review at BB with whole class. Ps come to BB or dictate to T, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <table border="1"> <tr> <td><math>x</math></td> <td>674</td> <td>452</td> <td>548</td> <td>343</td> <td>847</td> <td>919</td> <td>1629</td> <td><b>1548</b></td> </tr> <tr> <td><math>y</math></td> <td>261</td> <td>309</td> <td>437</td> <td>285</td> <td>51</td> <td><b>561</b></td> <td><b>1345</b></td> <td>734</td> </tr> <tr> <td><math>x - y</math></td> <td><b>413</b></td> <td><b>143</b></td> <td><b>111</b></td> <td><b>58</b></td> <td><b>796</b></td> <td>358</td> <td>284</td> <td>814</td> </tr> </table> <p style="text-align: right;"><i>30 min</i></p>	$x$	674	452	548	343	847	919	1629	<b>1548</b>	$y$	261	309	437	285	51	<b>561</b>	<b>1345</b>	734	$x - y$	<b>413</b>	<b>143</b>	<b>111</b>	<b>58</b>	<b>796</b>	358	284	814	<p><b>Notes</b></p> <p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Differentiation by time limit</p> <p>Encourage Ps to do easy calculations mentally.</p> <p>Reasoning, agreement, self-correction, praising</p> <p><b>Extension</b></p> <p>Ps add other columns to table.</p>
$x$	674	452	548	343	847	919	1629	<b>1548</b>																					
$y$	261	309	437	285	51	<b>561</b>	<b>1345</b>	734																					
$x - y$	<b>413</b>	<b>143</b>	<b>111</b>	<b>58</b>	<b>796</b>	358	284	814																					
<p><b>6</b></p> <p><b>Extension</b></p>	<p><i>PbY3b, page 9</i></p> <p>Q.3 Read: <i>Draw arrows pointing towards the multiples.</i></p> <p>Tell me a multiple of 3 (5, 8, 10, 100). Elicit that a multiple of a number is exactly divisible by that number, or is the result of multiplying that number by another number.</p> <p>What has 30 been multiplied by to result in 60? (<math>30 \times \underline{2} = 60</math>)</p> <p>Ps draw arrows in <i>Pbs.</i> Review at BB with whole class.</p> <p>Ps come to BB draw arrows or dictate where T should draw them. Class agrees/disagrees. Mistakes corrected.</p> <p><i>Solution:</i></p>  <p>Ps might not have shown that 40 is a multiple of 40, etc.</p> <p>Remind Ps that, e.g. the multiples of 3 are:</p> <p style="text-align: center;">0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, ...</p> <p>because 0 times and 1 times a number result in the multiples 0 and the number itself, i.e. <math>0 \times 3 = \underline{0}</math> and <math>1 \times 3 = \underline{3}</math>.</p> <p>If the arrows pointed in the opposite direction, what would they show? (They would point towards a <u>factor</u> of the number.)</p> <p>e.g. 30 is a <u>factor</u> of 60 because <math>\underline{30} \times 2 = 60</math>.</p> <p>Elicit that a factor of a certain number divides into that number exactly, or multiplies another number to make that certain number.</p> <p>What other numbers are factors of 60? (<math>3 \times 20</math>, <math>5 \times 12</math>, <math>6 \times 10</math>, <math>4 \times 15</math>, <math>60 \times 1</math>) Is 0 a factor of 60? (No, because it is impossible to divide by 0, or because <math>0 \times \text{another number} \neq 60</math>. 0 can only be a <u>multiple</u> of 60: <math>0 \times 60 = \underline{0}</math>)</p> <p>What special name do we give natural numbers which have only 1 and the number itself as factors? (<u>prime numbers</u>)</p> <p>Who can tell me a prime number? T writes what Ps dictate. Class agrees/disagrees.</p> <p style="text-align: right;"><i>35 min</i></p>	<p>Individual work, monitored, helped</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Revision of what a multiple is. Ps tell what they know. T repeats clearly if necessary.</p> <p>Discussion, reasoning, agreement, self-correction praising</p> <p>Whole class discussion</p> <p>BB: <u>Multiples</u> of a natural number always include 0 and the number itself.</p> <p>Whole class discussion</p> <p>Allow Ps to tell what they know. T repeats more clearly if necessary.</p> <p>BB: <u>Factors</u> of a natural number always include 1 and the number itself, but never 0!</p> <p>BB: <u>Prime numbers</u></p> <p>e.g. 1, 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, ...</p> <p>Agreement, praising</p>																											

Y4

## Lesson Plan 9

## Activity

7

**PbY4a, page 9**

Q.4 Read: *Underline the important data. Write a plan, estimate, calculate and check your result. Write the answer in a sentence. Do the work in your exercise book.*

Deal with one part at a time. Set a time limit. Ps read question themselves and solve it in *Ex. Bks.* Make sure that you do not miss a step! Ps sit up with arms folded when finished.

Review with the whole class. Ps come to BB to show solutions, explaining reasoning. Who agrees? Who did it a different way? Who made a mistake? What kind of mistake? etc.

Repeat for each of the other questions.

*Solution:*

a) Ann has £716 and Barry has £285 less. How much money does Barry have? How much money do Ann and Barry have altogether?

i) Plan: A: £716, B: £716 – £285 C: 

7	1	6
2	8	5
4	3	1

  
Estimation: e.g. 700 – 300 = 400  
Answer: Barry has £431.

ii) Plan: A + B: £716 + £431 C: 

7	1	6	
4	3	1	
1	1	4	7

  
Estimation: e.g. 720 + 430 = 1150  
Answer: Ann and Barry have £1147 altogether.

b) Ann has £716 and Sarah has £285 more. How much money does Sarah have? How much money do Ann and Sarah have altogether?

i) Plan: A: £716, S: £716 + £285 C: 

7	1	6	
2	8	5	
1	0	0	1
1	1	1	

  
Estimation: e.g. 700 + 300 = 1000  
Answer: Sarah has £1001.

ii) Plan: A + S: £716 + £1001 C: 

7	1	6	
1	0	0	1
1	7	1	7

  
Estimation: e.g. 720 + 1000 = 1720  
Answer: Ann and Sarah have £1717 altogether.

c) Ann has £716, which is £285 less than Tom has. How much does Tom have? How much do Ann and Tom have altogether?

i) Plan: A: £716, T: £716 + £285 = £1001 (from b)  
Answer: Tom has £1001.

ii) Plan: A + T: £716 + £1001 = £1717 (from b)  
Answer: Ann and Tom have £1717 altogether.

d) Ann has £716, which is £285 more than Suzy has. How much does Suzy have? How much do Ann and Suzy have altogether?

i) Plan: A: £716, S: £716 – £285 = £431 (from a)  
Answer: Suzy has £431.

ii) Plan: A + S: £716 + £431 = £1147 (from a)  
Answer: Ann and Suzy have £1147 altogether.

## Notes

Individual work, monitored, helped. Class kept together for a) and b), then differentiation by time limit.

Only the most able Ps will have time to finish all the questions individually. If no P finishes in the set time, e) can be done at home if Ps wish and reviewed in *Lesson 10*, or done with the whole class.

Discussion, reasoning, agreement, self-correction, praising  
Keep up a good pace throughout.

Check with addition or subtraction

or  $716 \times 2 - 285 = 1432 - 285$

1	4	3	2
	2	8	5
1	1	4	7


Check with addition in opposite direction

or  
 $716 \times 2 + 285$

7	1	6	
7	1	6	
2	8	5	
1	7	1	7
1	1		

Extra praise if Ps notice similarity to b)

Extra praise if Ps notice similarity to a)

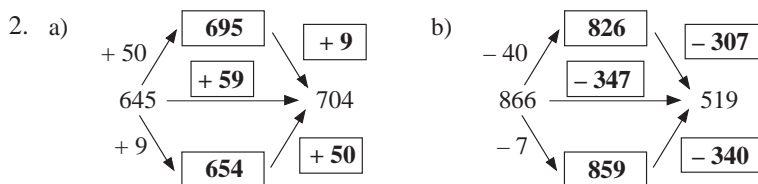
<h1>Y4</h1>		<p>Lesson Plan 9</p>																																																
<p><b>Activity</b></p> <p>7</p>	<p>(Continued)</p> <p>e) Ted has £761 and Sam has £285. How much money should Ted give to Sam so that they both have the same amount?</p> <p>Plan: T: £761, S: £285 Difference: £761 – £285</p> <p>The point where they both have the same amount will be half way between 761 and 285. (Show on a diagram on BB.)</p> <p>Mid-point: <math>(761 - 285) \div 2 = 476 \div 2</math> C: <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>7</td><td><sup>10</sup>6</td><td><sup>10</sup>1</td></tr><tr><td>2</td><td>8</td><td>5</td></tr><tr><td>4</td><td>7</td><td>6</td></tr></table></p> <p>Details:</p> $476 \div 2 = 400 \div 2 + 60 \div 2 + 16 \div 2$ $= 200 + 30 + 8 = 238$ <p>Answer: Ted should give £238 to Sam and they will both have £523.</p> <p>Stand up if you had all 5 problems correct. (Much deserved applause!)</p> <p style="text-align: right;">41 min</p>	7	<sup>10</sup> 6	<sup>10</sup> 1	2	8	5	4	7	6	<p><b>Notes</b></p> <p>Individual work, reviewed with whole class, or done as whole class activity</p> <p>Allow Ps to explain solution, with hints from T if necessary.</p> <p>BB: </p> <p>Check: <table style="display: inline-table; vertical-align: middle;"><tr><td></td><td>Sam</td><td></td><td>Ted</td><td></td></tr><tr><td>+</td><td><table border="1"><tr><td>2</td><td>8</td><td>5</td></tr><tr><td>2</td><td>3</td><td>8</td></tr><tr><td>5</td><td>2</td><td>3</td></tr></table></td><td>⊖</td><td><table border="1"><tr><td>7</td><td>6</td><td><sup>10</sup>1</td></tr><tr><td>2</td><td>3</td><td>8</td></tr><tr><td>5</td><td>2</td><td>3</td></tr></table></td><td>✓</td></tr><tr><td></td><td>1</td><td></td><td>1</td><td></td></tr></table></p> <p>Reasoning, agreement, self-correction, praising</p>		Sam		Ted		+	<table border="1"><tr><td>2</td><td>8</td><td>5</td></tr><tr><td>2</td><td>3</td><td>8</td></tr><tr><td>5</td><td>2</td><td>3</td></tr></table>	2	8	5	2	3	8	5	2	3	⊖	<table border="1"><tr><td>7</td><td>6</td><td><sup>10</sup>1</td></tr><tr><td>2</td><td>3</td><td>8</td></tr><tr><td>5</td><td>2</td><td>3</td></tr></table>	7	6	<sup>10</sup> 1	2	3	8	5	2	3	✓		1		1							
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<p>8</p>	<p><b>PbY4a, page 9,</b></p> <p>Q.5 Read: <i>Fill in the missing digits.</i></p> <p>Set a time limit. Ps check by doing calculation again mentally.</p> <p>Review at BB with whole class. Ps come to BB, explaining reasoning in detail. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p>Solution:</p> <p>a) <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td>1</td><td>4</td><td>3</td></tr><tr><td>+</td><td>6</td><td>0</td><td>9</td></tr><tr><td></td><td>7</td><td>5</td><td>2</td></tr></table> b) <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td>1</td><td>5</td><td>6</td></tr><tr><td>+</td><td>8</td><td>6</td><td>7</td></tr><tr><td></td><td>1</td><td>0</td><td>2</td></tr></table> c) <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td>9</td><td>7</td><td>3</td></tr><tr><td>-</td><td>5</td><td>6</td><td>1</td></tr><tr><td></td><td>4</td><td>1</td><td>2</td></tr></table> d) <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td>8</td><td>0</td><td>7</td></tr><tr><td>-</td><td>5</td><td>3</td><td>4</td></tr><tr><td></td><td>2</td><td>7</td><td>3</td></tr></table></p> <p style="text-align: right;">45 min</p>		1	4	3	+	6	0	9		7	5	2		1	5	6	+	8	6	7		1	0	2		9	7	3	-	5	6	1		4	1	2		8	0	7	-	5	3	4		2	7	3	<p>Individual work, monitored, helped</p> <p>(or whole class activity if time is short, or could be set for homework and reviewed in Lesson 10)</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement, self-correction, praising</p>
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**Y4****Lesson Plan  
10****Activity****Notes**

Tables practice, revision, activities consolidation

*Practice Book Y4a, page 10***Solutions:**

1. a)  $653 + 25 = \underline{678}$     b)  $200 - 25 = \underline{175}$     c)  $109 + 9 = \underline{118}$   
 $394 + 37 = \underline{431}$      $645 - 40 = \underline{605}$      $376 + 33 = \underline{409}$   
 $116 + 93 = \underline{209}$      $749 - 550 = \underline{199}$      $900 - 542 = \underline{358}$   
 $725 + 108 = \underline{833}$      $853 - 54 = \underline{799}$      $2000 + 11 = \underline{2011}$   
 $1010 + 29 = \underline{1039}$      $210 - 82 = \underline{128}$      $1550 - 440 = \underline{1110}$



3. a)  $40 \times 3 = \underline{120}$     b)  $70 \times 7 = \underline{490}$     c)  $20 \times 8 = \underline{160}$   
 $2 \times 70 = \underline{140}$      $3 \times 90 = \underline{270}$      $400 \times 0 = \underline{0}$   
 $61 \times 8 = \underline{488}$      $26 \times 4 = \underline{104}$      $30 \times 10 = \underline{300}$   
 $25 \times 6 = \underline{150}$      $91 \times 9 = \underline{819}$      $100 \times 10 = \underline{1000}$   
 $17 \times 4 = \underline{68}$      $85 \times 5 = \underline{425}$      $110 \times 11 = \underline{1210}$

4.

<i>a</i>	840	360	690	1224	<b>749</b>	816	1535	<b>0</b>
<i>b</i>	20	10	<b>30</b>	12	7	<b>1</b>	<b>5</b>	25
<i>c</i>	42	<b>36</b>	23	<b>102</b>	107	816	307	0

$$a = b \times c \quad b = a \div c \quad c = a \div b$$

5. Gave to friends:  $6 \times 15$  (sweets)    Had left: 25 sweets  
 In box:  $6 \times 15 + 25 = 90 + 25 = \underline{115}$  (sweets)



<h1>Y4</h1>	<p>R: Mental and written calculation  <b>C: Multiplication and division tables</b>                  E: Numbers up to 2000</p>	<h2>Lesson Plan 11</h2>																																
<p><b>Activity</b></p> <p><b>1</b></p>	<p><b>Sequences</b></p> <p>T says the first few terms of a sequence and Ps continue it. What is the rule?</p> <p>a) 0, 7, 14, (21, 28, 35, 42, 49, 56, 63, 70, 77, 84, ...)  <i>Rule:</i> + 7 (or multiples of 7 in increasing order)</p> <p>b) 0, -4, 4, -8, 8, -12, 12, (-16, 16, -20, 20, -24, 24, ...)  <i>Rule:</i> Negative, then corresponding positive, multiples of 4.</p> <p>c) ..., -24, -16, -8, 0, 8, 16, (24, 32, 40, 48, 56, 64, 72, ...)  <i>Rule:</i> + 8 (or whole multiples of 8 in increasing order)</p> <p>d) 11, 22, 33, (44, 55, 66, 77, 88, 99, 110, 121, 132, 143, ...)  <i>Rule:</i> + 11 (or natural multiples of 11 in increasing order)</p> <p style="text-align: right;"><i>6 min</i></p>	<p><b>Notes</b></p> <p>Whole class activity                  At speed in order round class                  Discussion on the rule.</p> <p>Talk about the different kinds of numbers:  <i>Natural numbers:</i> positive whole numbers (1, 2, 3, ...)  <i>Negative numbers:</i> <math>n &lt; 0</math>  <i>Positive numbers:</i> <math>n &gt; 0</math>  <i>Fraction:</i> part of 1 unit</p> <p>Praising, encouragement only</p>																																
<p><b>2</b></p>	<p><b>Multiplication table relay</b></p> <p>T says a multiplication, e.g. '3 × 4', P<sub>1</sub> says result ('= 12'), then says a multiplication for P<sub>2</sub>, e.g. '7 × 6'; P<sub>2</sub> says result ('= 42'), then says a multiplication for P<sub>3</sub>, e.g. '5 × 9', P<sub>3</sub> says result (= 45), etc.</p> <p>Ps may have multiplication table on desks if they wish. T notes the Ps who use it. Class points out errors if next P misses it.</p> <p style="text-align: right;"><i>11 min</i></p>	<p>Whole class activity                  At speed in order round class                  If a P makes a mistake, next P corrects it quickly and says the next multiplication.                  In good humour!</p>																																
<p><b>3</b></p>	<p><b>Division table relay</b></p> <p>T says a division, e.g. '8 ÷ 4', P<sub>1</sub> says result ('= 2'), then says a division for P<sub>2</sub>, e.g. '15 ÷ 5'; P<sub>2</sub> says result ('= 3'), then says a division for P<sub>3</sub>, e.g. '28 ÷ 7', P<sub>3</sub> says result (= 4), etc.</p> <p>If there is a remainder, Ps must solve it but T states that it was not a correct question. Class points out errors if next P misses it.</p> <p style="text-align: right;"><i>17 min</i></p>	<p>Whole class activity                  At speed in order round class                  If a P makes a mistake, next P corrects it quickly and says the next division.                  In good humour!</p>																																
<p><b>4</b></p>	<p><b>Writing operations</b></p> <p>Study the diagrams. Who can write additions or multiplications or divisions about them? Ps come to BB or dictate what T should write.</p> <p>BB:</p> <p>a) <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>100</td><td>100</td><td>100</td><td>100</td></tr> <tr><td>100</td><td>100</td><td>100</td><td>100</td></tr> <tr><td>100</td><td>100</td><td>100</td><td>100</td></tr> </table>                 b) <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>50</td><td>50</td><td>50</td><td>50</td><td>50</td></tr> <tr><td>50</td><td>50</td><td>50</td><td>50</td><td>50</td></tr> <tr><td>50</td><td>50</td><td>50</td><td>50</td><td>50</td></tr> <tr><td>50</td><td>50</td><td>50</td><td>50</td><td>50</td></tr> </table></p> <p>e.g. 400 + 400 + 400 = 1200      e.g. 250 + 250 + 250 + 250 = 1000                  300 + 300 + 300 + 300 = 1200      200 + 200 + 200 + 200 + 200 = 1000                  600 + 600 = 1200    etc.      500 + 500 = 1000    etc.                  400 × 3 = 1200      250 × 4 = 1000                  300 × 4 = 1200      200 × 5 = 1000                  600 × 2 = 1200    etc.      500 × 2 = 1000    etc.                  1200 ÷ 100 = 12      1000 ÷ 50 = 20                  1200 ÷ 200 = 6      1000 ÷ 100 = 10                  1200 ÷ 300 = 4    etc.      1000 ÷ 200 = 5    etc.</p> <p style="text-align: right;"><i>23 min</i></p>	100	100	100	100	100	100	100	100	100	100	100	100	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	<p>Whole class activity                  Model money stuck or drawn on BB or use enlarged copy master or OHP                  At a good pace                  Agreement, praising                  Extra praise for unexpected operations, e.g.                  50 × 10 × 2 = 1000</p>
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<b>Y4</b>		<i>Lesson Plan 11</i>
<p><b>Activity</b></p> <p><b>5</b></p>	<p><i>PbY4a, page 11</i></p> <p>Q.1 Read: <i>Calculate the products. Look for relationships.</i> Set a time limit. Encourage mental calculation. Review at BB with whole class. Ps dictate results to T. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) <math>4 \times 5 = \underline{20}</math>      <math>40 \times 5 = \underline{200}</math>      <math>4 \times 50 = \underline{200}</math>  <math>4 \times 500 = \underline{2000}</math>      <math>40 \times 50 = \underline{2000}</math></p> <p>b) <math>3 \times 6 = \underline{18}</math>      <math>30 \times 6 = \underline{180}</math>      <math>3 \times 60 = \underline{180}</math>  <math>3 \times 600 = \underline{1800}</math>      <math>30 \times 60 = \underline{1800}</math></p> <p>c) <math>4 \times 4 = \underline{16}</math>      <math>40 \times 4 = \underline{160}</math>      <math>4 \times 40 = \underline{160}</math>  <math>4 \times 400 = \underline{1600}</math>      <math>40 \times 40 = \underline{1600}</math></p> <p>Ps tell class what relationships they noticed. (e.g. if one of the factors increases by 10 times, the product increases by 10 times; if both factors increase by 10 times, the product increases by <math>10 \times 10 = 100</math> times, etc.)</p> <p style="text-align: right;">27 min</p>	<p style="text-align: center;"><b>Notes</b></p> <p>Individual work, monitored, helped</p> <p>Written on BB or SB or OHT (or T has BB already prepared and uncovers results as they are dealt with)</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p> <p>Involve several Ps. T repeats Ps' reasoning in a clearer way if necessary. Praise all contributions.</p>
<p><b>6</b></p>	<p><i>PbY4a, page 11</i></p> <p>Q.2 Read: <i>Calculate the quotients. Look for relationships.</i> Set a time limit. Encourage mental calculation. Review at BB with whole class. Ps dictate results to T. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) <math>12 \div 4 = \underline{3}</math>      <math>120 \div 40 = \underline{3}</math>  <math>120 \div 4 = \underline{30}</math>      <math>1200 \div 40 = \underline{30}</math>  <math>1200 \div 4 = \underline{300}</math>      <math>1200 \div 400 = \underline{3}</math></p> <p>b) <math>20 \div 5 = \underline{4}</math>      <math>200 \div 5 = \underline{40}</math>  <math>200 \div 5 = \underline{40}</math>      <math>2000 \div 50 = \underline{40}</math>  <math>2000 \div 5 = \underline{400}</math>      <math>2000 \div 500 = \underline{4}</math></p> <p>Ps tell class what relationships they noticed. (e.g. if the dividend increases by 10 times, the quotient also increases by 10 times; if the divisor increases by 10 times, the quotient decreases by 1 tenth, etc.)</p> <p style="text-align: right;">32 min</p>	<p>Individual work, monitored, helped</p> <p>Written on BB or SB or OHT (or T has BB already prepared and uncovers results as they are dealt with)</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p> <p>Involve several Ps. T repeats Ps' reasoning in a clearer way if necessary. Praise all contributions.</p>
<p><b>7</b></p>	<p><i>PbY4a, page 11</i></p> <p>Q.3 Read: <i>Calculate the products. Look for relationships.</i> Set a time limit. Ps can write calculations in <i>Ex. Bks</i> if necessary. Review at BB with whole class. Ps come to BB to write results, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) <math>3 \times 100 = \underline{300}</math>    b) <math>100 \times 7 = \underline{700}</math>    c) <math>200 \times 4 = \underline{800}</math>  <math>3 \times 40 = \underline{120}</math>      <math>30 \times 7 = \underline{210}</math>      <math>80 \times 4 = \underline{320}</math>  <math>3 \times 140 = \underline{420}</math>      <math>130 \times 7 = \underline{910}</math>      <math>280 \times 4 = \underline{1120}</math></p> <p>Use this idea to help you do some of the next multiplications.</p>	<p>Individual work, monitored, helped</p> <p>Written on BB or SB or OHT Do parts a), b) and c), then review before doing parts d), e) and f)</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Ps relate what they notice. (Bottom row is the sum of the other two rows)</p>

<b>Y4</b>		<i>Lesson Plan 11</i>
<b>Activity</b> 7	(Continued) d) $3 \times 12 = \underline{36}$ e) $6 \times 13 = \underline{78}$ f) $7 \times 14 = \underline{98}$ $3 \times 120 = \underline{360}$ $6 \times 130 = \underline{780}$ $7 \times 140 = \underline{980}$ $30 \times 12 = \underline{360}$ $60 \times 13 = \underline{780}$ $70 \times 14 = \underline{980}$ Ps tell what they notice. (e.g. $60 \times 13 = 6 \times 130$ , etc.) _____ 37 min _____	<b>Notes</b> If problems, write details on BB, e.g. $6 \times 13 = 6 \times 10 + 6 \times 3$ $= 60 + 18 = \underline{78}$ $7 \times 140 = 7 \times 100 + 7 \times 40$ $= 700 + 280 = \underline{980}$
<b>8</b>	<b>PbY4a, page 9</b> Q.4 Read: <i>Underline the data. Write a plan. Estimate, calculate and check your result in your exercise book. Write the answer as a sentence.</i> Set a time limit. Ps read questions themselves, write plans and solve them in <i>Ex. Bks</i> , then write the answers as sentences in <i>Pbs</i> . Review at BB with whole class. Ps come to BB to show solutions, explaining reasoning. Who agrees? Who did it a different way? Who made a mistake? What kind of mistake? etc. <i>Solution:</i> a) <i>A box of apples weighs about 28 kg. How much do 30 boxes of apples weigh?</i> <i>Plan:</i> 1 box: 28 kg, 30 boxes: $30 \times 28$ kg <i>Estimation:</i> e.g. $30 \times 30$ kg = 900 kg <i>C:</i> $30 \times 28 = 30 \times 20 + 30 \times 8 = 600 + 240 = \underline{840}$ (kg) <i>Answer:</i> 30 boxes of apples weigh 840 kg. b) <i>How much is the cost of 8 kg of pears if 1 kg costs £1.90?</i> <i>Plan:</i> 1 kg: £1.90 = 190 p, 8 kg: $8 \times 190$ p <i>Estimation:</i> e.g. $8 \times 200$ p = 1600 p <i>C:</i> $8 \times 190 = 8 \times 100 + 8 \times 90 = 800 + 720 = \underline{1520}$ (p) $1520$ p = £15 20 p = £15.20 <i>Answer:</i> 8 kg of pears cost £15.20. _____ 42 min _____	Individual work, monitored, helped Discussion, reasoning, agreement, self-correction, praising Accept any correct method. e.g. a) $30 \times 28 = 3 \times 10 \times 28$ $= 3 \times 280 = 600 + 240$ $= \underline{840}$ b) $8 \times 190$ $= 8 \times 200 - 8 \times 10$ $= 1600 - 80 = \underline{1520}$ Feedback for T
<b>9</b>	<b>PbY4a, page 11, Q.5</b> Read: <i>Write a plan for each question.</i> Deal with one part at a time. Set a time limit. Ps read question themselves, write their plan on slates or scrap paper and show on command. P who wrote correct plan explains to those who did not. Let's solve it. Ps come to BB or dictate what T should write. <i>Solution:</i> a) <i>6 children collected 120 kg of chestnuts. They share them equally. How many kg of chestnuts does each child get?</i> Show me . . . now! $120 \text{ kg} \div 6 (= \underline{20 \text{ kg}})$ <i>Answer:</i> Each child gets 20 kg of chestnuts. b) <i>At the market, they are packing fruit into boxes, 30 kg per box. They have 900 kg of fruit. How many boxes will they need?</i> Show me . . . now! $900 \text{ kg} \div 30 \text{ kg} (= \underline{30})$ <i>Answer:</i> They will need 30 boxes. _____ 45 min _____	Individual work in writing plans, but reviewed with whole class. Reasoning, agreement, self-correction in <i>Pbs</i> , praising Elicit that 120 kg is divided into 6 <u>equal</u> parts and that each child will get 1 sixth. It can be thought of as: 'How many 30 kg are in 900 kg?' or 'How many times does 30 kg go into 900 kg?'

