

# Bk3

R: Mental calculation  
 C: Numbers up to 200  
 E: Numbers over 200

## Lesson Plan 25

### Activity

1

#### Sequences

- a) The first term of a sequence is 80. Each following term is 40 more than the previous term. Continue the sequence.  
 Ps: 80, 120, 160, 200, 240, ...
- b) The first term is 200 and the sequence is decreasing by 20.  
 (Ps: 200, 180, 160, 140, 120, 100, 80, 60, ..., 0, (-20, -40, ...))
- Show each sequence on a number line (with 'ticks' at every 10).

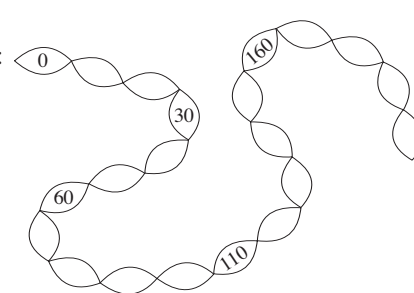
5 min

### Notes

Whole class activity  
 (Over 200 is voluntary)  
 In unison  
 In unison. (T notes how far Ps can count)  
 Praising, encouragement only

2

#### What is the rule?

- a) Study this diagram. BB: 
- Think about what the rule could be.  
 Ps come out one at a time to fill in a number.  
 Class points out errors.  
 Who can tell us the rule?  
 (increasing by 10) Who agrees?
- b) i) Let's write the biggest number in the place-value table.  
 Elicit that 200 = 2 hundreds, 0 tens and 0 units
- ii) Let's write 1 tenth of 200 in the table.  
 Elicit that 20 = 2 tens and 0 units
- iii) Let's write the number which is 6 times 20 in the table.  
 Elicit that 120 = 1 hundred, 2 tens and 0 units (= 12 tens)

11 min

Whole class activity  
 Drawn on BB or use enlarged copy master or OHP  
 At a good pace  
 Agreement, praising  
 SB or BB: 

H	T	U
2	0	0
	2	0
1	2	0

  
 Reasoning, agreement, praising

3

#### Book 3, page 25

- Q.1 Read: *Count the amount in the box and write the number in the place-value table.*
- What do the letters H, T and U stand for? (Hundreds, Tens, Units)  
 Review at BB with whole class. P comes to BB to fill in number and explain reasoning. Who agrees? Who thinks something else?
- BB:  $10 \times 10 \text{ units} = 10 \text{ tens} = 1 \text{ hundred}$   
 $4 \times 10 \text{ units} = 4 \text{ tens}$   
 $1 \times 100 + 4 \times 10 + 7 \times 1 = 100 + 40 + 7 = 147$
- Let's read the number in the table: '1 hundred and forty seven'

15 min

Individual work, monitored, helped  
 Use enlarged copy master or OHP (or piles of model coins)  
 Discussion, agreement, self-correcting, praising  
 BB: 

H	T	U
1	4	7

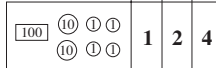

  
 In unison

4

#### Writing numbers 1

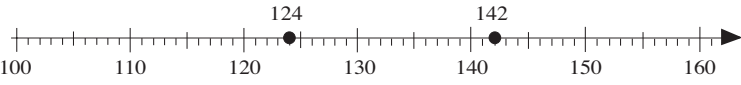
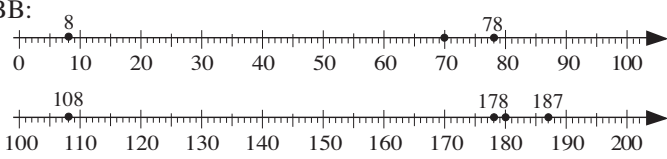
- a) Which numbers are shown here? Let's write them as digits in the place-value table.

BB:

	H	T	U		
	1	2	4	One hundred and twenty four	124
	1	4	2	One hundred and forty two	142

Ps come out to count the hundreds, tens, units and write in table.  
 Who agrees? Who thinks something else? Let's read the numbers.

Whole class activity  
 Drawn on BB or use enlarged copy master or OHP  
 Reasoning, agreement, praising  
 Ps also write both numbers as words and digits in *Ex. Bks.*

<b>Bk3</b>		<i>Lesson Plan 25</i>
<b>Activity</b>	<p>Where would the numbers be on this number line?</p>  <p>Ps come out to mark the numbers with a dot and label them.</p> <p>b) T dictates other numbers (e.g. 135, 153, 126, 162) and Ps write them as digits in their <i>Ex. Bks.</i></p> <p>Review with whole class. Mistakes corrected. Show on number line.</p> <p style="text-align: right;">20 min</p>	<p style="text-align: center;"><b>Notes</b></p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Class agrees/disagrees</p> <p>Agreement, self-correction, praising</p> <p>Praising</p>
<b>5</b>	<p><b>Writing numbers 2</b></p> <p>T has SB or BB already prepared. Let's write these numbers as digits.</p> <p>BB: a) 1 hundred + 4 tens + 6 units (146)  b) 1 hundred + 37 units (137)  c) 10 tens + 38 units (= 100 + 38) (138)  d) 3 tens + 1 hundred (= 30 + 100) (130)  e) 3 tens + 18 units (= 30 + 18) (48)</p> <p>Ps come out to BB to write number, explaining reasoning.</p> <p>T continues dictating similar questions. Ps write numbers in <i>Ex. Bks.</i></p> <p>Review with whole class. Mistakes corrected.</p> <p style="text-align: right;">25 min</p>	<p>Whole class activity to start</p> <p>Written on BB or SB or OHP</p> <p>Ps read addition in unison first</p> <p>Reasoning, agreement, praising</p> <p>Individual work</p> <p>Self-correction. Praising</p>
<b>6</b>	<p><b>Book 3, page 25</b></p> <p>Q.2 a) Read: <i>Write the numbers as digits.</i></p> <p>T elicits that question numbers are written in the Roman way and that there are 7 parts to the question, i.e. 7 numbers to write as digits.</p> <p>Review at BB with whole class. Mistakes corrected.</p> <p>b) Read: <i>List the numbers in increasing order.</i></p> <p>Review orally with whole class. Mistakes corrected.</p> <p>BB: <math>8 &lt; 70 &lt; 78 &lt; 108 &lt; 178 &lt; 180 &lt; 187</math></p> <p>Let's find the numbers on the number line. Ps come out to mark with a dot and to label them.</p> <p>BB:</p>  <p style="text-align: right;">30 min</p>	<p>Individual work, monitored, helped</p> <p>Discussion, revision of Roman numerals 1 to 10</p> <p>Agreement, self-correction, praising</p> <p>Feedback for T</p> <p>Use class number line or enlarged copy master or OHP</p> <p>Involve several Ps</p> <p>Class points out errors.</p> <p>Praising, encouragement only</p>
<b>7</b>	<p><b>Book 3, page 25</b></p> <p>Q.3 Read: <i>Fill in the missing numbers. Join up the given numbers to the number line.</i></p> <p>What is the <u>range</u> of each segment of the number line?  (a) from 50 to 110 b) from 150 to 210)</p> <p>Review at BB with whole class. Ps come out to fill in missing numbers and join to number line. Mistakes corrected.</p> <p>Let's read out the numbers in the boxes in increasing order.</p> <p style="text-align: right;">35 min</p>	<p>Individual work, monitored, helped</p> <p>Use enlarged copy master or OHP. Encourage neat joining.</p> <p>Agreement, self-correction, praising. Feedback for T</p> <p>In unison: '56, 79, 91, 95, 104, 111, 156, 179, 191, 195, 204, 211'</p>

**Bk3***Lesson Plan 25***Activity****8****Number table**Let's help *Tommy Turtle* complete his number table.

BB:



	<b>152</b>	153	154	155	<b>156</b>	157	158	159	<b>160</b>
<b>161</b>	162	163	164	165	166	167	<b>168</b>	169	170
171	172	<b>173</b>	174	175	176	<b>177</b>	178	179	180

Ps come out one after the other to fill in a number and say it to class.  
Class points out errors. Elicit that numbers in a column increase by 10.

Which number has *Tommy Turtle* eaten? (151)*40 min***Notes**

Whole class activity

Drawn on BB or use enlarged copy master or OHP

**Bold** numbers are given

At speed.

Agreement, praising

Class responds in unison

**9****Book 3, page 25**

T first talks about long car journeys and that the distances covered are usually measured in miles (British standard unit) and not km, in cars and on signposts.

Explain or elicit that a milometer is a gadget in a car which counts every mile the car has travelled.

Q.4 a) Read: *What will the milometer show when we have gone another mile?*

These are milometers on different cars. What does the zero show? (no thousands)

Let's read the numbers together. What do we have to do to these numbers? (Add on 1 more mile)

Review at BB with whole class. T writes what Ps dictate. Mistakes corrected. Let's read the new numbers.

BB:

0	1	4	9	0	1	8	9	0	1	9	9	0	1	3	8
↓				↓				↓				↓			
0	1	5	0	0	1	9	0	0	2	0	0	0	1	3	9

b) Read: *What did the milometer show 1 mile ago?*

This time we have to imagine what number would have been shown on the milometer when we were 1 mile back along the road. What do we have to do to these numbers? (Take off 1 mile)

Review at BB with whole class. T writes what Ps dictate. Mistakes corrected. Let's read the new numbers together.

BB:

0	1	7	9	0	1	7	1	0	1	2	9	0	1	5	0
↑				↑				↑				↑			
0	1	7	8	0	1	7	0	0	1	2	8	0	1	4	9

Whole class discussion to start

Ps tell of own experiences.

Elicit that new cars have very low numbers on the milometer (Ps could find out what the milometer shows on their family cars.)

In unison

Individual work, monitored

Agreement, self-correction  
Ps read numbers in unison

Show additions on BB:

e.g.  $149 + 1 = 150$ 

Agreement, self-correction  
Ps read numbers in unison

Show subtractions on BB:

e.g.  $179 - 1 = 178$ 

Praising

*45 min*

# Bk3

R: Mental calculation  
 C: Addition and subtraction up to 200  
 E: Numbers over 200

## Lesson Plan 26

### Activity

1

#### Number table

Study this table.

How many numbers does it show?  
 (201: numbers 0 to 200)

How many numbers:

- a) have 1 digit
- b) have 2 digits
- c) have 3 digits
- d) are whole tens
- e) do not have 2 digits
- f) have only odd digits
- g) do not have 3 digits
- h) have 2 as the units digit
- i) have 2 as the tens digit
- j) have 2 as the hundreds digit
- k) have digits which add up to 6?

Ps come to BB or OHP to show/count.

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49
50	51	52	53	54	55	56	57	58	59
60	61	62	63	64	65	66	67	68	69
70	71	72	73	74	75	76	77	78	79
80	81	82	83	84	85	86	87	88	89
90	91	92	93	94	95	96	97	98	99
100	101	102	103	104	105	106	107	108	109
110	111	112	113	114	115	116	117	118	119
120	121	122	123	124	125	126	127	128	129
130	131	132	133	134	135	136	137	138	139
140	141	142	143	144	145	146	147	148	149
150	151	152	153	154	155	156	157	158	159
160	161	162	163	164	165	166	167	168	169
170	171	172	173	174	175	176	177	178	179
180	181	182	183	184	185	186	187	188	189
190	191	192	193	194	195	196	197	198	199
200									

10 min

### Notes

Whole class activity

Table drawn on BB or use enlarged copy master or OHP

Solution:

- a) 10
- b) 90
- c) 101
- d) 20
- e)  $10 + 101 = 111$
- f)  $11 \times 5 = 55$
- g)  $10 + 90 = 100$
- h) 20
- i)  $10 + 10 = 20$
- j) 1
- k) 13

Agreement, praising

2

#### Sequences

- a) The first term of a sequence is 100. Each following term is 4 more than the previous term.

Write the first 10 terms of the sequence in your *Ex. Bks.*

Review with whole class. Mistakes corrected.

(100, 104, 108, 112, 116, 120, 124, 128, 132, 136, ...)

- b) What can the rule of this sequence be? Write these 3 terms in the centre of the line: 156, 150, 144, then write the 4 terms before them and the 4 terms after them.

Review with whole class. Mistakes corrected.

(180, 174, 168, 162, 156, 150, 144, 138, 132, 126, 120)

What is the rule? (decreasing by 6)

15 min

Individual work, monitored, part b) helped

Heading: lesson number/date  
 Reasoning, agreement, self-correcting, praising

T shows on BB if necessary  
 Reasoning, agreement, self-correction, praising

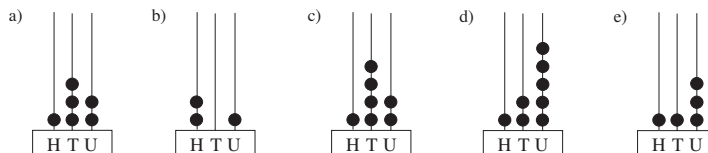
N.B. Accept other valid rules

3

#### Writing numbers

Which numbers are shown in the diagrams? Write the numbers as digits and in words in your *Ex. Bks.*

BB:



Review at BB with whole class. Mistakes corrected.

- Solution:
- a) 132 = One hundred and thirty two
  - b) 201 = Two hundred and one
  - c) 142 = One hundred and forty two
  - d) 125 = One hundred and twenty five
  - e) 113 = One hundred and thirteen

20 min

Individual work, monitored, helped

Drawn on BB or use enlarged copy master or OHP (or real abacus)

Time limit differentiation

Reasoning, agreement, self-correction

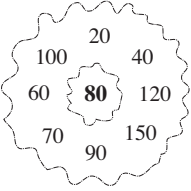
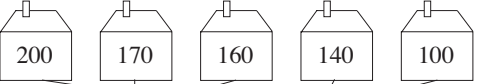
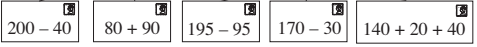
Feedback for T

Show on number line if necessary

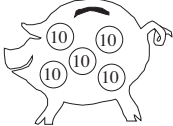
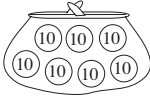
Praising

<b>Bk3</b>		<i>Lesson Plan 26</i>
<p><b>Activity</b></p> <p><b>4</b></p>	<p><b>Book 3, page 26</b></p> <p>Q.1 Read: <i>Write additions or subtractions about the pictures.</i></p> <p>T explains task. Elicit that parts a), b), d) and e) are additions, and parts c) and f) are subtractions.</p> <p>Do part a) on BB with whole class if necessary.</p> <p>Review at BB with whole class. Mistakes corrected.</p> <p><i>Solution:</i></p> <p>a) <math>14 + 3 = \underline{17}</math>      b) <math>7 + 5 = \underline{12}</math>      c) <math>12 - 7 = \underline{5}</math>  d) <math>140 + 30 = \underline{170}</math>    e) <math>70 + 50 = \underline{120}</math>    f) <math>120 - 70 = \underline{50}</math></p> <p>Who notices a connection between the rows? (Amounts in 2nd row are 10 times those in first row.)</p> <p><b>Extension</b></p> <p>Look at the addition in part a): <math>14 + 3 = 17</math>. How many numbers have been added? (2) We call this a <u>2-term</u> addition.</p> <p>Who can give me an example of a 3-term addition? (e.g. <math>1 + 2 + 3 = 6</math>) Does the order of the numbers being added matter? (No, because <math>14 + 3 = 3 + 14 = 17</math>, so the <u>sum</u> is the same)</p> <p>Is there another operation where the terms can be changed around? (multiplication, because if the order of terms is changed, the <u>product</u> stays the same: e.g. <math>1 \times 2 \times 3 = 3 \times 1 \times 2 = 6</math>)</p> <p>Does the order matter in a subtraction (division)? (Yes, if the order is changed, the <u>difference</u> (<u>quotient</u>) is different.)</p> <p style="text-align: right;">25 min</p>	<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>Reasoning, agreement, self-correction, praising</p> <p>Praising if Ps notice</p> <p>Whole class discussion on order of terms in the four operations</p> <p>Examples shown on BB</p> <p>Encourage Ps to use the words: operation, term, sum, difference, product, quotient</p> <p>e.g. <math>4 - 2 = \underline{2}</math>, <math>2 - 4 = \underline{-2}</math>  <math>4 \div 2 = \underline{2}</math>, <math>2 \div 4 = \underline{1 \text{ half}}</math></p>
<p><b>5</b></p>	<p><b>Book 3, page 26, Q.2</b></p> <p>Read: <i>Write operations about the jumps along the number lines.</i></p> <p>Deal with one part at a time. Ps come to BB to write start and end numbers of jumps below number line, then to write additions or subtractions about them. Who agrees? Who thinks something else?</p> <p>Elicit that in parts c) and d), the jumps are also shown in two easy stages: first to the nearest 100, then to the number required.</p> <p><i>Solution:</i> a) <math>120 + 30 = 150</math>      b) <math>180 - 50 = 130</math>  c) <math>60 + 80 = 140</math>      d) <math>150 - 70 = 80</math>  <math>60 + 40 + 40 = 140</math>      <math>150 - 50 - 20 = 80</math></p> <p style="text-align: right;">30 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>Ps write additions in <i>Pbs</i> too.</p> <p>(Or as individual work, reviewed and corrected)</p>
<p><b>6</b></p>	<p><b>Addition/subtraction practice</b></p> <p>Write only the answers to these operations in your <i>Ex. Bks.</i></p> <p>BB: a) <math>120 + 40 = \boxed{160}</math>      d) <math>80 + 110 = \boxed{190}</math>  b) <math>200 - 70 = \boxed{130}</math>      e) <math>90 + 80 - 20 = \boxed{150}</math>  c) <math>190 - 10 = \boxed{80}</math>      f) <math>30 + 120 + 30 = \boxed{180}</math></p> <p>Deal with one part at a time. Review with whole class. Ps explain how they did the calculations. Who did it another way? etc.</p> <p>e.g. c) <math>190 - 110 = 190 - 100 - 10 = 90 - 10 = 80</math>. or  <math>190 - 110 = 190 - 90 - 20 = 100 - 20 = 80</math></p> <p>e) <math>90 + 80 - 20 = 90 + 60 = 90 + 10 + 50 = 100 + 50 = 150</math>  <math>90 + 80 - 20 = 90 + 10 + 70 - 20 = 100 + 50 = 150</math></p> <p style="text-align: right;">35 min</p>	<p>Individual work, but class kept together</p> <p>T has BB/SB already prepared</p> <p>T reads each question aloud, then Ps write question letter and answer.</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Refer to number line if problems</p> <p>Let's read the answers in decreasing order. In unison: '190, 180, 160, 150, 130, 80'</p>

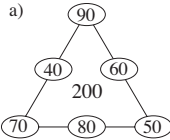
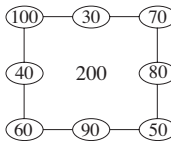
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<p><b>Activity</b></p> <p style="text-align: center;"><b>7</b></p>	<p><b>Book 3, page 26</b></p> <p>Q.3 Read: <i>Practise calculation.</i></p> <p>Elicit that there are 6 additions and 6 subtractions. (<math>6 + 6 = 12</math>) Let's see how many of them you can do in 3 minutes! Start . . . now! . . . Stop!</p> <p>Review at BB with whole class. Mistakes corrected. Who had 12 correct? Who made a mistake? What kind of mistake? etc.</p> <p>BB:</p> <p>a) <math>3 + 4 = \underline{7}</math>            <math>13 + 4 = \underline{17}</math>            <math>3 + 14 = \underline{17}</math>  <math>30 + 40 = \underline{70}</math>            <math>130 + 40 = \underline{170}</math>            <math>30 + 140 = \underline{170}</math></p> <p>b) <math>7 - 5 = \underline{2}</math>            <math>17 - 5 = \underline{12}</math>            <math>17 - 15 = \underline{2}</math>  <math>70 - 50 = \underline{20}</math>            <math>170 - 50 = \underline{120}</math>            <math>170 - 150 = \underline{20}</math></p> <p>Did anyone notice anything about the additions (subtractions)? Ps point out similarities and connections.</p> <p style="text-align: right;"><i>40 min</i></p>	<p style="text-align: center;"><b>Notes</b></p> <p>Individual work, monitored</p> <p>Keep to time limit</p> <p>Agreement, self-correction, evaluation, praising Feedback for T</p> <p>Whole class discussion Agreement, praising</p>																											
<p style="text-align: center;"><b>8</b></p> <p><b>Extension</b></p>	<p><b>Book 3, page 26</b></p> <p>Q.4 Read: <i>Roberta keeps some of her money in a piggy bank and some of it in a purse.</i></p> <p style="text-align: center;"><i>How much does Roberta have altogether?</i> <i>Complete the table.</i></p> <p>T could have Roberta's 'real' purse and piggy bank (containing money to match one of the columns in table, e.g. 30 p in piggy bank and £1.70 in purse) to show to class.</p> <p>Complete the table to show what Roberta's money might be.</p> <p>Review at the BB with whole class. Ps come out to fill in a column and explain reasoning. Mistakes corrected.</p> <p>BB:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: right;">Pence in </td> <td>80</td> <td>180</td> <td>30</td> <td>120</td> <td>50</td> <td>60</td> <td>30</td> <td>80</td> </tr> <tr> <td style="text-align: right;">Pence in </td> <td>20</td> <td>20</td> <td>170</td> <td>40</td> <td>130</td> <td>40</td> <td>130</td> <td>110</td> </tr> <tr> <td style="text-align: right;">Pence in total</td> <td>100</td> <td>200</td> <td>200</td> <td>160</td> <td>180</td> <td>100</td> <td>160</td> <td>190</td> </tr> </table> <p style="text-align: center;">↑</p> <p><b>X</b>, come and see what money is actually in the purse and piggy bank and show us the matching column in the table. Let's check that <b>X</b> is correct.</p> <p>Let's compare the rows in the table. Who can write an equation about them? Who agrees? Who can write it in a different way? etc.</p> <p style="text-align: right;"><i>45 min</i></p>	Pence in	80	180	30	120	50	60	30	80	Pence in	20	20	170	40	130	40	130	110	Pence in total	100	200	200	160	180	100	160	190	<p>Individual work, monitored</p> <p>Differentiation by time limit</p> <p>Keep money hidden until end of lesson!</p> <p>Table drawn on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement, self-correction, praising</p> <p>BB: <math>£1 = 100 \text{ p}</math>  <math>100 \text{ p} + 70 \text{ p} + 30 \text{ p} = 200 \text{ p}</math>  <math>\quad \quad \quad = £2</math></p> <p>e.g. Let <math>P_i =</math> Piggy bank,  <math>P_u =</math> Purse and <math>T =</math> Total</p> <p>BB: <math>P_i + P_u = T</math>  <math>P_i = T - P_u</math>  <math>P_u = T - P_i</math></p> <p>Praising</p>
Pence in	80	180	30	120	50	60	30	80																					
Pence in	20	20	170	40	130	40	130	110																					
Pence in total	100	200	200	160	180	100	160	190																					

<h1>Bk3</h1>	<p>R: Mental calculation                  C: <b>Addition and subtraction up to 200</b>                  E: <i>Over 200</i></p>	<h2 style="text-align: center;">Lesson Plan 27</h2>																														
<p><b>Activity</b></p> <p style="text-align: center;"><b>1</b></p>	<p><b>Secret number</b></p> <p>I am thinking of a number. You must find out what it is by asking me questions but I can answer only 'yes' or 'no'.</p> <p>e.g. <u>120</u>: Is it 2-digit? (No) Is it 3-digit? (Yes) Is it even? (Yes)                  Is it less than 150? (Yes) Is it more than 120? (No) Is it less than 110? (No) Does it have zero as the units digit? (Yes) Are its hundred and tens digits the same? (No) It is <u>120</u>. (Yes)</p> <p>If Ps deduce it quickly, repeat for another number. (Ps' choice)</p> <p style="text-align: right;">3 min</p>	<p style="text-align: center;"><b>Notes</b></p> <p>Whole class activity</p> <p>Encourage Ps to ask logical questions and keep in mind clues already given.</p> <p>Encourage different types of questions</p> <p>Praise creativity</p>																														
<p style="text-align: center;"><b>2</b></p>	<p><b>Sequence competition</b></p> <p>I will describe a sequence and then give you 1 minute to write as many terms as you can in your <i>Ex Bks.</i> (<i>Heading: Lesson number and date</i>)</p> <p>The first term is 200 and it decreases by 8. Start . . . now! . . . Stop!</p> <p>Everyone stand up. Ps list the terms in order round class.</p> <p>Ps who made a mistake, or did not have time to write that term, sit down. Let's give the winner(s) a big round of applause!</p> <p style="text-align: right;">8 min</p>	<p>Individual work</p> <p>Keep to time limit</p> <p>Checking sequence:                  200, 192, 184, 176, 168, . . .</p> <p>Agreement, self-correcting, praising. Stars, etc. awarded.</p>																														
<p style="text-align: center;"><b>3</b></p>	<p><b>Making additions</b></p> <p>Let's see how clever you are!</p> <p>We are going to add the number in the middle to the numbers around it to make as many additions as we can as quickly as we can.</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 20px;">BB:</div>  </div> <p>Let's do it in a logical order. How should we do it? (e.g. start at 20 and work clockwise)</p> <p>T writes first addition on BB and crosses off the 20. P<sub>1</sub> comes to BB to write next addition, explaining calculation, and crosses off '40', then chooses P<sub>2</sub> to write the next addition, and so on. Class points out errors. How many additions have we made? (8: one for each outer number)</p> <p style="text-align: right;">12 min</p>	<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Checking, agreement, praising</p> <p>BB:</p> <p>80 + 20 = 100                  80 + 40 = 120 (80 + 20 + 20)                  80 + 120 = 200                  80 + 150 = 230 (50 + 150 + 30)                  80 + 90 = 170 (80 + 20 + 70)                  80 + 70 = 150 (80 + 20 + 50)                  80 + 60 = 140 (80 + 20 + 40)                  80 + 100 = 180</p>																														
<p style="text-align: center;"><b>4</b></p>	<p><b>Place value</b></p> <p>Study the diagram. What do you think we have to do? (Write the digits for each number in the correct column: Hundreds, Tens or Units)</p> <div style="display: flex; align-items: flex-start;"> <table border="1" style="margin-right: 20px;"> <tr> <td>BB:</td> <td></td> <td>H</td> <td>T</td> <td>U</td> </tr> <tr> <td>100 + 50 + 2</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>146</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>100 + 40 + 8</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>178</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>197</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <div> <p>Ps come to BB to choose a row and write in the missing digits, explaining reasoning.</p> <p>Tell us the number you have written. Can you write it in words?</p> </div> </div> <p style="text-align: right;">16 min</p>	BB:		H	T	U	100 + 50 + 2					146					100 + 40 + 8					178					197					<p>Whole class activity</p> <p>Table drawn on BB or use enlarged copy master or OHP</p> <p>At a good pace</p> <p>Reasoning, agreement, praising                  (with T's or Ps' help)</p>
BB:		H	T	U																												
100 + 50 + 2																																
146																																
100 + 40 + 8																																
178																																
197																																
<p style="text-align: center;"><b>5</b></p>	<p><b>Sorting letters</b></p> <p>Let's help the postman deliver the letters to the correct houses.</p> <div style="display: flex; justify-content: center; align-items: center;"> <div style="margin-right: 20px;">  </div> <div>  </div> </div> <p>Ps come to BB to join up matching values. Class agrees/disagrees</p> <p style="text-align: right;">20 min</p>	<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP (or items cut out and stuck to BB, or use boxes as the houses)</p> <p>Reasoning, agreement, praising</p>																														



<b>Bk3</b>		<i>Lesson Plan 27</i>
<p><b>Activity</b></p> <p><b>6</b></p>	<p><b>Book 3, page 27, Q.1</b></p> <p>Read: <i>Who has more money? How much more?</i></p> <p>a) T chooses two Ps to be <i>Anne</i> and <i>Brian</i>. Each P explains their equation to class, says how much money they have, then chooses the correct coins from a purse. (Elicit that <math>100 \text{ p} = \text{£}1</math>)</p> <p>Which of you has more? <b>A</b> explains the inequality. How much more? <b>B</b> explains the subtraction.</p> <p>b) T chooses two other Ps to be <i>Colin</i> and <i>Diana</i>. Ps write their equations and choose appropriate coins from the purse.</p> <p>Then the P who has more writes the matching inequality and the P who has less writes the subtraction. Class agrees or disagrees.</p> <p>c) Done as individual work, reviewed with whole class. Two Ps come out to choose appropriate coins from the purse. (Or repeat with two other Ps at front of class as above.)</p> <p style="text-align: right;">25 min</p>	<p style="text-align: center;"><b>Notes</b></p> <p>Whole class activity to start T has purse already prepared Use enlarged copy master or OHP Reasoning, agreement, praising BB:</p> <p>b) C: <math>50 + 4 \times 10 + 2 = 92</math> D: <math>100 + 1 = 101</math> <math>101 &gt; 92</math> <math>101 - 92 = 9</math></p> <p>c) E: <math>100 + 50 + 5 + 1 = 156</math> F: <math>100 + 3 \times 10 + 20 + 5 + 1 = 156</math> <math>156 = 156</math> <math>156 - 156 = 0</math></p>
<p><b>7</b></p>	<p><b>Open sentences</b></p> <p>Look at these pictures. I have written some sentences about them.</p> <p>BB:</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p>a) There is <math>\boxed{50 \text{ p}}</math> in the piggy bank and <math>\boxed{70 \text{ p}}</math> in the purse. Altogether there is <math>\boxed{120 \text{ p}}</math>. [<math>50 + 70 = 120</math>, or <math>70 + 50 = 120</math>]</p> <p>b) There was <math>120 \text{ p}</math> in the piggy bank. We took out <math>\boxed{70 \text{ p}}</math> and <math>\boxed{50 \text{ p}}</math> is left. [<math>120 - 70 = 50</math>]</p> <p>c) We had <math>120 \text{ p}</math> in the purse. We spent <math>\boxed{50 \text{ p}}</math> and <math>\boxed{70 \text{ p}}</math> is left. [<math>120 - 50 = 70</math>]</p> <p>d) There is <math>\boxed{20 \text{ p}}</math> less in the piggy bank than in the purse. [<math>70 - 50 = 20</math>]</p> <p>e) There is <math>\boxed{20 \text{ p}}</math> more in the purse than in the piggy bank.</p> <p>Ps come out to fill in the missing items, read the sentence and then write it in a mathematical way. Class agrees/disagrees.</p> <p style="text-align: right;">30 min</p>	<p>Whole class activity Drawn and written on SB or BB or use enlarged copy master or OHP At a good pace With T's help if necessary</p> <p>Elicit that the terms of an addition are inter-changeable T encourages use of the words: terms, sum, difference</p> <p>Elicit that the terms of a subtraction are <u>not</u> inter-changeable. (<math>120 - 70 \neq 70 - 120</math>) or <math>70 \not&gt; 50</math></p> <p><math>50 + 20 = 70</math> or <math>50 &lt; 70</math></p> <p>Reasoning, agreement, praising</p>
<p><b>8</b></p>	<p><b>Book 3, page 27</b></p> <p>Q.2 Read: <i>Practise calculation.</i></p> <p>Elicit that there are <math>6 \times 3 = 18</math> calculations. Let's see how many you can do in 4 minutes! Start . . . now! . . . Stop!</p> <p>Review orally round class. Ps change pencils. Mistakes corrected. Who had 18 (17, 16, 15, less than 10) correct? What were your mistakes? Who does not know what they did wrong? etc.</p> <p>Did anyone notice anything about the additions/subtractions)? Ps (or T if no P notices) point out similarities and connections.</p> <p style="text-align: right;">36 min</p>	<p>Individual work, monitored</p> <p>Keep to time limit Agreement, self-correction, evaluation, praising Feedback for T Whole class discussion Agreement, praising</p>















<b>Bk3</b>		<i>Lesson Plan 27</i>
<b>Activity</b>  <b>9</b>	<p><b>Book 3, page 27</b></p> <p>Q.3 Read: <i>Anne has £80 and Bob has £60.</i></p> <p>Read the questions and do the calculations in your <i>Pbs</i>. Underline the answer.</p> <p>Review orally with whole class (or Ps show results with number cards on command). Mistakes corrected.</p> <p>a) <i>How much money do they have altogether?</i></p> <p>b) <i>How much money will they have altogether if:</i></p> <p>i) <i>Anne is give an extra £10?</i></p> <p>ii) <i>Bob spends £20?</i></p> <p>iii) <i>they each spend £40?</i></p> <p>iv) <i>Anne spends £50 and Bob is given an extra £90?</i></p> <p style="text-align: right;">41 min</p>	<p style="text-align: center;"><b>Notes</b></p> <p>Individual work, monitored, helped</p> <p>Agreement, self-correction, praising. Feedback for T.</p> <p>BB:</p> <p>a) <math>£80 + £60 = \underline{£140}</math></p> <p>b) i) <math>£140 + £10 = \underline{£150}</math></p> <p>ii) <math>£140 - £20 = \underline{£120}</math></p> <p>iii) <math>£140 - £40 - £40 = \underline{£60}</math></p> <p>iv) <math>£140 + £90 - £50 = \underline{£180}</math></p>
<b>10</b>	<p><b>Book 3, page 27, Q.4</b></p> <p>Read: <i>The 3 numbers along each line add up to 200.</i></p> <p><i>Write in the missing numbers.</i></p> <p>Deal with one puzzle at a time.</p> <p>a) Which are the possible numbers? BB: 40, 50, 60, 70, 80, 90</p> <p>What should we do first? (Try them in 3s) e.g.</p> <ul style="list-style-type: none"> <li>• <math>40 + 50</math> (60) not possible, as 110 (100) needed to make 200</li> <li>• <math>40 + 70 + 90 = 200</math>;</li> <li>• <math>50 + 60 + 90 = 200</math>; <math>50 + 70 + 80 = 200</math>;</li> <li>• <math>60 + 70</math> (80) not possible as number needed has already been used.</li> </ul> <p>We now know the three additions but where do we put them?</p> <p>Elicit that order of terms in additions can be change around and that a term common to two additions should be in a corner, i.e. corner numbers are 90, 70 and 50. Other numbers can now be inserted.</p> <p>b) Done in a similar way but 4 additions needed.</p> <p>(Or done as homework if Ps wish, or completed in <i>Lesson 35</i>)</p> <p style="text-align: right;">45 min</p>	<p>Whole class activity (Individual work if Ps wish)</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Encourage logical approach Discussion, agreement, praising</p> <p>Solutions: a) </p> <p>b) </p>

**Bk3**

R: Addition and subtraction with whole tens  
 C: **Multiplication and division (up to 200) mainly by 5 and 10**  
 E: Names of components. Divisibility.