<h1>Y4</h1>	<p>R: Mental calculation. Multiplication and division tables                  C: <b>Multiplication, division. Addition, subtraction up to 1000</b>                  E: <i>Up to 2000</i></p>	<h2>Lesson Plan 12</h2>
<p><b>Activity</b></p> <p><b>1</b></p> <p><b>Extension</b></p>	<p><i>PbY4a, page 12</i></p> <p>Q.1 Read: <i>Fill in the numbers which are missing from the multiplication table.</i></p> <p>Set a time limit. Less able Ps may have printed tables to help them.                  Review at BB with whole class. Ps dictate what T should write. Class agrees/disagrees. Mistakes corrected.</p> <p>Find these sequences in the table and continue them.                  What is the rule? Who agrees? Who thinks something else?</p> <p>a) 0, 8, 18, 30, (44, 60, 78, 98, 120, ...)  <math>\begin{array}{cccccccc} &amp; \diagdown &amp; &amp; \diagup &amp; &amp; \diagdown &amp; &amp; \diagup \\ &amp; 8 &amp; 10 &amp; 12 &amp; 14 &amp; 16 &amp; 18 &amp; 20 \\ &amp; \diagup &amp; &amp; \diagdown &amp; &amp; \diagup &amp; &amp; \diagdown \\ &amp; 2 &amp; 4 &amp; 6 &amp; 8 &amp; 10 &amp; 12 &amp; 14 \end{array}</math>                  Rule: Difference starts at 8 and increases by 2 (or <math>0 \times 7, 1 \times 8, 2 \times 9, 3 \times 10, 4 \times 11, 5 \times 12, \dots</math>)</p> <p>b) 0, 5, 12, 21, 32, (45, 60, 77, 96, 117, ...)  <math>\begin{array}{cccccccc} &amp; \diagdown &amp; &amp; \diagup &amp; &amp; \diagdown &amp; &amp; \diagup \\ &amp; 5 &amp; 7 &amp; 9 &amp; 11 &amp; 13 &amp; 15 &amp; 17 \\ &amp; \diagup &amp; &amp; \diagdown &amp; &amp; \diagup &amp; &amp; \diagdown \\ &amp; 2 &amp; 4 &amp; 6 &amp; 8 &amp; 10 &amp; 12 &amp; 14 \end{array}</math>                  Rule: Difference starts at 5 and increases by 2 (or <math>0 \times 4, 1 \times 5, 2 \times 6, 3 \times 7, 4 \times 8, 5 \times 9, 6 \times 10, \dots</math>)</p> <p>c) 0, 2, 6, 12, 20, 30, (42, 56, 72, 90, 110, 132, ...)  <math>\begin{array}{cccccccc} &amp; \diagdown &amp; &amp; \diagup &amp; &amp; \diagdown &amp; &amp; \diagup \\ &amp; 2 &amp; 4 &amp; 6 &amp; 8 &amp; 10 &amp; 12 &amp; 14 \\ &amp; \diagup &amp; &amp; \diagdown &amp; &amp; \diagup &amp; &amp; \diagdown \\ &amp; 2 &amp; 4 &amp; 6 &amp; 8 &amp; 10 &amp; 12 &amp; 14 \end{array}</math>                  Rule: Difference starts at 2 and increases by 2 (or <math>0 \times 1, 1 \times 2, 2 \times 3, 3 \times 4, 4 \times 4, 5 \times 6, 6 \times 7, \dots</math>)</p> <p>d) 0, 1, 4, 9, 16, (25, 36, 49, 64, 81, 100, 121, 144, ...)  <math>\begin{array}{cccccccc} &amp; \diagdown &amp; &amp; \diagup &amp; &amp; \diagdown &amp; &amp; \diagup \\ &amp; 1 &amp; 3 &amp; 5 &amp; 7 &amp; 9 &amp; 11 &amp; 13 \\ &amp; \diagup &amp; &amp; \diagdown &amp; &amp; \diagup &amp; &amp; \diagdown \\ &amp; 1 &amp; 3 &amp; 5 &amp; 7 &amp; 9 &amp; 11 &amp; 13 \end{array}</math>                  Rule: Difference starts at 1 and increases by 2 (or <math>0 \times 0, 1 \times 1, 2 \times 2, 3 \times 3, 4 \times 4, 5 \times 5, 6 \times 6, \dots</math>)</p> <p style="text-align: right;"><i>10 min</i></p>	<p><b>Notes</b></p> <p>Individual work, monitored                  Drawn on BB or use enlarged copy master or OHP (or <i>OHT 14</i>)                  Agreement, self-correction, praising if no mistakes                  Feedback for T</p> <p>T says first few terms, also writing them on the BB.                  Ps continue sequence in order round class (or T chooses Ps at random).</p> <p>Ps come to multiplication table on BB or OHT to point to terms.                  Discussion on the rule.                  T writes differences below terms on BB.</p> <p>Agreement, praising</p> <p>d) Elicit or remind Ps that these numbers are <u>square numbers</u>                  i.e. they can form a square, e.g. <math>3 \begin{array}{ c } \hline 3 \\ \hline \end{array}</math></p>
<p><b>2</b></p>	<p><b>Order of operations</b></p> <p>Copy these operations in your <i>Ex. Bks</i> and do them in the correct order</p> <p>BB:</p> <p>a) <math>6 \times 30 + 40 = (220)</math>      b) <math>3 \times 60 - 40 = (140)</math>                  c) <math>60 \times 2 - 25 = (95)</math>      d) <math>70 + 80 \div 4 = (90)</math>                  e) <math>90 + 150 \div 3 = (140)</math>      f) <math>200 - 300 \div 6 = (150)</math></p> <p>Set a time limit. Review at BB with whole class. Mistakes discussed and corrected. Revise order of operations if necessary.</p> <p style="text-align: right;"><i>15 min</i></p>	<p>Individual work, monitored                  Written on BB or SB or OHT                  Ps come to BB to write result of operation to be done first, then to write the answer, explaining reasoning. Class agrees/disagrees.                  Reasoning, agreement, self-correction, praising                  Feedback for T</p>

Y4		Lesson Plan 12
<b>Activity</b> <b>3</b>	<p><b>Missing numbers</b></p> <p>Who can fill in the missing numbers? Ps come to BB to write and explain reasoning with inverse operation. e.g. '7 times 6 = 42, because 42 divided by 6 = 7'.</p> <p>BB:</p> <p>a) <math>\boxed{0} \times 5 = 0</math>      b) <math>10 \times \boxed{7} = 70</math>      c) <math>\boxed{7} \times 6 = 42</math>      d) <math>7 \times \boxed{8} = 56</math></p> <p>e) <math>\boxed{8} \times 1 = 8</math>      f) <math>\boxed{1} \times 9 = 9</math>      g) <math>\boxed{7} \times 7 = 49</math>      h) <math>9 \times \boxed{8} = 72</math></p> <p>i) <math>18 \div \boxed{3} = 6</math>      j) <math>\boxed{35} \div 5 = 7</math>      k) <math>25 \div \boxed{5} = 5</math>      l) <math>\boxed{0} \div 8 = 0</math></p> <p>m) <math>\boxed{54} \div 9 = 6</math>      n) <math>48 \div \boxed{8} = 6</math>      o) <math>\boxed{27} \div 9 = 3</math>      p) <math>\boxed{\text{X}} \div 0 \neq 5</math></p> <p style="text-align: right;">20 min</p>	<p><b>Notes</b></p> <p>Whole class activity  Written on BB or use enlarged copy master or OHP  At a good pace  Reasoning, agreement, praising</p> <p>Agree that it is impossible to divide <u>any</u> number by zero.</p>
<b>4</b>	<p><b>Division practice</b></p> <p>Let's do these divisions. Ps come to BB in pairs, one P to write quotients and remainders and the other to check with multiplication and addition. Class points out errors.</p> <p>BB:</p> <p>a) <math>17 \div 4 = (4, r 1)</math>  <math>[4 \times 4 + 1 = 17] \checkmark</math></p> <p>b) <math>23 \div 2 = (11, r 1)</math>  <math>[2 \times 11 + 1 = 23] \checkmark</math></p> <p>c) <math>23 \div 5 = (4, r 3)</math>  <math>[4 \times 5 + 3 = 23] \checkmark</math></p> <p>d) <math>27 \div 7 = (3, r 6)</math>  <math>[3 \times 7 + 6 = 27] \checkmark</math></p> <p>e) <math>40 \div 6 = (6, r 4)</math>  <math>[6 \times 6 + 4 = 40] \checkmark</math></p> <p>f) <math>28 \div 2 = (14)</math> (no remainder)  <math>[14 \times 2 = 28] \checkmark</math></p> <p>g) <math>85 \div 5 = (17)</math> (no remainder)  <math>[17 \times 5 = 85] \checkmark</math></p> <p>h) <math>75 \div 9 = (8, r 3)</math>  <math>[8 \times 9 + 3 = 75] \checkmark</math></p> <p style="text-align: right;">25 min</p>	<p>Whole class activity  (or individual work in <i>Ex. Bks</i> if Ps wish)  Written on BB or SB or OHT  At a good pace  Reasoning, agreement, checking, praising  Details written on BB if problems, e.g.  <math>85 \div 5 = 50 \div 5 + 35 \div 5</math>  <math>= 10 + 7 = \underline{17}</math></p> <p>Feedback for T</p>
<b>5</b>	<p><b>PbY4a, page 12</b></p> <p>Q.2 Read: <i>Do the calculations in the correct order.</i></p> <p>Set a time limit. Ps write result above the first calculation to be done or keep it in mind before writing final result.</p> <p>Review at BB with whole class. Ps come to BB or dictate to T. Mistakes discussed and corrected.</p> <p>What did you notice? e.g. <math>(60 + 20) \times 2 = 60 \times 2 + 20 \times 2</math></p> <p><i>Solution:</i></p> <p>a) <math>60 + 20 \overset{40}{\times} 2 = \underline{100}</math>      b) <math>15 + 30 \overset{10}{\div} 3 = \underline{25}</math></p> <p><math>\overset{80}{(60 + 20) \times 2} = \underline{160}^*</math>      <math>\overset{45}{(15 + 30) \div 3} = \underline{15}^*</math></p> <p><math>\overset{120}{60 \times 2} + 20 = \underline{140}</math>      <math>\overset{5}{15 \div 3} + 30 = \underline{35}</math></p> <p><math>\overset{120}{60 \times 2} + \overset{40}{20 \times 2} = \underline{160}^*</math>      <math>\overset{5}{15 \div 3} + 30 \overset{10}{\div} 3 = \underline{15}^*</math></p> <p style="text-align: right;">30 min</p>	<p>Individual work, monitored, helped  Written on BB or SB or OHT  Reasoning, agreement, self-correction, praising.</p> <p>Extra praise if Ps notice and explain equal results without help from T.</p>

**Y4***Lesson Plan 12***Activity****6****PbY4a, page 12**

Q.3 Read: *Complete the tables. Write the rules in different ways.*

Deal with one part at a time. Elicit one form of the rule in words with the whole class first (unless Ps prefer to work it out for themselves). Then Ps complete the table and write the rule in different ways in *Pbs* under a time limit. Ps can do any necessary calculations in *Ex. Bks* or on scrap paper.

Review at BB with whole class. Ps come to BB to fill in columns, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected.

**A**, come and write the rule. Who agrees? Who can write it another way? Ps check the different forms with values from table.

*Solution:*

a)	<i>a</i>	4	150	632	111	<b>604</b>	354	<b>704</b>	635	246	<b>362</b>
	<i>b</i>	354	500	982	<b>461</b>	954	<b>704</b>	1054	<b>985</b>	<b>596</b>	712

$a = b - 350, \quad b = a + 350 \quad \text{Ext: } b - a = 350, (a - b = -350)$

b)	<i>x</i>	20	15	200	111	<b>50</b>	180	<b>150</b>	99	120	<b>100</b>
	<i>y</i>	140	105	1400	<b>777</b>	350	<b>1260</b>	1050	<b>693</b>	<b>840</b>	700

$x = y \div 7, \quad y = x \times 7, \quad \text{Ext: } y \div x = 7, (x \div y = \frac{1}{7})$

c)	<i>u</i>	888	346	1	551	<b>581</b>	500	<b>968</b>	273	<b>340</b>	1001
	<i>v</i>	112	654	999	<b>449</b>	419	<b>500</b>	32	<b>727</b>	660	<b>-1</b>

$u = 1000 - v, \quad v = 1000 - u, \quad (u + v = 1000)$

d)	<i>m</i>	2	40	10	<b>800</b>	200	<b>5</b>	8	<b>50</b>	25	800
	<i>n</i>	400	20	80	1	<b>4</b>	160	<b>100</b>	16	<b>32</b>	<b>1</b>

$m = 800 \div n, \quad n = 800 \div m, \quad (m \times n = 800)$

If any Ps try long division by 2-digit numbers, T helps and asks them to show it on BB. e.g.

			3	2	
2	5	8	0	0	
	-	7	5		
			5	0	
			-	5	0
				0	

45 min

**Notes**

Individual work, monitored, (helped)

Tables drawn on BB or use enlarged copy master or OHP

Differentiation by time limit

Reasoning, agreement, self-correcting, praising

At a good pace

If problems, write details of calculations on BB. Accept any correct reasoning, e.g.

BB:

	7	<sup>10</sup> 1	2
-	3	5	0
	3	6	2

$$180 \times 7 = 700 + 560 = \underline{1260}$$

$$15 \times 7 = 105, \text{ so}$$

$$150 \times 7 = \underline{1050}$$

$$99 \times 7 = 100 \times 7 - 1 \times 7 = 700 - 7 = \underline{693}$$

$$10 \times 80 = 800, \text{ so}$$

$$\underline{5} \times 160 = 800$$

$$5 \times 160 = 800, \text{ so}$$

$$\underline{50} \times 16 = 800$$

$$50 \times 16 = 800, \text{ so}$$

$$25 \times \underline{32} = 800, \text{ etc.}$$

Extra praise if Ps notice these easy ways to calculate.

<b>Y4</b>	R: Mental calculation C: <b>Multiplication and division tables. Operations up to 1000</b> E: <i>Operations up to 2000</i>	<i>Lesson Plan</i> <b>13</b>
<b>Activity</b>	<b>Notes</b>	
<b>1</b> <b>Multiplication table practice</b> T says a multiplication and: a) chooses Ps at random to answer, b) Ps answer in order round class, c) T says a multiplication, P answers it and says a multiplication for next P to answer, etc. (relay round class)	Whole class activity At speed T notes Ps who need to use their own $\times$ tables or to look at the $\times$ table on classroom wall. Praising, encouragement only  5 min	
<b>2</b> <b>Chain calculations</b> Listen to my instructions. Do the calculations in your head and write the results of each step one below the other in your <i>Ex. Bks.</i> Nod your head when you have done each step. Show me the final result when I say. e.g. <i>Start with 800. Find its quarter. . . . Add 10. . . . Multiply by 3. . . . Add 70. . . . Divide by 7.</i> Show me your answer . . . now! (100) Let's write the operations on the BB. Ps come to BB or dictate to T. BB: $800 \div 4 = 200$ ; $200 + 10 = 210$ ; $210 \times 3 = 630$ ; $630 + 70 = 700$ ; $700 \div 7 = 100$ How could we write it as one equation? Ps suggest how to do it. Class agrees/disagrees. T helps with the brackets if necessary. Let's check it. BB: $[(800 \div 4 + 10) \times 3 + 70] \div 7 = 100$ Repeat for, e.g. <i>Start with 20. Multiply by 8. (160) Add 20. (180) Divide by 60. (3) Add 60. (63) Divide by 9. (7) Multiply by 80. (560)</i> Show me . . . now! (560) Ps suggest how to write it as one equation (with T's help if necessary). BB: $[(20 \times 8 + 20) \div 60 + 60] \div 9 \times 80 = 560$	Whole class activity (but individual mental calculation) Wait until majority are ready before continuing to next step. Responses written on scrap paper or slates and shown in unison. Agreement, praising  Discussion, agreement, checking, praising Remind Ps to use curved brackets for 1st set needed, then square brackets for 2nd set needed.  Check that operations will be done in the correct order. You have been very clever!  10 min	
<b>3</b> <b>Boom!</b> Everyone stand up! We will count in multiples of 10 but you must say 'Boom' instead of the multiples of: a) <u>50</u> : '0, 10, 20, 30, 40, 'Boom', 60, 70, 80, 90, 'Boom', 110, . . .' b) <u>40 or 70</u> : '0, 10, 20, 30, Boom, 50, 60, Boom, Boom, 90, . . .' etc. Continue until fewer than 5 Ps remain standing. Let's give them a round of applause!	Whole class activity At speed, in order round class Ps knock on desks when they hear a mistake and P who made it must sit down. In good humour! Ps can choose the 'Boom' multiples too.  15 min	
<b>4</b> <b>Secret numbers</b> I am thinking of a number. I will give you a clue and you must work out what it is. Show me the number when I say. a) <i>It is 300 more than half of 420.</i> Show me . . . now! (510) P who answered correctly explains to those who did not. Let's check each step to make sure it is correct. b) <i>If I multiply it by 5, then add 400, then divide by 11, the result is 50.</i> Show me . . . now! (30) P explains. Class checks each step. If time, Ps can think of secret numbers and give clues too!	Individual work in <i>Ex. Bks.</i> Responses shown on scrap paper or slates in unison. BB: e.g. a) $n = 420 \div 2 + 300$ $= 210 + 300 = 510$ b) $n = (50 \times 11 - 400) \div 5$ $= (550 - 400) \div 5$ $= 150 \div 5 = 30$  20 min	



<b>Y4</b>		<i>Lesson Plan 13</i>
<p><b>Activity</b></p> <p><b>5</b></p>	<p><b>Inequalities</b></p> <p>Which <u>natural</u> numbers will make the inequality true? Elicit that natural numbers are positive whole numbers.</p> <p>a) Class reads inequality aloud first.</p> <p>'Five hundred plus the square is less than six hundred and eighteen minus one hundred and nine'</p> <p>What should we do first? (Work out the RHS.)</p> <p>Ps come to BB to do calculation, explaining reasoning. Class agrees/disagrees. Ps check with least and greatest possible values.</p> <p>BB: <math>500 + \square &lt; 618 - 109</math>  <math>\square</math>: 1, 2, 3, 4, 5, 6, 7 or 8</p> <p>b) Class reads the inequality aloud first. What should we do first? (Work out the LHS and RHS.) Ps come to BB to do calculations, explaining reasoning. Class agrees/disagrees. Ps check with least and greatest possible values.</p> <p>BB: <math>3 \times 27 + 150 &lt; 200 + \bigcirc &lt; 400 - 164</math>  <math>231 &lt; 200 + \bigcirc &lt; 236</math>  <math>\bigcirc</math>: 32, 33, 34, 35</p> <p style="text-align: right;">25 min</p>	<p><b>Notes</b></p> <p>Whole class activity</p> <p>Inequalities written on BB or SB or use enlarged copy master or OHP</p> <p>In unison</p> <p>Discussion, reasoning, agreement, checking, praising</p> <p><i>Check:</i></p> <p>BB: <math>500 + 1 &lt; 509</math> ✓  <math>500 + 8 &lt; 509</math> ✓</p> <p>In unison</p> <p>Discussion, reasoning, agreement, checking, praising</p> <p><i>Check:</i></p> <p>BB:  <math>231 &lt; 200 + 32 &lt; 236</math> ✓  <math>231 &lt; 200 + 35 &lt; 236</math> ✓</p>
<p><b>6</b></p>	<p><b>PbY4a, page 13</b></p> <p>Q.1 Read: <i>Do the calculations in the correct order.</i></p> <p>Deal with one at a time. Ps write results of 1st calculations above the operation signs.</p> <p>Review at BB with whole class. Ps come to BB or dictate to T. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) <math>2 \times 400 - 258 = \underline{542}</math>      b) <math>3 \times 140 - 130 = \underline{290}</math>  c) <math>7 \times 80 + 258 = \underline{818}</math>      d) <math>220 + 4 \times 90 = \underline{580}</math>  e) <math>912 - 5 \times 50 = \underline{662}</math>      f) <math>595 - 6 \times 70 = \underline{175}</math></p> <p style="text-align: right;">30 min</p>	<p>Individual work, monitored, helped</p> <p>Written on BB or SB or use enlarged copy master or OHP</p> <p>Calculations can be done in <i>Ex. Bks</i> if Ps cannot do them mentally.</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p>
<p><b>7</b></p>	<p><b>PbY4a, page 13</b></p> <p>Q.2 Read: <i>Do the calculations in the correct order.</i></p> <p>Deal with one at a time. Ps write results of 1st calculations above the operation signs .</p> <p>Review at BB with whole class. Ps come to BB or dictate to T. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) <math>640 \div 8 + 379 = \underline{459}</math>      b) <math>580 + 420 \div 6 = \underline{650}</math>  c) <math>910 - 480 \div 8 = \underline{850}</math>      d) <math>(1052 - 492) \div 7 = \underline{80}</math>  e) <math>810 \div 9 - 34 = \underline{56}</math>      f) <math>1200 \div (9 - 5) = \underline{300}</math></p> <p style="text-align: right;">35 min</p>	<p>Individual work, monitored, helped</p> <p>Written on BB or SB or use enlarged copy master or OHP</p> <p>Calculations can be done in <i>Ex. Bks</i> if Ps cannot do them mentally.</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p>

# Y4

## Lesson Plan 13

### Activity

8

*PbY4a, page 13*

Q.3 Read: *Underline the data. Make a plan. Estimate, calculate and write the answer.*

Deal with one part at a time. Set a time limit. Ps read question themselves and solve it in *Pbs*. Remember to check your result if you have time. Ps sit up with arms folded when finished.

Review with the whole class. Ps come to BB to show solutions, explaining reasoning. Who agrees? Who did it a different way? Who made a mistake? What kind of mistake? etc.

Repeat for each of the other questions.

*Solution:*

a) *George has 324 stamps and Rita has 3 times as many as George. How many stamps does Rita have?*

*Plan:* G: 324, R:  $324 \times 3$  E:  $300 \times 3 = 900$

C: e.g.  $324 \times 3 = 900 + 60 + 12 = 972$

*Answer:* Rita has 972 stamps.

b) *Helen has 324 postcards, which is 3 times as many as Mary has. How many postcards does Mary have?*

*Plan:* H: 324, M:  $324 \div 3$  E:  $300 \div 3 = 100$

C: e.g.  $324 \div 3 = 300 \div 3 + 24 \div 3 = 100 + 8 = 108$

*Answer:* Mary has 108 postcards.

c) *Steve has 324 marbles which is a quarter of the number of marbles that Jack has. How many marbles does Jack have?*

*Plan:* S: 324, J:  $324 \times 4$  E:  $300 \times 4 = 1200$

C: e.g.  $324 \times 4 = 1200 + 80 + 16 = 1296$

*Answer:* Jack has 1296 marbles.

d) *Johnny has 324 football cards and Mike has 1 quarter of that number. How many football cards does Mike have? How many football cards do the two boys have altogether?*

i) *Plan:* J: 324, M:  $324 \div 4$  E:  $320 \div 4 = 80$

C: e.g.  $324 \div 4 = 320 \div 4 + 4 \div 4 = 80 + 1 = 81$

*Answer:* Mike has 81 football cards.

ii) *Plan:* J + M:  $324 + 81$  E:  $320 + 80 = 400$

C: e.g.  $324 + 81 = 320 + 80 + 4 + 1 = 400 + 5 = 405$

*Answer:* They have 405 football cards altogether.

e) *Charlie has £324. How many matchbox cars can he buy with this money if each car costs £9? How much money would he have left?*

*Plan:* C: £324, 1 car: £9 No. of cars:  $£324 \div £9$

C: e.g.  $324 \div 9 = 270 \div 9 + 54 \div 9 = 30 + 6 = 36$

*Answer:* Charlie can buy 36 cars and he would have no money left.

Who had all 5 problems correct? Let's give them '3 cheers'!

45 min

### Notes

Individual work, monitored, helped.

Discussion, reasoning, agreement, self-correction, praising

Keep up a good pace throughout.

Accept any form of correct calculation, e.g.

$$\begin{array}{r} 324 \times 3 \\ \hline 972 \end{array}$$

$$\begin{array}{r} 108 \\ 3 \overline{) 324} \\ \underline{- 3} \phantom{0} \\ 24 \\ \underline{- 24} \\ 0 \end{array}$$

$$\begin{array}{r} 324 \times 4 \\ \hline 1296 \end{array}$$

$$\begin{array}{r} 81 \\ 4 \overline{) 324} \\ \underline{- 32} \phantom{0} \\ 04 \\ \underline{- 04} \\ 0 \end{array}$$

$$\begin{array}{r} 324 \\ + 81 \\ \hline 405 \end{array}$$

Estimate can be done with the whole class here.

E:  $30 < N < 40$

$$\begin{array}{r} 36 \\ 9 \overline{) 324} \\ \underline{- 27} \phantom{0} \\ 54 \\ \underline{- 54} \\ 0 \end{array}$$

<h1>Y4</h1>	<p>R: Mental calculation  <b>C: Multiplication and division tables. Operations up to 1000</b>                  E: Operations up to 2000</p>	<h2>Lesson Plan 14</h2>																																																																							
<p><b>Activity</b></p> <p><b>1</b></p>	<p><b>Secret number</b></p> <p>I am thinking of a number. Try to find out what it is by asking me questions about it. I can answer only yes or no and your question must be different from the previous one.</p> <p>e.g.</p> <ul style="list-style-type: none"> <li>• Is it less than 1000? Yes</li> <li>• Does it have 3 digits? Yes</li> <li>• Is it more than 500? No</li> <li>• Is it a whole hundred? No</li> <li>• Is its hundreds digit odd? Yes</li> <li>• Is it less than 300? No</li> <li>• Is its tens digit less than 5? No</li> <li>• Is it more than 375? Yes</li> <li>• Is it less than 390? No</li> <li>• Does it have two digits the same? No</li> <li>• Is it odd? Yes</li> <li>• Is its units digit less than 5? Yes</li> <li>• It is <u>391</u>! Yes</li> </ul> <p style="text-align: right;"><i>5 min</i></p>	<p><b>Notes</b></p> <p>Whole class activity</p> <p>T chooses Ps at random to ask a question.</p> <p>Encourage Ps to ask logical questions and to keep in mind clues already found out from previous questions.</p> <p>Ps can make notes in <i>Ex. Bks.</i></p> <p>At a good pace</p> <p>Extra praise for clever questions</p> <p>Repeat with another number if time (or P comes to front to think of a number and to answer questions.)</p>																																																																							
<p><b>2</b></p>	<p><b>Calculation practice</b></p> <p>T dictates 5 numbers. Ps write them in <i>Ex. Bks.</i>, one below the other, lining them up by place value.</p> <p>e.g. T: 567                    318                    9                    935                    76</p> <p>Do these calculations in your <i>Ex. Bks.</i> Show me the result when I say.</p> <p>a) <i>What is the difference between the greatest and 2nd greatest numbers?</i>          Show me . . . now! (368)          Write a 'B' at the bottom of your page if you were correct.     <b>B</b></p> <p>b) <i>What is the sum of the three 3-digit numbers?</i>          Show me . . . now! (1820)          Write an 'E' at the bottom of your page if you were correct.     <b>E</b></p> <p>c) Divide the 2nd greatest number by the smallest number.          Show me . . . now! (63)          Write an 'S' at the bottom of your page if you were correct.     <b>S</b></p> <p>d) What is the product of the two smallest numbers?          Show me . . . now! (684)          Write a 'T' at the bottom of your page if you were correct.     <b>T</b></p> <p>What word did you make if you got them all correct? (BEST)</p> <p style="text-align: right;"><i>13 min</i></p>	<p>Individual work but class kept together</p> <p>Responses written on scrap paper or slates.</p> <p>Quick check after each one.</p> <p>Ps who answered correctly come to BB to explain to Ps who were wrong.</p> <p>Reasoning, agreement, self-correcting, praising</p> <p>BB:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td></td><td>9</td><td>3</td><td>5</td></tr> <tr><td>-</td><td>5</td><td>6</td><td>7</td></tr> <tr><td></td><td>3</td><td>6</td><td>8</td></tr> </table> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td></td><td>5</td><td>6</td><td>7</td></tr> <tr><td></td><td>3</td><td>1</td><td>8</td></tr> <tr><td>+</td><td>9</td><td>3</td><td>5</td></tr> <tr><td>1</td><td>8</td><td>2</td><td>0</td></tr> <tr><td></td><td>1</td><td>2</td><td></td></tr> </table> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td></td><td></td><td>6</td><td>3</td></tr> <tr><td>9</td><td>5</td><td>6</td><td>7</td></tr> <tr><td>-</td><td>5</td><td>4</td><td></td></tr> <tr><td></td><td></td><td>2</td><td>7</td></tr> <tr><td></td><td></td><td>2</td><td>7</td></tr> <tr><td></td><td></td><td></td><td>0</td></tr> </table> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td></td><td>7</td><td>6</td><td>×</td><td>9</td></tr> <tr><td>6</td><td>8</td><td>4</td><td></td><td></td></tr> <tr><td></td><td></td><td>5</td><td></td><td></td></tr> </table> <p>Ps shout out in unison. Praising</p>		9	3	5	-	5	6	7		3	6	8		5	6	7		3	1	8	+	9	3	5	1	8	2	0		1	2				6	3	9	5	6	7	-	5	4				2	7			2	7				0		7	6	×	9	6	8	4					5		
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# Y4

## Lesson Plan 14

### Activity

3

#### Multiplication

Let's show these multiplications in detail to remind ourselves what we are doing. Ps come out to work on BB and rest of class work in *Ex. Bks.*

BB:

a)

2	1	6	×	1		
2	1	6				

2	1	6	×	2		
	1	2				
	2					
4						
4	3	2				

2	1	6	×	3		
	1	8				
	3					
6						
6	4	8				

2	1	6	×	4		
	2	4				
	4					
8						
8	6	4				

2	1	6	×	5		
	3	0				
	5					
1	0					
1	0	8	0			

shorter way

2	1	6	×	2		
4	3	2				
	1					

2	1	6	×	3		
6	4	8				
	1					

2	1	6	×	4		
8	6	4				
	2					

2	1	6	×	5		
1	0	8	0			
	3					

b)

	3	1	4	×	4		
		1	6				
		4					
1	2						
1	2	5	6				

	2	3	4	×	4		
		1	6				
		1	2				
8							
9	3	6					

shorter way

	3	1	4	×	4		
1	2	5	6				
	1						

	2	3	4	×	4		
9	3	6					
	1						

Details of reasoning: e.g.

$$314 \times 4: \quad 4 \times 4U = 16U = 1T + 6U$$

$$4 \times 1T = 4T; \quad 4T + 1T = 5T$$

$$4 \times 3H = 12H = 1Th + 2H$$

20 min

### Notes

Whole class activity

Written on BB or use enlarged copy master or OHP

Encourage Ps to give reasoning with details of place-value (as example below)  
Agreement, praising

Use the expressions to show:

- place value (e.g. 5T)
- digit value (e.g. 5)
- real value (e.g. 50)

If any P still does not understand, ask them to do another example on BB (with help of rest of class)

4

#### PbY4a, page 14

Q.1 Read: *Estimate the product first, then do the multiplication.*

Set a time limit. Ask Ps to estimate to the nearest 10.