## Lesson Plan 28

Activity		Notes																						
1	<p><b>What is the rule?</b></p> <p>Who can fill in one of the numbers missing from this table?</p> <p>BB:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"><b>110</b></td> <td style="text-align: center;"><b>50</b></td> <td style="text-align: center;"><b>70</b></td> <td style="text-align: center;">185</td> <td style="text-align: center;"><b>120</b></td> <td style="text-align: center;"><b>200</b></td> <td style="text-align: center;">170</td> <td style="text-align: center;"><b>155</b></td> <td style="text-align: center;"><b>140</b></td> <td style="text-align: center;"><b>10</b></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"><b>90</b></td> <td style="text-align: center;"><b>150</b></td> <td style="text-align: center;">130</td> <td style="text-align: center;"><b>15</b></td> <td style="text-align: center;">80</td> <td style="text-align: center;">0</td> <td style="text-align: center;"><b>30</b></td> <td style="text-align: center;">45</td> <td style="text-align: center;">60</td> <td style="text-align: center;">190</td> </tr> </table> <p style="text-align: center; margin-top: 10px;">  +  = 200;  = 200 - ;  = 200 -  </p> <p>Ps come out to BB one after the other to complete a column, explaining reasoning. Class agrees/disagrees.          Who can write the rule? Who agrees? Who can write it another way?</p> <p style="text-align: right;">5 min</p>		<b>110</b>	<b>50</b>	<b>70</b>	185	<b>120</b>	<b>200</b>	170	<b>155</b>	<b>140</b>	<b>10</b>		<b>90</b>	<b>150</b>	130	<b>15</b>	80	0	<b>30</b>	45	60	190	<p>Whole class activity            Table drawn on BB or use enlarged copy master or OHP</p> <p><b>Bold</b> numbers are those already given</p> <p>At a good pace</p> <p>Reasoning, agreement, praising</p>
	<b>110</b>	<b>50</b>	<b>70</b>	185	<b>120</b>	<b>200</b>	170	<b>155</b>	<b>140</b>	<b>10</b>														
	<b>90</b>	<b>150</b>	130	<b>15</b>	80	0	<b>30</b>	45	60	190														
2	<p><b>Problem 1</b></p> <p>Listen carefully to this problem. I will read it twice. When I read it the second time, write down the data in your <i>Ex. Bks</i>.</p> <p>Make a plan, do the calculations, check them and write your answer.  <i>A bar of toffee costs 70 p and an ice-cream costs 40 p more.</i>  <i>How much does the ice-cream cost?</i>  <i>How much do the two things cost altogether?</i></p> <p>Review at BB with whole class. <b>A</b>, come and explain to us what you wrote. Who agrees? Who did it another way?</p> <p><i>Plan:</i> Toffee bar: 70 p                  Ice-cream: 70 p + 40 p</p> <p><i>Calculations:</i>                                  <i>Answers:</i></p> <p>70 + 40 = 110                                  Ice-cream costs 110 p.                  110 p = <u>£1 10 p</u></p> <p>70 + 110 = 180                                  Altogether they cost 180 p. 180 p = <u>£1 80 p</u></p> <p style="text-align: right;">9 min</p>	<p>Individual work in <i>Ex. Bks</i></p> <p>T repeats slowly and P repeats in own words</p> <p>Discussion, reasoning, agreement, self-correcting, praising</p> <p>Feedback for T</p> <p>(T shows as £1.10 and £1.80)</p>																						
3	<p><b>Problem 2</b></p> <p>Listen very carefully to the problem this time! I will read it twice. When I read it the second time, write down the data in your <i>Ex. Bks</i>.</p> <p>Make a plan, do the calculations, check them and write your answer.  <i>A tulip costs 70 p, 40 p more than a bunch of snowdrops.</i>  <i>How much is a bunch of snowdrops?</i>  <i>How much does a tulip and a bunch of snowdrops cost altogether?</i></p> <p>Review at BB with whole class. <b>B</b>, come and explain to us what you wrote. Who agrees? Who did it another way?</p> <p><i>Plan:</i> Tulip: 70 p                                  Snowdrops: 70 p - 40 p</p> <p><i>Calculations:</i>                                  <i>Answers:</i></p> <p>70 - 40 = 30                                  Snowdrops cost <u>30 p</u></p> <p>70 + 30 = 100                                  Altogether they cost <u>£1</u>.                  (100 p = <u>£1</u>)</p> <p style="text-align: right;">12 min</p>	<p>Individual work in <i>Ex. Bks</i></p> <p>T repeats slowly and P repeats in own words</p> <p>Discussion, reasoning, agreement, self-correcting, praising</p> <p>Feedback for T</p>																						

<b>Bk3</b>		<i>Lesson Plan 28</i>
<p><b>Activity</b></p> <p><b>4</b></p>	<p><b>Sums and differences</b></p> <p>Let's fill in the results and then write them in increasing order.</p> <p>BB:</p> <p>a) i) <math>60 + 80 = \boxed{140}</math>      ii) <math>60 + 90 = \boxed{150}</math></p> <p>iii) <math>50 + 80 = \boxed{130}</math>      iv) <math>50 + 90 = \boxed{140}</math></p> <p><math>130 &lt; 140 = 140 &lt; 150</math></p> <p>Who notices a connection between them? e.g.</p> <ul style="list-style-type: none"> <li><math>60 + 80 = 50 + 90</math>, i.e. the first term decreases by 10 but the 2nd term increases by the same amount, so the results are equal.</li> <li><math>60 + 80 &lt;^{10} 60 + 90</math>, so the result is 10 less also.</li> </ul> <p>b) i) <math>140 - 50 = \boxed{90}</math>      ii) <math>150 - 50 = \boxed{100}</math></p> <p>iii) <math>140 - 60 = \boxed{80}</math>      iv) <math>120 - 30 = \boxed{90}</math></p> <p><math>80 &lt; 90 = 90 &lt; 100</math></p> <p>Who notices a connection between them? e.g.</p> <ul style="list-style-type: none"> <li><math>140 - 50 = 120 - 30</math>, i.e. the first and second numbers decrease by the same amount (20), so the results are the same.</li> <li><math>140 - 50 &lt;^{10} 150 - 50</math>, and <math>140 - 50 &gt;^{10} 140 - 60</math>, (If we subtract the same number from a number which is 10 more, then the difference is 10 more also.</li> </ul> <p>If we subtract 10 more from the same number, then the difference is 10 less.)</p> <p style="text-align: right;"><i>18 min</i></p>	<p><b>Notes</b></p> <p>Whole class activity</p> <p>T has SB or BB or OHP already prepared</p> <p>Ps come to BB to write the sums and differences, then to list in increasing order.</p> <p>Discussion, agreement, praising</p> <p>If no P notices, T gives hints or points out connections</p> <p>As above</p> <p>Consolidate orally with other examples, e.g.</p> <p>If <math>130 + 50 = 180</math>, <math>120 + 60 = ?</math></p> <p>If <math>130 + 50 = 180</math>, <math>130 + 60 = ?</math></p> <p>If <math>130 - 50 = 80</math>, <math>140 - 50 = ?</math></p> <p>If <math>130 - 50 = 80</math>, <math>130 - 60 = ?</math></p>
<p><b>5</b></p>	<p><b>Boom!</b></p> <p>Let's play Boom! Everyone stand up!</p> <p>Let's start at 98 and say 'boom' instead of every number which is divisible by 5.</p> <p>Ps: 98, 99, boom, 101, 102, 103, 104, boom, 106, 107, 108, 109, boom, 111, 112, 113, 114, boom, . . .</p> <p>Continue until only one P is left standing.</p> <p style="text-align: right;"><i>22 min</i></p>	<p>Whole class activity</p> <p>If Ps make a mistake they sit down and next P answers correctly.</p> <p>At speed round class</p> <p>In good humour!</p> <p>Class applauds the winner.</p>
<p><b>6</b></p> <p><b>Extension</b></p>	<p><b>Book 3, page 28</b></p> <p>Q.1 Read: <i>How many lettuces are in the gardens?</i> <i>Write additions and and multiplications about the pictures.</i></p> <p>Deal with one part at a time. Review at BB with whole class.</p> <p>Ps dictate operations to T or come out to write on BB:</p> <p>a) <math>5 + 5 + 5 + 5 + 5 = 25</math>; <math>5 \times 5 = 25</math> (only two are possible)</p> <p>b) <math>5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 50</math>; <math>10 + 10 + 10 + 10 + 10 = 50</math>; <math>10 \times 5 = 5 \times 10 = 50</math></p> <ul style="list-style-type: none"> <li>If the owner of each garden sold the lettuces at 10 p each, how much money would they each make?</li> </ul> <p>a) <math>25 \times 10 \text{ p} = 20 \times 10 \text{ p} + 5 \times 10 \text{ p} = 200 \text{ p} + 50 \text{ p}</math> <math>= \text{£}2 \text{ } 50 \text{ p} = \text{£}2.50</math></p> <p>b) In each row: <math>10 \times 10 \text{ p} = 100 \text{ p} = \text{£}1</math> In 5 rows: <math>5 \times \text{£}1 = \text{£}5</math></p> <p style="text-align: right;"><i>28 min</i></p>	<p>Individual work, monitored</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, reasoning, agreement, praising</p> <p>T revises the terms: multiplier, product, factor (e.g. <math>5 \times 10</math> is a 2-factor multiplication)</p> <p>Elicit that order of factors in a multiplication does not matter</p> <p>T begins to show usual way of writing a sum of money.</p>

**Bk3***Lesson Plan 28***Activity****7****Book 3, page 28 Q.2**

Read: *Frog jumps 10 units at a time and Sparrow jumps 5 units at a time along the number line.*

*Draw their jumps and write the numbers they land on if:*

*a) they start from 100, b) they start from 60.*

Deal with one part at a time. Ps come out to BB to show first *Frog's* and then *Sparrow's* jumps, writing each number landed on below the number line.

Let's say *Frog's* numbers: '100, 110, 120, 130, 140, 150, 160'.

Let's make a table to show where they have got to after the same number of jumps. Ps come out to fill in data.

BB: a)

	Start	1	2	3	4	5	6	7	8
<i>F</i>	100	110	120	130	140	150	160	170	180
<i>S</i>	100	105	110	115	120	125	130	135	140

Elicit that:  $F = 100 + \text{Number of jumps} \times 10$

$S = 100 + \text{Number of jumps} \times 5$

- Where would they each get to after 9 (10) jumps?

Repeat in similar way for part b), with table as:

b)

	Start	1	2	3	4	5	6	7	8
<i>F</i>	60	70	80	90	100	110	120	130	140
<i>S</i>	60	65	70	75	80	85	90	95	100

**Notes**

Whole class activity

Ps can show jumps on class number line with the animals stuck to straws.

Or use enlarged copy master or OHP

In unison. Repeat for *Sparrow's*.

Table drawn on BB or use enlarged copy master or OHP

Agreement, praising

Feedback for T

e.g.

$$F = 100 + 9 \times 10 = 190,$$

$$S = 100 + 9 \times 5 = 145, \text{ etc.}$$

e.g.

$$F = 60 + 9 \times 10 = 150,$$

$$S = 60 + 9 \times 5 = 105, \text{ etc.}$$

**Extension**

If they started at zero, where would they get to after 4 (7, 15) jumps?

34 min

Agreement, praising

**8****Book 3, page 28**

Q.3 Read: *Write an addition, a multiplication and a division about each picture.*

Deal with one part at a time. Review at BB with whole class.

Ps dictate operations to T, or come out to write on BB: e.g.

a)  $50 + 15 = 65$ ;  $5 \times 13 = 5 \times (10 + 3) = 65$ ;  $65 \div 5 = 13$

b)  $50 + 50 + 50 + 50 + 50 + 50 + 50 = 350$ ;

$7 \times 5 \times 10 = 350$ ;  $350 \div 7 = 50$ ;

(or  $7 \times 5 \text{ tens} = 35 \text{ tens}$ ;  $35 \text{ tens} \div 7 = 5 \text{ tens}$ )

Elicit that the dividend and divisor cannot be interchanged

(except of course when they are the same number, e.g.  $5 \div 5$ )

40 min

Individual work, monitored, (helped)

Drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

Accept any correct operation, e.g.  $10 + 3 + 10 + 3 + \dots$

T revises the terms:

$$\begin{array}{c} 65 \div 5 = 13 \\ \uparrow \quad \uparrow \quad \uparrow \\ \text{dividend, divisor, quotient} \end{array}$$

**9****Oral work**

T writes two digits of several 3-digit numbers on BB. e.g.

1 2 □; □ 3 0; 2 8 □; □ 1 9; 3 □ 5; 2 □ 0; 2 3 □; 1 □ 2

a) Which numbers could be exactly divisible by 5? What could the numbers be? Elicit that □ 1 9 and 1 □ 2 are impossible.

b) Repeat for numbers exactly divisible by 10. **Extension:** c) 100

45 min

Whole class activity

T chooses Ps at random

At a good pace

Agreement that:

a) only 0 or 5 as units digit

b) only 0 as units digit

c) only 200. Praising

Lesson Plan  
29

**Bk3**

R: Mental calculation  
C: Multiplication and division up to 200. Even and odd  
E: Over 200

**Activity**

1

**Missing numbers**

Let's fill in the missing numbers. Ps come to BB to fill in numbers, saying the complete multiplication or division. Class agrees/disagrees.

BB:

a)  $70 \times 2 \rightarrow 140 \div 10 \rightarrow 14 \times 5 \rightarrow 70 \div 2 \rightarrow 35 \div 5 \rightarrow 7$

b)  $200 \div 5 \rightarrow 40 \div 10 \rightarrow 4 \times 5 \rightarrow 20 \times 2 \rightarrow 40 \div 5 \rightarrow 8 \times 2 \rightarrow 16 \times 10 \rightarrow 160$

5 min

**Notes**

Whole class activity

Written on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, praising

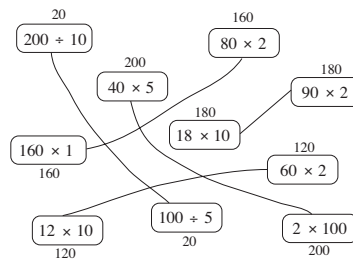
2

**Equal values**

Let's join up the equal values. BB:

Ps come out to BB to join up (or arrange in pairs) and to write values above or below each box.

Class points out errors.



Let's say the values in decreasing order: '200, 180, 160, 120, 20'

10 min

Whole class activity

Drawn on BB or use enlarged copy master or OHP (or use as cards, cut out and stuck to BB)

Reasoning, agreement, praising

In unison

3

**Making 120**

A magician is making magic spells about the number 120. Let's help him find the multiplications and divisions he needs!

BB:  $\frac{120}{240 \div 2}$   
 $60 \times 2$   
 $\frac{360}{12 \times 3}$   
 $12 \times 10$   
 $\frac{40}{40} \times 3$

- a) Ps come to BB to fill in missing numbers, saying the complete multiplication or division.  
b) Who can think of other ways to make 120? (e.g.  $6 \times 20$ ,  $4 \times 30$ ,  $120 \times 1$ ,  $480 \div 4$ ,  $100 + 20$ ,  $200 - 80$ , etc.)

15 min

Whole class activity

Table written on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, praising

Praise creativity

4

**Mental calculations**

T says an operation, Ps write only the answers in *Ex. Bks.* (Heading: Lesson number and date)

a)  $90 \times 2 - 5 = 175$       b)  $400 \div 2 + 2 = 202$   
c)  $5 \times 30 = 150$           d)  $300 \div 2 - 47 = 103$   
e)  $2 \times 70 - 3 = 137$       f)  $150 \div 5 = 30$

Review at BB with whole class. Ps change to coloured pencils and mark/correct own work.

Who had all 6 correct? Who made a mistake? What kind of mistake? Who did the same? etc.

Let's write these numbers in decreasing order. What sign should we write between them? (>) Ps write out numbers in *Ex. Bks.*, T on BB.

BB:  $202 > 175 > 150 > 137 > 103 > 30$

**Extension**

If we wanted to put these numbers into two sets, how could we do it? (even or odd, 2 or 3 digits, divisible or indivisible by 5, etc.)

Let's use odd and even sets. Which numbers should go where?

Ps come out to BB to write numbers in correct sets. Class agrees/disagrees.

20 min

Individual work

T repeats slowly and Ps nod heads when they are ready to continue

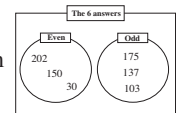
T has SB or OHP already prepared and writes in results as dictated by Ps.

Agreement, self-correction, evaluation, praising

Feedback for T

Whole class activity. Use enlarged copy master or OHP

BB: Venn diagram



Praising

**Bk3***Lesson Plan 29***Activity****5****Book 3, page 29**Q.1 Read: *Complete the table.*

Who can explain to us what we have to do?

(2nd row: multiply numbers in top row by 2;

3rd row: multiply numbers in top row by 5;

4th row: multiply numbers in top row by 10)

Let's see how much of the table you can complete in 4 minutes!

Review at BB with whole class. **A**, how did you do fill in the table? Who did it another way? (e.g. by rows or by columns)

Ps recite the multiples of 2 (5, 10) and T uncovers a row at a time on already completed table. Ps correct their mistakes.

*Solution:*

×	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
10	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200

*28 min***Notes**

Individual work, monitored

Initial discussion about table

Differentiation by time limit

Agreement, self-correction, praising

Use enlarged copy master or OHP

T asks multiplications and divisions from the table.

Ps use table to help them.

At speed orally round class

**6****Book 3, page 29, Q.2**a) Read: *Exchange these amounts for £2 coins.**Draw the £2 coins in the boxes.*

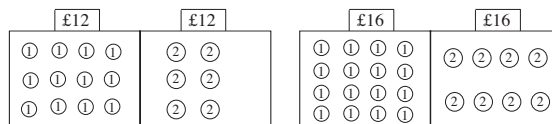
What do you notice about the picture on the LHS of the first box?

(3 × 4 = 12) £1 coins = £12.

Let's exchange the £1 coins for £2 coins. P comes to BB to circle

£1 coins in pairs and to draw 6 £2 coins (or to stick 6 £2 coins on BB)

Who can write an equation about it?



Repeat for the 2nd picture in part a).

b) Read: *Exchange these amounts for £20 notes.**Draw the £20 notes.*

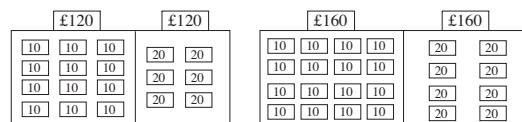
What do you notice about the picture on the LHS of the first box?

(4 × 3 = 12) £10 notes = £120.

Let's exchange the £10 notes for £20 notes. P comes to BB to circle

£10 notes in pairs and to draw 6 £20 notes (or to stick £20 notes on

BB) Who can write an equation about it?



Repeat for the 2nd picture in part b).

Discuss connections between values in parts a) and b). (10 times more)

(Or done as individual work, monitored and reviewed.)

*33 min*

Whole class activity

Use enlarged copy master or OHP (or table drawn on BB and model money stuck to it.)

Reasoning, agreement, praising

(Ps can draw coins in *Pbs* at same time if they wish)BB:  $£12 \div £2 = 6$  (times)*Check:*  $6 \times £2 = £12$  $£16 \div £2 = 8$  (times)*Check:*  $8 \times £2 = £16$ 

Reasoning, agreement, praising

(Ps can draw notes in *Pbs* at same time if they wish)

BB:

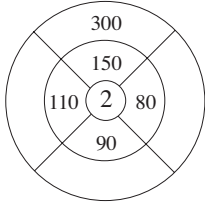
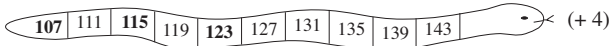
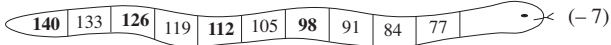
 $£120 \div £20 = 6$  (times)*Check:*  $6 \times £20 = £120$  $£160 \div £20 = 8$  (times)*Check:*  $8 \times £20 = £160$ 

Agreement, praising

Note that:  $120 = 12 \times 10$  $160 = 16 \times 10$



<b>Bk3</b>		<i>Lesson Plan 29</i>												
<p><b>Activity</b></p> <p><b>7</b></p>	<p><b>Book 3, page 29</b></p> <p>Q.3 Read: <i>Practise calculation.</i></p> <p>Elicit that there are <math>3 \times 5 = 15</math> calculations. Let's see how many you can do in 3 minutes! Start . . . now! . . . Stop!</p> <p>Review orally round class. Ps change pencils. Mistakes corrected. Who had all 15 correct? Who made a mistake? What kind of mistake? etc.</p> <p>Encourage Ps to use the names of the components. e.g.</p> <ul style="list-style-type: none"> <li>missing factor is found by dividing the product by the other factor: <math>\square \times 7 = 140</math>; <math>140 \div 7 = \underline{20}</math></li> <li>missing divisor is found by dividing the dividend by the quotient: <math>16 \div \square = 8</math>; <math>16 \div 8 = \underline{2}</math>, etc.</li> </ul> <p style="text-align: right;">. . . 38 min . . .</p>	<p style="text-align: center;"><b>Notes</b></p> <p>Individual work, monitored (helped)</p> <p>Keep to time limit</p> <p>Agreement, self-correction, evaluation, praising</p> <p>If problems, write calculation on BB.</p> <p>Feedback for T</p>												
<p><b>8</b></p>	<p><b>Book 3, page 29</b></p> <p>Q.4 Read: <i>Among how many children can 60 apples be shared equally if we do not cut up any apples?</i></p> <p style="text-align: center;"><i>Show your answer by writing divisions.</i></p> <p>Encourage Ps to list the divisions in a logical order. Elicit that they should try the divisors 3, 4, 5, . . . and only write the division if there is no remainder, i.e. if the number of apples is divisible by that number.</p> <p>Let's see how many you can write in 2 minutes! Start . . . now! . . . Stop!</p> <p>Review at BB with whole class. Ps dictate divisions one after the other and T writes on BB. Class points out any wrong or missed divisions.</p> <p>BB:</p> <table style="width: 100%; border: none;"> <tr> <td><math>60a \div 2 = 30a</math></td> <td><math>60a \div 3 = 20a</math></td> <td><math>60a \div 4 = 15a</math></td> </tr> <tr> <td><math>60a \div 5 = 12a</math></td> <td><math>60a \div 6 = 10a</math></td> <td><math>60a \div 10 = 6a</math></td> </tr> <tr> <td><math>60a \div 12 = 5a</math></td> <td><math>60a \div 15 = 4a</math></td> <td><math>60a \div 20 = 3a</math></td> </tr> <tr> <td><math>60a \div 30 = 2a</math></td> <td><math>60a \div 60 = 1a</math></td> <td><math>(60a \div 1 = 60a)</math></td> </tr> </table> <p style="text-align: right;">. . . 42 min . . .</p>	$60a \div 2 = 30a$	$60a \div 3 = 20a$	$60a \div 4 = 15a$	$60a \div 5 = 12a$	$60a \div 6 = 10a$	$60a \div 10 = 6a$	$60a \div 12 = 5a$	$60a \div 15 = 4a$	$60a \div 20 = 3a$	$60a \div 30 = 2a$	$60a \div 60 = 1a$	$(60a \div 1 = 60a)$	<p>Individual work, monitored, (helped)</p> <p>Initial discussion on logical strategy. Let Ps suggest what to do.</p> <p>Keep to time limit</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Discussion on whether a group of 1 person could be valid – not really as 'shared' suggests more than 1 person</p>
$60a \div 2 = 30a$	$60a \div 3 = 20a$	$60a \div 4 = 15a$												
$60a \div 5 = 12a$	$60a \div 6 = 10a$	$60a \div 10 = 6a$												
$60a \div 12 = 5a$	$60a \div 15 = 4a$	$60a \div 20 = 3a$												
$60a \div 30 = 2a$	$60a \div 60 = 1a$	$(60a \div 1 = 60a)$												
<p><b>9</b></p>	<p><b>Odd and even numbers</b></p> <p>T writes 'Odd' and 'Even' at each side of BB. T says a number and Ps say whether it is odd or even. T writes in appropriate column.</p> <p>e.g. 0, 1, 4, 7, 8, 10, 21, 34, 67, 98, 100, 121, 134, 167, 198, etc.</p> <p>(Ps can add own numbers to each set if there is time.)</p> <p>Elicit that:</p> <ul style="list-style-type: none"> <li>if the last digit is even, the number is always even;</li> <li>if the last digit is odd, the number is always odd.</li> </ul> <p style="text-align: right;">. . . 45 min . . .</p>	<p>Whole class activity</p> <p>At speed round class</p> <p>BB <u>Odd</u>      <u>Even</u></p> <p style="padding-left: 40px;">1, 7, 21, 67    0, 4, 8, 10,</p> <p style="padding-left: 40px;">121, 167, . . .    34, 98, . . .</p> <p>Feedback for T</p> <p>Agreement, praising</p>												

<b>Bk3</b>	R: Mental calculation C: <b>Order of operations</b> E: Money problems	<i>Lesson Plan</i> <b>30</b>
<b>Activity</b> <b>1</b>	<b>Logic puzzle</b> Study this diagram. Think about what the rule could be. BB: <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <math>2 \times 150 = 300</math>  <math>2 \times 80 = 160</math>  <math>2 \times 90 = 180</math>  <math>2 \times 110 = 220</math> </div> </div> <p>Ps come to BB to fill in missing numbers and write their calculation. Class agrees or disagrees. What is the rule?            number in outer circle = <math>2 \times</math> number in same segment of middle circle</p> <p style="text-align: right;"><i>4 min</i></p>	<b>Notes</b> Whole class activity Drawn on BB or use enlarged copy master or OHP  At a good pace  Who can say it another way? Reasoning, agreement, praising
<b>2</b>	<b>Sequences</b> a) The first term of a sequence is 100. Each following term is 6 more than the previous term. Ps say terms in order round class. Ps: '100, 106, 112, 118, 124, 130, 136, 142, 148, 154, ...' b) The first term of a sequence is 200. The 2nd term is 197. What can the rule be? (Decreasing by 3) Let's continue it. Ps: '200, 197, 194, 191, 188, 185, 182, 179, 176, 173, ...' c) Fill in the numbers missing from the snakes. What is the rule? i) <div style="display: flex; align-items: center; justify-content: center;">  </div> ii) <div style="display: flex; align-items: center; justify-content: center;">  </div> <p style="text-align: right;"><i>10 min</i></p>	Whole class activity If P makes a mistake, the next P corrects it  Accept other rules but continue the sequence using 'decreasing by 3'  Drawn on BB or use enlarged copy master or OHP Ps come to BB to write in missing numbers and give the rule. Class points out errors Praising
<b>3</b>	<b>Order of operations</b> Which operation should we do first? Ps come to BB to point to first operation and write result above sign, then to complete calculation and fill in the result. Class agrees/disagrees. BB: a) $120 \overset{60}{\div} 2 + 10 = \boxed{70}$ b) $160 \overset{16}{\div} 10 - 16 = \boxed{0}$ c) $120 + 40 \overset{8}{\div} 5 = \boxed{128}$ d) $160 \div (10 \overset{5}{-} 5) = \boxed{32}$ Revise order of operations: <ul style="list-style-type: none"> <li>• do operations inside brackets first;</li> <li>• do multiplication and division before addition and subtraction</li> <li>• if only multiplication and division, or addition and subtraction, work from left to right;</li> <li>• if only addition (multiplication) order does not matter – do calculations in easiest order.</li> </ul> <p style="text-align: right;"><i>15 min</i></p>	Whole class activity T has BB or SB or OHP already prepared. Reasoning, agreement, praising BB: d) $160 \div (10 - 5) = 160 \div 5$ $= 150 \div 5 + 10 \div 5$ $= 30 + 2 = 32$ or $160 \div 5 = 320 \div 10 = 32$  Elicit rules from Ps

<b>Bk3</b>		<i>Lesson Plan 30</i>
<p><b>Activity</b></p> <p><b>4</b></p>	<p><b>True or False?</b></p> <p>Let's play a game. I will show you a mathematical statement. If you think it is true, stand up, but if you think it is false put your hands on your head when I say.</p> <p>BB:      (60)                      (0)</p> <p>a) <math>2 \times 60 - 60 = 2 \times (60 - 60)</math>      Show me . . . now! (false)</p> <p style="padding-left: 2em;">(165)                      (165)</p> <p>b) <math>65 + 2 \times 50 = 65 + (2 \times 50)</math>      Show me . . . now! (true)</p> <p style="padding-left: 2em;">(35)                      (35)</p> <p>c) <math>(15 + 80) - 60 = 15 + (80 - 60)</math>      Show me . . . now! (true)</p> <p style="padding-left: 2em;">(55)                      (45)</p> <p>d) <math>120 - 70 + 5 = 120 - (70 + 5)</math>      Show me . . . now! (false)</p> <p style="padding-left: 2em;">(106)                      (10)</p> <p>e) <math>120 - 70 \div 5 = (120 - 70) \div 5</math>      Show me . . . now! (false)</p> <p style="padding-left: 2em;">(110)                      (110)</p> <p>f) <math>5 \times 12 + 50 = (5 \times 12) + 50</math>      Show me . . . now! (true)</p> <p style="text-align: right;"><i>20 min</i></p>	<p><b>Notes</b></p> <p>Whole class activity</p> <p>T has BB or SB or OHP already prepared (or shows on flash cards)</p> <p>T uncovers (shows) one statement at a time.</p> <p>Give Ps time to think.</p> <p>Responses given in unison</p> <p>Confirm with 2 Ps coming to BB to work out LHS and RHS.</p> <p>If false, how can we make it true? (e.g. change sign to <math>\neq</math>, or add brackets, etc.)</p>
<p><b>5</b></p>	<p><b>Money</b></p> <p>Which of these amounts of money can be made up from £2 coins?</p> <p>BB:      <u>£4</u>    <u>£14</u>    £53    £3    <u>£94</u>    <u>£154</u></p> <p style="padding-left: 2em;">£23    <u>£34</u>    £63    <u>£74</u>    £93    £183</p> <p>Ps come out to BB to underline those which can, and to say how many £2 coins would be needed. Class agrees/disagrees.</p> <p>What do the values remind you of? (even and odd numbers)</p> <p style="text-align: right;"><i>25 min</i></p>	<p>Whole class activity</p> <p>Written on BB or SB or OHP beforehand</p> <p>At a good pace</p> <p>Agreement, praising</p>
<p><b>6</b></p>	<p><b>Book 3, page 30</b></p> <p>Q.1 Read: <i>Practise calculation.</i></p> <p>Elicit that there are <math>4 \times 3 = 12</math> calculations. Let's see how many you can do in 3 minutes! Start . . . now! . . . Stop!</p> <p>Review at BB with whole class. Mistakes corrected.</p> <p>Who had all 12 correct? Who made a mistake? What kind of mistake? etc.</p> <p>Discuss order of operations: a) and b): done from left to right, c) and d): <math>\times</math> or <math>\div</math> done first</p> <p><i>Solution:</i>    a) 110; 70; 160                      b) 120; 3; 4</p> <p style="padding-left: 2em;">c) 70; 84; 81                              d) 135; 23; 60</p> <p style="text-align: right;"><i>30 min</i></p>	<p>Individual work, monitored (if necessary, deal with one row at a time)</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>If problems, write calculations on BB</p> <p>Agreement, praising</p>
<p><b>7</b></p>	<p><b>Book 3, page 30</b></p> <p>Q.2 Read: <i>Which of the numbers 0, 1, 2, 3, 4, or 5 could be put in the place of the missing digits so that the numbers are even? List the possible 3-digit numbers.</i></p> <p>Review at BB with whole class. Ps come to BB to write (or show with number cards) the possible numbers, explaining reasoning. Class agrees/disagrees. Mistakes corrected.</p> <p><i>Solution:</i></p> <p>a) 15 <input type="text"/>: <u>150</u>, <u>152</u>, <u>154</u>      b) 1 <input type="text"/> 5: None – always odd</p> <p>c) <input type="text"/> 16: <u>116</u>, <u>216</u>, <u>316</u>, <u>416</u>, <u>516</u>    d) 10 <input type="text"/>: <u>100</u>, <u>102</u>, <u>104</u></p> <p style="text-align: right;"><i>35 min</i></p>	<p>Individual work, monitored</p> <p>Ps may use number cards on desks if necessary</p> <p>T can use number cards stuck to BB</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p> <p>N.B. <u>016</u> is really 16, so is <u>not</u> a 3-digit number</p>