Review at BB with whole class. Ps come to BB or dictate to T, explaining reasoning in detail. Class agrees/disagrees.

Mistakes discussed and corrected. If problems, show multiplication in long form on BB.

*Solution:*

a) E: 

4	2	0
---	---	---

 E: 

4	5	0
---	---	---

 E: 

7	5	0
---	---	---

 E: 

1	0	5	0
---	---	---	---

	7	3	×	6		
4	3	8				
	1					

	1	4	6	×	3		
4	3	8					
	1	1					

	2	4	6	×	3		
7	3	8					
	1	1					

	3	4	6	×	3		
1	0	3	8				
	1	1					

b) E: 

4	0	0
---	---	---

 E: 

4	5	0
---	---	---

 E: 

9	0	0
---	---	---

 E: 

7	5	0
---	---	---

	4	7	×	8		
3	7	6				
	5					

	1	4	7	×	3		
4	4	1					
	1	2					

	1	4	7	×	6		
8	8	2					
	2	4					

	2	4	7	×	3		
7	4	1					
	1	2					

26 min

Individual work, monitored, helped

Written on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

Feedback for T

Ps point out relationships. e.g. doubling one term and halving the other term gives the same result, etc.

**Y4***Lesson Plan 14***Activity****5****Division**

Let's do the division in different ways. Ps dictate what T should write (horizontal division), or come to BB (vertical division), explaining reasoning. Who agrees? Who can do it another way? etc.

T demonstrates shorter way if no P has done so, with place-value details.

BB:

a)  $476 \div 2 = 400 \div 2 + 70 \div 2 + 6 \div 2 = 200 + 35 + 3 = \underline{238}$

	2	3	8	
2	4	7	6	
-	4			
	0	7		
		-	6	
			1	6
		-	1	6
				0

Shorter way

	2	3	8
2	4	7	6
			1

Details:  $4\text{H} \div 2 = \underline{2\text{H}}$   
 $7\text{T} \div 2 = \underline{3\text{T}}$ , and 1T remains  
 $1\text{T} + 6\text{U} = 16\text{U}$   
 $16\text{U} \div 2 = \underline{8\text{U}}$

b)  $812 \div 7 = 700 \div 7 + 70 \div 7 + 42 \div 7 = 100 + 10 + 6 = \underline{116}$

	1	1	6	
7	8	1	2	
-	7			
	1	1		
		-	7	
			4	2
		-	4	2
				0

Shorter way

	1	1	6	
7	8	1	2	
			1	4

Details:  $8\text{H} \div 7 = \underline{1\text{H}}$ , and 1H remains  
 $1\text{H} + 1\text{T} = 11\text{T}$   
 $11\text{T} \div 7 = \underline{1\text{T}}$ , and 4T remains  
 $4\text{T} + 2\text{U} = 42\text{U}$   
 $42\text{U} \div 7 = \underline{6\text{U}}$

c)  $714 \div 6 = 600 \div 6 + 60 \div 6 + 54 \div 6 = 100 + 10 + 9 = \underline{119}$

	1	1	9	
6	7	1	4	
-	6			
	1	1		
		-	6	
			5	4
		-	5	4
				0

Shorter way

	1	1	9	
6	7	1	4	
			1	5

Details:  $7\text{H} \div 6 = \underline{1\text{H}}$ , and 1H remains  
 $1\text{H} + 1\text{T} = 11\text{T}$   
 $11\text{T} \div 6 = \underline{1\text{T}}$ , and 5T remains  
 $5\text{T} + 4\text{U} = 54\text{U}$   
 $54\text{U} \div 6 = \underline{9\text{U}}$

d)  $735 \div 5 = 500 \div 5 + 200 \div 5 + 35 \div 5 = 100 + 40 + 7 = \underline{147}$

	1	4	7	
5	7	3	5	
-	5			
	2	3		
		-	2	0
			3	5
		-	3	5
				0

Shorter way

	1	4	7	
5	7	3	5	
			2	3

Details:  $7\text{H} \div 5 = \underline{1\text{H}}$ , and 2H remains  
 $2\text{H} + 3\text{T} = 23\text{T}$   
 $23\text{T} \div 5 = \underline{4\text{T}}$ , and 3T remains  
 $3\text{T} + 5\text{U} = 35\text{U}$   
 $35\text{U} \div 5 = \underline{7\text{U}}$

35 min

**Notes**

Whole class activity

Divisions written on BB or SB or OHT

Use squared board if possible or grids drawn on BB or use enlarged copy master for long and short vertical division.

Allow Ps to show the methods of calculation, with rest of class pointing out errors.

T could show how to do the first short division in detail, then Ps could do the others (with T's help).

At a good pace

Reasoning, agreement

Praising, encouragement only

# Y4

## Lesson Plan 14

### Activity

6

*PbY4a, page 14*

Q.2 Read: *Estimate the quotient first, then do the division.*  
*Check with multiplication.*

Ps estimate by rounding to nearest 100. Ps can use long or short division. Deal with one part at a time if Ps are unsure.

Review at BB with whole class. Ps come to BB to do calculations, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected.

*Solution:*

a) E: 200                      b) E: 140 (700 ÷ 5)                      c) E: e.g. 125 (1000 ÷ 8)

H	T	U
2	1	2
4	8	4
-	8	
	0	4
-	4	
		0
	0	8
	-	8
		0

Check:

H	T	U	
2	1	2	× 4
8	4	8	

H	T	U
1	3	4
5	6	7
-	5	
	1	7
-	1	5
		2
		0
	-	2
		0

Check:

H	T	U	
1	3	4	× 5
6	7	0	

H	T	U
1	2	2
8	9	7
-	8	
	1	7
-	1	6
		1
		6
	-	1
		6
		0

Check:

H	T	U	
1	2	2	× 8
9	7	6	

40 min

### Notes

Individual work, monitored, helped

Written on BB or use enlarged copy master or OHP

Ps give details of how they estimated and also say what they are doing when showing calculations.

Extra praise if Ps used short division correctly and can explain reasoning!

e.g.

	1	3	4
5	6	7	0
	1	2	

b)

6H ÷ 5 = 1H, and 1H remains  
 1H + 7T = 17T  
 17T ÷ 5 = 3T, and 2T remain  
 2T + 0U = 20U  
 20U ÷ 5 = 4U

Feedback for T

7

*PbY4a, page 14*

Q.3 Read: *Underline the data. Make a plan. Estimate, calculate and write the answer.*

Deal with one part at a time. Ps read problem themselves and write just a plan for each first.

Review plans with the whole class. **A**, what plan did you write? Who wrote the same? Who wrote a different one? etc. Class agrees on which plans are correct. Mistakes corrected.

Then Ps estimate, calculate and write the answers. Ps can use *Ex. Bks* for calculations and write only plans and answers in *Pbs*.

Review with whole class. Ps come to BB to do calculations, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected.

*Solution:*

a) *Lisa had collected 516 shells. She gave 1 quarter of the shells to Alice and 1 third of them to Julie. How many shells did Lisa have left?*

Plan: L: 516, A: 516 ÷ 4, J: 516 ÷ 3

L had left: 516 - 516 ÷ 4 - 516 ÷ 3  
 or 516 - (516 ÷ 4 + 516 ÷ 3)

C: e.g. 516 ÷ 4 = 400 ÷ 4 + 80 ÷ 4 + 36 ÷ 4  
 = 100 + 20 + 9 = 129                      **A: 129**

516 ÷ 3 = 300 ÷ 3 + 210 ÷ 3 + 6 ÷ 3  
 = 100 + 70 + 2 = 172                      **J: 172**

A + J: 129 + 172 = 229 + 72 = 299 + 2 = 301

L - (A + J): 516 - 301 = 215

Answer: Lisa had 215 shells left.

Individual work in writing plans first, monitored, helped  
 Discuss correct plans with whole class before calculating.

Individual work in calculating (or done with whole class if time is short)

Reasoning, agreement, self-correction, praising

E: 500 - 100 - 200 = 200

Or BB:

1	2	9
4	5	1
	1	3

1	7	2
3	5	1
	2	

Check: 129 + 172 + 215 = 516

<b>Y4</b>		<i>Lesson Plan 14</i>																																														
<b>Activity</b> 7	<p>(Continued)</p> <p>b) <i>Darren bought 5 pairs of sports socks for £7.75. Jamie bought 6 pairs of the same kind of socks. How much did Jamie pay?</i></p> <p><i>Plan:</i> D: 5 pairs <math>\rightarrow</math> £7.75 = 775 p,            1 pair <math>\rightarrow</math> 775 p <math>\div</math> 5</p> <p>J: 6 pairs <math>\rightarrow</math> (775 p <math>\div</math> 5) <math>\times</math> 6</p> <p>C: e.g. <math>775 \div 5 = 500 \div 5 + 250 \div 5 + 25 \div 5</math>  <math>= 100 + 50 + 5 = \underline{155}</math> (p)</p> <p><math>155 \times 6 = 100 \times 6 + 50 \times 6 + 5 \times 6</math>  <math>= 600 + 300 + 30 = \underline{930}</math> (p)</p> <p>930 p = £9.30</p> <p><i>Answer:</i> Jamie paid £9.30</p> <p style="text-align: right;"><i>45 min</i></p>	<p style="text-align: center;"><b>Notes</b></p> <p>Agreement on plan first, then individual calculation</p> <p>Reasoning, agreement, self-correcting, praising</p> <p>E: <math>800 \div 5 \times 6 = 160 \times 6 = 960</math> (p)</p> <p>Or BB:            or</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="border: 1px dashed black; padding: 2px;">1</td> <td style="border: 1px dashed black; padding: 2px;">5</td> <td style="border: 1px dashed black; padding: 2px;">5</td> <td></td> </tr> <tr> <td style="border: 1px dashed black; padding: 2px;">5</td> <td style="border: 1px dashed black; padding: 2px;">7</td> <td style="border: 1px dashed black; padding: 2px;">7</td> <td style="border: 1px dashed black; padding: 2px;">5</td> </tr> <tr> <td></td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td></td> </tr> </table> <p style="margin-left: 20px;"><math>6</math></p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="border: 1px dashed black; padding: 2px;">1</td> <td style="border: 1px dashed black; padding: 2px;">5</td> <td style="border: 1px dashed black; padding: 2px;">5</td> <td style="border: 1px dashed black; padding: 2px;"><math>\times</math></td> <td style="border: 1px dashed black; padding: 2px;">6</td> <td></td> </tr> <tr> <td style="border: 1px dashed black; padding: 2px;">9</td> <td style="border: 1px dashed black; padding: 2px;">3</td> <td style="border: 1px dashed black; padding: 2px;">0</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">3</td> <td style="text-align: center;">3</td> <td></td> <td></td> <td></td> </tr> </table> <p style="margin-left: 20px;"><math>6</math></p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="border: 1px dashed black; padding: 2px;">7</td> <td style="border: 1px dashed black; padding: 2px;">7</td> <td style="border: 1px dashed black; padding: 2px;">5</td> <td></td> </tr> <tr> <td style="border: 1px dashed black; padding: 2px;">+</td> <td style="border: 1px dashed black; padding: 2px;">1</td> <td style="border: 1px dashed black; padding: 2px;">5</td> <td style="border: 1px dashed black; padding: 2px;">5</td> </tr> <tr> <td></td> <td style="text-align: center;">9</td> <td style="text-align: center;">3</td> <td style="text-align: center;">0</td> </tr> <tr> <td></td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td></td> </tr> </table> <p>6 pairs = 5 pairs + 1 pair</p>	1	5	5		5	7	7	5		2	2		1	5	5	$\times$	6		9	3	0					3	3				7	7	5		+	1	5	5		9	3	0		1	1	
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# Y4

# Lesson Plan 15

## Activity

## Notes

Tables practice, revision, activities, consolidation  
**PbY4a, page 15**

*Solutions:*

Q.1 4, 13, 22, 31, 40, 103, 112, 121, 130, 202, 211, 220, 301, 310, 400

Q.2 a) F (114 is not a multiple of 4)  
b) T  
c) F (100 is 10 whole tens)  
d) T

Q.3 0, 9, 103,  
99, 6, 49,  
160, 669, 60,  
20, 207, 900,  
63, 2007, 450

The number is	even	odd
divisible by 9	0 900 450	9 99 207 63 2007
not divisible by 9	6 160 60 20	103 49 669

Q.4 a) 

	2	6	7
+	3	5	2
	6	1	9

 b) 

	2	9	3	
+	7	8	2	
	1	0	7	5

 c) 

	9	8	8
-	4	3	6
	5	5	2

 d) 

	8	5	1
-	3	6	3
	4	8	8

Q.5

$45 + 75 \times 3$   
 Half of 2430  
 $1645 + 560 \div 8$   
 $324 \div 3 + 892$   
 $1715$   
 $270$   
 $1215$   
 $550$   
 $1032$   
 $1000$   
 $1802$   
 $21$   
 $770 \div 7 \times 5$   
 $(1324 - 423) \times 2$   
 $(328 - 139) \div 9$   
 $1\text{Th} + 8\text{T} + 2\text{U}$



<h1>Y4</h1>	R: Mental calculation (4 operations) C: <b>Written calculation. Division with remainders. Divisibility</b> E: Numbers up to 2000. Problems in context	<h2>Lesson Plan</h2> <h1>16</h1>																				
<b>Activity</b>  <b>1</b>	<b>Addition and subtraction practice</b> Let's fill in the missing numbers. Ps come out to BB to write missing values, saying whole equation and explaining reasoning. Class agrees/disagrees. Check with reverse operation. BB: a) $36 + \boxed{50} = 86$ b) $\boxed{40} + 57 = 97$ c) $84 - \boxed{70} = 14$ d) $\boxed{72} - 30 = 42$ e) $236 + \boxed{50} = 286$ f) $\boxed{40} + 357 = 397$ g) $584 - \boxed{70} = 514$ h) $\boxed{472} - 30 = 442$ i) $236 + \boxed{450} = 686$ j) $\boxed{240} + 357 = 597$ k) $584 - \boxed{270} = 314$ l) $\boxed{572} + 130 = 442$  <i>5 min</i>	<b>Notes</b>  Whole class activity Written on BB or SB or OHT or use enlarged copy master At a good pace Agreement, praising Feedback for T																				
<b>2</b>	<b>Multiplication and division practice</b> Let's fill in the missing numbers. Ps come out to BB to write missing values, saying whole equation and explaining reasoning. Class agrees/disagrees. Check with reverse operation. BB: a) $\boxed{50} \times 3 = 150$ b) $\boxed{3} \times 60 = 180$ c) $\boxed{20} \times 9 = 180$ d) $\boxed{8} \times 70 = 560$ e) $40 \times \boxed{20} = 800$ f) $\boxed{25} \times 4 = 100$ g) $250 \times \boxed{4} = 1000$ h) $\boxed{35} \times 20 = 700$ i) $320 \div \boxed{8} = 40$ j) $450 \div \boxed{50} = 9$ k) $\boxed{300} \div 6 = 50$ l) $\boxed{420} \div 70 = 6$  <i>10 min</i>	Whole class activity Written on BB or SB or OHT or use enlarged copy master At a good pace Agreement, praising Feedback for T																				
<b>3</b>	<b>Sequences</b> T says and writes on BB the first few terms of a sequence. Ps note terms in <i>Ex. Bks</i> and work out the rule. Let's continue the sequence. What is the rule? Who agrees? Who can express it in a different way? etc. a) 1, 5, 9, 13, (17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, ...) <i>Rule:</i> Increasing by 4, or gives a remainder of 1 after dividing by 4 b) 18, 33, 48, 63, (78, 93, 108, 123, 138, 153, 168, 183, ...) <i>Rule:</i> Increasing by 15, or gives a remainder of 3 after dividing by 15 (or by 5) c) 11, 111, 211, 311, (411, 511, 611, 711, 811, 911, 1011, ...) <i>Rule:</i> Increasing by 100, or gives a remainder of 11 after dividing by 100 (or by 50 or by 20)  <i>15 min</i>	Whole class activity At speed in order round class Class points out errors. Discussion, agreement on the rule. If disagreement, check one or two terms, e.g. BB: $138 = 15 \times 9 + \textcircled{3}$ or <table border="1" style="border-collapse: collapse; text-align: center; width: 100px; margin: 0 auto;"> <tr><td></td><td></td><td></td><td></td><td>9</td></tr> <tr><td>1</td><td>5</td><td>1</td><td>3</td><td>8</td></tr> <tr><td></td><td>-</td><td>1</td><td>3</td><td>5</td></tr> <tr><td></td><td></td><td></td><td></td><td>3</td></tr> </table> $711 = 7 \times 100 + \textcircled{11}$					9	1	5	1	3	8		-	1	3	5					3
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<b>Y4</b>		<i>Lesson Plan 16</i>															
<p><b>Activity</b></p> <p><b>4</b></p>	<p><b>Problems</b></p> <p>Listen carefully, note the data, do the calculation in your <i>Ex. Bks.</i> and show me the result when I say.</p> <p>a) <i>Rabbit's burrow is 216 m from the woods. If one day Rabbit makes 2 journeys to the wood and back, what distance did he cover that day?</i></p> <p>Show me . . . now! (864 m)</p> <p>P who responded correctly explains to those who did not. e.g.</p> <p>He made 2 journeys there and back so he covered the distance <u>4</u> times.</p> <p>C: <math>216 \times 4 = 200 \times 4 + 10 \times 4 + 6 \times 4</math> or <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>2</td><td>1</td><td>6</td><td>×</td><td>4</td></tr><tr><td>8</td><td>6</td><td>4</td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td>2</td></tr></table></p> <p style="margin-left: 100px;"><math>= 800 + 40 + 24</math></p> <p style="margin-left: 100px;"><math>= \underline{864}</math> (m)</p> <p><i>Answer:</i> Rabbit covered 864 m.</p> <p>b) <i>Dan measured the length of his exercise book 5 times and found it was 295 mm each time. How wide is Dan's exercise book?</i></p> <p>Show me . . . now! (295 mm)</p> <p>No calculation is needed. The width is given in the question!</p> <p><i>Answer:</i> Dan's exercise book is 295 mm wide.</p> <p style="text-align: right;"><i>19 min</i></p>	2	1	6	×	4	8	6	4							2	<p><b>Notes</b></p> <p>Whole class activity</p> <p>T repeats each question slowly and a P repeats in own words.</p> <p>Give Ps time to think and calculate.</p> <p>Results written on scrap paper or slates and shown in unison.</p> <p>Reasoning, agreement, self-correction, praising</p> <p>T stresses that Ps should listen to (or read) questions carefully and picture them in their heads.</p> <p>Imagine yourself measuring your own <i>Ex. Bk.</i> 5 times!</p>
2	1	6	×	4													
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				2													
<p><b>5</b></p>	<p><b>Divisibility</b></p> <p>Let's make 2-digit numbers from the digits 0, 1, 2, 3, 4 and 5 so that they are divisible by</p> <p>a) 2 (10, 12, 14, 20, 22, 24, 30, 32, 34, 40, 42, 44, 50, 52, 54)</p> <p>b) 3 (12, 15, 21, 24, 30, 33, 42, 45, 51, 54)</p> <p>c) 4 (12, 20, 24, 32, 40, 44, 52)</p> <p>d) 5 (10, 15, 20, 25, 30, 35, 40, 45, 50, 55)</p> <p>e) 7 (14, 21, 35, 42)</p> <p>If a P makes a mistake, show it by reasoning with division. e.g.</p> <ul style="list-style-type: none"> <li>• 3 is <u>not</u> a factor of 52, because <math>52 \div 3 = 30 \div 3 + 22 \div 3</math>  <math>= 10 + 7, r 1 = \underline{17, r 1}</math></li> <li>• 43 is <u>not</u> divisible by 4, because <math>43 \div 4 = \underline{10, r 3}</math></li> </ul> <p style="text-align: right;"><i>25 min</i></p>	<p>Whole class activity</p> <p>T write digits on BB</p> <p>Ps dictate the 2-digit numbers</p> <p>Class points out errors.</p> <p>Agreement, checking in case of mistake, praising</p> <p>Show details of more difficult cases, e.g.</p> <p><math>52 \div 2 = 40 \div 2 + 12 \div 2</math>  <math>= 20 + 6 = \underline{26}</math></p> <p><math>54 \div 3 = 30 \div 3 + 24 \div 3</math>  <math>= 10 + 8 = \underline{18}</math></p>															

# Y4

## Lesson Plan 16

### Activity

6

**PbY4a, page 16**

Q.1 Read: Calculate the quotient and the remainder. Check with multiplication.

Deal with one part at a time. Review at BB with whole class. Ps come to BB (with their Pbs) to do calculation and explain reasoning. Class points out errors. Mistakes discussed/corrected.

Solution:

<p>a)</p> <table border="1" style="border-collapse: collapse; text-align: center; width: 100%;"> <tr><td></td><td>H</td><td>T</td><td>U</td><td></td></tr> <tr><td></td><td>1</td><td>0</td><td>7</td><td>r 5</td></tr> <tr><td>6</td><td>6</td><td>4</td><td>7</td><td></td></tr> <tr><td>-</td><td>6</td><td></td><td></td><td></td></tr> <tr><td></td><td>0</td><td>4</td><td>7</td><td></td></tr> <tr><td></td><td>-</td><td>4</td><td>2</td><td></td></tr> <tr><td></td><td></td><td></td><td>5</td><td></td></tr> </table> <p>Check:</p> <table border="1" style="border-collapse: collapse; text-align: center; width: 100%;"> <tr><td>H</td><td>T</td><td>U</td><td></td><td></td></tr> <tr><td>1</td><td>0</td><td>7</td><td>×</td><td>6</td></tr> <tr><td>6</td><td>4</td><td>2</td><td></td><td></td></tr> <tr><td>+</td><td>5</td><td></td><td></td><td></td></tr> <tr><td>6</td><td>4</td><td>7</td><td></td><td>✓</td></tr> </table>		H	T	U			1	0	7	r 5	6	6	4	7		-	6					0	4	7			-	4	2					5		H	T	U			1	0	7	×	6	6	4	2			+	5				6	4	7		✓	<p>b)</p> <table border="1" style="border-collapse: collapse; text-align: center; width: 100%;"> <tr><td></td><td>H</td><td>T</td><td>U</td><td></td></tr> <tr><td></td><td>1</td><td>2</td><td>4</td><td>r 4</td></tr> <tr><td>7</td><td>8</td><td>7</td><td>2</td><td></td></tr> <tr><td>-</td><td>7</td><td></td><td></td><td></td></tr> <tr><td></td><td>1</td><td>7</td><td></td><td></td></tr> <tr><td>-</td><td>1</td><td>4</td><td></td><td></td></tr> <tr><td></td><td></td><td>3</td><td>2</td><td></td></tr> <tr><td></td><td>-</td><td>2</td><td>8</td><td></td></tr> <tr><td></td><td></td><td></td><td>4</td><td></td></tr> </table> <p>Check:</p> <table border="1" style="border-collapse: collapse; text-align: center; width: 100%;"> <tr><td>H</td><td>T</td><td>U</td><td></td><td></td></tr> <tr><td>1</td><td>2</td><td>4</td><td>×</td><td>7</td></tr> <tr><td>8</td><td>6</td><td>8</td><td></td><td></td></tr> <tr><td>+</td><td>4</td><td></td><td></td><td></td></tr> <tr><td>8</td><td>7</td><td>2</td><td></td><td>✓</td></tr> </table>		H	T	U			1	2	4	r 4	7	8	7	2		-	7					1	7			-	1	4					3	2			-	2	8					4		H	T	U			1	2	4	×	7	8	6	8			+	4				8	7	2		✓	<p>c)</p> <table border="1" style="border-collapse: collapse; text-align: center; width: 100%;"> <tr><td></td><td>H</td><td>T</td><td>U</td><td></td></tr> <tr><td></td><td>2</td><td>3</td><td>7</td><td>r 1</td></tr> <tr><td>4</td><td>9</td><td>4</td><td>9</td><td></td></tr> <tr><td>-</td><td>8</td><td></td><td></td><td></td></tr> <tr><td></td><td>1</td><td>4</td><td></td><td></td></tr> <tr><td>-</td><td>1</td><td>2</td><td></td><td></td></tr> <tr><td></td><td></td><td>2</td><td>9</td><td></td></tr> <tr><td></td><td>-</td><td>2</td><td>8</td><td></td></tr> <tr><td></td><td></td><td></td><td>1</td><td></td></tr> </table> <p>Check:</p> <table border="1" style="border-collapse: collapse; text-align: center; width: 100%;"> <tr><td>H</td><td>T</td><td>U</td><td></td><td></td></tr> <tr><td>2</td><td>3</td><td>7</td><td>×</td><td>4</td></tr> <tr><td>9</td><td>4</td><td>8</td><td></td><td></td></tr> <tr><td>+</td><td>1</td><td></td><td></td><td></td></tr> <tr><td>9</td><td>4</td><td>9</td><td></td><td>✓</td></tr> </table>		H	T	U			2	3	7	r 1	4	9	4	9		-	8					1	4			-	1	2					2	9			-	2	8					1		H	T	U			2	3	7	×	4	9	4	8			+	1				9	4	9		✓
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31 min

### Notes

Individual work, monitored, helped

(or part a) done with whole class first if Ps are unsure)

Written on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correcting, praising

Accept any correct method of calculation (horizontal division in Ex. Bks, long division or short division)

Ps circle remainders and/or write beside answers.

Feedback for T

7

**PbY4a, page 16**

Q.2 Read: Is 642 divisible by these numbers? Do the calculations, then write YES or NO.

How can we tell whether a number is divisible by another number? (After doing the division there will be no remainder.)

Set a time limit. Ps do long or short division (or horizontal division in Ex. Bks if they prefer) and write YES or NO on dotted lines in Pbs.

Review at BB with whole class. T points to a number. Is 642 divisible by this number? Class shouts YES or NO in unison.

Ps who respond incorrectly come to BB to do calculation (with help of class). Mistakes corrected.

Agree that 642 is divisible by 3 and 6, but not by 4 and 9.

Elicit that 3 and 6 are factors of 642 (642 is a multiple of 3 and 6).

Solution:

a) 3 YES	b) 4 NO	c) 6 YES	d) 9 NO
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36 min

Individual work, monitored, helped

Differentiation by time limit

Written on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correcting, praising

T shows another way to reason, e.g.

BB: 642 = 600 + 30 + 12  
(all divisible by 3 and 6)

or 642 = 630 + 9 + 3  
(630 and 9 are divisible by 9 but 3 is not)

or 642 = 400 + 240 + 2  
(400 and 240 are divisible by 4 but 2 is not)

**Y4***Lesson Plan 16***Activity****8****PbY4a, page 16**

Q.3 Read: *Do the calculations in your exercise book.*  
*Write the answers in the boxes.*

Set a time limit. Ps read questions themselves, do calculations and write results in *Pbs*.

Review with whole class. T (or P) reads each question and class show solutions on command. Ps who respond correctly explain at BB to those who were wrong. Mistakes corrected.

*Solution:*

a) *Which number is three times as much as 264?* (792)

BB: e.g.  $264 \times 3 = 600 + 180 + 12 = \underline{792}$

b) *Three times a number is 264. What is the number?* (88)

BB: e.g.  $264 \div 3 = 240 \div 3 + 24 \div 3 = 80 + 8 = \underline{88}$

c) *Which number is 1 third of 426?* (142)

BB: e.g.  $426 \div 3 = 300 \div 3 + 120 \div 3 + 6 \div 3$   
 $= 100 + 40 + 2 = \underline{142}$

d) *One third of a number is 426. What is the number?* (1278)

BB: e.g.  $426 \times 3 = 1200 + 60 + 18 = \underline{1278}$

40 min

**Notes**

Individual work, monitored, helped

Ps may use any correct method of calculation.

Responses shown on scrap paper or slates in unison.

Reasoning, agreement, self-correction, praising

or 

2	6	4	×	3
7	9	2		
1	1			

or 

		8	8
3	2	6	4
	2		

or 

	1	4	2
3	4	2	6
	1		

or 

	4	2	6	×	3
1	2	7	8		
	1				

**9****Remainders**

Let's practise finding remainders. Ps dictate numbers to T who writes on BB as a sequence. Class points out errors or missed numbers.

T decides when to skip some terms and continue from other numbers.

a) *Tell me the natural numbers which have a remainder of*

i) *1 after they have been divided by 3,*

e.g. 1, 4, 7, 10, 13, 16, 19, . . . , 601, . . . , 820, . . .

Elicit that they are 1 more than multiples of 3.

ii) *2 after dividing by 3,*

e.g. 2, 5, 8, 11, . . . , 602, . . . , 821, . . .

Elicit that they are 2 more than multiples of 3.

iii) *1 after dividing by 7*

e.g. 1, 8, 15, 22, 29, . . . , 351, . . . , 904, . . .

Elicit that they are 1 more than multiples of 7.

b) **PbY4a, page 16, Q.4**

Read: *Write 2-digit numbers which have a remainder of 6 after dividing by 7.*

Give Ps time to write numbers in *Pbs*. Then Ps dictate numbers to T who writes them on BB as a sequence. Class points out errors or missed numbers.

BB: 13, 20, 27, 34, 41, 48, 55, 62, 69, 76, 83, 90, 97

Elicit that they are 6 more (or 1 less) than multiples of 7

45 min

Whole class activity

Elicit that natural numbers are positive whole numbers.

At speed in order round class

Check on BB that new 3-digit start numbers have the correct remainder, e.g.

BB:

$820 = 600 + 210 + 9 + \textcircled{1}$

$351 = 350 + \textcircled{1}$

$904 = 700 + 140 + 63 + \textcircled{1}$

Individual work, monitored (or continue as whole class activity)

Agreement, self-correcting praising

**Y4**

R: Mental calculations  
 C: **Written calculations. Division (with remainders). Divisibility**  
 E: *Numbers up to 2000. Problems.*

*Lesson Plan*  
**17**

**Activity**

**1**

**Forming rectangles**

Let's draw different rectangles which have a perimeter of 24 units.  
 Elicit that 1 unit is the side of a grid square.

Ps come to BB to draw rectangles on the grid, confirming perimeter length by writing an operation. What is its area? e.g.

BB:

11 1		$P = 2 \times 1 + 2 \times 11 = 24$ (units) $A = 11$ (unit squares)
10 2		$P = 2 \times (2 + 10) = 2 \times 12 = 24$ (units) $A = 2 \times 10 = 20$ (unit squares)
9 3		$P = 2 \times (3 + 9) = 2 \times 12 = 24$ (units) $A = 3 \times 9 = 27$ (unit squares)
8 4		$P = 2 \times (4 + 8) = 2 \times 12 = 24$ (units) $A = 4 \times 8 = 32$ (unit squares)
7 5		$P = 2 \times (5 + 7) = 2 \times 12 = 24$ (units) $A = 5 \times 7 = 35$ (unit squares)
6 6	square	$P = 2 \times (6 + 6) = 2 \times 12 = 24$ (units) $A = 6 \times 6 = 36$ (unit squares)

Extra praise for unexpected sides e.g.

$11 \frac{1}{2}$

$P = 2 \times (11 \frac{1}{2} + \frac{1}{2}) = 2 \times 12 = 24$  (units)  
 $A = 5 + 1 \text{ half} + 1 \text{ quarter} = 5 + 3 \text{ quarters} = 5 \frac{3}{4}$  (unit squares)

*10 min*

**Notes**

Whole class activity  
 Grid drawn on BB or use squared BB or enlarged copy master or OHP  
 Ps could have copies on desks too if they wish.  
 At a good pace  
 Reasoning, agreement, praising  
 T helps with writing operations where necessary.  
 [Revision of perimeter and area of a rectangle (square).]

What do you notice?  
 Agree that the 24-unit perimeter which gives the largest area is the most regular shape, i.e. a square.

If a P suggests this case, T helps with calculating the area.

**2**

**PbY4a, page 17**

Q.1 Read: *The area of a rectangle is 360 unit squares. How long is the other side if one side is:*  
 a) 5 units, b) 12 units, c) 8 units?

T or P explains task with aid of a diagram. Elicit that the operation to be done is division. Ps can do calculations in Ex. Bks if they cannot do them mentally.

Review at BB with whole class. Ps come to BB to show their calculations. Who agrees? Who did it another way? etc.

*Solution:* e.g.

- a)  $360 \div 5 = 350 \div 5 + 10 \div 5 = 70 + 2 = 72$  (units)
- b)  $360 \div 12 = 360 \div 6 \div 2 = 60 \div 2 = 30$  (units)
- c)  $360 \div 8 = 320 \div 8 + 40 \div 8 = 40 + 5 = 45$  (units)

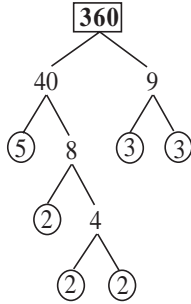
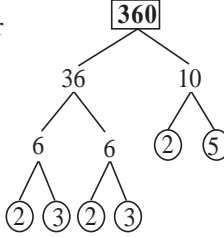
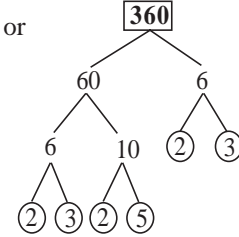
Individual work, monitored, helped but whole class introduction

BB:  $b$   $A = 360$

$A = b \times c$   
 $= 360$  unit squares  
 $b = A \div c, c = A \div b$

Reasoning, agreement, self-correcting, praising

(or vertical long or short division)

<h1>Y4</h1>		<p><i>Lesson Plan 17</i></p>																										
<p><b>Activity</b></p> <p>2</p> <p><b>Extension</b></p>	<p>(Continued)</p> <p>Read: <i>Calculate the perimeter of each rectangle.</i></p> <p>Review at BB with whole class. Ps dictate operations to T, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) <math>P = 2 \times (5 + 72) = 2 \times 77 = 154</math> (units)</p> <p>b) <math>P = 2 \times (12 + 30) = 2 \times 42 = 84</math> (units)</p> <p>c) <math>P = 2 \times (8 + 45) = 2 \times 53 = 106</math> (units)</p> <p>How could we show the sides of all the rectangles which have an area of 360 unit squares? T asks several Ps what they think. Agree that best way would be to show them in a table.</p> <p>T (or P) draws table on BB or OHT. Let's do it logically! Which values should be put in the first column? (e.g. 1 and 360)</p> <p>Ps dictate to T or come to BB, explaining reasoning. Encourage Ps to do the calculations mentally. Class points out errors. What is the rule for the table? Who can write it a different way? etc.</p> <p>BB:</p> <table border="1"> <tr> <td><i>b</i></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>8</td> <td>9</td> <td>10</td> <td>12</td> <td>15</td> <td>18</td> </tr> <tr> <td><i>c</i></td> <td>360</td> <td>180</td> <td>120</td> <td>90</td> <td>72</td> <td>60</td> <td>45</td> <td>40</td> <td>36</td> <td>30</td> <td>24</td> <td>20</td> </tr> </table> <p><i>Rule: <math>b = 360 \div c, c = 360 \div b, (b \times c = 360)</math></i></p> <p>What could we say about all the numbers in the table? (They are all factors of 360.)</p> <p style="text-align: right;"><i>18 min</i></p>	<i>b</i>	1	2	3	4	5	6	8	9	10	12	15	18	<i>c</i>	360	180	120	90	72	60	45	40	36	30	24	20	<p><b>Notes</b></p> <p>Individual work, monitored, helped</p> <p>Reasoning, agreement, self-correction, praising.</p> <p>Whole class activity</p> <p>(or individual or paired work within a time limit if Ps prefer, reviewed at BB with whole class)</p> <p>At a good pace</p> <p>Reasoning, agreement, praising</p> <p>Then table carries on with values reversed.</p> <p>Discussion on the rule.</p> <p>Agreement, praising</p>
<i>b</i>	1	2	3	4	5	6	8	9	10	12	15	18																
<i>c</i>	360	180	120	90	72	60	45	40	36	30	24	20																
<p>3</p>	<p><b>Factorising</b></p> <p>Let's break down 360 into its lowest factors T shows the first 1 or 2 steps on BB and Ps continue the diagram. Class agrees/disagrees.</p> <p>BB: e.g.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="text-align: center;"> <p>or</p>  </div> <div style="text-align: center;"> <p>or</p>  </div> </div> <p style="text-align: center;"><math>360 = 2 \times 2 \times 2 \times 3 \times 3 \times 5</math></p> <p>What kind of numbers have we circled? (Prime numbers). What is a prime number? (A number which has only 2 factors: 1 and itself.) We can say that we have broken down 360 into its <u>prime factors</u>.</p> <p>Does it matter how we do factorisation? (No, as we will always end up with the same prime factors.)</p> <p style="text-align: right;"><i>23 min</i></p>	<p>Whole class activity</p> <p>Ps decide how to break down the factors. Try it in 2 or 3 different ways</p> <p>If a factor cannot be broken down further, Ps draw a circle around it.</p> <p>At a good pace</p> <p>Agreement, praising</p> <p>Check by multiplying the circled factors in increasing order.</p> <p>BB: <u>Prime number</u> factors: 1 and itself</p>																										

# Y4

## Lesson Plan 17

### Activity

4

*PbY4a, page 17*

Q.2 Read: *Practise division.*

Check your divisions with multiplication in your head (or in your *Ex. Bks*) if you have time. T sets a time limit.

Review at BB with whole class. Ps come to BB or dictate to T, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected. Do checks on BB with whole class. Ps dictate what T should write.

*Solution:*

<p>a)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td></td><td>1</td><td>1</td><td>6</td></tr> <tr><td>7</td><td>8</td><td>1</td><td>3</td></tr> <tr><td>-</td><td>7</td><td></td><td></td></tr> <tr><td></td><td>1</td><td>1</td><td></td></tr> <tr><td>-</td><td>7</td><td></td><td></td></tr> <tr><td></td><td></td><td>4</td><td>3</td></tr> <tr><td></td><td></td><td>-</td><td>4</td></tr> <tr><td></td><td></td><td></td><td>2</td></tr> <tr><td></td><td></td><td></td><td>0</td></tr> </table> <p>Check:</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>1</td><td>6</td><td>×</td><td>7</td></tr> <tr><td>8</td><td>1</td><td>2</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>+</td><td>1</td></tr> <tr><td>8</td><td>1</td><td>3</td><td></td><td></td></tr> </table>		1	1	6	7	8	1	3	-	7				1	1		-	7					4	3			-	4				2				0	1	1	6	×	7	8	1	2						+	1	8	1	3			<p>b)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td></td><td>1</td><td>6</td><td>8</td></tr> <tr><td>4</td><td>6</td><td>7</td><td>2</td></tr> <tr><td>-</td><td>4</td><td></td><td></td></tr> <tr><td></td><td>2</td><td>7</td><td></td></tr> <tr><td>-</td><td>2</td><td>4</td><td></td></tr> <tr><td></td><td></td><td>3</td><td>2</td></tr> <tr><td></td><td></td><td>-</td><td>3</td></tr> <tr><td></td><td></td><td></td><td>2</td></tr> <tr><td></td><td></td><td></td><td>0</td></tr> </table> <p>Check:</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>6</td><td>8</td><td>×</td><td>4</td></tr> <tr><td>6</td><td>7</td><td>2</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>2</td><td>3</td></tr> </table>		1	6	8	4	6	7	2	-	4				2	7		-	2	4				3	2			-	3				2				0	1	6	8	×	4	6	7	2						2	3	<p>c)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td></td><td>1</td><td>1</td><td>5</td></tr> <tr><td>6</td><td>6</td><td>9</td><td>5</td></tr> <tr><td>-</td><td>6</td><td></td><td></td></tr> <tr><td></td><td>0</td><td>9</td><td></td></tr> <tr><td>-</td><td>6</td><td></td><td></td></tr> <tr><td></td><td></td><td>3</td><td>5</td></tr> <tr><td></td><td></td><td>-</td><td>3</td></tr> <tr><td></td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td></td><td>5</td></tr> </table> <p>Check:</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>1</td><td>5</td><td>×</td><td>6</td></tr> <tr><td>6</td><td>9</td><td>0</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>+</td><td>5</td></tr> <tr><td>6</td><td>9</td><td>5</td><td></td><td></td></tr> </table>		1	1	5	6	6	9	5	-	6				0	9		-	6					3	5			-	3				0				5	1	1	5	×	6	6	9	0						+	5	6	9	5			<p>d)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td></td><td>1</td><td>3</td><td>1</td></tr> <tr><td>3</td><td>3</td><td>9</td><td>5</td></tr> <tr><td>-</td><td>3</td><td></td><td></td></tr> <tr><td></td><td>0</td><td>9</td><td></td></tr> <tr><td>-</td><td>9</td><td></td><td></td></tr> <tr><td></td><td></td><td>0</td><td>5</td></tr> <tr><td></td><td></td><td>-</td><td>3</td></tr> <tr><td></td><td></td><td></td><td>2</td></tr> <tr><td></td><td></td><td></td><td>0</td></tr> </table> <p>Check:</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>3</td><td>1</td><td>×</td><td>3</td></tr> <tr><td>3</td><td>9</td><td>3</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>+</td><td>2</td></tr> <tr><td>3</td><td>9</td><td>5</td><td></td><td></td></tr> </table>		1	3	1	3	3	9	5	-	3				0	9		-	9					0	5			-	3				2				0	1	3	1	×	3	3	9	3						+	2	3	9	5		
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31 min

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*PbY4a, page 17*

Q.3 Read: *Practise division.*

Check your divisions with multiplication in your head (or in your *Ex. Bks*) if you have time. T sets a time limit.

Review at BB with whole class. Ps come to BB or dictate to T, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected. Do checks on BB with whole class. Ps dictate what T should write.

*Solution:*

<p>a)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td></td><td></td><td>8</td><td>2</td></tr> <tr><td>8</td><td>6</td><td>5</td><td>7</td></tr> <tr><td>-</td><td>6</td><td>4</td><td></td></tr> <tr><td></td><td></td><td>1</td><td>7</td></tr> <tr><td>-</td><td>1</td><td>6</td><td></td></tr> <tr><td></td><td></td><td></td><td>0</td></tr> </table> <p>Check:</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>8</td><td>2</td><td>×</td><td>8</td></tr> <tr><td>6</td><td>5</td><td>6</td><td></td></tr> <tr><td></td><td></td><td></td><td>+</td><td>1</td></tr> <tr><td>6</td><td>5</td><td>7</td><td></td><td></td></tr> </table>			8	2	8	6	5	7	-	6	4				1	7	-	1	6					0	8	2	×	8	6	5	6					+	1	6	5	7			<p>b)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td></td><td></td><td>8</td><td>3</td></tr> <tr><td>9</td><td>7</td><td>5</td><td>2</td></tr> <tr><td>-</td><td>7</td><td>2</td><td></td></tr> <tr><td></td><td></td><td>3</td><td>2</td></tr> <tr><td>-</td><td>2</td><td>7</td><td></td></tr> <tr><td></td><td></td><td></td><td>0</td></tr> </table> <p>Check:</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>8</td><td>3</td><td>×</td><td>9</td></tr> <tr><td>7</td><td>4</td><td>7</td><td></td></tr> <tr><td></td><td></td><td></td><td>+</td><td>5</td></tr> <tr><td>7</td><td>5</td><td>2</td><td></td><td></td></tr> </table>			8	3	9	7	5	2	-	7	2				3	2	-	2	7					0	8	3	×	9	7	4	7					+	5	7	5	2			<p>c)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td></td><td></td><td>7</td><td>1</td></tr> <tr><td>5</td><td>3</td><td>5</td><td>6</td></tr> <tr><td>-</td><td>3</td><td>5</td><td></td></tr> <tr><td></td><td></td><td>0</td><td>6</td></tr> <tr><td>-</td><td></td><td>5</td><td></td></tr> <tr><td></td><td></td><td></td><td>0</td></tr> </table> <p>Check:</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>7</td><td>1</td><td>×</td><td>5</td></tr> <tr><td>3</td><td>5</td><td>5</td><td></td></tr> <tr><td></td><td></td><td></td><td>+</td><td>1</td></tr> <tr><td>3</td><td>5</td><td>6</td><td></td><td></td></tr> </table>			7	1	5	3	5	6	-	3	5				0	6	-		5					0	7	1	×	5	3	5	5					+	1	3	5	6			<p>d)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td></td><td></td><td>9</td><td>3</td></tr> <tr><td>3</td><td>2</td><td>7</td><td>9</td></tr> <tr><td>-</td><td>2</td><td>7</td><td></td></tr> <tr><td></td><td></td><td>0</td><td>9</td></tr> <tr><td>-</td><td></td><td>9</td><td></td></tr> <tr><td></td><td></td><td></td><td>0</td></tr> </table> <p>Check:</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>9</td><td>3</td><td>×</td><td>3</td></tr> <tr><td>2</td><td>7</td><td>9</td><td></td><td></td></tr> </table>			9	3	3	2	7	9	-	2	7				0	9	-		9					0	9	3	×	3	2	7	9		
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39 min

### Notes

Individual work, monitored, (helped)

Written on BB or use enlarged copy master or OHP

Accept long or short vertical division.

Differentiation by time limit

Reasoning, agreement, checking, self-correction, praising

Feedback for T

Individual work, monitored, (helped)

Written on BB or use enlarged copy master or OHP

Accept long or short vertical division.

Differentiation by time limit

Reasoning, agreement, checking, self-correction, praising

Feedback for T



**Y4**

*Lesson Plan 17*

**Activity**

**6**

*PbY4a, page 17*

Q.4 Read: *Do the calculations and write the answers in your exercise book.*

Try to picture the problem in your head. Draw a diagram if it will help you.

For a) and b), Ps read problem themselves, do calculation and write answer as a sentence in *Ex. Bks.*

Review with the whole class. Ps come to BB to do calculations, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected.

*Solution:*

a) *A floor tile is 205 mm wide. How wide is the utility room if 9 tiles laid end to end are needed for each row?*

*Plan:* 1 tile: 205 mm, 9 tiles:  $205 \text{ mm} \times 9$

*C:* e.g.  $205 \times 9 = 200 \times 9 + 5 \times 9 = 1800 + 45 = \underline{1845}$  (mm)

*Answer:* The utility room is 1 m 84 cm 5 mm wide.

b) *4 sacks of wheat weigh 304 kg altogether. How much wheat, on average, is in each sack?*

*Plan:* 4 sacks: 304 kg, 1 sack:  $304 \text{ kg} \div 4$

*C:* e.g.  $304 \div 4 = 280 \div 4 + 24 \div 4 = 70 + 6 = \underline{76}$  (kg)

*Answer:* On average, there is 76 kg of wheat in each sack.

Why do we say 'on average'? (Because there might be 76 kg in each sack but there could also be, e.g.

78 kg in sack 1, 74 kg in sack 2, 75 kg in sack 3, 77 kg in sack 4. which also give a total of 304 kg.)

c) Read: *Study the diagram. Make up a question about it.*

Set a time limit. Ps (Ps can work in pairs.)

Review at BB with whole class. Ps suggest questions. Class agrees whether they are valid. Deal with all cases.

e.g. *If a man walks at a steady speed and takes 7 minutes to cover 420 m, how far did he walk in in the first minute?*

T (or class) chooses the 'best' one to solve. Ps come to BB or dictate what T should write. P who thought of the question decides whether the solution is correct.

e.g. 7 minutes: 420 m 1 minute:  $420 \text{ m} \div 7 = \underline{60 \text{ m}}$

Let's give them a round of applause!

*45 min*

**Notes**

Individual work, monitored, helped

(or all done as whole class activity if time is short)

Discussion, reasoning, agreement, self-correction, praising

or

	2	0	5	×	9
1	8	4	5		

1845 mm = 1 m 84 cm 5 mm

or

		7	6
4	3	0	4
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-	2	4	
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Whole class discussion

Allow Ps time to think and explain. T gives hints only if necessary.

Individual (or paired) work, monitored

Diagram drawn on BB or use enlarged copy master or OHP

Whole class discussion. Praise all contributions.

Extra praise if Ps realise the similarity to part b).

i.e. the man has to walk at a steady speed, otherwise we can only work out the average distance he covered per minute.

**Extension**



<h1>Y4</h1>	<p>R: Mental calculation.  C: <b>Written calculations. Divisibility</b>  E: <i>Numbers up to 2000. Problems</i></p>	<h2>Lesson Plan 18</h2>																														
<p><b>Activity</b></p> <p><b>1</b></p>	<p><b>Boom!</b></p> <p>Everyone stand up. I will say the first few terms of a sequence and you must continue it but you must say 'boom' instead of any number divisible by 9.</p> <p>a) 3, 6, (boom, 12, 15, boom, 21, 24, boom, 30, 33, boom, ...)</p> <p>b) 2, 4, 6, (8, 10, 12, 14, 16, boom, 20, 22, 24, 26, 28, ...)</p> <p>c) 10, 20, 30, (40, 50, 60, 70, 80, boom, 100, 110, 120, ...)</p> <p>This time you must say 'boom' instead of any number divisible by either 4 or 6!</p> <p>d) 1, 2, 3, boom, 5, boom, 7, boom, 9, 10, 11, boom, 13, ...)</p> <p style="text-align: right;">_____ 6 min _____</p>	<p style="text-align: center;"><b>Notes</b></p> <p>Whole class activity  At speed in order round class.  Ps who make a mistake sit down and the next P corrects their mistake.  Class points out mistake if next P misses it.  In good humour!  Class applauds Ps still standing at the end.</p>																														
<p><b>2</b></p>	<p><b>Calculation practice</b></p> <p>T asks questions and Ps calculate in <i>Ex. Bks</i> (or mentally). Ps write answers on scrap paper or slates and show to T on command.</p> <p>Ps who responded correctly explain at BB to those who did not. Who did the same? Who did it another way? Who made a mistake? What was your mistake? etc.</p> <p>a) <i>What is 4 times the sum of 176 and 49?</i>  Show me ... now! (900)  e.g. <math>176 + 49 = 175 + 50 = 225</math>; <math>225 \times 4 = 800 + 100 = \underline{900}</math></p> <p>b) <i>What is 4 times the difference between 176 and 49?</i>  Show me ... now! (508)  e.g. <math>176 - 49 = 177 - 50 = 127</math>; <math>127 \times 4 = 480 + 28 = \underline{508}</math></p> <p>c) <i>What is the sum of 176 and 4 times 49?</i>  Show me ... now! (372)  e.g. <math>49 \times 4 = 160 + 36 = 196</math>, or <math>49 \times 4 = 50 \times 4 - 4 = 196</math>;  <math>176 + 196 = 276 + 96 = 276 + 100 - 4 = 376 - 4 = \underline{372}</math></p> <p>d) <i>What is the difference between 4 times 176 and 49?</i>  Show me ... now! (655)  e.g. <math>176 \times 4 = 400 + 280 + 24 = 680 + 24 = 704</math>;  <math>704 - 49 = 705 - 50 = \underline{655}</math></p> <p style="text-align: right;">_____ 14 min _____</p>	<p>Whole class activity but individual work in <i>Ex. Bks</i>.</p> <p>Give Ps time to do calculations/write answers.</p> <p>Responses shown in unison.</p> <p>Reasoning, agreement, praising</p> <p>Accept any correct method of calculation.  e.g.</p> <p>a) <table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr><td>2</td><td>2</td><td>5</td><td>×</td><td>4</td></tr> <tr><td>9</td><td>0</td><td>0</td><td></td><td></td></tr> <tr><td>2</td><td>2</td><td></td><td></td><td></td></tr> </table></p> <p>d) <table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>7</td><td>6</td><td>×</td><td>4</td></tr> <tr><td>7</td><td>0</td><td>4</td><td></td><td></td></tr> <tr><td>3</td><td>2</td><td></td><td></td><td></td></tr> </table></p> <p>Extra praise for 'quick' ways.</p> <p>Feedback for T</p>	2	2	5	×	4	9	0	0			2	2				1	7	6	×	4	7	0	4			3	2			
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<p><b>3</b></p>	<p><b>Multiplication practice</b></p> <p>T has numbers already written on BB.</p> <p>BB: <math>A = \{108, 247, 319\}</math>      <math>B = \{3, 4\}</math></p> <p>a) Let's write multiplications using a number from <i>Set A</i> and a number from <i>Set B</i>. Ps come to BB or dictate what T should write.  e.g. <math>108 \times 3 =</math>      <math>247 \times 3 =</math>      <math>319 \times 3 =</math>  <math>108 \times 4 =</math>      <math>247 \times 4 =</math>      <math>319 \times 4 =</math></p> <p>b) Which would give the smallest product? (<math>108 \times 3 = 324</math>)</p> <p>c) Which would give the greatest product? (<math>319 \times 4 = 1276</math>)</p> <p>d) Which would give an even number as the product?  <math>108 \times 3 \rightarrow \textcircled{4}</math>   <math>108 \times 4 \rightarrow \textcircled{2}</math>   <math>247 \times 4 \rightarrow \textcircled{8}</math>   <math>319 \times 4 \rightarrow \textcircled{6}</math>  Agree that <u>any</u> number times an even number <math>\rightarrow</math> an even product.</p>	<p>Whole class activity  BB or SB already prepared</p> <p>Agreement, praising</p> <p>Smallest multiplicand and the smallest multiplier  Greatest multiplicand and the greatest multiplier  Only the units digit needs to be considered.</p>																														

<h1>Y4</h1>		<p><i>Lesson Plan 18</i></p>																																																																																																																																									
<p><b>Activity</b></p> <p>3</p>	<p>(Continued)</p> <p>e) Which would give an odd number as the product?  <math>247 \times 3 \rightarrow \textcircled{1}</math> <math>313 \times 3 \rightarrow \textcircled{9}</math> (Odd <math>\times</math> odd <math>\rightarrow</math> odd product)</p> <p>f) Which numbers in <i>Set A</i> are divisible by 3? (108, as <math>108 = 90 + 18</math>)  <math>(247 = 240 + 6 + \textcircled{1})</math> and <math>319 = 300 + 18 + \textcircled{1}</math>, so not divisible by 3)</p> <p>g) Which numbers in <i>Set B</i> are divisible by 4? (108, as <math>108 = 100 + 8</math>)          (the other two numbers are odd, so are <u>not</u> divisible by 4)</p> <p style="text-align: right;">22 min</p>	<p><b>Notes</b></p> <p>Only the units digit needs to be considered.</p> <p>Ps might want to do all the divisions in long or short form to check.</p>																																																																																																																																									
<p>4</p>	<p><b>PbY4a, page 18, Q.1</b></p> <p>Read: <i>Which numbers can be written instead of the letters?</i></p> <p>Deal with one at a time. Class reads each statement in unison.</p> <p>Ps suggest which operation to do first and how to continue. Ps come to BB to do calculations, explaining reasoning. Class points out errors.</p> <p><i>Solution:</i></p> <p><math>157 \times 3 + a = 196 + 285</math>  <math>471 + a = 481</math>  <math>a = 481 - 471</math>  <math>a = 10</math></p> <p><math>b + 136 \times 2 = 640 \div 8 + 292</math>  <math>b + 272 = 372</math>  <math>b = 372 - 272</math>  <math>b = 100</math></p> <p><math>376 + 287 \leq c - 126 \leq 134 \times 5</math>  <math>663 \leq c - 126 \leq 670</math>  <math>789 \leq c \leq 796</math>  <math>c: 789, 790, 791, 792, 793, 794, 795, 796</math></p> <p><math>364 \div 7 + 100 &lt; 160 - d &lt; 55 \times 3 - 8</math>  <math>52 + 100 &lt; 160 - d &lt; 165 - 8</math>  <math>152 &lt; 160 - d &lt; 157</math>  <math>d: 7, 6, 5, 4</math></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>5</td><td>7</td><td><math>\times</math></td><td>3</td><td></td></tr> <tr><td>4</td><td>7</td><td>1</td><td></td><td></td><td></td></tr> <tr><td>1</td><td>2</td><td></td><td></td><td></td><td></td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>9</td><td>6</td></tr> <tr><td>2</td><td>8</td><td>5</td></tr> <tr><td>4</td><td>8</td><td>1</td></tr> <tr><td>1</td><td>1</td><td></td></tr> </table> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>3</td><td>6</td><td><math>\times</math></td><td>2</td><td></td></tr> <tr><td>2</td><td>7</td><td>2</td><td></td><td></td><td></td></tr> <tr><td>1</td><td></td><td></td><td></td><td></td><td></td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>8</td><td>0</td></tr> <tr><td>2</td><td>9</td><td>2</td></tr> <tr><td>3</td><td>7</td><td>2</td></tr> <tr><td>1</td><td></td><td></td></tr> </table> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>3</td><td>7</td><td>6</td></tr> <tr><td>2</td><td>8</td><td>7</td></tr> <tr><td>6</td><td>6</td><td>3</td></tr> <tr><td>1</td><td>1</td><td></td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>3</td><td>4</td><td><math>\times</math></td><td>5</td><td></td></tr> <tr><td>6</td><td>7</td><td>0</td><td></td><td></td><td></td></tr> <tr><td>1</td><td>2</td><td></td><td></td><td></td><td></td></tr> </table> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>6</td><td>6</td><td>3</td></tr> <tr><td>1</td><td>2</td><td>6</td></tr> <tr><td>7</td><td>8</td><td>9</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>6</td><td>7</td><td>0</td></tr> <tr><td>1</td><td>2</td><td>6</td></tr> <tr><td>7</td><td>9</td><td>6</td></tr> </table> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td></td><td></td><td>5</td><td>2</td></tr> <tr><td>7</td><td>3</td><td>6</td><td>4</td></tr> <tr><td></td><td></td><td>1</td><td></td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td></td><td>5</td><td>5</td><td><math>\times</math></td><td>3</td><td></td></tr> <tr><td>1</td><td>6</td><td>5</td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td>1</td><td></td><td></td><td></td></tr> </table> </div> <p style="text-align: right;">30 min</p>	1	5	7	$\times$	3		4	7	1				1	2					1	9	6	2	8	5	4	8	1	1	1		1	3	6	$\times$	2		2	7	2				1						8	0	2	9	2	3	7	2	1			3	7	6	2	8	7	6	6	3	1	1		1	3	4	$\times$	5		6	7	0				1	2					6	6	3	1	2	6	7	8	9	6	7	0	1	2	6	7	9	6			5	2	7	3	6	4			1			5	5	$\times$	3		1	6	5						1				<p>Whole class activity          (If some Ps wish to try the first 3 statements individually, let them)</p> <p>Written on BB or SB or OHT          At a good pace</p> <p>Results of operations can be written above the operation signs or in a new line as shown here.</p> <p>Discussion, reasoning, agreement, (self-correction if done individually), praising</p> <p>T will probably need to help with <i>d</i>.</p> <p>Demonstrate on class number line if problems.</p>
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<p>5</p>	<p><b>PbY4a, page 18</b></p> <p>Q.2 Read: <i>One quarter of a path has already been paved. How much has been done if the whole path is 792 m long?</i></p> <p>Elicit that the shaded part in the diagram is the part already paved.</p> <p>Review at BB with whole class. Ps come to BB to write plan, estimate, calculate, check and write the answer as a sentence.</p> <p>Class points out errors. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p><i>Plan:</i> <math>792 \text{ m} \div 4</math>                      What fraction of the path has not been paved yet? (3 quarters)</p> <p><i>Estimation:</i> <math>800 \div 4 = 200</math></p> <p><i>Answer:</i> 198 m has been paved.</p> <p style="text-align: right;">35 min</p>	<p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement, self-correction, praising</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><i>Calculation:</i></p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td></td><td>1</td><td>9</td><td>8</td></tr> <tr><td>4</td><td>7</td><td>9</td><td>2</td></tr> <tr><td>-</td><td>4</td><td></td><td></td></tr> <tr><td></td><td>3</td><td>9</td><td></td></tr> <tr><td>-</td><td>3</td><td>6</td><td></td></tr> <tr><td></td><td></td><td>3</td><td>2</td></tr> <tr><td>-</td><td></td><td>3</td><td>2</td></tr> <tr><td></td><td></td><td></td><td>0</td></tr> </table> </div> <div style="text-align: center;"> <p><i>Check:</i></p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>9</td><td>8</td><td><math>\times</math></td><td>4</td><td></td></tr> <tr><td>7</td><td>9</td><td>2</td><td></td><td></td><td></td></tr> <tr><td>3</td><td>3</td><td></td><td></td><td></td><td></td></tr> </table> </div> </div>		1	9	8	4	7	9	2	-	4				3	9		-	3	6				3	2	-		3	2				0	1	9	8	$\times$	4		7	9	2				3	3																																																																																											
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# Y4

## Lesson Plan 18

### Activity

6

*PbY4a, page 18*

Q.3 Read: *Pete can cycle 4 m in one second. How long will it take Pete to cycle: a) 760 m, b) 380 m, c) 1520 m?*

Set a time limit. Ps can use any correct form of calculation.