<b>Bk3</b>		<i>Lesson Plan 30</i>									
<p><b>Activity</b></p> <p><b>8</b></p>	<p><b>Book 3, page 30</b></p> <p>Q.3 Read each question carefully, underline the data and read it again. Picture the story in your head and think about whether the answer will be bigger or smaller. Write a plan, do the calculation and write your answer as a sentence.</p> <p>Let's see how many you can solve in 3 minutes! Start . . . now! Stop! Review at BB with whole class. Mistakes corrected.</p> <p>a) Read: <i>Henry had 70 p. He paid a bill with five 10 p coins. How much money did he have left?</i></p> <p>Plan: Had 70 p Spent: <math>5 \times 10</math> p  Calculation: <math>70 - 5 \times 10 = 70 - 50 = \underline{20}</math>,  or <math>5 \times 10 = 50, 70 - 50 = \underline{20}</math>  Answer: Henry had 20 p left.</p> <p>b) Read: <i>Judith paid a bill with ten 5 p coins and had 70 p left. How much money did she have at first?</i></p> <p>Plan: Spent: <math>10 \times 5</math> p Had left: 70 p  Calculation: <math>70 + 10 \times 5 = 70 + 50 = \underline{120}</math> (p),  or <math>10 \times 5 = 50, 70 + 50 = \underline{120}</math> (p)  Answer: Judith had £1 20 p (or £1.20) at first.</p> <p>c) Read: <i>Sue has 70 p. A sweet costs <math>\frac{1}{10}</math> of her money. How much will Sue pay if she buys 5 sweets?</i></p> <p>Plan: Has: 70 p 1 sweet: <math>70 \text{ p} \div 10</math>  5 sweets: <math>5 \times (70 \text{ p} \div 10)</math>  Calculation: <math>5 \times (70 \div 10) = 5 \times 7 = \underline{35}</math> (p)  or <math>70 \text{ p} \div 10 = 7 \text{ p}, 5 \times 7 \text{ p} = \underline{35} \text{ p}</math>  Answer: Sue pays 35 p.</p> <p>What do you notice about the three problems? (Compare numbers, operations and outcomes.) Praise any contribution.</p> <p><b>Extension</b> Ps could make up own problem using the numbers 5, 10 and 70.</p> <p style="text-align: right;"><i>41 min</i></p>	<p><b>Notes</b></p> <p>Individual work, monitored helped</p> <p>Differentiation by time limit</p> <p>Ps explain reasoning at BB</p> <p>Class agrees/disagrees.</p> <p>Discuss alternative methods and any mistakes made.</p> <p>BB: <math>120 \text{ p} = \text{£}1 \text{ } 20 \text{ p} = \text{£}1.20</math></p> <p>Whole class discussion  e.g. <math>5 \times 10 \text{ p} = 10 \times 5 \text{ p}</math></p>									
<p><b>9</b></p>	<p><b>Book 3, page 30, Q.4</b></p> <p>Read: <i>Solve the number puzzle.</i></p> <p>T explains (or elicits) that:</p> <ul style="list-style-type: none"> <li>clues <u>across</u> start from the given letter and go horizontally along the row to the end ;</li> <li>clues <u>down</u> start from the given letter and go vertically down the column to the end (or to shaded square).</li> <li>each white square should contain only one digit, but the shaded square should <u>not</u> be filled in.</li> </ul> <p>Who would like to start? Ps come to BB to choose a clue, work out the result and write the answer in the puzzle. Class agrees/disagrees.</p> <p>Clues:</p> <p><b>Across</b></p> <p>a <math>152 - 20 \overset{40}{\times} 2 = \underline{112}</math></p> <p>d <math>60 + 100 - 10 = \underline{150}</math></p> <p>e <math>100 \overset{20}{\div} 5 + 2 = \underline{22}</math></p> <p><b>Down</b></p> <p>a <math>200 \overset{20}{\div} 10 - 9 = \underline{11}</math></p> <p>b <math>12 + 70 \overset{140}{\times} 2 = \underline{152}</math></p> <p>c <math>400 \overset{200}{\div} 2 + 2 \div 1 = \underline{202}</math></p> <p style="text-align: right;"><i>45 min</i></p>	<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP  (or individual work if Ps wish, reviewed with whole class)</p> <p>Discussion on how to complete the puzzle</p> <p>Ps suggest where to start and where to go next.</p> <p>Reasoning, agreement, praising</p> <p>Solution:</p> <table border="1" data-bbox="1262 1944 1410 2092"> <tr> <td><sup>a</sup> 1</td> <td><sup>b</sup> 1</td> <td><sup>c</sup> 2</td> </tr> <tr> <td><sup>d</sup> 1</td> <td>5</td> <td>0</td> </tr> <tr> <td style="background-color: #cccccc;"></td> <td><sup>e</sup> 2</td> <td>2</td> </tr> </table>	<sup>a</sup> 1	<sup>b</sup> 1	<sup>c</sup> 2	<sup>d</sup> 1	5	0		<sup>e</sup> 2	2
<sup>a</sup> 1	<sup>b</sup> 1	<sup>c</sup> 2									
<sup>d</sup> 1	5	0									
	<sup>e</sup> 2	2									

**Bk3**

R: Mental calculation  
 C: Calculation with quantities (length, capacity, mass)  
 E: Numbers over 200

**Lesson Plan  
31****Activity****1****Number ladders**

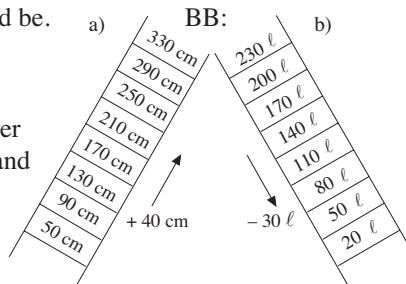
Discuss the standard units in each ladder first: a) length in cm; b) capacity in litres. T reminds Ps of short way of writing 'litre' ( $\ell$ ).

Think about what the rules could be.

What quantities are missing from the ladders?

Ps come to BB one after the other to fill in the missing quantities and give their reasoning.

Class agrees or disagrees.



What is the rule? ( a) increasing by 40 cm; b) decreasing by 30 litres )

What is the range of each ladder?

*5 min***Notes**

Whole class activity

Drawn on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, praising

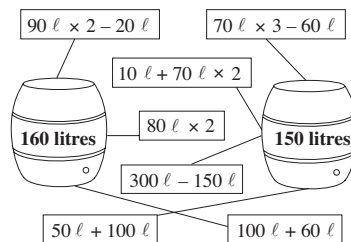
a) 50 cm to 330 cm

b) 20 litres to 230 litres

**2****Equal quantities**

Talk about the capacity of the barrels first and what they might hold. Which can hold more? How much more? ( $160 \ell - 150 \ell = 10 \ell$ )

BB:



Which quantity belongs to which barrel? Ps come out to BB to choose a quantity and join up to (or put beneath) the matching barrel. Class checks that they are correct.

*10 min*

Whole class activity

Use enlarged copy master or OHP

(or items enlarged, cut out and stuck to BB)

Initial discussion about diagram

At a good pace

Reasoning, agreement, checking, praising

**3****Open statements**

Let's see what you remember about standard units of measure.

I have missed out something from each of these statements. Who can come and complete them?

BB:

a)  $1 \text{ m} = \boxed{100} \text{ cm} = 1000 \boxed{\text{mm}}$     b)  $196 \text{ cm} = \boxed{1} \text{ m } 96 \boxed{\text{cm}}$

c)  $2 \text{ m } 24 \text{ cm} \boxed{>} 192 \text{ cm}$     d)  $1 \text{ litre} = 100 \boxed{\text{cl}} = 1000 \boxed{\text{ml}}$

e)  $1 \text{ kg} = \boxed{1000} \text{ g}$     f)  $1 \text{ km} = 1000 \boxed{\text{m}}$

Ps come out to fill in missing items and to read out the complete statement. What is it a measure of? What would you use to measure it?

Let's say the units of length in decreasing order: 'km, m, cm, mm'

*15 min*

Whole class activity

T has BB or SB or OHP already prepared

At a good pace

Discussion on what is being measured (length, capacity, mass or weight)

Agreement, praising

In unison

**4****Capacity and mass**

a) Everyone stand up! Hold your arms 1 metre apart . . . now!  
 T walks round class checking against metre stick, praising or correcting.  
 Repeat for 10 cm (50 cm, 100 cm, 20 cm)

Whole class activity

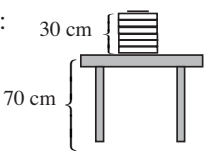
In unison

Feedback for T. Praising only

Use lengths of card as a check

<b>Bk3</b>		<i>Lesson Plan 31</i>
<b>Activity</b>	<p>b) T shows class an open-topped transparent plastic cube. P comes out to measure an edge. (10 cm) Elicit that <u>all</u> edges are 10 cm. (A cube has square faces, so edges are equal.)</p> <p>T shows class a unit cube. P comes out to measure an edge. (1 cm) Elicit that all its edges are 1 cm.</p> <p>How many 1 cm cubes do you think will fill the 10 cm cube? (Ask several Ps what they think.) Let's check. T shows that 10 are needed along one edge and that <math>10 \times 10 = 100</math> are needed to cover the base.</p> <p>If we need 100 cm cubes for 1 layer, how many would we need to fill the cube? (Cube is 10 cm high, so we need 10 layers, i.e. <math>10 \times 100</math> cm cubes = 1000 centimetre cubes = 1000 cc)</p> <p>How much liquid does the 10 cm cube hold? (1 litre) Let's check. T (or P) pours 1 litre of water into a measuring jug and then into the cube.</p> <p>Elicit from the scale on the jug that: 1 litre = 100 cl = 1000 ml (BB)</p> <p>How many of these cm cubes take up the same space as 1 litre (1 cl, 1 ml) of water? (1000 cc, 10 cc, 1 cc)</p> <p>c) Who remembers what is the mass of 1 litre of water? (Remind Ps if necessary of 1 litre of water being balanced by a 1 kg weight.)</p> <p>Elicit that 1 kg = 1000 g (BB). Let's make a table on the BB to compare all these standard units of measure. (T, with Ps' help)</p> <p style="text-align: right;"><i>22 min</i></p>	<p style="text-align: center;"><b>Notes</b></p> <p>Discussion on relation of length to capacity</p> <p>T could use multilink 1 cm cubes</p> <p>T has 10 strips of 10 cubes stuck together</p> <p>T has 10 layers of 100 cubes already prepared as a check</p> <p>T reminds Ps if necessary of filling the glass cube with water in <i>Lesson 23</i></p> <p>Discussion, agreement</p> <p>BB: <u>Measurements of water</u></p> <p>1000 cc → 1 litre → 1 kg  10 cc → 1 cl → 10 g  1 cc → 1 ml → 1 g</p> <p>Praising</p>
<b>5</b>	<p><b>Could it be true?</b></p> <p>I will say some sentences about measurement but some of them might not be true. Tell me if you think I might have made a mistake.</p> <p>a) I drank 200 cl of milk for my breakfast. (200 cl = 2 litres, a lot of milk for 1 person; 20 cl more realistic – show on measuring jug)</p> <p>b) My height is more than 1 m but less than 2 m. (Possible – show with metre rule)</p> <p>c) I am 120 months old. (120 months = 10 years, so not true)</p> <p>d) I weigh 630 kg. (should be 63 kg – show on bathroom scales)</p> <p style="text-align: right;"><i>26 min</i></p>	<p>Whole class activity</p> <p>T asks several Ps what they think</p> <p>Ps suggest corrections to statements</p> <p>Discussion, reasoning, checking, agreement, praising</p> <p>All done in good humour!</p>
<b>6</b>	<p><b>Book 3, page 31</b></p> <p>Q.1 Read: <i>Fill in the missing items.</i></p> <p>Deal with one part at a time. Discuss type of measure (length, capacity or mass) and how many smaller units are in the larger unit. (e.g. 100 cm = 1 m). Ps fill in missing items.</p> <p>Review with whole class. Mistakes corrected.</p> <p><i>Solution:</i></p> <p>a) 1 m 72 cm = <u>172</u> cm      b) 1 m 8 cm = <u>108</u> cm  148 cm = <u>1 m 48 cm</u>      1 and a half metres = <u>150</u> cm</p> <p>c) 1 litre 25 cl = <u>125 cl</u>      d) 1 litre 5 cl = <u>105</u> cl  151 cl = <u>1</u> litre <u>51</u> cl      <u>1</u> and a half litres = 150 cl</p> <p>e) 2 litres water → <u>2</u> kg      f) 200 g <u>&lt;</u> 1 kg  1 km <u>&gt;</u> 300 m      130 cl <u>&gt;</u> 1 litre</p> <p style="text-align: right;"><i>31 min</i></p>	<p>Individual work, monitored, helped</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p> <p>Parts e) and f) could be done with whole class. Refer to number line if necessary.</p> <p>Praising, encouragement only</p> <p>BB: 1 kg = 1000 g  1 km = 1000 m  1 litre = 100 cl</p>



<b>Bk3</b>		<i>Lesson Plan 31</i>																						
<p><b>Activity</b></p> <p><b>7</b></p>	<p><b>Book 3, page 31</b></p> <p>Q.2 Read <i>Mrs Mouse had 180 g of cheese. Help her to work out how much cheese has been eaten and how much remains. Complete the table.</i></p> <p>How do we work out the missing values in the top (bottom) row of the table? (Take away given amount from 180 g)</p> <p>Review at BB with whole class. Ps come to BB to fill in table, explaining reasoning. Class points out errors.</p> <p>Who can come and write the rule? Who agrees? Who can write it another way? etc.</p> <p>BB:</p> <table border="1" data-bbox="379 734 1054 837"> <tr> <td>Eaten (g)</td> <td>0</td> <td>140</td> <td>170</td> <td>25</td> <td>132</td> <td>75</td> <td>34</td> <td>115</td> <td>40</td> <td>180</td> </tr> <tr> <td>Remaining (g)</td> <td>180</td> <td>40</td> <td>10</td> <td>155</td> <td>48</td> <td>105</td> <td>146</td> <td>65</td> <td>140</td> <td>0</td> </tr> </table> <p>Rule: <math>180 \text{ g} = E + R</math>, <math>E = 180 \text{ g} - R</math>, <math>R = 180 \text{ g} - E</math></p> <p style="text-align: right;">36 min</p>	Eaten (g)	0	140	170	25	132	75	34	115	40	180	Remaining (g)	180	40	10	155	48	105	146	65	140	0	<p><b>Notes</b></p> <p>Individual work, monitored, (helped)</p> <p>Table drawn on BB or use enlarged copy master or OHP</p> <p>Differentiation by time limit Ps who finish quickly add own columns to table</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p>
Eaten (g)	0	140	170	25	132	75	34	115	40	180														
Remaining (g)	180	40	10	155	48	105	146	65	140	0														
<p><b>8</b></p>	<p><b>Book 3, page 31, Q.3</b></p> <p>Read: <i>Fill in the missing numbers and standard units.</i></p> <p>T has BB already prepared. Ps come out to write calculations (with T's help where necessary), explaining reasoning. Class agrees/ disagrees. Ps write agreed answer in <i>Pbs</i>.</p> <p>BB:</p> <p>a) <math>45 \text{ cm} \times 2 = 40 \text{ cm} \times 2 + 5 \text{ cm} \times 2 = 80 \text{ cm} + 10 \text{ cm} = \underline{90 \text{ cm}}</math>  <math>180 \text{ kg} \div 10 = \underline{18 \text{ kg}}</math></p> <p>b) <math>150 \text{ litres} \div 5 = \underline{30 \text{ litres}}</math>  <math>23 \text{ litres} \times 5 = 20 \text{ litres} \times 5 + 3 \text{ litres} \times 5 = 100 \text{ litres} + 15 \text{ litres} = \underline{115 \text{ litres}}</math></p> <p>c) <math>1 \text{ m } 30 \text{ cm} \div 2 = 100 \text{ cm} \div 2 + 30 \text{ cm} \div 2 = 50 \text{ cm} + 15 \text{ cm} = \underline{65 \text{ cm}}</math>  <math>1 \text{ m } 30 \text{ cm} \times 5 = 1 \text{ m} \times 5 + 30 \text{ cm} \times 5 = 5 \text{ m} + 150 \text{ cm} = 5 \text{ m} + 1 \text{ m} + 50 \text{ cm} = \underline{6 \text{ m } 50 \text{ cm}}</math></p> <p style="text-align: right;">41 min</p>	<p>Whole class activity</p> <p>Discussion at BB</p> <p>At a good pace</p> <p>Reasoning, agreement, praising Ps can write results in <i>Pbs</i> too</p> <p>T will need to direct Ps with part c)</p>																						
<p><b>9</b></p>	<p><b>Book 3, page 31</b></p> <p>Q.4 Read: <i>Write a plan, do the calculation and write the answer as a sentence.</i></p> <p>a) Ps read problem by themselves and solve in <i>Pbs</i>. Review with whole class. Mistakes corrected.</p> <p>Plan: Brother: 90 cm Sarah: 90 cm + 40 cm  Calculation: <math>90 \text{ cm} + 40 \text{ cm} = 130 \text{ cm} = \underline{1 \text{ m } 30 \text{ cm}}</math>  Answer: Sarah is 1 m 30 cm tall.</p> <p>b) P reads problem. Demonstrate with books/pencil at front of class.</p> <p>Plan: Desk: 70 cm; 1 book: 5 cm, 6 books: <math>6 \times 5 \text{ cm}</math>  Calculation: <math>70 \text{ cm} + 6 \times 5 \text{ cm} = 70 \text{ cm} + 30 \text{ cm} = 100 \text{ cm} = \underline{1 \text{ m}}</math>  Answer: The pencil will be 1 metre from the floor.</p> <p style="text-align: right;">46 min</p>	<p>Individual work, monitored, helped</p> <p>Reasoning, agreement, self-correction, praising or <math>\boxed{130} \text{ cm} &gt;_{40 \text{ cm}} 90 \text{ cm}</math></p> <p>Whole class activity</p> <p>Diagram: </p> <p>Reasoning, agreement, praising</p>																						

**Bk3**

R: Mental calculation  
 C: **Addition, subtraction with whole tens**  
 E: *Numbers over 200*

**Lesson Plan  
32****Activity****1****Sequences**

- a) The first term of a sequence is 170. Each following term is 8 less than the previous term. What is the sequence?  
 Ps: '170, 162, 154, 146, 138, 130, 122, 114, 106, 98, 90, 82, ...'
- b) The first term of a sequence is 110 and the sequence is increasing by 9. What is the sequence?  
 Ps: '110, 119, 128, 137, 146, 155, 164, 173, 182, 191, ...'