Review at BB with whole class. Ps explain their solutions on BB. Who did the same? Who did it another way? etc.

Mistakes discussed and corrected.

*Solution:* e.g.

a) 760 m      b) 380 m      c) 1520 m

$$\begin{array}{r}
 \boxed{1} \boxed{9} \boxed{0} \\
 4 \overline{) 760} \\
 \underline{4} \phantom{0} \\
 36 \phantom{0} \\
 \underline{30} \phantom{0} \\
 60 \\
 \underline{60} \\
 0
 \end{array}
 \div 2 \rightarrow
 \begin{array}{r}
 \phantom{0} \boxed{9} \boxed{5} \\
 4 \overline{) 380} \\
 \underline{4} \phantom{0} \\
 38 \phantom{0} \\
 \underline{32} \phantom{0} \\
 60 \\
 \underline{60} \\
 0
 \end{array}
 \times 4 \rightarrow
 \begin{array}{r}
 \phantom{0} \boxed{3} \boxed{8} \boxed{0} \\
 4 \overline{) 1520} \\
 \underline{4} \phantom{0} \\
 15 \phantom{0} \\
 \underline{12} \phantom{0} \\
 30 \phantom{0} \\
 \underline{30} \phantom{0} \\
 0
 \end{array}$$

$\xrightarrow{\times 2}$

190 seconds      95 seconds      380 seconds

If no P has done so, T could elicit another way to obtain solutions to b) and c) using direct proportion. T draws arrows. Extra praise if Ps noticed relationships without hints from T.

40 min

### Notes

Individual work monitored, helped

Differentiation by time limit

Discussion, reasoning, agreement, self-correcting, praising

or, e.g.

$$\begin{aligned}
 &760 \text{ m} \div 4 \text{ m} \\
 &= (400 \text{ m} + 360 \text{ m}) \div 4 \text{ m} \\
 &= 100 + 90 = \underline{190} \text{ (times)}
 \end{aligned}$$

Revise direct proportion.

[If one value (i.e. dividend) increases (decreases) by a certain number of times, another value (i.e. quotient) also increases (decreases) by that number of times.]

7

*PbY4a, page 18*

Q.4 Read: *Fill in the missing numbers and signs.*

Ps do calculations and check with reverse operations at RHS of *Pbs* or in *Ex. Bks.*

Review at BB with whole class. Ps come to BB to fill in numbers and signs, explaining reasoning. Class agrees/disagrees.

Mistakes discussed and corrected.

In a), agree that dividing by 2 and then by 3 is the same as dividing by 6.

*Solution:*

a)  $708 \div 2 \rightarrow \boxed{3} \boxed{5} \boxed{4} \div 3 \rightarrow \boxed{1} \boxed{1} \boxed{8}$

$\xrightarrow{\div 6}$

or

$$\begin{array}{r}
 \phantom{0} \boxed{3} \boxed{5} \boxed{4} \\
 2 \overline{) 708} \\
 \underline{6} \phantom{0} \\
 10 \phantom{8} \\
 \underline{6} \phantom{8} \\
 48 \\
 \underline{48} \\
 0
 \end{array}
 \quad \text{Ch: } \begin{array}{r}
 \phantom{0} \boxed{1} \boxed{1} \boxed{8} \\
 3 \overline{) 354} \\
 \underline{3} \phantom{0} \\
 54 \\
 \underline{54} \\
 0
 \end{array}$$

b)  $698 = \boxed{1} \boxed{3} \boxed{9} \times 5 + \boxed{3}$

$$\begin{array}{r}
 \phantom{0} \boxed{1} \boxed{3} \boxed{9} \\
 5 \overline{) 698} \\
 \underline{5} \phantom{0} \\
 19 \phantom{8} \\
 \underline{15} \phantom{8} \\
 48 \\
 \underline{45} \\
 3
 \end{array}
 \quad \text{Ch: } \begin{array}{r}
 \phantom{0} \boxed{1} \boxed{3} \boxed{9} \times 5 \\
 6 \overline{) 698} \\
 \underline{6} \phantom{0} \\
 95 \\
 \underline{90} \\
 8 \\
 \underline{8} \\
 0
 \end{array}$$

45 min

Individual work monitored, helped

(or whole class activity if time is short)

Written on BB or use enlarged copy master or OHT

Discussion, reasoning, agreement, self-correcting, praising

or, e.g.

$$\begin{aligned}
 &708 \div 2 = (600 + 108) \div 2 \\
 &= 300 + 54 = \underline{354}
 \end{aligned}$$

$$\begin{aligned}
 &354 \div 3 \\
 &= (300 + 30 + 24) \div 3 \\
 &= 100 + 10 + 8 = \underline{118}
 \end{aligned}$$

etc.

# Y4

R: Mental calculation  
 C: **Written calculations. Divisibility**  
 E: Numbers up to 2000. Problems

## Lesson Plan 19

### Activity

1

#### Find the mistakes

Mr. Silly has done these calculations.! What do you think of them? Are they correct? How can we check? Could the layout be better?

Ps come to BB to try to explain Mr Silly's reasoning, find any mistakes, say what he has done wrong and write the operation again correctly. Class agrees/disagrees.

BB: e.g.

a) 

7	9	4	8				
-	7	0	0	1	0	0	
	2	4	8				
-		7	0		1	0	
	1	7	8				
-		7	0		1	0	
	1	0	8				
-		7	0		1	0	
		3	8				
-		2	8			4	
		1	0				
		-	7			1	
				③	1	3	5

 ✓

Correct (but very long!)

Check:

1	3	5	×	7
9	4	5		
+	3			
9	4	8		

b) 

1	2	0	3
+	3	1	5
4	3	5	3

 ✗

315 has wrong place value!  
Should be:

1	2	0	3
+	3	1	5
1	5	1	8

 ✓

d) 

5	×	1	0	8
		0		
		4	0	
5	4	0		

 ✓

Correct result, but a better layout is:

1	0	8	×	5
		4	0	
		0		
5				
5	4	0		

c) 

2	7	5	×	3
	1	5		
2	1			
6				
8	2	5		

 ✓  
(long way)

e)  $817 \div 8 = 12, r 1$  ✗  
 ↑  
 (0 tens missing)

Should be:  
 $817 \div 8 = 102, r 1$

Check:

	1	0	2	r 1
8	8	1	7	
-	8			
	0	1	7	
	-	1	6	
			①	

6 min

### Notes

Whole class activity

(Ps may do calculations in Ex. Bks. first if they wish)

Written on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, praising

Accept any form of correct calculation with correct reasoning.

or

e)  $817 \div 8$   
 $= 800 \div 8 + 17 \div 8$   
 $= 100 + 2. r 1$   
 $= 102, r 1$

Feedback for T

2

#### Number sets

Let's write the numbers from 0 to 20 in the correct place in the set diagrams.

Deal with one part at a time. Ps come to BB one after the other to write a number, explaining reasoning. Class agrees/disagrees.

BB:

a) 

Divisible by 8	Not divisible by 8
0 8 16	1 2 3 4 5
	6 7 9 10 11
	12 13 14 15
	17 18 19 20

c) 

	Divisible by 8	Not divisible by 8
Not divisible by 5	8 16	1 2 3 4
		6 7 9 11
		12 13 14
		17 18 19
	(48, 112)	(101, 533)

b) 

Divisible by 5	Not divisible by 5
0 5 10	1 2 3 4
15 20	6 7 8 9
	11 12 13 14
	16 17 18 19

d) 

	Divisible by 5	Not divisible by 5
Divisible by 5	0	5 10 15 20
	(40, 240)	(70, 95)

T points to each set in c). Ps say other numbers which belong there.

12 min

Whole class activity

Drawn on BB or use enlarged copy master or OHP

At speed

Reasoning, agreement, praising

T chooses Ps at random. Agreement, praising



# Y4

## Lesson Plan 19

### Activity

5

*PbY4a, page 19, Q.2*

Read: *Helen had 952 stamps. She gave 278 stamps to Sam.*

- a) *How many stamps did Helen have left?*  
*Complete the calculation.*

Ps come out to BB to point to relevant data and complete the middle subtraction, explaining reasoning. Class agrees/disagrees. Ps write the result in *Pbs* too.

BB:

	← -200	9 5 2	+ 100 →	
-		2 7 8		-
	←	6 7 4	→	

- Read: b) *How many stamps would she have left if she had at first*  
 i) *200 stamps less?*

Which calculation is this? Should we follow the arrows pointing to the right or to the left? Ps come to BB to point to relevant arrows, to write the LH subtraction, explaining reasoning and to write operation above lower arrow. Class agrees/disagrees. Ps write the result in *Pbs*.

BB:

7 5 2	← -200	9 5 2	+ 100 →	
-		2 7 8		-
4 7 4	← -200	6 7 4	→	

- Read: b) *How many stamps would she have left if she had at first*  
 ii) *100 stamps lmore?*

Ps come to BB to point to relevant arrows, to write the subtraction, on RHS, explaining reasoning and to write operation above lower arrow. Class agrees/disagrees. Ps write the result in *Pbs* too.

*Solution:*

7 5 2	← -200	9 5 2	+ 100 →	1 0 5 2
-		2 7 8		-
4 7 4	← -200	6 7 4	+ 100 →	7 7 4

### Extension

*How many stamps would Helen have left if she had given Sam:*

- i) *200 less stamps*                      ii) *100 more stamps?*

Ps come to BB to write calculations and operations above arrows. Class agrees/disagrees.

BB:

9 5 2	← -200	9 5 2	+ 100 →	9 5 2
-		2 7 8		-
8 7 4	← +200	6 7 4	- 100 →	5 7 4

### Notes

Whole class activity

Drawn on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, praising

Extra praise if Ps realise that only one subtraction needs to be done properly – the other results can be obtained mentally.

Drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, praising

(Or Ps calculate mentally and show results to T on scrap paper or slates in unison on command.)

33 min

# Y4

## Lesson Plan 19

### Activity

6

*PbY4a, page 19*

Q.3 Read: *Fill in the missing numbers.*

Set a time limit. Ps can write necessary calculations in *Ex. Bks.* Remember to check your result by doing the completed calculation again mentally.

Review at BB with whole class. Ps come to BB or dictate results to T, explaining how they worked out the answer. Who agrees? Who did it a different way? etc. (e.g. using reverse calculation or trial and error or noticing connections or by estimation.)

If problems, show details of reverse calculation on BB. Mistakes discussed and corrected.

*Solution:*

a)

4	9	6
+	2	8
7	7	7

3	4
+	3
4	1

8	3	4
-	5	0
3	2	9

9	4	4
-	8	4
1	0	3

b)

2	3	3	×	6
1	3	9	8	

1	2	7	×	4
5	0	8		

1400 = 233 × 6 + 2

511 = 127 × 4 + 3

39 min

### Notes

Individual work, monitored, helped

Written on BB or use enlarged copy master or OHP

Differentiation by time limit

Discussion, reasoning, agreement, self-correction, praising

Details, e.g. trial and error:

2	3	3	×	5
		5		

2	3	3	×	7
		1		

2	3	3	×	6
1	3	9	8	

or by estimation

1	2	7
4	5	0
1	2	

7

*PbY4a, page 19, Q.4*

T (or P) reads questions and Ps work out answers mentally (or in *Ex. Bks.* if necessary) then show on scrap paper or slates on command. Ps who respond correctly explain to those who do not. T writes agreed result on BB.

*3 pupils can do 108 multiplication in 3 hours. If all the pupils calculate at the same speed, how many calculations can be done by:*

- a) 6 pupils in 3 hours (216)  $2 \times 108 = \underline{216}$
- b) 3 pupils in 6 hours (216)  $2 \times 108 = \underline{216}$
- c) 6 pupils in 6 hours (432)  $2 \times 2 \times 108 = 4 \times 108 = \underline{432}$
- d) 6 pupils in 9 hours (648)  $2 \times 3 \times 108 = 6 \times 108 = \underline{648}$
- e) 9 pupils in 9 hours (972)  $3 \times 3 \times 108 = 9 \times 108 = \underline{972}$
- f) 3 pupils in 90 minutes (54)  $108 \div 2 = \underline{54}$
- g) 6 pupils in 90 minutes (108)  $108 \times 2 \div 2 = \underline{108}$
- h) 9 pupils in 90 minutes (162)  $108 \times 3 \div 2 = 324 \div 2 = \underline{162}$
- i) 1 pupil in 3 hours (36)  $108 \div 3 = (90 + 18) \div 3 = \underline{36}$
- j) 1 pupil in 1 hour? (12)  $108 \div 3 \div 3 = 36 \div 3 = \underline{12}$

45 min

Whole class activity (or individual work under a time limit if Ps wish, reviewed with whole class)

Written on BB or use enlarged copy master or OHP

Responses shown in unison

Reasoning, agreement, praising

Extra praise if Ps notice relationships which make calculations easier, e.g.

d)  $\rightarrow 3 \times a)$

g)  $\rightarrow 2 \times f)$

h)  $\rightarrow 3 \times f)$

j)  $\rightarrow f) \div 3$

Stand up if you had all correct! Let's give them '3 cheers'!



**Y4****Lesson Plan**  
**20****Activity****Notes**

Tables practice, revision, activities, consolidation

**PbY4a, page 20***Solutions:*

- Q.1 a)  $164 \times 4 = 400 + 240 + 16 = \underline{656}$   
 b)  $164 \div 4 = \underline{41}$   
 c)  $456 \div 4 = 400 \div 4 + 40 \div 4 + 16 \div 4$   
 $= 100 + 10 + 4 = \underline{114}$   
 d)  $456 \times 4 = 1600 + 200 + 24 = \underline{1824}$

Q.2

a)	<i>a</i>	5	120	78	25	<b>140</b>	12	45	<b>240</b>	<b>199</b>	182
	<i>b</i>	235	120	162	<b>215</b>	100	<b>228</b>	<b>195</b>	0	41	<b>58</b>

$$a = 240 - b$$

$$b = 240 - a$$

b)	<i>x</i>	7	2	100	5	20	0	<b>4</b>	9	<b>5</b>	<b>70</b>
	<i>y</i>	49	14	700	<b>35</b>	<b>140</b>	<b>0</b>	28	<b>63</b>	35	490

$$x = y \div 7$$

$$y = x \times 7$$

c)	<i>u</i>	5	20	50	10	25	<b>100</b>	<b>4</b>	200	40	1
	<i>v</i>	40	10	4	<b>20</b>	<b>8</b>	2	50	<b>1</b>	<b>5</b>	<b>200</b>

$$u = 200 \div v$$

$$v = 200 \div u$$

d)	<i>m</i>	725	40	1205	75	600	<b>1000</b>	999	1	1850	<b>1901</b>
	<i>n</i>	1275	1960	795	<b>1925</b>	<b>1400</b>	1000	<b>1001</b>	<b>1999</b>	<b>150</b>	99

$$m = 2000 - n$$

$$n = 2000 - m$$

- Q.3 a)  $10 \times 100 < \blacksquare < 201 \times 5$   $\blacksquare$ : 1001, 1002, 1003, 1004

- b)  $125 \div 5 \leq \textcircled{\diagup} < 210 \div 7$   $\textcircled{\diagup}$ : 25, 26, 27, 28, 29

- c)  $4 \times 60 - 4 \times 58 > \frown$   $\frown$ : 1, 2, 3, 4, 5, 6, 7

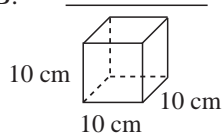
- d)  $30 \times 10 < \triangle < 912 \div 3$   $\triangle$ : 301, 302, 303, 304

- Q.4  $150 \div 7 = 140 \div 7 + 10 \div 7 = 20 + 1, r 3 = \underline{21, r 3}$

The baker can make 21 cakes and he will have 3 eggs left over.

(0 is neither positive nor negative)



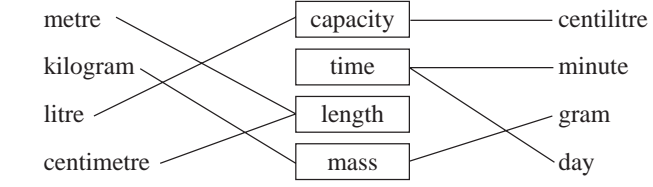
<h1>Y4</h1>	R: Calculation C: Measures: revision of length, capacity, mass. Numbers up to 2000 E: Problems	<h2>Lesson Plan 21</h2>
<b>Activity</b>  <b>1</b>	<p><b>Measuring length</b></p> <p>a) What units does your ruler show? (e.g. cm and mm) What range of lengths can you measure with it? (e.g. 0 cm to 27 cm or 0 mm to 275 mm; or more if we mark, e.g. 20 cm, then move the ruler along)</p> <p>Who can fill in the missing items? Ps come to BB or dictate to T.</p> <p>BB: 1 centimetre = <input type="text" value="10"/> millimetres    1 cm = 10 <input type="text" value="mm"/></p> <p>Measure the width of your exercise book. T asks several Ps their result. Ps might give it in different units. T writes on BB. e.g.</p> <p>BB: Width of exercise book: 18 cm 5 mm = 185 mm</p> <p>b) i) What range of lengths can we measure with this metre stick? (0 m to 1 m, or 0 cm to 100 cm, or 0 mm to 1000 mm)</p> <p>ii) What range of lengths can we measure with this tape measure? (e.g. 0 m to 1 and a half m, or 0 cm to 150 cm, or 0 mm to 1500 mm)</p> <p>Let's measure the width of A's desk (the classroom).</p> <p>Ps come to front of class in pairs to choose an appropriate measuring tool, measure and write length on BB. (T should have an idea of what the lengths are beforehand. If the measures are way out, ask another pair of Ps to repeat it.) e.g.</p> <p>BB: Width of:</p> <p style="padding-left: 40px;">A's desk: 503 mm = 50 cm 3 mm</p> <p style="padding-left: 40px;">the classroom: 1245 cm = 12 m 45 cm (= 12 450 mm)</p> <p>Who can fill in the missing items? Ps dictate to T or come to BB. Rest of class write in <i>Ex. Bks.</i> too.</p> <p>BB: 1 m = 100 <input type="text" value="cm"/> = <input type="text" value="1000"/> mm            1 km = <input type="text" value="1000"/> m</p> <p style="padding-left: 40px;">1 cm = <input type="text" value="10"/> mm</p> <p>What place is about 1 km from the school? (T should already have one or two in mind, or cite number of times round playground)</p> <p style="text-align: right;"><i>10 min</i></p>	<p style="text-align: center;"><b>Notes</b></p> <p>Whole class activity</p> <p>Ps have rulers on desks and T has other measuring tools (e.g. metre rule, tape measure, etc.) (T could have a ruler or tape measure in inches and feet too and compare these Imperial units with cm and m.)</p> <p>Discussion, agreement, praising</p> <p>At a good pace throughout</p> <p>And/or T could ask several Ps how tall they are (or measure them) and write their heights on BB.</p> <p><b>Extension</b></p> <p>[T might mention that in some countries, e.g. Hungary, they use these units of length.</p> <p>BB:</p> <p style="padding-left: 40px;">1 mm &lt; 1 cm &lt; 1 dm &lt; 1 m &lt; 1 km</p> <p style="padding-left: 80px;"><math>\times 10</math>   <math>\times 10</math>   <math>\times 10</math>   <math>\times 1000</math></p> <p>What do you think dm means? (decimetre) How many cm do you think are in 1 dm? (10)</p> <p>How many dm do you think are in 1 m? (10). Elicit or tell that 1 dm = 1 tenth of a m]</p>
<b>2</b>	<p><b>Measuring capacity</b></p> <p>What is capacity? (How much liquid a container can hold.)</p> <p>a) Let's measure capacity using non-standard units. (e.g. measuring the capacity of a jug or bottle using a tumbler or glass.)</p> <p>Ps estimate first, then confirm by measuring with water. e.g.</p> <p>BB: 3 glasses &lt; capacity of jug &lt; 4 glasses</p> <p>b) What range of capacity can be measured using this measuring jug (feeding bottle)? e.g. 0 ml to 1000 ml, or 0 cl to 100 cl, or 0 litre to 1 litre.</p> <p>How much water is in this bucket (bottle, etc.)? Ps estimate first, then measure. (e.g. 2 litres, 75 cl, 750 ml, etc.)</p> <p>What is missing? Ps come to BB or dictate to T.</p> <p>BB: 1 litre = 100 <input type="text" value="cl"/> = <input type="text" value="1000"/> ml            1 cl = 10 <input type="text" value="ml"/></p> <p>Ps copy in <i>Ex. Bks.</i></p> <p>Elicit the relationship between capacity and length. Show it in a diagram or demonstrate with an open-top 10 cm glass cube.</p> <p style="text-align: right;"><i>20 min</i></p>	<p>Whole class activity</p> <p>T has various containers of different size</p> <p>Discussion, agreement, praising</p> <p>At a good pace</p> <p>T could mention Imperial units too (pint, gallon) and compare with decimal units.</p> <p>BB: <u>1 litre of water</u></p> <div style="text-align: center;">  </div> <p><b>Extension</b></p> <p>How many litres of water would you displace in a bath?</p>

<b>Y4</b>		<i>Lesson Plan 21</i>
<p><b>Activity</b></p> <p><b>3</b></p>	<p><b>Measuring mass</b></p> <p>T has various objects to weigh and different sets of scales and weights.</p> <p>a) Ps come to front of class to measure weights using non-standard units. Ps estimate first. e.g. 2 spoons &lt; a book &lt; 3 spoons</p> <p>b) What range of units could we measure with these scales? Ps come to BB to read range and T writes on BB. (e.g. 0 g to 1000 g, or 0 kg to 5 kg)</p> <p>Ps come to front to estimate mass first then weigh various items using appropriate sets of scales and standard units. Ps write weights on BB. T could ask various Ps what they weigh, or Ps come to front of class to weigh themselves on bathroom scales and write weights on BB.</p> <p>What is missing? Ps come to BB or dictate to T.</p> <p>BB: 1 kg = <input type="text" value="1000"/> g    1 tonne = 1000 <input type="text" value="kg"/></p> <p>Ps copy in <i>Ex. Bks.</i> What kind of things would you weigh in tonnes? (e.g. ships, elephants, transporters, etc. – very heavy things!)</p> <p>Elicit the relationship between mass, capacity and length.</p> <p>Ps can demonstrate by filling a 10 cm × 10 cm × 10 cm open-top glass cube with water, pouring it into a litre jug, then pouring it into the container on a set of scales.</p> <p>BB: 1000 cm cubes (cc) of water → 1 litre → 1 kg 1 cc of water → 1 ml → 1 g</p> <p style="text-align: right;"><i>28 min</i></p>	<p><b>Notes</b></p> <p>Whole class activity</p> <p>Digital and mechanical scales and balances with various weights: e.g. 1 g, 2 g, 5 g, 10 g, 20 g, 50 g, 100 g, 200 g, 500 g, 1 kg</p> <p>[T might show Imperial weights too (ounce, lb, stone) and compare with decimal measures.]</p> <p>At a good pace</p> <p>Discussion, agreement, praising</p> <p>Allow Ps to explain it if they can but T should have appropriate measuring tools available for them to use.</p> <p>T gives hints only if Ps do not remember.</p> <p>Agreement, praising</p>
<p><b>4</b></p>	<p><b><i>PbY4a, page 21</i></b></p> <p>Q.1 Read: <i>Fill in the missing numbers and units.</i></p> <p>What kind of measures are these? (length) Set a time limit.</p> <p>Review at BB with whole class. Ps dictate results to T or come to BB, explaining reasoning. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) 3 m 35 cm = <u>335</u> cm      b) 5 m 70 cm = <u>570</u> cm</p> <p>c) 198 cm = <u>1</u> m <u>98</u> cm      d) 609 cm = <u>6</u> m <u>9</u> cm</p> <p>e) 8 cm 4 mm = <u>84</u> mm      f) 1 m 32 cm 5 mm = <u>1325</u> mm</p> <p>g) 1273 mm = <u>1</u> m <u>27</u> cm <u>3</u> mm</p> <p>h) 1905 mm = <u>1</u> m <u>90</u> cm <u>5</u> mm</p> <p style="text-align: right;"><i>32 min</i></p>	<p>Individual work, monitored, helped</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Differentiation by time limit</p> <p>Discussion, reasoning, agreement, self-correcting, praising</p> <p>Feedback for T</p>
<p><b>5</b></p>	<p><b><i>PbY4a, page 21</i></b></p> <p>Q.2 Read: <i>Fill in the missing numbers and units.</i></p> <p>What kind of measures are these? (capacity) Set a time limit.</p> <p>Review at BB with whole class. Ps dictate results to T or come to BB, explaining reasoning. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) 3 litres 42 cl = <u>342</u> cl      b) 6 litres 58 cl = <u>658</u> cl</p> <p>c) 824 cl = <u>8</u> litres <u>24</u> cl      d) 703 cl = <u>7</u> litres <u>3</u> cl</p> <p>e) 1 litre 63 cl 5 ml = <u>1635</u> ml      f) 1 litre 4 cl 8 ml = <u>1048</u> ml</p> <p>g) 1546 ml = <u>1</u> litre <u>54</u> cl <u>6</u> ml      h) 1038 ml = <u>1</u> litre <u>3</u> cl <u>8</u> ml</p> <p style="text-align: right;"><i>36 min</i></p>	<p>Individual work, monitored, helped</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Differentiation by time limit</p> <p>Discussion, reasoning, agreement, self-correcting, praising</p> <p>Feedback for T</p>