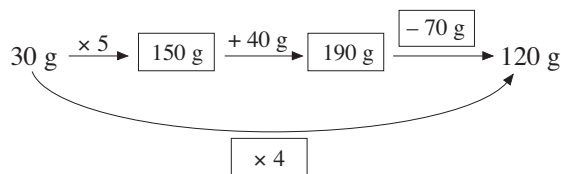
*5 min***Notes**

Whole class activity  
 T chooses Ps at random  
 At speed  
 If P makes a mistake, the next P corrects it.  
 Praising

**2****Missing values**

Let's fill in the missing items. Ps come to BB to fill in missing numbers, units and signs, saying the complete operation. Class agrees/disagrees.

BB:

*10 min*

Whole class activity  
 Drawn on BB or use enlarged copy master or OHP  
 At a good pace  
 Reasoning, agreement, praising

**3****Book 3, page 32**

Q.1 Read: *Write additions or subtractions about the pictures.*

T explains task. Elicit that parts a) and b) are additions and parts c) and d) are subtractions. Ps write values in LH and RH boxes before writing the addition or subtraction.

Review at BB with whole class. Mistakes corrected.

*Solution:*

- a)  $70 \text{ p} + 26 \text{ p} = \underline{96 \text{ p}}$       b)  $\pounds 170 + \pounds 26 = \underline{\pounds 196}$   
 c)  $63 \text{ p} - 23 \text{ p} = \underline{40 \text{ p}}$       d)  $\pounds 163 - \pounds 23 = \underline{\pounds 140}$

Who notices a connection between them? (First numbers are 100 more in 2nd part of each row, but numbers being added or taken away are the same, so results are 100 more)

*15 min*

Individual work, monitored, helped  
 Drawn on BB or use enlarged copy master or OHP  
 Reasoning, agreement, self-correction, praising

Discussion, agreement  
 Extra praise if Ps notice by themselves

**4****Multiplication of mass**

Jenny has made some treacle toffee for a school fete. She wants to pack pieces of equal weight (mass) into bags and then label each bag with its total weight (mass). Let's help her by completing the table.

BB:

Mass of each piece of toffee	60 g	30 g	70 g	40 g	90 g	50 g	70 g	80 g	e.g.
Number of pieces in the bag	5	4	2	6	2	4	1	3	
Mass of the bag of toffee	300 g	120 g	140 g	240 g	180 g	200 g	70 g	240 g	

Elicit that middle row times top row equals bottom row, etc. using column already completed

Ps come out to choose a column and fill in missing value, explaining reasoning. Class points out errors.

Whole class activity  
 Table drawn on BB or use enlarged copy master or OHP

Ps finished first may add own columns

Ps suggest 'rule' for table

Reasoning, agreement, praising

Orally or in *Ex. Bks.*

**Extension**

If Jenny sells the toffee at £1 per 100 g, how much would each size of bag cost?

*20 min*

<b>Bk3</b>		<i>Lesson Plan 32</i>
<b>Activity</b>		<b>Notes</b>
<p><b>5</b></p>	<p><b>Book 3, page 32</b></p> <p>Q.2 Read: <i>For each sequence, complete the rule and write the next 3 terms.</i></p> <p>Review orally with whole class. Mistakes corrected.</p> <p><i>Solution:</i></p> <p>a) increasing by 20: <b>27, 47, 67</b>, 87, 107, 127,  b) increasing by 30: <b>9, 39</b>, 69, 99, 129,  c) decreasing by 30: <b>196, 166</b>, 136, 106, 76,  d) decreasing by 40: <b>200, 160</b>, 120, 80, 40,</p> <p style="text-align: right;"><i>25 min</i></p>	<p>Individual work, monitored (helped)</p> <p>Agreement, self-correction, praising</p> <p>Continue the sequences orally if time</p>
<p><b>6</b></p>	<p><b>Book 3, page 32</b></p> <p>Q.3 Read: <i>Practise calculation.</i></p> <p>How many calculations are there? (<math>3 \times 3 = 9</math>; 6 additions and 3 subtractions). Let's see how many you can do in 3 minutes! Start . . . now! . . . Stop!</p> <p>Review orally round class. Ps change pencils. Mistakes corrected. Who had 9 (8, 7, less than 7) correct? What were your mistakes? Who does not know what they did wrong? etc.</p> <p>Did anyone notice anything about the additions (subtractions)? Discuss similarities and connections. (e.g. if 100 is added to either term in a 2-term addition, the sum is 100 more)</p> <p style="text-align: right;"><i>30 min</i></p>	<p>Individual work, monitored</p> <p>Keep to time limit</p> <p>Agreement, self-correction, evaluation, praising</p> <p>Feedback for T</p> <p>Whole class discussion  e.g. <math>27 + 60 = \underline{87}</math>  <math>27 + 160 = 127 + 60 = \underline{187}</math></p>
<p><b>7</b></p>	<p><b>Problems</b></p> <p>Listen carefully to these problems. I will read each one twice. When I read it the second time, write down the data in your <i>Ex. Bks.</i></p> <p>Do the calculation and show me the answer with number cards (or on scrap paper) when I say.</p> <p>a) <i>Alison has 58 picture cards and Betty has 30 more than Alison. How many cards does Bettina have?</i>  Show me . . . now! (<b>88</b>)  <b>B</b>, how did you get your answer? Who agrees? etc.  BB: A: 58, B: <math>58 + 30 = \underline{88}</math> Answer: Betty has 88 cards.</p> <p>b) <i>Sally has collected 58 buttons, 30 more than Roberta. How many buttons does Roberta have?</i>  Show me . . . now! (28)  <b>C</b>, how did you get your answer? Who agrees? etc.  BB: S: 58, R: <math>58 - 30 = \underline{28}</math> Answer: Roberta has 28 buttons.</p> <p>c) <i>Edward has 58 stamps and Frank has 30 stamps. How many stamps do they have altogether?</i>  Show me . . . now! (88)  <b>D</b>, how did you get your answer? Who agrees? etc.  BB: E: 58, F: 30, <math>E + F = 58 + 30 = \underline{88}</math>  Answer: They have 88 stamps altogether.  Who has more? How many more? (Edward has 28 stamps more.)</p> <p>Discuss similarities in the data in all 3 problems.</p> <p style="text-align: right;"><i>35 min</i></p>	<p>Whole class activity</p> <p>T repeats each problem slowly and Ps repeat in own words</p> <p>Ps work in <i>Ex. Bks.</i></p> <p>In unison</p> <p>Reasoning, agreement, self-correcting, praising</p> <p>In unison</p> <p>Reasoning, agreement, self-correcting, praising</p> <p>In unison</p> <p>Reasoning, agreement, self-correcting, praising</p> <p>BB: <math>E &gt; F</math>, <math>58 - 30 = \underline{28}</math></p> <p>Ps might notice it themselves</p>

<b>Bk3</b>		<i>Lesson Plan 32</i>
<b>Activity</b>  <b>8</b>	<p><b>Book 3, page 32</b></p> <p>Q.4 Read: <i>Fill in the missing numbers.</i></p> <p>Elicit that there are <math>3 \times 4 = 12</math> calculations (8 additions and 4 subtractions). Let's see how many you can do in 3 minutes! Start . . . now! . . . Stop!</p> <p>Review orally round class. Ps change pencils. Mistakes corrected. Who had no mistakes? Who made 1 (2, more than 2) mistakes? What were they? Who did the same? etc.</p> <p>Ps with all correct explain to class how they did the calculations so accurately and quickly.</p> <p>Discuss similarities in questions.</p> <p style="text-align: right;"><i>40 min</i></p>	<p style="text-align: center;"><b>Notes</b></p> <p>Individual work, monitored</p> <p>Keep to time limit</p> <p>Agreement, self-correction, evaluation, praising</p> <p>Feedback for T</p> <p>Awards given for excellent work (stars, stickers, etc.)</p> <p>e.g. <math>29 + \underline{10} = 39</math>  <math>29 + \underline{110} = 139</math></p>
<b>9</b>	<p><b>Book 3, page 32</b></p> <p>Q.5 Read: <i>Greg and Helen have 58 postcards altogether. Greg has 30 more than Helen. How many cards do they each have?</i></p> <p>T allows 2 minutes for Ps to try to work out the answer.</p> <p>E, what is your answer? Who agrees? Who thinks something else? Who did it another way? Who could not solve it?</p> <p>Discussion on strategies for solution. (Could make a table and try lots of different values for Greg and Helen until the correct solution is found but not very concise mathematically.)</p> <p><i>Logical solution:</i></p> <p>Greg had 30 more, so give Greg his 30 more first.</p> <p>That leaves <math>58 - 30 = 28</math> cards to share equally between them.</p> <p>So they each get <math>28 \div 2 = 14</math> cards.</p> <p>Helen: <u>14</u> cards          Greg: <math>30 + 14 = \underline{44}</math> cards.</p> <p><i>Check:</i> <math>14 + 44 = 58</math></p> <p style="text-align: right;"><i>45 min</i></p>	<p>Individual trial first Monitored</p> <p>Discussion, reasoning, agreement, checking, self-correction.</p> <p>Praise any valid strategy</p> <p>Demonstrate if necessary with 2 Ps at front of class</p> <p>Extra praise if Ps thought of this method without help!</p>

**Bk3**

R: Mental calculation  
 C: **Multiplication and division (mainly 3, 6 and 9)**  
 E: Over 200

**Lesson Plan**  
**33****Activity****1****Boom!**

T: Is 99 divisible by 3? (Yes, because  $99 = 3 \times 33$ )  
 Is 100 divisible by 3? (No, because  $100 = 3 \times 33 + 1$ , so there would be a remainder of 1)

Let's play Boom! Everyone stand up!

Let's start at 100 and say 'boom' instead of every number which is divisible by 3.

Ps: 100, 101, boom, 103, 104, boom, 106, 107, boom, 109, 110, boom, . . .

*5 min***Notes**

Whole class activity

BB:  $99 \div 3 = 33$   
 $100 \div 3 = 33, r 1$

If Ps make a mistake they sit down and next P corrects it.

At speed round class

In good humour! Praising

**2****Number strips**

Ps have these numbers strips already on desks and T has large copies on BB for demonstration only:

- 5 strips 10 cm by 1 cm (e.g. red card)
- 5 strips 9 cm by 1 cm (e.g. dark blue card)
- 5 strips 6 cm by 1 cm (e.g. pink card)
- 5 strips 3 cm by 1 cm (e.g. yellow card)

Elicit that the unit used as a measure is a 1 cm square (cm cube if using Cuisenaire rods or multilink cubes).

- a) Lay the five 9 cm strips one exactly below the other like this. (T shows on BB.)

How many cm squares (or cubes) are there on 1 strip? (9)

How many are there on the 5 strips altogether? (45)

(T writes on BB and Ps write in *Ex. Bks.*)

- b) Now lay the five 6 cm strips one exactly below the other like this (T shows on BB) and then lay the five 3 cm strips beside them.

How many cm squares (or cubes) are there altogether? (45)

(T writes on BB and Ps write in *Ex. Bks.*)

Who notices something about the shapes you made in a) and b)? (both equal)

- c) Now lay the five 10 cm strips one exactly below the other like this. (T shows on BB)

How many cm squares (or cubes) are there altogether? (50)

T writes on BB and Ps write in *Ex. Bks.*

Compare the shape with the five 9 cm strips. Which has more cm squares (cubes)? (10 cm strips) How many more? (5 more)

T elicits or shows that :

BB:  $5 \times 10 - 5 \times 1 = 50 - 5 = 45 = 5 \times (10 - 1) = 5 \times 9$

*15 min*

Whole class activity

Use copy master, enlarged, coloured and strips cut out, or Cuisenaire rods or multilink cubes)

(or paired work)

Discussion on unit of measure  
 Ps check lengths with rulers.

BB:

			9		

$$5 \times 9 = 45$$

		6			3

$$5 \times 6 + 5 \times 3 = 5 \times (6 + 3) = 5 \times 9 = 45$$

			10		

$$5 \times 10 = 50$$


**Bk3***Lesson Plan 33***Activity****3****Book 3, page 33**

Q.1 Read: *How many pence are in the boxes?*  
Write a multiplication about each picture.

Review at BB with whole class. Mistakes corrected.

*Solution:*

a)  $6 \times 2 \text{ p} = \underline{12} \text{ p}$                       b)  $6 \times 20 \text{ p} = \underline{120} \text{ p}$

c)  $3 \times 5 \text{ p} = \underline{15} \text{ p}$                       d)  $3 \times 50 \text{ p} = \underline{150} \text{ p}$

Who notices a connection between them? (Elicit that if the multiplier is 10 more, then the product is also 10 more.)

How would we write the 120 p (150 p) as £s? (£1.20, £1.50)

20 min

**Notes**

Individual work, monitored, helped

Drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

BB:  $3 \times 50 = 50 + 50 + 50 = 150$

Discussion, agreement

Extra praise if Ps notice by themselves

**4****Multiplication (3, 6, 9)**

Study this table. Who can explain to us what we have to do?

(2nd row: multiply numbers in top row by 3;

3rd row: multiply numbers in top row by 6;

4th row: multiply numbers in top row by 9)

Ps come out one after the other to choose a square at random and fill it in, saying the complete multiplication. Class points out errors.

Ps use easier products to help with difficult numbers.

(e.g.  $9 \times 15 = 9 \times 10 + 9 \times 5 = 90 + 45 = 135$ )

Ps choose other numbers to put in the empty column headings at end of table and use known products to help complete the columns.

*Solution:*

$\times$	0	1	2	3	4	5	6	7	8	9	10	15	20	40	70	100
3	0	3	6	9	12	15	18	21	24	27	30	45	60	120	210	300
6	0	6	12	18	24	30	36	42	48	54	60	90	120	240	420	600
9	0	9	18	27	36	45	54	63	72	81	90	135	180	360	630	900

What else do you notice about the rows? (the numbers in the row of 9s are 3 times more than those in the row of 3s; the numbers in the row of 6s are 2 times those in the row of 3s)

T says multiplications and divisions from the table. Ps give product or quotient, using the table to help them if necessary.

25 min

Whole class activity

Drawn on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, praising

e.g.  $3 \times 70 = 3 \times 7 \times 10 = 21 \times 10 = 210$

or  $3 \times 70 = 3 \times 20 + 3 \times 20 + 3 \times 20 + 3 \times 10 = 60 + 60 + 60 + 30 = 210$

Agreement, praising

Orally round class at speed

Ps can ask questions too.

**5****Book 3, page 33**

Q.2 Read: *Complete the table.*

What do you notice about this table? (Columns could be inserted after '10' in previous table. Columns for 15 and 20 have already been done on BB.)

Remind Ps about easy ways of calculating using known products, e.g.  $3 \times 16 = 3 \times 10 + 3 \times 6 = 30 + 18 = 48$

Let's see how much of the table you can complete in 4 minutes!

Review at BB with whole class. Ps read out the multiples in each row in unison. Mistakes corrected. Ps explain how they obtained the difficult products,

*Solution:*

$\times$	11	12	13	14	15	16	17	18	19	20	
a	3	33	36	39	42	45	48	51	54	57	60
b	6	66	72	78	84	90	96	102	108	114	120
c	9	99	108	117	126	135	144	153	162	171	180

31 min

Individual work, monitored

Drawn on BB or use enlarged copy master or OHP

Discussion, reasoning, checking, agreement, praising

Liken rows to sequences increasing by 3 (6, 9)

e.g.  $6 \times 16 = 2 \times 3 \times 16 = 2 \times 48 = 96$

Label the rows and compare them

BB:  $a + b = c$ ,  $b = 2 \times a$   
 $c = 3 \times a$



<b>Bk3</b>		<i>Lesson Plan 33</i>
<b>Activity</b>		<b>Notes</b>
<p><b>6</b></p>	<p><b>Book 3, page 33</b></p> <p>Q.3 Read: <i>Calculate the products and quotients.</i></p> <p>How many calculations are there? (<math>4 \times 3 = 12</math>; 6 multiplications and 6 divisions).</p> <p>Let's see how many you can do in 3 minutes! Start . . . now! . . . Stop!</p> <p>Review orally round class. Ps change pencils. Mistakes corrected. Who had 12 (11, 10, less than 10) correct? What were your mistakes? Who did the same? etc.</p> <p>What did you notice about the multiplications (divisions)? Discuss similarities and connections. (e.g. if multiplier or number being multiplied (multiplicand) is 10 times more, then product will be 10 times more)</p> <p style="text-align: right;">35 min</p>	<p>Individual work, monitored</p> <p>Keep to time limit</p> <p>Agreement, self-correction, evaluation, praising</p> <p>Feedback for T</p> <p>Awards given for excellent work (stars, stickers, etc.)</p> <p>e.g. <math>6 \times 3 = 18</math>,  <math>6 \times 30 = 180</math>, <math>60 \times 3 = 180</math></p>
<p><b>7</b></p>	<p><b>Book 3, page 33, Q.4</b></p> <p>Read: <i>Fill in the missing numbers.</i></p> <p>T chooses Ps at random to give missing numbers. What is the name of the missing component? How did you calculate it? Is it connected to another question in this exercise? In what way? etc.</p> <p>Encourage Ps to use the words: 'multiplicand', 'factor', 'multiplier', 'product', 'dividend', 'divisor', 'quotient'. Class points out errors.</p> <p>(Or done as individual work, monitored, helped and reviewed.)</p> <p style="text-align: right;">40 min</p>	<p>Whole class activity</p> <p>At a good pace</p> <p>With T's and class's help</p> <p>Discussion, reasoning, agreement, praising</p> <p>(Opportunity for oral practice)</p> <p>Feedback for T</p>
<p><b>8</b></p>	<p><b>Book 3, page 33</b></p> <p>Q.5 Ps read the problems themselves, do the calculations and write the answers as a sentence in their <i>Pbs</i>.</p> <p>Review with whole class. Ps explain their solutions. Class agrees/disagrees or shows alternative methods of solution.</p> <p><i>Solutions:</i></p> <p>a) <i>Andrew has 90 football stickers, 3 times more than David. How many stickers does David have?</i></p> <p>BB: A: 90, D: <math>90 \div 3 = 30</math></p> <p>Answer: David has 30 football stickers.</p> <p>b) <i>Emma saved £30, which was 1 sixth of the amount that Vicky saved. How much did Vicky save?</i></p> <p>BB: E: <math>\text{£}30 = V \div 6</math>, V: <math>\text{£}30 \times 6 = \text{£}180</math></p> <p>Answer: Vicky saved £180.</p> <p style="text-align: right;">45 min</p>	<p>Individual work, monitored, helped</p> <p>Discussion, reasoning, agreement, checking, self-correction</p> <p>Praise any valid strategy</p> <p>e.g. <math>90 = 3 \times 30</math></p> <p>Feedback for T</p> <p>BB: 1 sixth of 30 = <math>30 \div 6</math></p> <p>(Or answers can be written on scrap paper and shown in unison before reviewing)</p>

**Bk3**

R: Addition, subtraction, multiplication, division  
 C: **Division with remainder**  
 E: *Numbers over 200*

**Lesson Plan**  
**34****Activity****1****Division by 9**

Ps have 29 counters (or coins, sticks, etc.) already on desks.

- a) Divide the 29 counters into 9 equal groups. How will you do it? (one in 1st group, 1 in 2nd group, etc.)

**A**, come and write a division about it. Who agrees? Who thinks something else? How can we check it? (multiplication)

BB:  $29c \div 9 = 3c$ , remainder 2 counters

*Check:*  $9 \times 3c + 2c = 27c + 2c = 29c$

- b) Now put the 29 counters into groups of 9 counters. How will you do it? (Count out 9 counters in 1st group, then 9 counters in 2nd group, etc.)

**B**, come and write a division about it? Is **B** correct? etc.

BB:  $29c \div 9c = 3$  times, and 2 counters remain

Repeat above with 6 (sharing 29 among 6 boxes, grouping in 6s).

- c) BB:  $29c \div 6 = 4c$ , remainder 5c

- d) BB:  $29c \div 6c = 4$  times, and 5 counters remain

*6 min***Notes**

Whole class activity

(Grouping/sharing in 9s as individual or paired work, monitored, helped)

Or Ps could use items from their collection

Initial discussion on strategy

Reasoning, agreement, checking, praising

Ps write divisions and checks in *Ex. Bks* too

Revision of two contexts for division: sharing among 9, grouping in 9s.

**2****Division by 3**

T has BB already prepared

152, 185, 122, 151, 181, 121, 150,  
120, 184, 182

Let's put these numbers in increasing order. Ps come to BB to rearrange cards, or write out again, crossing off each from original list as it is used.

BB: 120, 121, 122, 150, 151, 152, 181, 182, 184, 185

- **C**, come and draw a *red* dot above the numbers which give a remainder of 1 when divided by 3. Class points out errors.
- **D**, come and draw a *blue* triangle above the numbers which give a remainder of 2 when divided by 3. Class points out errors.

Check on BB:  $120 = 3 \times 40$ ,  $120 \div 3 = 40$

$121 = 3 \times 40 + 1$ ,  $121 \div 3 = 40, r 1$

$122 = 3 \times 40 + 2$ ,  $122 \div 3 = 40, r 2$

*12 min*

Whole class activity

Written on BB or SB or OHP or numbers written on card and stuck to BB

Class grees/disagrees. At a good pace

Agreement, checking, praising

What other numbers in the series would have a

- red dot (124, 127, 154, . .)
- blue triangle (125, 128, . . .)

**3****Remainders**

Let's put these numbers in the correct place in the table.

What is the remainder when a number is divided by 5?

BB:

141, 146, 172, 157, 163, 176, 150, 166  
144, 158, 211, 160, 155, 119, 192

Ps come out to BB to choose a number, cross of the list and write in correct column in the table, explaining reasoning. Class agrees/disagrees. If problems, check with a division on the BB.

What can you say about the numbers 150, 155, 160? (multiples of 5, divisible by 5, no remainder when divided by 5)

Elicit that any number with a zero or 5 as units digit is divisible by 5.

*16 min*

Whole class activity

Drawn on BB or use enlarged copy master or OHP

At a good pace




BB:

Remainder when divided by 5			
1	2	3	4
141	172	163	144
146	157	158	119
176	192		
166			
211			

Agreement, praising

<b>Bk3</b>		<i>Lesson Plan 34</i>																																								
<p><b>Activity</b></p> <p><b>4</b></p>	<p><b>Problem</b></p> <p>Listen carefully to this problem. I will read it twice. When I read it the second time, write down the data in your <i>Ex. Bks.</i></p> <p>Write a plan and do the calculation. Show me the answer when I say.</p> <p><i>Eve had £1.95 in her purse. She paid her bus fare with nine 20 p coins. How much money did she have left?</i></p> <p>Show me . . . now! <b>(15 p)</b></p> <p><b>X</b>, how did you get your answer? Who agrees? etc.</p> <p>BB: <i>Plan:</i> Had: £1.95 = 195 p Spent: <math>9 \times 20</math> p  <i>Calculation:</i> <math>195 - 9 \times 20 = 195 - 180 = \underline{15}</math></p> <p><i>Answer:</i> Eve had 15 p left.</p> <p style="text-align: right;"><i>20 min</i></p>	<p><b>Notes</b></p> <p>Individual work, monitored</p> <p>(with number cards or written on scrap paper)</p> <p>P repeats in own words</p> <p>In unison</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p>																																								
<p><b>5</b></p>	<p><b>Book 3, page 34</b></p> <p>Q.1 Read: <i>Pack these apples in boxes of 9. How many boxes will be filled and how many apples will remain?</i></p> <p>Ps count the apples, circle them in groups of 9, write a division about it and check with a multiplication.</p> <p>Review at BB with whole class. <b>Y</b>, how many boxes did you fill? How many apples were left over? Who agrees? Who thinks something else? etc. Mistakes corrected.</p> <p>BB: <math>34 \text{ a} \div 9 \text{ a} = 3 \text{ (times), remainder } 7 \text{ a}</math>  <i>Check:</i> <math>3 \times 9 \text{ a} + 7 \text{ a} = 27 \text{ a} + 7 \text{ a} = 34 \text{ a}</math></p> <p style="text-align: right;"><i>25 min</i></p>	<p>Individual work, monitored</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, reasoning, agreement, checking, self-correction</p> <p>('a' written instead of 'apples')</p> <p>Feedback for T</p> <p>Praising</p>																																								
<p><b>6</b></p>	<p><b>Book 3, page 34</b></p> <p>Q.2 Read: <i>Exchange the £1 coins for £10 notes. How many £1 coins will remain? Complete the table.</i></p> <p>Do first column on BB with whole class if necessary. Ps may write details of calculations in <i>Ex. Bks.</i> if necessary.</p> <p>Review at BB with whole class. Mistakes corrected.</p> <p><i>Solution:</i></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Number of:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>⊕ coins</td> <td>46</td> <td>75</td> <td>100</td> <td>107</td> <td>140</td> <td>63</td> <td>121</td> <td>159</td> <td></td> </tr> <tr> <td>⊕ notes</td> <td>4</td> <td>7</td> <td>10</td> <td>10</td> <td>14</td> <td>6</td> <td>12</td> <td>15</td> <td></td> </tr> <tr> <td>£s remaining</td> <td>6</td> <td>5</td> <td>0</td> <td>7</td> <td>0</td> <td>3</td> <td>1</td> <td>9</td> <td></td> </tr> </table> <p style="text-align: right;"><i>30 min</i></p>	Number of:										⊕ coins	46	75	100	107	140	63	121	159		⊕ notes	4	7	10	10	14	6	12	15		£s remaining	6	5	0	7	0	3	1	9		<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> <p>Feedback for T</p>
Number of:																																										
⊕ coins	46	75	100	107	140	63	121	159																																		
⊕ notes	4	7	10	10	14	6	12	15																																		
£s remaining	6	5	0	7	0	3	1	9																																		
<p><b>7</b></p>	<p><b>Written exercises</b></p> <p>T says a division, Ps write it in <i>Ex. Bks.</i> Ps calculate result and check with multiplication. Mistakes corrected.</p> <p>a) <math>34 \div 5 = (6, r 4)</math>    b) <math>47 \div 9 = (5, r 2)</math>    c) <math>34 \div 6 = (5, r 4)</math>  <math>6 \times 5 + 4 = 34</math>            <math>5 \times 9 + 2 = 47</math>            <math>5 \times 6 + 4 = 34</math></p> <p>d) <math>45 \div 9 = (5)</math>            e) <math>130 \div 20 = (6, r 10)</math>    f) <math>250 \div 25 = (10)</math>  <math>5 \times 9 = 45</math>                <math>6 \times 20 + 10 = 130</math>        <math>10 \times 25 = 250</math></p> <p>Review at BB with whole class. Mistakes corrected.</p> <p style="text-align: right;"><i>35 min</i></p>	<p>Individual work, monitored (helped)</p> <p>T has BB/SB or OHP already prepared but not shown until review of answers</p> <p>Reasoning, agreement, self-correction, praising</p> <p>(Or done as a whole class activity)</p>																																								

**Bk3***Lesson Plan 34*

<b>Activity</b>		<b>Notes</b>																											
<p><b>8</b></p>	<p><b>Book 3, page 34</b></p> <p>Q.3 Read: <i>Practise division. Check with multiplication.</i></p> <p>Do part a) on BB with whole class first only if necessary. Review at BB with whole class Mistakes corrected.</p> <p><i>Solution:</i></p> <p>a) <math>19 \div 2 = (9, r 1)</math>      b) <math>25 \div 6 = (4, r 1)</math>  <math>9 \times 2 + 1 = 19</math>              <math>4 \times 6 + 1 = 25</math></p> <p>c) <math>30 \div 9 = (3, r 3)</math>      d) <math>27 \div 5 = (5, r 2)</math>  <math>3 \times 9 + 3 = 30</math>              <math>5 \times 5 + 2 = 27</math></p> <p>e) <math>53 \div 6 = (8, r 5)</math>      f) <math>134 \div 20 = (6, r 14)</math>  <math>8 \times 6 + 5 = 53</math>              <math>6 \times 20 + 14 = 134</math></p> <p>What is the greatest whole number you can have as a remainder when dividing by 2 (4, 7, 10, 19, 27, 69, etc.)? (1, 3, 6, 9, . . .) Why? (Because if the remainder was 1 more, there would be enough to make another group of 2 (4, 7, . . .))</p> <p style="text-align: right;"><i>40 min</i></p>	<p>Individual work, monitored (helped)</p> <p>Written on BB or SB or use enlarged copy master or OHP</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p> <p>Discussion, agreement, praising</p>																											
<p><b>9</b></p> <p><b>Extension</b></p>	<p><b>Book 3, page 34</b></p> <p>Q.4 Read: <i>Each box can hold 6 eggs. How many boxes can be filled and how many eggs will remain?</i></p> <p><i>Complete the table. Complete the rule.</i></p> <p>Talk about farmer with lots of hens collecting different numbers of eggs on different days. Why might that be? P explains to class what each row in table means. (T can show real egg-box). Do first column with whole class if necessary. Elicit that in the rule: <math>E = \text{Eggs}</math>, <math>B = \text{Boxes filled}</math> and <math>R = \text{Remaining eggs}</math> Review at BB with whole class. Mistakes corrected. Rule agreed.</p> <p><i>Solution:</i></p> <p>Number of:</p> <table border="1" data-bbox="379 1451 1058 1585"> <tbody> <tr> <td style="text-align: center;">○</td> <td style="text-align: center;"><b>30</b></td> <td style="text-align: center;"><b>45</b></td> <td style="text-align: center;"><b>50</b></td> <td style="text-align: center;"><b>121</b></td> <td style="text-align: center;"><b>185</b></td> <td style="text-align: center;">123</td> <td style="text-align: center;">182</td> <td style="text-align: center;">70</td> </tr> <tr> <td style="text-align: center;"> filled</td> <td style="text-align: center;">5</td> <td style="text-align: center;">7</td> <td style="text-align: center;">8</td> <td style="text-align: center;">20</td> <td style="text-align: center;">30</td> <td style="text-align: center;"><b>20</b></td> <td style="text-align: center;"><b>30</b></td> <td style="text-align: center;"><b>11</b></td> </tr> <tr> <td style="text-align: center;">○ remaining</td> <td style="text-align: center;">0</td> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> <td style="text-align: center;">5</td> <td style="text-align: center;"><b>3</b></td> <td style="text-align: center;"><b>2</b></td> <td style="text-align: center;"><b>4</b></td> </tr> </tbody> </table> <p>Who can write the rule in another way? Who agrees? Who thinks something else? etc.</p> <p style="text-align: right;"><i>45 min</i></p>	○	<b>30</b>	<b>45</b>	<b>50</b>	<b>121</b>	<b>185</b>	123	182	70	 filled	5	7	8	20	30	<b>20</b>	<b>30</b>	<b>11</b>	○ remaining	0	3	2	1	5	<b>3</b>	<b>2</b>	<b>4</b>	<p>Individual work, monitored (helped)</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Initial discussion about context</p> <p>Ps can write details of difficult calculations at bottom of page in <i>Pbs</i> if necessary.</p> <p>e.g. <math>185 = 30 \times 6 + 5</math>  <math>70 = 11 \times 6 + 4</math></p> <p>Reasoning, agreement, self-correction, praising</p> <p><i>Rule:</i> <math>E = B \times 6 + R</math></p> <p><math>[B = (E - R) \div 6</math>  <math>R = E - B \times 6]</math></p>
○	<b>30</b>	<b>45</b>	<b>50</b>	<b>121</b>	<b>185</b>	123	182	70																					
 filled	5	7	8	20	30	<b>20</b>	<b>30</b>	<b>11</b>																					
○ remaining	0	3	2	1	5	<b>3</b>	<b>2</b>	<b>4</b>																					

**Bk3**

R: Mental calculation  
 C: **Adding, subtracting 1-digit numbers**  
 E: *Problems in context*

**Lesson Plan**  
**35****Activity****1****Jumps along the number line**

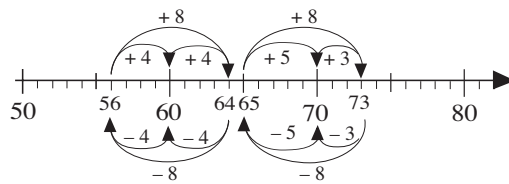
Study these jumps along the number line. Who can write an operation about them? Ps come out to label the start and end numbers for each jump, then to write additions about them. Who agrees? etc.

If the arrows pointed in the opposite direction, what would the operations be? Ps come out to write subtractions and show the jumps along the number line in the opposite direction.

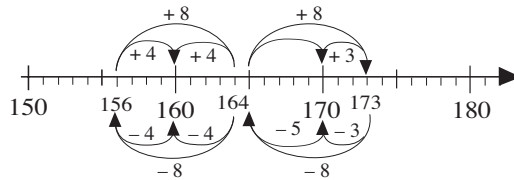
Repeat for  $65 + 8 = 73$  and  $165 + 8 = 173$ .

BB:

a)



b)



What do you notice about the two segments of the number line?  
 (Numbers in lower one are 100 more but adding/subtracting is similar.)

7 min

**Notes**

Whole class activity

Use class number line or enlarged copy master or OHP

Ps say the operations too

Discussion, reasoning, agreement, praising

BB:

a)

$$56 + 8 = 56 + 4 + 4 = 64$$

$$64 - 8 = 64 - 4 - 4 = 56$$

$$65 + 8 = 65 + 5 + 3 = 73$$

$$73 - 8 = 73 - 3 - 5 = 65$$

b)

$$156 + 8 = 156 + 4 + 4 = 164$$

$$164 - 8 = 164 - 4 - 4 = 156$$

$$165 + 8 = 165 + 5 + 3 = 173$$

$$173 - 8 = 173 - 3 - 5 = 165$$

Agreement, praising

**2****Sequences**

The first term of a sequence is 102. Add 6, then 7, then 6, then 7 and so on. Let's say the sequence.

Ps: 102, 108, 115, 121, 128, 134, 141, 147, 154, 160, 167, 173, 180, ...

10 min

Whole class activity

At speed round class

If P makes a mistake, next P corrects it. Praising only

**3****Book 3, page 35**

Q.1 Read: *Write additions and subtractions about the pictures.*

Talk about the pictures first: how much is in each piggy bank and how much has still to be put in.

Ps write additions and subtractions in *Pbs*.

Review at BB with whole class. Ps come out to BB or dictate to T what to write. Class agrees/disagrees.