<b>Y4</b>		<i>Lesson Plan 21</i>																																						
<b>Activity</b>  <b>6</b>	<p><b>PbY4a, page 21</b></p> <p>Q.3 Read: <i>Fill in the missing numbers and units.</i></p> <p>What kind of measures are these? (mass) Set a time limit.</p> <p>Review at BB with whole class. Ps dictate results to T or come to BB, explaining reasoning. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) 1 kg 806 g = <u>1 kg 806</u> g      b) 1 kg 257 g = 1257 g  c) 1300 g = <u>1 kg 300</u> g      d) 1604 g = <u>1 kg 604</u> g  e) 1320 g = <u>1 kg 320</u> g      f) 1001 g = <u>1 kg 1</u> g  g) 1624 g = <u>1 kg 624</u> g      h) 1479 g = <u>1 kg 479</u> g</p> <p style="text-align: right;">40 min</p>	<p style="text-align: center;"><b>Notes</b></p> <p>Individual work, monitored, helped</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Differentiation by time limit</p> <p>Discussion, reasoning, agreement, self-correcting, praising</p> <p>Feedback for T</p>																																						
<b>7</b>	<p><b>PbY4a, page 21, Q.4</b></p> <p>Read: <i>Write plans and do the calculations in your exercise book. Fill in the answers.</i></p> <p>Deal with one part at a time. P reads question aloud, 2nd P writes a plan, 3rd P does calculation, 4th P checks it and 5th P says the answer as a sentence. Throughout, rest of class intervenes if an error is made or if they think of an alternative way to solve it.</p> <p><i>Solution:</i> e.g.</p> <p>a) <i>Freddy Frog jumped 120 cm 5 mm, then another 1 m 14 cm 3 mm. How far did he jump altogether?</i></p> <p><i>Plan:</i> 1st jump: 120 cm 5 mm = 1205 mm  2nd jump: 1 m 14 cm 3 mm = 1143 mm  Total distance jumped:</p> <table style="margin-left: auto; margin-right: auto;"> <tr><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">2</td><td style="border: 1px dashed black; padding: 2px;">0</td><td style="border: 1px dashed black; padding: 2px;">5</td></tr> <tr><td style="border: none;">+</td><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">4</td></tr> <tr><td style="border: none;"></td><td style="border: 1px dashed black; padding: 2px;">2</td><td style="border: 1px dashed black; padding: 2px;">3</td><td style="border: 1px dashed black; padding: 2px;">4</td></tr> <tr><td style="border: none;"></td><td style="border: none;"></td><td style="border: none;"></td><td style="border: none;">8</td></tr> </table> <p style="text-align: right;">(mm)</p> <p>2347 mm = 2 m 347 mm = 2 m 34 cm 7 mm</p> <p><i>Answer:</i> He jumped 2 m 34 cm 8 mm altogether.</p> <p>b) <i>Peter Pelican drank 1 litre of 143 ml of water and his son drank 210 ml less. How much water did his son drink?</i></p> <p><i>Plan:</i> P: 1 litre 143 ml = 1143 ml      S: 1143 ml – 210 ml</p> <p><i>Answer:</i> His son drank 933 ml (= 93 cl 3 ml) of water.</p> <p>c) <i>If one egg weighs 60 g, what is the weight of 31 eggs?</i></p> <p><i>Plan:</i> 1 egg: 60 g      31 eggs: 31 × 60 g</p> <p>C: 31 × 60 g = 30 × 60 g + 60 g = 1800 g + 60 g = 1860 g</p> <p>1860 g = <u>1 kg 860</u> g</p> <p><i>Answer:</i> 31 eggs weigh 1 kg 860 g.</p> <p>d) <i>Sammy Snail takes 5 minutes to move 1950 mm. How far can he move in 1 minute?</i></p> <p><i>Plan:</i> 5 min: 1950 mm      1 min: 1950 mm ÷ 5</p> <p>C:</p> <table style="margin-left: auto; margin-right: auto;"> <tr><td style="border: 1px dashed black; padding: 2px;">5</td><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">9</td><td style="border: 1px dashed black; padding: 2px;">5</td><td style="border: 1px dashed black; padding: 2px;">0</td></tr> <tr><td style="border: none;"></td><td style="border: none;"></td><td style="border: none;"></td><td style="border: none;"></td><td style="border: none;">4</td></tr> </table> <p style="text-align: right;">(mm)      390 mm = 39 cm</p> <p><i>Answer:</i> He can move 39 cm in 1 minute.</p> <p style="text-align: right;">45 min</p>	1	2	0	5	+	1	1	4		2	3	4				8	5	1	9	5	0					4	<p>Whole class activity (or individual work if Ps wish, reviewed with whole class)</p> <p>Discussion, agreement, checking, praising</p> <p>or 120 cm = 1 m 20 cm  1 m 20 cm 5 mm + 1 m 14 cm 3 mm  = (1 + 1) m + (20 + 14) cm + (5 + 3) mm  = <u>2 m + 34 cm + 8 mm</u></p> <p>C:</p> <table style="margin-left: auto; margin-right: auto;"> <tr><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">4</td><td style="border: 1px dashed black; padding: 2px;">3</td></tr> <tr><td style="border: none;">-</td><td style="border: 1px dashed black; padding: 2px;">2</td><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">0</td></tr> <tr><td style="border: none;"></td><td style="border: 1px dashed black; padding: 2px;">9</td><td style="border: 1px dashed black; padding: 2px;">3</td><td style="border: 1px dashed black; padding: 2px;">3</td></tr> </table> <p style="text-align: right;">(ml)</p> <p>or 31 × 60 = 31 × 6 × 10  = 186 × 10 = <u>1860</u></p> <p>or 1950 ÷ 5  = 1000 ÷ 5 + 500 ÷ 5 + 450 ÷ 5  = 200 + 100 + 90  = <u>390</u> (mm)</p>	1	1	4	3	-	2	1	0		9	3	3
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<h1>Y4</h1>	R: Calculations C: <b>Measures: (length, capacity, mass, time). Numbers up to 2000</b> E: Problems	<h2>Lesson Plan</h2> <h1>22</h1>
<b>Activity</b>  <b>1</b>	<b>Estimating length</b> Imagine these things in real life. Estimate their lengths. BB: (a) book (b) rubber (c) house (d) car (e) table $1\text{ m} < \boxed{\text{e}} < 2\text{ m}$ $2\text{ cm} < \boxed{\text{b}} < 3\text{ cm}$ $10\text{ cm} < \boxed{\text{a}} < 20\text{ cm}$ $4\text{ m} < \boxed{\text{d}} < 5\text{ m}$ $10\text{ m} < \boxed{\text{c}} < 20\text{ m}$ Ps come to BB to write letter of item in appropriate inequality. Class agrees disagrees. If problems, check against real measures. <p style="text-align: right;"><i>4 min</i></p>	<b>Notes</b> Whole class activity (T could have some real items to show to class ) Inequalities written on BB or use enlarged copy master or OHP At a good pace Agreement, praising Feedback for T
<b>2</b>	<b>Estimating capacity</b> Imagine these things in real life. Estimate their capacity BB: (a) jug (b) bucket (c) tank (d) spoon (e) glass (f) bottle $1\text{ litre} < \boxed{\text{f}} < 2\text{ litres}$ $80\text{ litres} < \boxed{\text{c}} < 100\text{ litres}$ $10\text{ ml} < \boxed{\text{d}} < 20\text{ ml}$ $100\text{ ml} < \boxed{\text{e}} < 200\text{ ml}$ $800\text{ ml} < \boxed{\text{a}} < 1000\text{ ml}$ $1000\text{ cl} < \boxed{\text{f}} < 2000\text{ cl}$ $5\text{ litres} < \boxed{\text{b}} < 10\text{ litres}$ $80\text{ cl} < \boxed{\text{a}} < 1\text{ litre}$ Ps come to BB to write letter of item in appropriate inequality. Class agrees disagrees. Extra praise if Ps notice that 2 inequalities are the same as two others (see joining lines). <p style="text-align: right;"><i>10 min</i></p>	Whole class activity (T could have some real items to show to class.) Inequalities written on BB or use enlarged copy master or OHP At a good pace Discussion, agreement, praising T points to other inequalities Ps say them using other units, e.g $10\text{ cl} < \boxed{\text{e}} < 20\text{ cl}$
<b>3</b>	<b>Estimating mass</b> Imagine these things in real life. Estimate their mass (weight). BB: (a) 1 litre of milk (b) apple (c) teacher (d) loaf of bread (e) Y4 boy (f) egg $900\text{ g} < \boxed{\text{a}} < 1100\text{ g}$ $20\text{ kg} < \boxed{\text{e}} < 40\text{ kg}$ $50\text{ g} < \boxed{\text{f}} < 100\text{ g}$ $50\text{ kg} < \boxed{\text{c}} < 1000\text{ kg}$ $500\text{ g} < \boxed{\text{d}} < 1000\text{ g}$ $100\text{ g} < \boxed{\text{b}} < 200\text{ g}$ Ps come to BB to write letter of item in appropriate inequality. Class agrees disagrees. <p style="text-align: right;"><i>15 min</i></p>	Whole class activity (T could have real items to show to class.) Inequalities written on BB or use enlarged copy master/OHP At a good pace Discussion, agreement, praising <b>Extension</b> Ps suggest another item and class agrees on an inequality for it. Check with real weight.

<b>Y4</b>		<i>Lesson Plan 22</i>
<b>Activity</b> <b>4</b>	<p><b>Time</b></p> <p>What standard units of time do we use? Ps tell what they know. (e.g. seconds, minutes, hours, days, weeks, months, seasons, years)</p> <p>Let's fill in the missing units. Ps come to BB or dictate to T.</p> <p>BB: 1 year = <b>4</b> seasons      1 year = 52 <b>weeks</b> + 1 or 2 <b>days</b></p> <p>1 year = 12 <b>months</b>                      1 week = <b>7</b> days</p> <p>1 <b>year</b> = 365 or 366 <b>days</b>              1 day = 24 <b>hours</b></p> <p>1 hour = <b>60</b> minutes              1 minute = 60 <b>seconds</b></p> <p>T informs class (or elicits if T thinks Ps might know):</p> <ul style="list-style-type: none"> <li>• Leap years have an extra day (February 29th) so have <u>366</u> days.</li> <li>• Years divisible by 4 are leap years, except the whole hundred years when only every fourth hundred is a leap year. When is the next leap year? (2004, as the next year divisible by 4)</li> <li>• In a non-leap year, 1 January and 31 December are on the same day of the week.</li> <li>• The year 2000 was the last year of the second millennium (or second thousand years), or the last day of the 20th century.</li> <li>• 2001 is the first year of the third millennium (or third thousand years), or the first year of the 21st century.</li> </ul> <p>What was the first <u>day</u> of the 21st century? (1 January 2001, or 01 / 01 / 2001)</p> <p style="text-align: right;">20 min</p>	<p style="text-align: center;"><b>Notes</b></p> <p>Whole class activity T has clock and large calendar on the wall.</p> <p>Written on BB or use enlarged copy master or OHP At a good pace Agreement, praising BB: <math>52 \times 7 = 350 + 14</math>       = 364</p> <p>Feedback for T</p> <p>Discussion. Involve several Ps. e.g. 2000 was a leap year but 2100 will not be. T refers to calendar where appropriate.</p> <p>BB: 1 century = 100 years       1 millennium = 1000 years</p> <p>Remind Ps of different ways of writing the date.</p>
<b>5</b>	<p><b>What is the time?</b></p> <p>a) T sets a real or model clock and Ps read the time. Encourage other Ps to express the times in different ways.</p> <p>e.g. 12 o'clock, 12:00 or 00:00, mid-day (noon) or midnight       4 o'clock, 4.00 pm or 4.00 am, 04:00 or 16:00       2 minutes to nine, 8.58 am or 8.58 pm, 8:58 or 20:58       A quarter to 12, 11.45 am or 11.45 pm, 11:45 or 23:45, etc.</p> <p>b) T (or P) dictates times in different ways. Ps set their model clocks and show to T on command.</p> <p style="text-align: right;">25 min</p>	<p>Whole class activity T chooses Ps at random. Class points out errors. Remind Ps that 12 o'clock is neither am nor pm. Agreement, praising Ps can set the time too!</p> <p>Use copy master from <i>Y2 LP 103/1</i>. Agreement, praising</p>
<b>6</b>  <b>Extension</b>	<p><b>PbY4a, page 22</b></p> <p>Q.1 Read: <i>Join up the quantities to the tools you would use to measure them.</i></p> <p>Review at BB with whole class Ps come to BB to draw joining lines. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><b>Solution:</b></p> <div style="text-align: center;"> </div> <p>T points to a quantity and Ps express it in another way.</p> <p style="text-align: right;">29 min</p>	<p>Individual work, monitored Drawn on BB or use enlarged copy master or OHP Discussion, agreement, self-correcting, praising Feedback for T</p> <p>e.g. 3 kg 480 g = 3480 g Agreement, praising</p>

<b>Y4</b>		<i>Lesson Plan 22</i>														
<p><b>Activity</b></p> <p><b>7</b></p>	<p><i>PbY4a, page 22</i></p> <p>Q.2 Read: <i>Join up the measures to the matching units.</i></p> <p>Review at BB with whole class Ps come to BB to draw joining lines. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p>  <p><b>Extension</b></p> <p>What other units could be used for each type of measure?</p> <p style="text-align: right;">33 min</p>	<p><b>Notes</b></p> <p>Individual work, monitored</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Discussion, agreement, self-correcting, praising</p> <p>Feedback for T</p> <p>e.g. capacity: ml (pint, gallon)</p>														
<p><b>8</b></p>	<p><i>PbY4a, page 22</i></p> <p>Q.3 Read: <i>Fill in the missing numbers and units.</i></p> <p>Elicit that there are 14 equations. Set a time limit.</p> <p>Review at BB with whole class. Ps come to BB or dictate to T.</p> <p>Ps mark/correct own work and write how many correct out of 14.</p> <p>Who had 14 correct? Who made 1 mistake (2, 3, 4, more than 4) mistakes? What was your mistake? Who did the same? Who made a different mistake? etc.</p> <p><i>Solution:</i></p> <table border="0" style="width: 100%;"> <tr> <td>a) 439 cm = <u>4</u> m <u>39</u> cm</td> <td>12 m 6 cm = <u>1206</u> cm</td> </tr> <tr> <td>b) 1831 mm = <u>1</u> m <u>83</u> cm <u>1</u> mm</td> <td>1 m 67 mm = <u>1067</u> mm</td> </tr> <tr> <td>c) 1210 g = <u>1</u> kg <u>210</u> g</td> <td>1 kg 340 g = 1340 g</td> </tr> <tr> <td>d) 1942 ml = <u>1</u> litre <u>942</u> ml</td> <td>1 litre 86 ml = 1086 ml</td> </tr> <tr> <td>e) 11 minutes = <u>660</u> seconds</td> <td>4 hrs 27 min = <u>267</u> min</td> </tr> <tr> <td>f) 372 seconds = <u>6</u> m <u>12</u> sec</td> <td>10 min 40 sec = 640 sec</td> </tr> <tr> <td>g) January = <u>4</u> weeks <u>3</u> days</td> <td>June = 4 weeks 2 days</td> </tr> </table> <p style="text-align: right;">40 min</p>	a) 439 cm = <u>4</u> m <u>39</u> cm	12 m 6 cm = <u>1206</u> cm	b) 1831 mm = <u>1</u> m <u>83</u> cm <u>1</u> mm	1 m 67 mm = <u>1067</u> mm	c) 1210 g = <u>1</u> kg <u>210</u> g	1 kg 340 g = 1340 g	d) 1942 ml = <u>1</u> litre <u>942</u> ml	1 litre 86 ml = 1086 ml	e) 11 minutes = <u>660</u> seconds	4 hrs 27 min = <u>267</u> min	f) 372 seconds = <u>6</u> m <u>12</u> sec	10 min 40 sec = 640 sec	g) January = <u>4</u> weeks <u>3</u> days	June = 4 weeks 2 days	<p>Individual work, monitored, helped</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Differentiation by time limit</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Evaluation. Class applauds Ps with all (most) correct.</p> <p>Feedback for T</p>
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<p><b>9</b></p>	<p><i>PbY4a, page 22</i></p> <p>Q.4 Read: <i>Write in the missing numbers. (They need only be approximate.)</i></p> <p>Ps fill in what they can during the rest of the lesson. They can finish it at home if they run out of time.</p> <p>T chooses Ps to read out their details. Class decides whether their estimates are realistic or not.</p> <p><i>Solution:</i> e.g.</p> <p>Today's date: 16 / 10 / 2001</p> <p>My height: 134 cm = 1 m 34 cm</p> <p>My weight: 32 kg                      Length of my step: 60 cm</p> <p>My age: 8 years 3 months          Length of my span: 12 cm</p> <p>I go to bed at: 9.00 pm              Length of my foot: 14 cm</p> <p>I get up at: 8.00 am                  I sleep for: 11 hours per day</p> <p style="text-align: right;">45 min</p>	<p>Individual work, monitored</p> <p>Ps have rulers on desks.</p> <p>T should have bathroom scales and a height measure against the classroom wall.</p> <p>T might need to explain what a 'span' is (from tip of thumb to tip of little finger when hand is stretched out flat)</p> <p>Ps can help each other to find the measures they do not know.</p> <p>Agreement, self-correcting, praising, encouragement only</p> <p>In good humour!</p>														



# Y4

R: Calculations up to 1000  
 C: **Length, capacity, mass, time. Calculations up to 2000**  
 E: *Problems*

## Lesson Plan 23

### Activity

1

#### Problems

Study the diagrams and the data. Let's think of questions to ask and then try to answer them. Ps suggest questions and methods of solution.

a) BB:



[N.B. Choose easier lengths for sides if T does not want class challenged so much!]

e.g. 3 m 42 cm

Q.1 *What is the perimeter of the rectangle?*

$$P = 2 \times (2 \text{ m} + 3 \text{ m } 42 \text{ cm}) = 2 \times 5 \text{ m } 42 \text{ cm} = \underline{10 \text{ m } 84 \text{ cm}}$$

Q.2 *Which side is longer and by how much?*

Let's label the long side *a* and the short side *b*.

$$a = 3 \text{ m } 42 \text{ cm} = 342 \text{ cm}$$

$$b = 2 \text{ m} = 200 \text{ cm, so } a > b$$

$$a - b = 342 \text{ cm} - 200 \text{ cm} = 142 \text{ cm} = \underline{1 \text{ m } 42 \text{ cm}}$$

Answer: *a* is longer than *b* by 1 m 42 cm

Q.3 *What is the area of the rectangle?*

$$\begin{aligned} A &= 3 \text{ m } 42 \text{ cm} \times 2 \text{ m} = 3 \text{ m} \times 2 \text{ m} + 42 \text{ cm} \times 2 \text{ m} \\ &= 6 \text{ m}^2 + 42 \text{ cm} \times 200 \text{ cm} \\ &= 6 \text{ m}^2 + 8400 \text{ cm}^2 \\ &= \underline{6 \text{ m}^2 \text{ } 8400 \text{ cm}^2} \end{aligned}$$

$$\text{or } A = 342 \text{ cm} \times 200 \text{ cm} = 684 \text{ cm} \times 100 \text{ cm} = 68 \text{ } 400 \text{ cm}^2 = \underline{6 \text{ m}^2 \text{ } 8400 \text{ cm}^2}$$

Because

BB:  $1 \text{ m} \times 1 \text{ m} = 1 \text{ m}^2$  (1 m square)  
 $1 \text{ cm} \times 1 \text{ cm} = 1 \text{ cm}^2$  (1 cm square)  
 $1 \text{ m}^2 = 100 \times 100 \text{ cm}^2 = \underline{10 \text{ } 000 \text{ cm}^2}$

b) BB: → £13 20 p

e.g.

Q.1 *What do 3 balls cost?*

$$12 \text{ balls: } £13 \text{ } 20 \text{ p} = 1320 \text{ p}$$

$$3 \text{ balls: } 1320 \text{ p} \div 12 \times 3 = 110 \text{ p} \times 3 = 330 \text{ p} = \underline{£3 \text{ } 30 \text{ p}}$$

$$\text{Or } 3 \text{ balls} = 12 \text{ balls} \div 4, \text{ so cost is } 1320 \text{ p} \div 4 = 330 \text{ p}$$

Of course, Ps might think of questions not mentioned here!

### Notes

Whole class activity

Diagrams drawn on BB

T intervenes only if necessary.

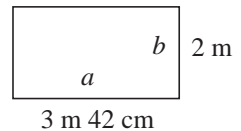
Ps draw diagrams and write solutions in *Ex. Bks.* too.

Reasoning, agreement, praising

$$\text{or } 2 \times 5 \text{ m } 42 \text{ cm}$$

$$= 2 \times 542 \text{ cm} = \underline{1084 \text{ cm}}$$

BB:



This is very difficult because of the data, but if Ps suggest it let them work through it as far as they can, praising any correct contribution.

T helps with the calculation and reading the result.

T reminds Ps of the notation for 'squares' and explains why  $68 \text{ } 400 \text{ cm}^2 = 6 \text{ m}^2 \text{ } 8400 \text{ cm}^2$

Have no expectations of Ps learning it yet, but some might follow the reasoning!

C: 

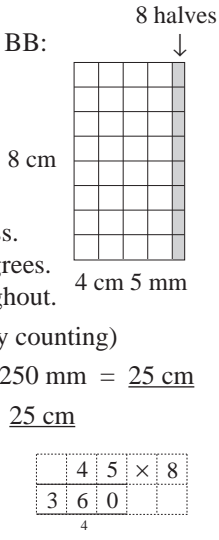
			1	1	0
1	2	1	3	2	0
	-	1	2		
			1	2	
		-	1	2	
				0	0

or

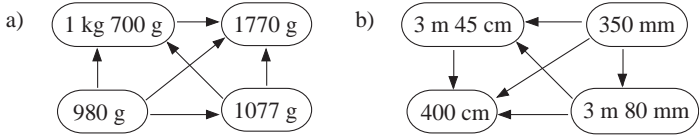
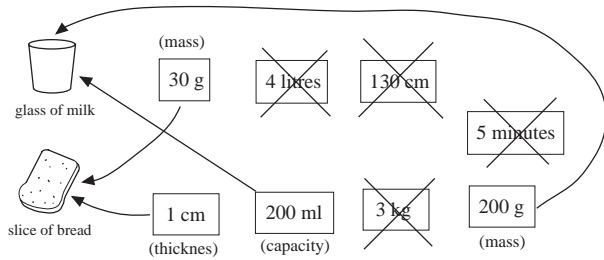
		3	3	0
4	1	3	2	0
				1

$$330 \text{ p} = £3 \text{ } 30 \text{ p} = £3.30$$



<h1>Y4</h1>		<p><i>Lesson Plan 23</i></p>
<p><b>Activity</b></p> <p><b>2</b></p>	<p><b>Construction</b></p> <p>a) Draw a rectangle in your <i>Ex. Bks</i> with sides 4 cm 5 mm and 8 cm.              BB: T draws a rough diagram on BB but Ps measure (or count) accurately in <i>Ex. Bks</i> or on grid.</p> <p>b) Calculate its perimeter and its area.              T sets a time limit. Review at BB with whole class. Ps come to BB or dictate to T. Class agrees/disagrees. Mistakes discussed and corrected. T helps throughout.</p> <p><i>Solution:</i> by calculating in either mm or cm (or by counting)</p> <p><math>P = 2 \times (45 \text{ mm} + 80 \text{ mm}) = 2 \times 125 \text{ mm} = 250 \text{ mm} = \underline{25 \text{ cm}}</math>              or <math>P = 2 \times (4.5 \text{ cm} + 8 \text{ cm}) = 2 \times 12.5 \text{ cm} = \underline{25 \text{ cm}}</math></p> <p><math>A = 45 \text{ mm} \times 80 \text{ mm} = \underline{3600 \text{ mm}^2}</math>, or  <math>A = 4.5 \text{ cm} \times 8 \text{ cm} = (32 + 4) \text{ cm}^2 = \underline{36 \text{ cm}^2}</math></p>  <p style="text-align: right;"><i>18 min</i></p>	<p><b>Notes</b></p> <p>Individual work in <i>Ex. Bks</i> (or on 0.5 cm square grid) monitored, helped</p> <p>Perimeter found individually but area could be done with the whole class.</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Elicit that: <math>45 \text{ mm} = 4.5 \text{ cm}</math>  <math>4.5 = 4 \text{ and } 5 \text{ tenths}</math>  <math>= 4 \text{ and a half}</math></p> <p>BB: <math>1 \text{ mm} \times 1 \text{ mm} = 1 \text{ mm}^2</math>  <math>10 \text{ mm} \times 10 \text{ mm} = 100 \text{ mm}^2 = 1 \text{ cm}^2</math></p>
<p><b>3</b></p>	<p><b>Missing numbers and units</b></p> <p>Let's see how quickly we can fill in the missing items!</p> <p>Ps come to BB to write numbers and units, explaining reasoning and to say completed equation. Class checks mentally whether they are correct.</p> <p>BB:</p> <p>a) <math>780 \text{ m} + \boxed{220 \text{ m}} = 1 \text{ km}</math>      <math>2 \text{ km} - \boxed{500} \text{ m} = 1500 \text{ m}</math>  <math>1260 \text{ m} + \boxed{740 \text{ m}} = 2 \text{ km}</math>      <math>1 \text{ km} - \boxed{560} \text{ m} = 440 \text{ m}</math></p> <p>b) <math>450 \text{ g} + \boxed{550 \text{ g}} = 1 \text{ kg}</math>      <math>1 \text{ kg} - 20 \text{ g} = \boxed{980} \text{ g}</math>  <math>1350 \text{ m} + \boxed{650 \text{ g}} = 2 \text{ kg}</math>      <math>2 \text{ kg} - 840 \text{ g} = \boxed{1160} \text{ g}</math></p> <p>c) <math>330 \text{ ml} + \boxed{670 \text{ ml}} = 1 \text{ litre}</math>      <math>1 \text{ litre} - \boxed{590} \text{ ml} = 410 \text{ ml}</math>  <math>1600 \text{ ml} + \boxed{400 \text{ ml}} = 2 \text{ litres}</math>      <math>\boxed{1310} \text{ ml} - 1 \text{ litre} = 310 \text{ ml}</math></p> <p style="text-align: right;"><i>25 min</i></p>	<p>Whole class activity</p> <p>Written on BB or SB or OHT or use enlarged copy master</p> <p>At a good pace</p> <p>Reasoning, e.g.  '<math>780 \text{ m} + \underline{220 \text{ m}} = 1 \text{ km}</math>  because  <math>1 \text{ km} - 780 \text{ m} = \underline{220 \text{ m}}</math>'</p> <p>Agreement, praising</p>
<p><b>4</b></p>	<p><b>PbY3b, page 23</b></p> <p>Q.1 Read: <i>Fill in the missing numbers.</i></p> <p>Set a time limit or deal with one row at a time.</p> <p>Review at BB with whole class. Ps come to BB or dictate to T, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) <math>1500 \text{ m} = \underline{1} \text{ km } \underline{500} \text{ m}</math>      <math>1 \text{ km } 480 \text{ m} = \underline{1480} \text{ m}</math>  b) <math>1300 \text{ g} = \underline{1} \text{ kg } \underline{300} \text{ g}</math>      <math>1 \text{ kg } 290 \text{ g} = \underline{1290} \text{ m}</math>  c) <math>1640 \text{ mm} = \underline{1} \text{ m } \underline{640} \text{ mm}</math>      <math>1 \text{ m } 517 \text{ mm} = \underline{1517} \text{ mm}</math>  d) <math>1240 \text{ ml} = \underline{1} \text{ litre } \underline{240} \text{ ml}</math>      <math>1 \text{ litre } 804 \text{ ml} = \underline{1804} \text{ ml}</math>  e) <math>640 \text{ minutes} = \underline{10} \text{ hrs } \underline{40} \text{ min}</math>      <math>10 \text{ hrs } 56 \text{ min} = \underline{656} \text{ min}</math>  f) <math>90 \text{ days} = \underline{12} \text{ weeks } \underline{6} \text{ days}</math>      <math>50 \text{ wks } 6 \text{ days} = \underline{356} \text{ days}</math></p> <p style="text-align: right;"><i>31 min</i></p>	<p>Individual work, monitored, helped</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p>

<h1>Y4</h1>		<p style="text-align: right;"><i>Lesson Plan 23</i></p>																								
<p><b>Activity</b></p> <p style="text-align: center;"><b>5</b></p>	<p><b>PbY4a, page 23</b></p> <p>Q.2 Elicit that there are <math>3 \times 4 = 12</math> additions and subtractions. Ps can calculate horizontally in <i>Pbs</i> or vertically in <i>Ex. Bks</i>. Deal with one block at a time. Set a time limit.</p> <p>Review at BB with whole class. Ps come to BB or dictate to T, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) <math>340\text{m} + 460\text{m} = 740\text{m} + 60\text{m} = \underline{800\text{m}}</math>  <math>950\text{m} + 320\text{m} = 1250\text{m} + 20\text{m} = 1270\text{m} = \underline{1\text{ km } 270\text{ m}}</math>  <math>1\text{ km } 50\text{ m} + 406\text{ m} = \underline{1\text{ km } 456\text{ m}}</math>  <math>1\text{ km } 240\text{ m} - 1040\text{ m} = 1240\text{ m} - 1040\text{ m} = \underline{200\text{ m}}</math></p> <p>b) <math>810\text{ ml} + 190\text{ ml} = 1000\text{ ml} = \underline{1\text{ litre}}</math>  <math>450\text{ ml} + 870\text{ ml} = 1320\text{ ml} = \underline{1\text{ litre } 320\text{ ml}}</math>  <math>1\text{ litre } 310\text{ ml} + 440\text{ ml} = \underline{1\text{ litre } 750\text{ ml}}</math>  <math>1\text{ litre } 50\text{ ml} - 200\text{ ml} = 1050\text{ ml} - 200\text{ ml} = \underline{850\text{ ml}}</math></p> <p>c) <math>157\text{ g} + 243\text{ g} = 357\text{ g} + 43\text{ g} = \underline{400\text{ g}}</math>  <math>630\text{ g} + 510\text{ g} = 1140\text{ g} = \underline{1\text{ kg } 140\text{ g}}</math>  <math>1\text{ kg } 40\text{ g} + 350\text{ g} = \underline{1\text{ km } 390\text{ g}}</math>  <math>1\text{ kg } 210\text{ g} - 430\text{ g} = 1210\text{ g} - 430\text{ g} = \underline{780\text{ g}}</math></p> <p style="text-align: right;"><i>40 min</i></p>	<p style="text-align: center;"><b>Notes</b></p> <p>Individual work, monitored, helped</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Differentiation by time limit</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Deails of vertical calculations written on BB if needed, e.g.</p> <p>c)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td></td><td>6</td><td>3</td><td>0</td></tr> <tr><td>+</td><td>5</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>1</td><td>4</td><td>0</td></tr> </table> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>1</td><td>2</td><td>1</td><td>0</td></tr> <tr><td>-</td><td>4</td><td>3</td><td>0</td></tr> <tr><td></td><td>7</td><td>8</td><td>0</td></tr> </table>		6	3	0	+	5	1	0	1	1	4	0	1	2	1	0	-	4	3	0		7	8	0
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-	4	3	0																							
	7	8	0																							
<p style="text-align: center;"><b>6</b></p>	<p><b>PbY4a, page 23, Q.3</b></p> <p>Read: <i>Fill in the missing numbers to show how much time has passed.</i></p> <p>How could we do it? (e.g. using a model clock) Ps come to front of class to set the initial time on the model clock and then to move it forward to the finish time. Class counts the hours and minutes. P writes the time passed on the BB and Ps in <i>Pbs</i>.</p> <p>What other way could we have worked it out? (subtraction) Who would like to show it on the BB? Ps writes subtraction, with T's help.</p> <p>BB:</p> <p>a) <math>12\text{ hours } 15\text{ min} - 7\text{ hours } 45\text{ min}</math>      T shows another model:  <math>= 5\text{ hours } 15\text{ min} - 45\text{ min}</math>      <math>12\text{ hrs } 15\text{ min} \rightarrow 11\text{ hrs } 75\text{ min}</math>  <math>= 5\text{ hours} - 30\text{ min}</math>      <math>- \underline{7\text{ hrs } 45\text{ min}} \quad - \underline{7\text{ hrs } 45\text{ min}}</math>  <math>= \underline{4\text{ hours } 30\text{ min}}</math>      <math>\underline{\hspace{2cm}} \quad \underline{4\text{ hrs } 30\text{ min}}</math></p> <p>Ps come to BB to use whichever method they prefer to work out the missing times, explaining reasoning (with T's help if necessary). Class points out errors or easier ways to calculate.</p> <p><i>Solution:</i></p> <p>a) 7 hours 45 min      to      12 hours 15 min:      <u>4 hours 30 min</u></p> <p>b) 15 hours 30 min      to      17 hours 50 min:      <u>2 hours 20 min</u></p> <p>c) 6.30 am      to      2.40 pm:      <u>8 hours 10 min</u></p> <p>d) 08 : 40 : 00      to      15 : 10 : 00:      <u>6 hours 30 min</u></p> <p>e) 10 : 25 : 00      to      <u>14 : 40 : 00:</u>      4 hours 15 min</p> <p>f) <u>2 : 10 : 00</u>      to      3 : 20 : 00:      1 hour 10 min</p> <p><b>Extension</b></p> <p>T points to a time and Ps express it in another way.</p> <p style="text-align: right;"><i>45 min</i></p>	<p>Whole class activity (if some Ps wish to try it individually, let them)</p> <p>Written on BB or SB or use enlarged copy master or OHT</p> <p>Discussion on methods of solution (e.g. practically, or 'counting on' or subtraction)</p> <p>Ps might start vertical subtraction, then need T's help to complete it.</p> <p>Reasoning, agreement, praising</p> <p>c) <math>2.40\text{ pm} \rightarrow 14\text{ hrs } 40\text{ min}</math>  <math>6.30\text{ am} \rightarrow \underline{6\text{ hrs } 30\text{ min}}</math>          Difference: <u>8 hrs 10 min</u></p> <p>d)</p> <table style="margin-left: auto; margin-right: auto;"> <tr><td>15 hrs 10 min</td><td><math>\rightarrow</math></td><td>14 hrs 70 min</td></tr> <tr><td>- 8 hrs 40 min</td><td></td><td>- 8 hrs 40 min</td></tr> <tr><td><u>                    </u></td><td></td><td><u>6 hrs 30 min</u></td></tr> </table> <p>f) if both are am or both pm!</p>	15 hrs 10 min	$\rightarrow$	14 hrs 70 min	- 8 hrs 40 min		- 8 hrs 40 min	<u>                    </u>		<u>6 hrs 30 min</u>															
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- 8 hrs 40 min		- 8 hrs 40 min																								
<u>                    </u>		<u>6 hrs 30 min</u>																								

<p><b>Y4</b></p>	<p>R: Mental calculation                  C: <b>Measurement: time</b>                  E: Numbers up to (and beyond) 2000</p>	<p><i>Lesson Plan</i>  <b>24</b></p>
<p><b>Activity</b>  <b>1</b></p>	<p><b>Which is more?</b>                  Let's compare them and draw arrows pointing towards the one which is more. Ps come to BB to draw arrows. Class points out errors.                  BB:</p>  <p>What do you notice? (e.g. 6 arrows, 3 pointing towards the biggest quantity, 2 towards the 2nd biggest, 1 towards the 2nd smallest; the smallest quantity has only arrows pointing away from it)</p> <p style="text-align: right;"><i>5 min</i></p>	<p><b>Notes</b>                  Whole class activity                  Written on BB or flash cards stuck to BB, or use enlarged copy master or OHP                  At a good pace                  In good humour!                  Reasoning, agreement, praising                  Feedback for T</p>
<p><b>2</b></p>	<p><b>Which belongs?</b>                  Which of these quantities belongs to which food ?                  Ps come to BB to draw joining lines or to cross out unrealistic quantities, explaining reasoning. Class agrees/disagrees.                  BB:</p>  <p>(Ps might say, e.g., that they can eat a slice of bread or drink a glass of milk in 5 minutes; or that in Giant's Land a glass could hold 4 litres of milk and a slice of bread could weigh 3 kg and measure 130 cm long!)</p> <p style="text-align: right;"><i>10 min</i></p>	<p>Whole class activity                  Drawn on BB or use pictures cut from magazines and cards stuck to BB, or use enlarged copy master or OHP                  At a good pace                  Reasoning, agreement, praising                  In good humour!                  If possible, confirm with real glass of milk and slice of bread.                  Extra praise if Ps make a valid case for one of the quantities crossed out.</p>
<p><b>3</b></p>	<p><b>Time</b>                  Write the answers to these questions in your <i>Ex. Bks</i>. Use suitable units of time. The times need only be approximate or you could give a range if you are unsure.                  Review answer after every question. Deal with all cases.</p> <p>a) How long do you sleep each day? (e.g. 8 to 11 hours)                  b) How long is the school's Easter break? (e.g. 2 weeks)                  c) How long is half a year? (e.g. 6 months; 26 weeks; 182 and a half days)                  d) How much time does it take you to get to school? (various answers)                  e) How long is your maths lesson? (e.g. 45 minutes; 3 quarters of an hour)                  f) How much time does it take you to run 100 m? (e.g. 20 seconds, half a minute, etc.)</p> <p>Ps can think of question too!</p> <p style="text-align: right;"><i>15 min</i></p>	<p>Individual work in <i>Ex. Bks</i> but class kept together                  Or Ps could show answers on scrap paper or slates in unison on command.                  Discuss whether answers are realistic or unrealistic.                  In f) T could have a rough distance measured beforehand to give Ps an idea, e.g. from the school gate to the playing fields.                  Extra praise for clever questions!</p>

# Y4

## Lesson Plan 24

### Activity

4

**PbY4a, page 24**

Q.1 Read: Write a plan. Do the calculation in your exercise book. Write the answer

Deal with one part at a time. Ps read question themselves, write a plan in *Pbs*, do calculation in *Ex. Bks.* and write answer in *Pbs*.

Review with whole class. T asks several Ps for their answer. A, come and tell us how you worked it out. Who did the same? Who did it a different way? etc. Mistakes discussed/corrected.

Solution:

\* a) A ball bearing weighs 30 g. What is the weight of 451 ball bearings?  
 Plan:  $30 \text{ g} \times 451$  C:  $30 \times 451 = 3 \times 4510 = 13\ 530 \text{ (g)}$   
 = 13 kg 530 g

Answer: They weigh 13 kg 530 g.

b) A snail moves at a speed of 6 cm per minute. How far will it have gone after 3 hours 7 minutes?

Plan:  $(3 \times 60 + 7) \times 6 \text{ cm}$  C:  $187 \times 6 \text{ cm} = 1122 \text{ cm}$   
 = 11 m 22 cm

Answer: It will have gone 11 m 22 cm.

\* c) Grandma made 17 litres of tomato sauce and poured it into 70 cl bottles. How many bottles did she fill?

Plan:  $(17 \times 100) \text{ cl} \div 70 \text{ cl}$  C:  $1700 \div 70 = 170 \div 7$   
 = 24, r 2

Answer: She filled 24 bottles.

d) Mum bought 14 m 36 cm of material and made 4 tablecloths, all the same size. How much material did she use for each tablecloth?

Plan:  $14 \text{ m } 36 \text{ cm} \div 4$  C:  $1436 \text{ cm} \div 4 = 359 \text{ cm}$   
 = 3 m 59 cm

Answer: Mum used 3 m 59 cm for each tablecloth.

25 min

### Notes

Individual work, monitored, helped

(starred questions can be done with whole class if T thinks they are too difficult)

Reasoning, agreement, self-correction, praising

$$\begin{array}{r} 4510 \times 3 \\ 13530 \end{array}$$

$$\begin{array}{r} 187 \times 6 \\ 1122 \end{array}$$

$$\begin{array}{r} 24 \text{ r } 2 \\ 7 \overline{) 170} \\ \underline{14} \phantom{0} \\ 30 \\ \underline{28} \\ 2 \end{array}$$

24 full bottles + 2 cl left over

$$\begin{array}{r} 359 \\ 4 \overline{) 1436} \\ \underline{12} \phantom{00} \\ 23 \phantom{0} \\ \underline{20} \phantom{0} \\ 36 \\ \underline{32} \\ 4 \end{array}$$

5

**PbY4a, page 24, Q.2**

Read: Mary had a length of ribbon which measured 9 m 24 cm. She cut 4 pieces from it, each 124 cm long. What length of ribbon was left?

What has the diagram to do with the question? How can we solve it? Ps come to BB to explain diagram and suggest methods of solution. Class agrees/disagrees or offers alternative methods.

e.g Length of ribbon:  $9 \text{ m } 24 \text{ cm} = 924 \text{ cm}$   
 Length cut off:  $4 \times 124 \text{ cm}$   
 Length left:  $924 \text{ cm} - 4 \times 124 \text{ cm} = 924 \text{ cm} - 496 \text{ cm}$   
 =  $428 \text{ cm} = 4 \text{ m } 28 \text{ cm}$

T writes new information on diagram as it is calculated.

Answer: 4 m 28 cm of ribbon remained.

30 min

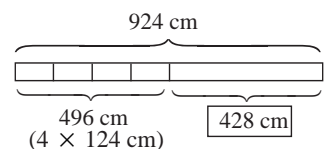
Whole class activity (or individual work if Ps prefer)

Diagram drawn on BB.

Reasoning, agreement, praising

C:

$$\begin{array}{r} 924 \\ 4 \overline{) 924} \\ \underline{4} \phantom{00} \\ 52 \phantom{0} \\ \underline{40} \phantom{0} \\ 124 \\ \underline{124} \\ 0 \end{array}$$



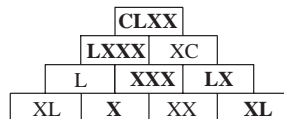
<h1>Y4</h1>		<i>Lesson Plan 24</i>																								
<p><b>Activity</b></p> <p><b>6</b></p>	<p><i>PbY4a, page 24</i></p> <p>Q.3 Read: <i>A train travels at a speed of 20 m per second on average. Complete the table.</i></p> <p>Discuss what 'on average' means. (The train might slow down in places and speed up in others but if we take the total distance for each journey and divide it by the total time taken, then we get an <u>average</u> speed, as if the train was travelling at the same speed every second.)</p> <p>Deal with one table at a time. (Results from table a) will help with table b)). Necessary calculations done in <i>Ex. Bks.</i></p> <p>Review at BB with whole class. Ps come to BB or dictate to T, explaining reasoning. Mistakes discussed and corrected.</p> <p>Extra praise if Ps notice connections in and between tables to make calculations easier.</p> <p><i>Solution:</i></p> <p>a)</p> <table border="1"> <thead> <tr> <th>Journey time</th> <th>Distance</th> </tr> </thead> <tbody> <tr> <td>30 seconds</td> <td><b>600 m</b></td> </tr> <tr> <td>1 minute</td> <td><b>1200 m</b></td> </tr> <tr> <td>1 and a half minutes</td> <td><b>1800 m</b></td> </tr> <tr> <td>50 seconds</td> <td><b>1000 m</b></td> </tr> <tr> <td>45 seconds</td> <td><b>900 m</b></td> </tr> </tbody> </table> <p>b)</p> <table border="1"> <thead> <tr> <th>Distance</th> <th>Journey time</th> </tr> </thead> <tbody> <tr> <td>120 metres</td> <td><b>6 seconds</b></td> </tr> <tr> <td>200 metres</td> <td><b>10 seconds</b></td> </tr> <tr> <td>600 metres</td> <td><b>30 seconds</b></td> </tr> <tr> <td>1200 metres</td> <td><b>60 seconds</b></td> </tr> <tr> <td>2000 metres</td> <td><b>100 seconds</b></td> </tr> </tbody> </table> <p style="text-align: center;"><i>38 min</i></p>	Journey time	Distance	30 seconds	<b>600 m</b>	1 minute	<b>1200 m</b>	1 and a half minutes	<b>1800 m</b>	50 seconds	<b>1000 m</b>	45 seconds	<b>900 m</b>	Distance	Journey time	120 metres	<b>6 seconds</b>	200 metres	<b>10 seconds</b>	600 metres	<b>30 seconds</b>	1200 metres	<b>60 seconds</b>	2000 metres	<b>100 seconds</b>	<p style="text-align: center;"><b>Notes</b></p> <p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Initial whole class discussion Ps explain what they think and T repeats in a clearer way if necessary.</p> <p>Reasoning, agreement, self-correction, praising.</p> <p>Connections: e.g. 1 minute = 2 × 30 seconds, 1 and a half minutes = 1 minute + 30 seconds, 45 seconds = 30 seconds + half of 30 seconds, etc.</p> <p>T points to a time or distance and Ps express it in another way, e.g. 100 sec. = 1 min. 40 sec. 1800 m = 1 km 800 m, 45 sec. = 3 quarters of a min.</p>
Journey time	Distance																									
30 seconds	<b>600 m</b>																									
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<p><b>7</b></p> <p><b>Extension</b></p>	<p><i>PbY4a, page 24, Q.4</i></p> <p>Read: <i>One litre of oil has mass 900 g. Complete the table.</i></p> <p>Elicit that: BB: 1 litre = 100 cl = 1000 ml</p> <p>Ps come to BB to choose a column and work out the missing quantity, explaining reasoning in detail. Difficult calculations done at side of BB if necessary. Class agrees/disagrees or suggests an easier way to calculate. Ps complete table in <i>Pbs</i> too.</p> <p><i>Solution:</i></p> <table border="1"> <thead> <tr> <th>Capacity</th> <th>10 cl</th> <th>30 cl</th> <th>(11 litres 50 cl) 1150 cl</th> <th><b>2 litres</b></th> <th>(20 cl) 200 ml</th> <th><b>10 litres</b></th> <th>(1 litre) 1000 ml</th> </tr> </thead> <tbody> <tr> <td>Mass</td> <td><b>90 g</b></td> <td><b>270 g</b></td> <td><b>10 350 g</b></td> <td>1800 g</td> <td><b>180 g</b></td> <td>9 kg</td> <td><b>900 g</b></td> </tr> </tbody> </table> <p style="text-align: center;"> <math>900\text{ g} \div 10 = 90\text{ g}</math>    <math>3 \times 90\text{ g} = 270\text{ g}</math>    <math>11 \times 900\text{ g} = 9900\text{ g}</math>    <math>90\text{ g} \times 2 = 180\text{ g}</math>    <math>(9000\text{ g})</math>  <math>900\text{ g} \div 2 = 450\text{ g}</math>  <math>9900\text{ g} + 450\text{ g} = 10350\text{ g}</math> (= 10 litres 350 g)         </p> <p>What is the rule? Check with easy values from the table. Note how the equations change according to the units used.</p> <p style="text-align: center;"><i>45 min</i></p>	Capacity	10 cl	30 cl	(11 litres 50 cl) 1150 cl	<b>2 litres</b>	(20 cl) 200 ml	<b>10 litres</b>	(1 litre) 1000 ml	Mass	<b>90 g</b>	<b>270 g</b>	<b>10 350 g</b>	1800 g	<b>180 g</b>	9 kg	<b>900 g</b>	<p>Whole class activity (or individual work if Ps wish, reviewed with whole class)</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, reasoning, agreement, praising Extra praise if Ps notice connections between columns which make the calculations easier.</p> <p><i>Rule:</i> e.g.  <math>M(\text{g}) = C(\text{cl}) \times 9</math>  <math>C(\text{cl}) = M(\text{g}) \div 9</math>  <math>C(\text{ml}) = M(\text{g}) \div 9 \times 10</math> </p>								
Capacity	10 cl	30 cl	(11 litres 50 cl) 1150 cl	<b>2 litres</b>	(20 cl) 200 ml	<b>10 litres</b>	(1 litre) 1000 ml																			
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**Y4****Lesson Plan  
25****Activity**

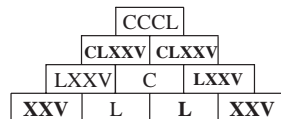
Tables practice, revision, activities, consolidation

**PbY4a, page 25***Solutions:*

Q.1 a)



b)

Q.2 a)  $275 \text{ m} + 420 \text{ m} = \underline{695} \text{ m}$ 

$$821 \text{ cm} + 275 \text{ cm} = 1096 \text{ cm} = \underline{10} \text{ m } \underline{96} \text{ cm}$$

$$1 \text{ km } 75 \text{ m} - 620 \text{ m} = 1075 \text{ m} - 620 \text{ m} = \underline{455} \text{ m}$$

$$427 \text{ m} + 720 \text{ m} = 1147 \text{ m} = \underline{1} \text{ km } \underline{147} \text{ m}$$

$$72 \text{ mm} + 99 \text{ mm} = 171 \text{ mm} = \underline{17} \text{ cm } \underline{1} \text{ mm}$$

b)  $27 \text{ cl} + 1260 \text{ cl} = 1287 \text{ cl} = \underline{12} \text{ litres } \underline{87} \text{ cl}$ 

$$1 \text{ litre } 27 \text{ cl} - 47 \text{ cl} = 127 \text{ cl} - 47 \text{ cl} = \underline{80} \text{ cl}$$

$$1 \text{ litre } 226 \text{ ml} + 874 \text{ ml} = 1 \text{ litre } 1100 \text{ ml} = \underline{2} \text{ litres } \underline{10} \text{ cl}$$

$$1257 \text{ ml} + 874 \text{ ml} = 2131 \text{ ml} = \underline{2} \text{ litres } \underline{131} \text{ ml}$$

c)  $281 \text{ g} + 322 \text{ g} = \underline{603} \text{ g}$ 

$$470 \text{ g} + 833 \text{ g} = 1303 \text{ g} = \underline{1} \text{ kg } \underline{303} \text{ g}$$

$$1 \text{ kg } 57 \text{ g} + 233 \text{ g} = \underline{1} \text{ kg } \underline{290} \text{ g}$$

$$1 \text{ kg } 242 \text{ g} - 1051 \text{ g} = 1242 \text{ g} - 1051 \text{ g} = \underline{191} \text{ g}$$

Q.3 SL: 93 m, ET:  $93 \text{ m} + 207 \text{ m} = \underline{300} \text{ m}$ 

The Eiffel Tower is 300 m high.

Q.4  $(332 - 12) \div 8 = 320 \div 8 = \underline{40}$ 

There will be 40 chairs in each row.

**Notes**

<h1>Y4</h1>	<p>R: Sequences. Mental calculation                  C: <b>Revision and practice: numbers, calculations, measures</b>                  E: <i>Problems</i></p>	<h2>Lesson Plan 26</h2>																																																				
<p><b>Activity</b></p> <p><b>1</b></p>	<p><b>Number analysis</b></p> <p>Let's fill in this table. What do you think it means? If no P understands it, T does first column as a model for Ps to follow. Ps come to BB to complete the remaining columns. Class points out errors.</p> <p>BB:</p> <table border="1"> <tr> <td>Number</td> <td colspan="4">1834</td> <td colspan="4">1496</td> <td colspan="4">1509</td> </tr> <tr> <td>Digit value</td> <td>1</td><td>8</td><td>3</td><td>4</td> <td>1</td><td>4</td><td>9</td><td>6</td> <td>1</td><td>5</td><td>0</td><td>9</td> </tr> <tr> <td>Place value</td> <td>1Th</td><td>8H</td><td>3T</td><td>4U</td> <td>1Th</td><td>4H</td><td>9T</td><td>6U</td> <td>1Th</td><td>5H</td><td>0T</td><td>9U</td> </tr> <tr> <td>Real value</td> <td>1000</td><td>800</td><td>30</td><td>4</td> <td>1000</td><td>400</td><td>90</td><td>6</td> <td>1000</td><td>500</td><td>0</td><td>9</td> </tr> </table> <p>Repeat with other 4-digit numbers suggested by Ps.</p> <p style="text-align: right;">4 min</p>	Number	1834				1496				1509				Digit value	1	8	3	4	1	4	9	6	1	5	0	9	Place value	1Th	8H	3T	4U	1Th	4H	9T	6U	1Th	5H	0T	9U	Real value	1000	800	30	4	1000	400	90	6	1000	500	0	9	<p><b>Notes</b></p> <p>Whole class activity                  Drawn on BB or use enlarged copy master or OHP                  At a good pace                  Reasoning, agreement, praising                  Let's read the numbers together.</p> <p>Feedback for T</p>
Number	1834				1496				1509																																													
Digit value	1	8	3	4	1	4	9	6	1	5	0	9																																										
Place value	1Th	8H	3T	4U	1Th	4H	9T	6U	1Th	5H	0T	9U																																										
Real value	1000	800	30	4	1000	400	90	6	1000	500	0	9																																										
<p><b>2</b></p>	<p><b>PbY4a, page 26</b></p> <p>Q.1 Read: <i>Complete the table. Follow the example.</i></p> <p>Let's see if you can complete this table by yourselves!</p> <p>Review at BB with whole class. Ps come to BB or dictate to T. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <table border="1"> <tr> <td>Number</td> <td colspan="4">1978</td> <td colspan="4">1083</td> <td colspan="4">1803</td> </tr> <tr> <td>Digit value</td> <td>1</td><td>9</td><td>7</td><td>8</td> <td>1</td><td>0</td><td>8</td><td>3</td> <td>1</td><td>8</td><td>0</td><td>3</td> </tr> <tr> <td>Place value</td> <td>1Th</td><td>9H</td><td>7T</td><td>8U</td> <td>1Th</td><td>0H</td><td>8T</td><td>3U</td> <td>1Th</td><td>8H</td><td>0T</td><td>3U</td> </tr> <tr> <td>Real value</td> <td>1000</td><td>900</td><td>70</td><td>8</td> <td>1000</td><td>0</td><td>80</td><td>3</td> <td>1000</td><td>800</td><td>0</td><td>3</td> </tr> </table> <p style="text-align: right;">8 min</p>	Number	1978				1083				1803				Digit value	1	9	7	8	1	0	8	3	1	8	0	3	Place value	1Th	9H	7T	8U	1Th	0H	8T	3U	1Th	8H	0T	3U	Real value	1000	900	70	8	1000	0	80	3	1000	800	0	3	<p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement, self-correcting, praising</p>
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Real value	1000	900	70	8	1000	0	80	3	1000	800	0	3																																										
<p><b>3</b></p>	<p><b>Mental calculation</b></p> <p>Write these numbers one below the other in your <i>Ex. Bks.</i> Make sure that the place values line up! T dictates numbers, e.g.</p> <p style="margin-left: 40px;">1231</p> <p style="margin-left: 40px;">68</p> <p style="margin-left: 40px;">904</p> <p style="margin-left: 40px;">360</p> <p style="margin-left: 80px;">Do these calculations in your head and show me the result on scrap paper or slates when I say. e.g.</p> <ul style="list-style-type: none"> <li>• Add the 1st, 2nd and 4th numbers. Show me . . . now! (1659)</li> <li>• Subtract the 4th number from the 1st number. Show me . . . now! (871)</li> <li>• Divide the 2nd number by 4 and add the result to the 3rd number. Show me . . . now! (921)</li> </ul> <p>etc.</p> <p style="text-align: right;">13 min</p>	<p>Whole class activity                  Ps write numbers in <i>Ex. Bks.</i> to keep them in mind.</p> <p>Responses shown in unison.</p> <p>Ps answering correctly explain how they did the calculation.</p> <p>In good humour!</p> <p>Praising, encouragement only</p> <p>Ps can think of calculations too!</p>																																																				



# Y4

## Lesson Plan 26

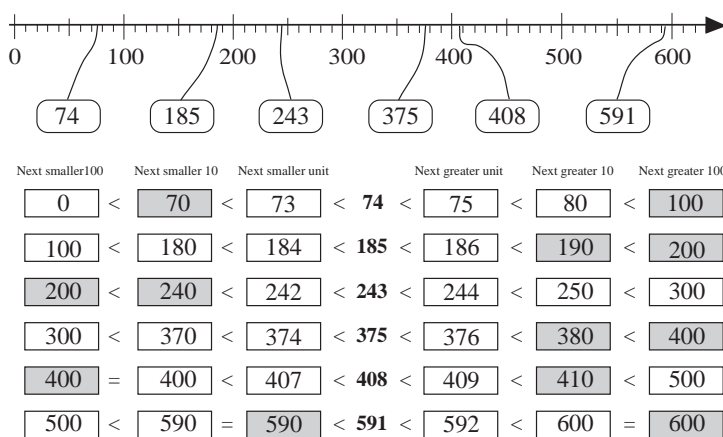
### Activity

4

#### Number line

- Let's join up each number to its approximate position on the number line. Ps come to BB to say the number, point to its place on the number line and draw joining line. Class agrees/disagrees.
- Let's write the next smaller and greater units, tens and hundreds for each number. Ps come to BB or dictate to T. Class points out errors.
- T points to each original number in turn. What is this number rounded to the nearest 10 (100)? Ps come to BB or dictate to T. Class points out errors. (Numbers could be coloured or starred.)

BB:



20 min

### Notes

Whole class activity

Drawn on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, praising

Agree that 5 rounds up

What do you notice?

(e.g. 591 rounds down to nearest ten but rounds up to nearest 100; 408 rounds to 400 as the nearest 10 and the nearest 100)

Feedback for T

5

#### PbY4a, page 26

Q.2 Read: a) *Join up the numbers to their approximate position on the number line.*

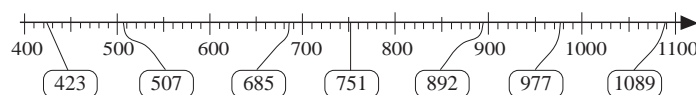
b) *Write the next smaller and greater whole tens and hundreds in the boxes.*

Set a time limit. Review at BB with whole class. Ps come to BB or dictate to T. Class agrees/disagrees. Mistakes discussed and corrected.

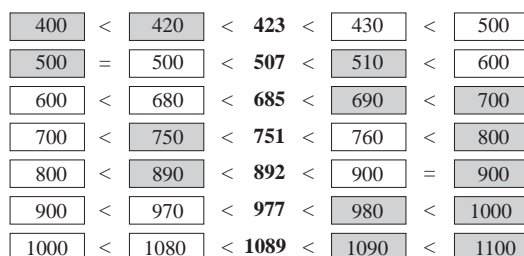
For each middle number, colour the nearest ten *red* and the nearest hundred *yellow*. Review with whole class.

*Solution:*

a)



b)



26 min

Individual work, monitored, helped

Drawn on BB or use enlarged copy master or OHP

Agreement, self-correction, praising

Or done orally with whole class

Ps tell what they notice.

Who had them all correct?

The person nearest them give them a pat on the back!





<h1>Y4</h1>	<p>R: Mental calculation                  C: <b>Sequences. Revision and practice of calculations (up to 2000)</b>                  E: Problems</p>	<h2>Lesson Plan 27</h2>
<p><b>Activity</b></p> <p><b>1</b></p>	<p><b>Mental calculation</b></p> <p>If you were doing these calculations in your head, how would you do them? Ps come to BB or explain to T who writes on BB. Who agrees? Who would do it another way? Which is easier?</p> <p>If you could write it down, how would you do the calculation? Ps come to BB or dictate to T. Do you think it is quicker to write it down or do it mentally?</p> <p>BB: e.g.</p> <p>a) <math>48 + 37 = (85)</math>      <math>348 + 37 = (385)</math>      <math>348 + 437 = (785)</math>              <math>(48 + 30 + 7)</math>      <math>(348 + 30 + 7)</math>      <math>(348 + 400 + 30 + 7)</math></p> <p>b) <math>64 - 26 = (38)</math>      <math>764 - 26 = (738)</math>      <math>764 - 226 = (538)</math>              <math>(64 - 20 - 6)</math>      <math>(764 - 20 - 6)</math>      <math>(764 - 200 - 20 - 6)</math></p> <p>c) <math>49 \times 3 = (147)</math>      <math>249 \times 3 = (747)</math>              <math>(40 \times 3 + 9 \times 3)</math>      <math>(200 \times 3 + 40 \times 3 + 9 \times 3)</math>                  <math>= 120 + 27</math>      <math>= 600 + 120 + 27</math>              or <math>(50 \times 3 - 1 \times 3)</math>      <math>(250 \times 3 - 1 \times 3)</math>                  <math>= 150 - 3</math>      <math>= 750 - 3</math></p> <p>d) <math>87 \div 4 = (21, r 3)</math>      <math>432 \div 6 = (72)</math>              <math>(80 \div 4 + 7 \div 4)</math>      <math>(420 \div 6 + 12 \div 6)</math>                  <math>= 20 + 1, r 3</math>      <math>= 70 + 2</math></p> <p style="text-align: right;">8 min</p>	<p><b>Notes</b></p> <p>Whole class activity</p> <p>Operations written on BB or SB or OHT</p> <p>Discussion, reasoning, agreement, checking, praising</p> <p>BB:</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <math display="block">\begin{array}{r} 348 \\ + 437 \\ \hline 785 \end{array}</math> <p>1</p> </div> <div style="text-align: center;"> <math display="block">\begin{array}{r} 764 \\ - 226 \\ \hline 538 \end{array}</math> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <math display="block">\begin{array}{r} 249 \\ \times 3 \\ \hline 747 \end{array}</math> <p>1 2</p> </div> <div style="text-align: center;"> <math display="block">\begin{array}{r} \phantom{0}21 \\ 487 \\ \hline 1487 \end{array}</math> <p>r 3</p> </div> </div> <div style="display: flex; justify-content: center; margin-top: 10px;"> <math display="block">\begin{array}{r} \phantom{0}72 \\ 6432 \\ \hline 42792 \end{array}</math> <p>1</p> </div> <p>Agree that in general written calculations are simpler.</p>
<p><b>2</b></p>	<p><b>Sequences</b></p> <p>In each sequence, the difference between any two adjacent numbers is the same. Let's fill in the missing numbers.</p> <p>Ps come to BB to write the numbers above the lines, explaining reasoning. Class checks that they are correct.</p> <p>BB:</p> <p>a) <u>300</u>, <u>294</u>, <u>288</u>, <b>282</b>, <b>276</b>, <b>270</b>, <u>264</u>, <u>258</u>, <u>252</u>      Rule: - 6</p> <p>b) <u>590</u>, <u>610</u>, <u>630</u>, <b>650</b>, <b>670</b>, <b>690</b>, <u>710</u>, <u>730</u>, <u>750</u>, <u>770</u>      Rule: + 20</p> <p>c) <u>805</u>, <u>822</u>, <u>839</u>, <b>856</b>, <b>873</b>, <b>890</b>, <u>907</u>, <u>924</u>, <u>941</u>, <u>958</u>      Rule: + 17</p> <p style="text-align: right;">14 min</p>	<p>Whole class activity</p> <p>T has bold numbers written in middle of BB or SB or OHT and horizontal lines drawn for the other terms.</p> <p>At a good pace</p> <p>Reasoning, agreement, praising</p>
<p><b>3</b></p>	<p><b>PbY4a, page 27</b></p> <p>Q.1 Read: <i>Practise addition.</i></p> <p>You may do the calculations mentally or write them in your <i>Ex. Bks.</i> Let's see how many you can do in 3 minutes!</p> <p>Start . . . now! . . . Stop!</p> <p>Review with whole class. Ps change pencils and mark/correct their own work. Ps dictate answers, explaining reasoning. Class points out errors.</p> <p>Who had all 9 correct? Who made a mistake? What was your mistake? etc. Deal with all cases.</p> <p><i>Solution:</i></p> <p>a) <math>56 + 18 = \underline{74}</math>      <math>556 + 18 = \underline{574}</math>      <math>556 + 418 = \underline{974}</math></p> <p>b) <math>43 + 29 = \underline{72}</math>      <math>243 + 29 = \underline{272}</math>      <math>243 + 929 = \underline{1172}</math></p> <p>c) <math>37 + 48 = \underline{85}</math>      <math>937 + 48 = \underline{985}</math>      <math>937 + 548 = \underline{1485}</math></p> <p style="text-align: right;">20 min</p>	<p>Individual work, monitored (less able Ps helped and they might only be expected to do the first two columns)</p> <p>Differentiation by time limit</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p>

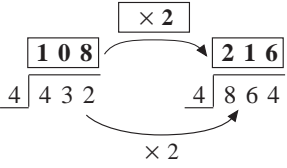
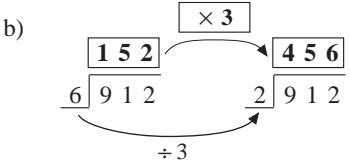
<b>Y4</b>		<i>Lesson Plan 27</i>
<p><b>Activity</b></p> <p><b>4</b></p>	<p><i>PbY4a, page 27</i></p> <p>Q.2 Read: <i>Practise subtraction.</i></p> <p>You may do the calculations mentally or write them in your <i>Ex Bks.</i> Let's see how many you can do in 3 minutes!</p> <p>Start . . . now! . . . Stop!</p> <p>Review with whole class. Ps change pencils and mark/correct their own or neighbour's work. Ps dictate answers, explaining reasoning. Class points out errors.</p> <p>Who had all 9 correct? Who made a mistake? What was your mistake? etc. Deal with all cases.</p> <p><i>Solution:</i></p> <p>a) <math>92 - 16 = \underline{76}</math>      <math>392 - 16 = \underline{376}</math>      <math>492 - 216 = \underline{276}</math>  b) <math>63 - 27 = \underline{36}</math>      <math>863 - 27 = \underline{836}</math>      <math>863 - 127 = \underline{736}</math>  c) <math>56 - 49 = \underline{7}</math>      <math>556 - 49 = \underline{507}</math>      <math>556 - 449 = \underline{107}</math></p> <p style="text-align: right;"><i>26 min</i></p>	<p><b>Notes</b></p> <p>Individual work, monitored (less able Ps helped and they might only be expected to do the first two columns)</p> <p>Differentiation by time limit</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p> <p>Class applauds Ps who had 18 correct in Q.1 and Q.2.</p>
<p><b>5</b></p>	<p><i>PbY4a, page 27</i></p> <p>Q.3 Read: <i>In each sequence the difference between any term and the next term is the same. Write the missing terms.</i></p> <p>Deal with one part at a time. Ps can do calculations in <i>Ex Bks.</i></p> <p>Review at BB with whole class. Ps dictate terms to T and give the rule. Class agrees/disagrees. Mistakes discussed/corrected.</p> <p><i>Solution:</i></p> <p>a) <u>1000</u>, <u>940</u>, <u>880</u>, <b>820</b>, <b>760</b>, <b>700</b>, <u>640</u>, <u>580</u>, <u>520</u>  <i>Rule:</i> - 60</p> <p>b) <u>100</u>, <u>300</u>, <u>500</u>, <b>700</b>, <b>900</b>, <b>1100</b>, <u>1300</u>, <u>1500</u>, <u>1700</u>  <i>Rule:</i> + 200</p> <p>c) <u>50</u>, <u>220</u>, <u>390</u>, <b>560</b>, <b>730</b>, <b>900</b>, <u>1070</u>, <u>1240</u>, <u>1410</u>  <i>Rule:</i> + 170</p> <p>d) <u>374</u>, <u>360</u>, <u>346</u>, <b>332</b>, <b>318</b>, <b>304</b>, <u>290</u>, <u>276</u>, <u>262</u>  <i>Rule:</i> - 14</p> <p>e) <u>263</u>, <u>275</u>, <b>287</b>, <u>299</u>, <b>311</b>, <u>323</u>, <u>335</u>, <u>347</u>, <u>359</u>  <i>Rule:</i> + 12</p> <p style="text-align: right;"><i>35 min</i></p>	<p>Individual work, monitored, helped (or whole class activity)</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>Extra praise if Ps had e) correct!</p> <p>Discuss how to solve part e):  BB: <math>(311 - 287) \div 2</math>  <math>= 24 \div 2</math>  <math>= 12</math></p>

<h1>Y4</h1>		<i>Lesson Plan 27</i>																																				
<p><b>Activity</b></p> <p><b>6</b></p>	<p><b>PbY4a, page 21</b></p> <p>Q.4 Read: <i>Solve the problems in your exercise book.</i></p> <p>Deal with one part at a time. Ps read the question themselves, make a plan, do the calculation and write the answer as a sentence in <i>Ex. Bks.</i></p> <p>Review with whole class. Ps come to BB to show their solution, explaining reasoning. Who agrees? Who thinks something else? Who did it a different way? Who made a mistake? What kind of mistake? etc.</p> <p><i>Solutions:</i></p> <p>a) <i>60 swallows are resting on the wire between two telegraph poles. What weight is on the wire if each swallow weighs about 30 grams?</i></p> <p>BB: 1 swallow: 30 g    60 swallows: <math>30 \text{ g} \times 60</math>  <math>30 \text{ g} \times 60 = 300 \text{ g} \times 6 = \underline{1800 \text{ g}} = \underline{1 \text{ kg } 800 \text{ g}}</math></p> <p><i>Answer:</i> There is about 1 kg 800 g on the wire.</p> <p>b) <i>Every time we breathe in, we take about half a litre of air into our lungs. We take a breath about 20 times every minute. How much air do we breathe in during 30 minutes?</i></p> <p>BB: 1 breath: half a litre    1 minute: <math>20 \times \text{half a litre}</math>          30 minutes: <math>30 \times 20 \times \text{half a litre} = 30 \times 10 \text{ litres}</math>  <math>= \underline{300 \text{ litres}}</math></p> <p><i>Answer:</i> We breathe in about 300 litres of air in 30 minutes.</p> <p>c) <i>A hare weighs about 8 kg and a brown bear can weigh 40 times as much. What could be the weight of a brown bear?</i></p> <p>BB: hare: 8 kg    brown bear: <math>40 \times 8 \text{ kg} = \underline{320 \text{ kg}}</math></p> <p><i>Answer:</i> A brown could weigh about 320 kg</p> <p style="text-align: right;"><i>41 min</i></p>	<p style="text-align: center;"><b>Notes</b></p> <p>Individual work, monitored, helped</p> <p>Ps could show answers on scrap paper or slates in unison on command.</p> <p>Reasoning, agreement, self-correcting, praising</p> <p>Make sure that Ps realise the importance of writing 'about' or 'roughly' or '<math>\approx</math>' in answers.</p> <p>Feedback for T</p>																																				
<p><b>7</b></p> <p><b>Extension</b></p>	<p><b>PbY4a, page 27, Q.5</b></p> <p>Read: <i>Work out a rule and complete the table.</i></p> <p>Agree on one form of the rule in words using the completed columns.</p> <p>Ps come to BB to choose a column and fill in the missing number, explaining reasoning. Class agrees/disagrees. Ps can think of several possible numbers for the last column.</p> <p>Who can write the rule in a mathematical way? Who agrees? Who can write it another way? etc. Check with values from the table.</p> <p><i>Solution</i></p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 5%;"><i>a</i></td> <td style="width: 5%;">1</td> <td style="width: 5%;">80</td> <td style="width: 5%;">15</td> <td style="width: 5%;">100</td> <td style="width: 5%;">32</td> <td style="width: 5%;">140</td> <td style="width: 5%;">90</td> <td style="width: 5%;"><b>100</b></td> <td style="width: 5%;">28</td> <td style="width: 5%;"><b>20</b></td> <td style="width: 5%;"><small>e.g.</small></td> </tr> <tr> <td><i>b</i></td> <td>4</td> <td>2</td> <td>20</td> <td>0</td> <td>4</td> <td>580</td> <td>200</td> <td>200</td> <td><b>320</b></td> <td><b>10</b></td> <td></td> </tr> <tr> <td><i>c</i></td> <td>7</td> <td>242</td> <td>65</td> <td>300</td> <td><b>100</b></td> <td><b>1000</b></td> <td><b>470</b></td> <td>500</td> <td>404</td> <td>70</td> <td></td> </tr> </table> <p><i>Rule:</i> <math>c = 3 \times a + b</math>    <math>b = c - 3 \times a</math>    <math>a = (c - b) \div 3</math></p> <p>Who can think of other columns to add to the table?</p> <p style="text-align: right;"><i>45 min</i></p>	<i>a</i>	1	80	15	100	32	140	90	<b>100</b>	28	<b>20</b>	<small>e.g.</small>	<i>b</i>	4	2	20	0	4	580	200	200	<b>320</b>	<b>10</b>		<i>c</i>	7	242	65	300	<b>100</b>	<b>1000</b>	<b>470</b>	500	404	70		<p>Whole class activity (or individually if Ps wish)</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>At a good pace</p> <p>Discussion on the rule, reasoning, agreement, praising</p> <p>Details of calculations shown on BB if problems.</p> <p>Agreement, praising</p>
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<h1>Y4</h1>	<p>R: Mental calculation                  C: <b>Revision and practice of calculations (up to 2000)</b>                  E: <i>Problems</i></p>	<h2>Lesson Plan 28</h2>																																																																																																		
<p><b>Activity</b></p> <p><b>1</b></p>	<p><b>Products</b></p> <p>Let's choose from these digits <span style="border: 1px solid black; padding: 2px;">1</span> <span style="border: 1px solid black; padding: 2px;">2</span> <span style="border: 1px solid black; padding: 2px;">3</span> <span style="border: 1px solid black; padding: 2px;">5</span> and multiply a 3-digit number by a 1-digit number, so that the product is:</p> <p>a) the greatest possible, BB: <table style="display: inline-table; border-collapse: collapse;"><tr><td style="border: 1px solid black; padding: 2px;"> </td><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">1</td><td style="border: 1px solid black; padding: 2px;">×</td><td style="border: 1px solid black; padding: 2px;">5</td><td style="border: 1px solid black; padding: 2px;"> </td></tr><tr><td style="border: 1px solid black; padding: 2px;">1</td><td style="border: 1px solid black; 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At a good pace                  Agreement, praising</p>
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<p><b>2</b></p>	<p><b>Problem</b></p> <p>Listen to the problem and picture it in your head. Write the data and do the calculation in your <i>Ex. Bks.</i> Show me the answer when I say.</p> <p><i>The human skull is made up of 29 bones, the spinal column has 26 bones, each arm has 32 bones, each leg has 31 bones and the remaining part of the body has 25 bones.</i></p> <p><i>How many bones make up a human skeleton?</i></p> <p>Show me . . . now! (206)</p> <p>P who responded correctly explains to those who did not. Mistakes discussed and corrected.</p> <p>BB: <math>29 + 26 + 32 + 32 + 31 + 31 + 25</math> or <table style="display: inline-table; border-collapse: collapse;"><tr><td style="border: 1px solid black; padding: 2px;"> </td><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">9</td></tr><tr><td style="border: 1px solid black; padding: 2px;"> </td><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;"> </td><td style="border: 1px solid black; padding: 2px;">6</td><td style="border: 1px solid black; padding: 2px;">4</td></tr><tr><td style="border: 1px solid black; padding: 2px;"> </td><td style="border: 1px solid black; padding: 2px;">6</td><td style="border: 1px solid black; padding: 2px;">2</td></tr><tr><td style="border: 1px solid black; padding: 2px;">+</td><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">5</td></tr><tr><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">0</td><td style="border: 1px solid black; padding: 2px;">6</td></tr></table></p> <p><i>Answer:</i> The human skeleton is made from 206 bones.</p> <p>Would any of you like to be a doctor or nurse when you grow up? Why? Why not?</p> <p style="text-align: right;">11 min</p>		2	9		2	6		6	4		6	2	+	2	5	2	0	6	<p>Whole class activity                  T repeats question slowly and Ps repeat in own words.                  Responses written on scrap paper or slates and shown in unison.                  Reasoning, agreement, self-correction, praising                  Ps say answer as a sentence in unison.                  Short discussion involving as many Ps as possible.</p>																																																																																
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<p><b>3</b></p> <p><b>Extension</b></p>	<p><b>Find the mistakes</b></p> <p>Pete is a year 4 pupil in another school. He is unsure of his units, so he has written several answers. Let's help him choose the correct one.</p> <p>Ps come to BB to cross out unrealistic data and say why they cannot be correct. Class agrees/disagrees.</p> <p>BB:</p> <p>a) Pete's height is: <del>13 m</del> <del>13 mm</del> <del>13 cm</del> 130 cm</p> <p>b) Pete's handspan is: 160 mm <del>160 cm</del> <del>1600 cm</del></p> <p>c) Length of Pete's step is: <del>46 m</del> 46 cm <del>46 mm</del></p> <p>d) Pete's age is: <del>103 years</del> <del>103 days</del> <del>103 weeks</del> 103 months</p> <p>What other data could be written down? Ps suggest criteria and Ps estimate their own data. (e.g. weight, how far away from school they live, length of little finger, how high (long) they can jump, etc.)</p> <p style="text-align: right;">15 min</p>	<p>Whole class activity                  Written on BB or use enlarged copy master or OHP                  At a good pace                  Reasoning, agreement, praising                  In good humour!                  Extra praise for creative suggestions.</p>																																																																																																		



<h1>Y4</h1>		<p>Lesson Plan 28</p>
<p><b>Activity</b></p> <p>4</p>	<p><i>PbY4a, page 28</i></p> <p>Q.1 Read: <i>Solve the problems in your exercise book.</i></p> <p>Deal with one part at a time. Ps read the question themselves, make a plan, do the calculation and write the answer as a sentence in <i>Ex. Bks.</i></p> <p>Review with whole class. Ps come to BB to show their solution, explaining reasoning. Who agrees? Who thinks something else? Who did it a different way? Who made a mistake? What kind of mistake? etc.</p> <p><i>Solutions:</i></p> <p>a) <i>An athlete won a high jump competition with a jump of 236 cm. A dolphin can leap out of the water and into the air to a height which is 374 cm above that reached by the high jumper. How high can this dolphin jump?</i></p> <p>BB: A: 236 cm D: <math>236\text{ cm} + 374\text{ cm} = 610\text{ cm}</math></p> <p><i>Answer:</i> This dolphin can jump to a height of 610 cm.</p> <p>b) <i>A milk churn contained 7 litres 5 cl of milk. The farmer's wife used 2 litres 18 cl of the milk to feed some newborn lambs. How much milk was left in the churn?</i></p> <p>BB: Had: 7 litres 5 cl = 705 cl</p> <p>Used: 2 litres 18 cl = 218 cl</p> <p>Had left: <math>705\text{ cl} - 218\text{ cl} = 487\text{ cl} = 4\text{ litres } 87\text{ cl}</math></p> <p><i>Answer:</i> There was 4 litres 87 cl of milk left in the churn.</p> <p style="text-align: right;">21 min</p>	<p><b>Notes</b></p> <p>Individual work, monitored, helped</p> <p>(Ps could show answers on scrap paper or slates in unison on command.)</p> <p>Reasoning, agreement, self-correcting, praising</p> <p>Feedback for T</p> <div style="text-align: center;"> <math display="block">\begin{array}{r} 236 \\ + 374 \\ \hline 610 \\ \small{11} \end{array}</math> </div> <div style="text-align: center;"> <math display="block">\begin{array}{r} 705 \\ - 218 \\ \hline 487 \end{array}</math> </div>
<p>5</p>	<p><b>Factors and products</b></p> <p>Study the diagrams. Note how do the factors and products change. Let's fill in the missing numbers and signs.</p> <p>Ps come to BB to fill in missing items, explaining reasoning. Class agrees/disagrees. What do you notice? (If a factor is increased by a certain number of times, the product also increases by that number of times.)</p> <p>BB:</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>a)</p> <math display="block">\begin{array}{r} 135 \\ \times 6 \\ \hline 810 \end{array} \xrightarrow{+3} \begin{array}{r} 135 \\ \times 2 \\ \hline 270 \end{array}</math> <p><math>\xrightarrow{+3}</math></p> </div> <div style="text-align: center;"> <p>b)</p> <math display="block">\begin{array}{r} 75 \\ \times 4 \\ \hline 300 \end{array} \xrightarrow{\times 3} \begin{array}{r} 225 \\ \times 4 \\ \hline 900 \end{array}</math> <p><math>\xrightarrow{\times 3}</math></p> </div> </div> <p style="text-align: right;">25 min</p>	<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement, praising</p> <p>Feedback for T</p>
<p>6</p>	<p><i>PbY4a, page 28</i></p> <p>Q.2 Read: <i>Look at how the factors and products change. Fill in the missing numbers and signs.</i></p> <p>Review at BB with whole class. Ps come to BB or dictate to T. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>a)</p> <math display="block">\begin{array}{r} 132 \\ \times 3 \\ \hline 396 \end{array} \xrightarrow{\times 2} \begin{array}{r} 132 \\ \times 6 \\ \hline 792 \end{array}</math> <p><math>\xrightarrow{\times 2}</math></p> </div> <div style="text-align: center;"> <p>b)</p> <math display="block">\begin{array}{r} 216 \\ \times 4 \\ \hline 864 \end{array} \xrightarrow{\div 4} \begin{array}{r} 54 \\ \times 4 \\ \hline 216 \end{array}</math> <p><math>\xrightarrow{\div 4}</math></p> </div> </div> <p style="text-align: right;">30 min</p>	<p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, reasoning, agreement, self-correction, praising</p>

Y4		Lesson Plan 28
<p><b>Activity</b></p> <p>7</p>	<p><b>PbY4a, page 28, Q.3</b></p> <p>Read: <i>Look at how the dividends, divisors and quotients change. Fill in the missing numbers and signs.</i></p> <p>Ps work out the divisions first in <i>Ex. Bks.</i> Ps come to BB to fill in missing quotients. Class agrees/disagrees. Then Ps fill in missing operations. Class checks mentally.</p> <p>What do you notice? (e.g. If the dividend increases by a certain number of times, the quotient also increases by that number of times; if the divisor decreases by a certain number of times, the quotient increases by that number of times)</p> <p><i>Solution:</i></p> <p>a) </p> <p>b) </p> <p style="text-align: center;">35 min</p>	<p><b>Notes</b></p> <p>Whole class activity (or individual work if Ps wish)</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement, praising</p> <p>T repeats what Ps have noticed more clearly if necessary.</p>
<p>8</p>	<p><b>PbY4a, page 28</b></p> <p>Q.4 Read: <i>Solve the problems in your exercise book.</i></p> <p>Give Ps a set time to read questions themselves and do the calculations in <i>Ex. Bks.</i> Check that the amounts add up to 1200!</p> <p>Review with whole class. T (or a P) reads each question and Ps show results on scrap paper or slates on command.</p> <p>Ps who responded correctly explain to those who did not. Mistakes discussed and corrected.</p> <p><i>Solutions:</i></p> <p><i>Flora has collected 1200 1p coins and she wants to put them in two piggy banks. How many coins should she put in each piggy bank so that there is:</i></p> <p>a) <i>twice as much money in one piggy bank as in the other?</i> BB: <math>1200 \div 3 = 400</math>; (PB<sub>1</sub>: <u>400</u> and PB<sub>2</sub>: <u>800</u>)</p> <p>b) <i>half as much money in one piggy bank as in the other?</i> BB: <math>1200 \div 3 = 400</math>; (PB<sub>1</sub>: <u>400</u> and PB<sub>2</sub>: <u>800</u>)</p> <p>c) <i>three times as much money in one piggy bank as in the other?</i> BB: <math>1200 \div 4 = 300</math>; (PB<sub>1</sub>: <u>300</u> and PB<sub>2</sub>: <u>900</u>)</p> <p>d) <i>1 third as much money in one piggy bank as in the other?</i> BB: <math>1200 \div 4 = 300</math>; (PB<sub>1</sub>: <u>300</u> and PB<sub>2</sub>: <u>900</u>)</p> <p>e) <i>five times as much money in one piggy bank as in the other?</i> BB: <math>1200 \div 6 = 200</math>; (PB<sub>1</sub>: <u>200</u> and PB<sub>2</sub>: <u>1000</u>)</p> <p>f) <i>1 fifth as much money in one piggy bank as in the other?</i> BB: <math>1200 \div 6 = 200</math>; (PB<sub>1</sub>: <u>200</u> and PB<sub>2</sub>: <u>1000</u>)</p> <p>g) <i>1 seventh as much money in one piggy bank as in the other?</i> BB: <math>1200 \div 8 = 150</math> (PB<sub>1</sub>: <u>150</u> and PB<sub>2</sub>: <u>1050</u>)</p> <p style="text-align: center;">45 min</p>	<p>Individual work, monitored, to start, then whole class review (or all done as a whole class activity, one at a time)</p> <p>Piggy Banks drawn on BB or use enlarged copy master</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>Extra praise if Ps realise that a) and b), c) and d), etc. are really the same question, e.g.</p> <ul style="list-style-type: none"> <li>twice as much in PB2 is the same as half as much in PB1</li> <li>3 times as much in PB2 is the same as 1 third as much in PB1.</li> </ul> <p>T could show solution like this: Let <math>s</math> = smaller amount</p> <p>a) PB<sub>1</sub>: <math>s</math>, PB<sub>2</sub>: <math>2 \times s</math> <math>s + 2 \times s = 3 \times s = 1200</math> <math>s = 1200 \div 3 = 400</math> So PB<sub>1</sub>: <u>400</u> and PB<sub>2</sub>: <math>2 \times 400 = \underline{800}</math></p> <p>c) PB<sub>1</sub>: <math>s</math>, PB<sub>2</sub>: <math>3 \times s</math> <math>s + 3 \times s = 4 \times s = 1200</math> <math>s = 1200 \div 4 = 300</math> So PB<sub>1</sub>: <u>300</u> and PB<sub>2</sub>: <math>3 \times 300 = \underline{900}</math> etc.</p>