*Solution:*

a)  $146 \text{ p} + 4 \text{ p} = 150 \text{ p}$  (£1.50),  $150 \text{ p} - 4 \text{ p} = 146 \text{ p}$  (£1.46)

b)  $168 \text{ p} + 7 \text{ p} = 175 \text{ p}$  (£1.75),  $175 \text{ p} - 7 \text{ p} = 168 \text{ p}$  (£1.68)

15 min

Individual work, monitored, (helped)

Use enlarged copy master or OHP

Discussion, reasoning, agreement, self-correction, praising

Elicit that  $100 \text{ p} = \text{£}1$ 

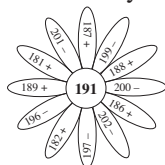
Ps write results as £s

Feedback for T

**4****Missing numbers**

Study the picture carefully. What do you think the rule might be? T asks several Ps what they think. (The sum or difference is 191.)

BB:



Ps come to BB to choose a petal and fill in the missing number, saying the complete addition or subtraction.

Class agrees/disagrees.

Who can think of another operation resulting in 191?

20 min

Whole class activity

Use enlarged copy master or OHP

Initial discussion on rule

At a good pace

Reasoning, agreement, praising

Encourage creativity

<b>Bk3</b>		<i>Lesson Plan 35</i>
<p><b>Activity</b></p> <p><b>5</b></p>	<p><b>Missing signs</b></p> <p>What is missing from these statements? (signs) Let's fill in the correct sign between the two sides.</p> <p>BB: a) <math>150 - 7 \overset{143}{&lt;} 172 - 9 \overset{163}</math></p> <p>b) <math>146 - 8 \overset{138}{=} 131 + 7 \overset{138}</math></p> <p>c) <math>137 + 6 \overset{143}{=} 152 - 9 \overset{143}</math></p> <p>d) <math>123 + 9 \overset{132}{&gt;} 140 - 9 \overset{131}</math></p> <p>What should we do first? (Do calculation on each side.)</p> <p>Ps come out to BB in threes, two to write results above each side of statement and 3rd to fill in sign.</p> <p>Are they correct? Who thinks something else? etc.</p> <p>Let's read the completed statement (inequalities from left to right and from right to left).</p> <p style="text-align: right;"><i>25 min</i></p>	<p><b>Notes</b></p> <p>Whole class activity</p> <p>Written on BB or SB or use enlarged copy master or OHP</p> <p>At a good pace</p> <p>Reasoning, agreement, checking, praising</p> <p>Ps show on class number line as a check.</p> <p>In unison. Praising</p>
<p><b>6</b></p>	<p><b>Missing numbers</b></p> <p>Study these equations. What number can we write in the boxes to make them true?</p> <p>BB: a) <math>197 - 5 + 7 - 2 = 203 - \boxed{6} \quad (197)</math></p> <p>b) <math>138 - 9 - 2 + 3 = 137 - \boxed{7} \quad (130)</math></p> <p>c) <math>124 + 10 - 7 - 3 = 119 + \boxed{5} \quad (124)</math></p> <p>d) <math>132 - 6 - 2 + 4 = \boxed{9} + 119 \quad (128)</math></p> <p>What should we do first? (Calculate value of complete side.)</p> <p>Ps come to BB in pairs, one to write result above given side and the other to fill in missing number. Class points out errors.</p> <p>If problems, Ps show numbers on class number line.</p> <p style="text-align: right;"><i>30 min</i></p>	<p>Whole class activity</p> <p>T has BB or SB or OHP already prepared</p> <p>At a good pace</p> <p>Note that, e.g. in c): <math>10 - 7 - 3 = 0</math></p> <p>Reasoning, agreement, praising</p>
<p><b>7</b></p>	<p><b>Book 3, page 35</b></p> <p>Q.2 Read: <i>Calculate the sums and differences.</i></p> <p>Elicit that there are <math>4 \times 3 = 12</math> calculations (6 additions and 6 subtractions). Let's see how many you can do in 3 minutes! Start . . . now! . . . Stop!</p> <p>Review orally with whole class. Ps change pencils and mark/correct mistakes. Write difficult calculations on BB.</p> <p>Who had all 12 correct? Who made a mistake? What kind of mistake? etc.</p> <p>Who notices a connection between some of them? (similar pairs, e.g. <math>94 + 8</math> and <math>135 + 8</math>; <math>102 - 5</math> and <math>182 - 5</math>; etc.)</p> <p style="text-align: right;"><i>35 min</i></p>	<p>Individual work, monitored, helped</p> <p>Discussion, reasoning, agreement, self-correction, evaluation, praising</p> <p>Extra praise if Ps notice by themselves</p>
<p><b>8</b></p>	<p><b>Book 3, page 35</b></p> <p>Q.3 Read: <i>Practise calculation.</i></p> <p>Revise order of operations. Ps can write results above interim calculations if it will help them.</p> <p>Review at BB with whole class. Mistakes corrected.</p> <p>Who had them all correct? Who made 1 (2, 3, more than 3) mistakes? What kind of mistake, etc.</p> <p>Ps point out similarities and connections.</p> <p style="text-align: right;"><i>30 min</i></p>	<p>Individual work, monitored, helped</p> <p>Agreement, self-correction, praising, awards given.</p> <p><i>Solution:</i></p> <p>a) 130, 160, 170</p> <p>b) 174, 103, 13</p> <p>c) 104, 204, 204</p> <p>d) 18, 118, 18</p>



<b>Bk3</b>		<i>Lesson Plan 35</i>
<b>Activity</b> <b>9</b>	<p><b>Book 3, page 35</b></p> <p>Q.4 Read: <i>Write a plan, do the calculation, check the answer and write it as a sentence.</i></p> <p>Revise standard units of measure. (length, mass, capacity)</p> <p>Deal with one problem at a time. Ps read problem and solve in Pbs. Review with whole class. Mistakes corrected.</p> <p>a) <i>Peter is 1 m 34 cm tall and Sarah is 8 cm taller. How tall is Sarah?</i></p> <p><i>Plan:</i> Peter: 1 m 34 cm Sarah: 1 m 34 cm + 8 cm</p> <p><i>Calculation:</i> 1 m 34 cm + 8 cm = <u>1 m 42 cm</u></p> <p><i>Check:</i> 1 m 42 cm – 8 cm = 1 m 34 cm</p> <p><i>Answer:</i> Sarah is 1 m 42 cm tall.</p> <p>b) <i>A shop had 126 kg of apples in stock. This was 9 kg more than the amount of grapes in stock. How many kg of grapes were in the shop?</i></p> <p><i>Plan:</i> Apples: 126 kg; Grapes: 126 kg – 9 kg</p> <p><i>Calculation:</i> 126 kg – 9 kg = (126 – 9) kg = <u>117 kg</u></p> <p><i>Check:</i> 117 kg + 9 kg = 126 kg</p> <p><i>Answer:</i> 117 kg of grapes were in the shop.</p> <p>c) <i>There was 1 litre 50 cl of water in a jug. Another 50 cl of water was poured into the jug. How much water was in the jug then?</i></p> <p><i>Plan:</i> At first: 1 litre 50 cl Added: 50 cl</p> <p><i>Calculation:</i> 1 litre 50 cl + 50 cl = 2 litres  or 1 and a half litres + half a litre = 2 litres</p> <p><i>Check:</i> 2 litres – 50 cl = 1 litre 50 cl</p> <p><i>Answer:</i> There was then 2 litres of water in the jug.</p> <p>(Elicit that capacity of jug needs to be at least 2 litres, otherwise water would overflow!)</p> <p style="text-align: right;"><i>45 min</i></p>	<p style="text-align: center;"><b>Notes</b></p> <p>Individual work, monitored, helped</p> <p>BB: 1 m = 100 cm  1 kg = 1000 g  1 litre = 100 cl</p> <p>Reasoning, checking, agreement, self-correction, praising</p> <p>or 134 cm + 8 cm = 140 cm  or 134 cm &lt; 140 cm  8 cm</p> <p>or 126 kg &gt; 117 kg  9 kg</p> <p>(= 1 litre + 1 litre)</p> <p>or 150 cl &lt; 200 cl  50 cl</p> <p>Extra praise if Ps think of this by themselves.</p>

<h1>Bk3</h1>	<p>R: Mental calculation  C: <b>Multiplication and division (by 4, 8, 7) up to 200</b>  E: <i>Problems in context</i></p>	<h2 style="text-align: center;">Lesson Plan 36</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 but I can answer only 'yes' or 'no'.</p> <p>e.g. <u>151</u>: Is it 2-digit? (No) Is it 3-digit? (Yes) Is it even? (No)  Is its hundreds digit more than 1? (No) Is it less than 150? (No)  Is it more than 175? (No) Is its tens digit more than 5? (No) Is it less than 155? (Yes) Are its hundreds and units digits the same? (Yes) It is <u>151</u>. (Yes)</p> <p>If Ps deduce it quickly, repeat for another number. (Ps' choice)</p> <p style="text-align: right;"><i>5 min</i></p>	<p style="text-align: center;"><b>Notes</b></p> <p>Whole class activity</p> <p>Encourage Ps to ask logical questions and keep in mind clues already given.</p> <p>Encourage different types of questions.</p> <p>Praise creativity</p> <p>P can answer the questions</p>																																																								
<p><b>2</b></p>	<p><b>Multiplication (2, 4, 8)</b></p> <p>Study this table. Who can explain to us what we have to do?</p> <p>(2nd row: multiply numbers in top row by 2;  3rd row: multiply numbers in top row by 4;  4th row: multiply numbers in top row by 8)</p> <p>T chooses Ps and squares at random. P dictates what T should write, saying the complete multiplication. Class points out errors.</p> <p>Ps use easier products to help with difficult numbers.  (e.g. <math>8 \times 15 = 8 \times 10 + 8 \times 5 = 80 + 40 = 120</math>;) )</p> <p><i>Solution:</i></p> <table border="1" data-bbox="438 1055 963 1205"> <tr> <td>×</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>15</td><td>20</td> </tr> <tr> <td>2</td><td>0</td><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td><td>12</td><td>14</td><td>16</td><td>18</td><td>20</td><td>30</td><td>40</td> </tr> <tr> <td>4</td><td>0</td><td>4</td><td>8</td><td>12</td><td>16</td><td>20</td><td>24</td><td>28</td><td>32</td><td>36</td><td>40</td><td>60</td><td>80</td> </tr> <tr> <td>8</td><td>0</td><td>8</td><td>16</td><td>24</td><td>32</td><td>40</td><td>48</td><td>56</td><td>64</td><td>72</td><td>80</td><td>120</td><td>160</td> </tr> </table> <p>What else do you notice about the rows? (e.g. the numbers in the row of 8s are 4 times more than those in the row of 2s and 2 times more than those in the row of 4s; the numbers in the row of 4s are 2 times those in the row of 2s)</p> <p>T says multiplications and divisions from the table. Ps give product or quotient, using the table to help them if necessary.</p> <p style="text-align: right;"><i>10 min</i></p>	×	0	1	2	3	4	5	6	7	8	9	10	15	20	2	0	2	4	6	8	10	12	14	16	18	20	30	40	4	0	4	8	12	16	20	24	28	32	36	40	60	80	8	0	8	16	24	32	40	48	56	64	72	80	120	160	<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, praising</p> <p>Leave last 2 columns until the end.</p> <p>Agreement, praising</p> <p>Orally round class at speed</p> <p>Ps can ask questions too.</p>
×	0	1	2	3	4	5	6	7	8	9	10	15	20																																													
2	0	2	4	6	8	10	12	14	16	18	20	30	40																																													
4	0	4	8	12	16	20	24	28	32	36	40	60	80																																													
8	0	8	16	24	32	40	48	56	64	72	80	120	160																																													
<p><b>3</b></p>	<p><b>Book 3, page 36</b></p> <p>Q.1 Read: <i>Write operations about the picture.</i></p> <p>Elicit that there are 13 shapes, each made from 7 squares, so <math>7 \times 13 = 7 \times 10 + 7 \times 3 = 70 + 21 = 91</math> squares altogether</p> <p>Review at BB with whole class. A, come and show us what you wrote. Who did the same? Who wrote something else?</p> <p>Accept additions, subtractions, multiplications and divisions.</p> <p>e.g. <math>7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 = 91</math>  <math>91 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 = 0</math>  <math>7 \times 13 = 13 \times 7 = 91</math>; <math>91 \div 7 = 13</math>, <math>91 \div 13 = 7</math></p> <p>Let's complete the multiplication table of 7.</p> <p>BB:</p> <table border="1" data-bbox="456 1951 1018 2029"> <tr> <td>×</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>15</td><td>20</td> </tr> <tr> <td>7</td><td>0</td><td>7</td><td>14</td><td>21</td><td>28</td><td>35</td><td>42</td><td>49</td><td>56</td><td>63</td><td>70</td><td>105</td><td>140</td> </tr> </table> <p>T asks multiplications and divisions from the table.</p> <p style="text-align: right;"><i>16 min</i></p>	×	0	1	2	3	4	5	6	7	8	9	10	15	20	7	0	7	14	21	28	35	42	49	56	63	70	105	140	<p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Deal with all responses.  Reasoning, agreement, self-correcting, praising</p> <p>Whole class activity</p> <p>Ps dictate products to T</p> <p>BB: <math>7 \times 15 = 7 \times 10 + 7 \times 5 = 70 + 35 = 105</math></p> <p>T chooses Ps at random.  At speed. Praising</p>																												
×	0	1	2	3	4	5	6	7	8	9	10	15	20																																													
7	0	7	14	21	28	35	42	49	56	63	70	105	140																																													

<b>Bk3</b>		<i>Lesson Plan 36</i>																																																												
<p><b>Activity</b></p> <p><b>4</b></p>	<p><i>Book 3, page 36</i></p> <p>Q.2 Read: <i>Complete the table.</i></p> <p>What do you notice about this table? (Columns could be inserted after '10' in previous table. Columns for 15 and 20 have already been done on BB.)</p> <p>Remind Ps about easy ways of calculating using known products, e.g. <math>8 \times 19 = 8 \times 10 + 8 \times 9 = 80 + 72 = 152</math> (or <math>8 \times 19 = 8 \times 20 - 8 \times 1 = 160 - 8 = 152</math>)</p> <p>Let's see how much of the table you can complete in 4 minutes!</p> <p>Review at BB with whole class. Ps read out the multiples in each row in unison. Mistakes corrected. Ps explain how they obtained the difficult products. (BB)</p> <p><i>Solution:</i></p> <table border="1" data-bbox="475 775 1059 983"> <tr> <td><i>a</i></td> <td><math>\times</math></td> <td>11</td> <td>12</td> <td>13</td> <td>14</td> <td>15</td> <td>16</td> <td>17</td> <td>18</td> <td>19</td> <td>20</td> </tr> <tr> <td><i>b</i></td> <td>2</td> <td>22</td> <td>24</td> <td>26</td> <td>28</td> <td>30</td> <td>32</td> <td>34</td> <td>36</td> <td>38</td> <td>40</td> </tr> <tr> <td><i>c</i></td> <td>4</td> <td>44</td> <td>48</td> <td>52</td> <td>56</td> <td>60</td> <td>64</td> <td>68</td> <td>72</td> <td>76</td> <td>80</td> </tr> <tr> <td><i>d</i></td> <td>8</td> <td>88</td> <td>96</td> <td>104</td> <td>112</td> <td>120</td> <td>128</td> <td>136</td> <td>144</td> <td>152</td> <td>160</td> </tr> <tr> <td><i>e</i></td> <td>7</td> <td>77</td> <td>84</td> <td>91</td> <td>98</td> <td>105</td> <td>112</td> <td>119</td> <td>126</td> <td>133</td> <td>140</td> </tr> </table> <p>T asks divisions from the table. Ps use table to help them answer.</p> <p style="text-align: right;"><i>23 min</i></p>	<i>a</i>	$\times$	11	12	13	14	15	16	17	18	19	20	<i>b</i>	2	22	24	26	28	30	32	34	36	38	40	<i>c</i>	4	44	48	52	56	60	64	68	72	76	80	<i>d</i>	8	88	96	104	112	120	128	136	144	152	160	<i>e</i>	7	77	84	91	98	105	112	119	126	133	140	<p><b>Notes</b></p> <p>Individual work, monitored</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Ps can do difficult calculations in <i>Ex Bks</i></p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>Liken rows to sequences increasing by 2 (4, 8, 7)</p> <p>e.g. <math>4 \times 16 = 4 \times 2 \times 8 = 8 \times 8 = 64</math></p> <p>Label the rows <i>a, b, c, d, e</i> and discuss connections between them, e.g.</p> <p><math>2 \times b = c, \quad 4 \times b = d,</math> <math>d - e = a</math> (e.g. <math>104 - 13 = 91</math>)</p> <p>Orally, at speed round class</p>
<i>a</i>	$\times$	11	12	13	14	15	16	17	18	19	20																																																			
<i>b</i>	2	22	24	26	28	30	32	34	36	38	40																																																			
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<i>e</i>	7	77	84	91	98	105	112	119	126	133	140																																																			
<p><b>5</b></p>	<p><b>Problem 1</b></p> <p>Listen carefully to this problem. For each part, do the calculation in your <i>Ex. Bks</i> and show me the answer when I say.</p> <p><i>I have 160 sweets. How many will each child get if I share the sweets equally among:</i></p> <p>a) 2 children Show me ... now! (80) BB: <math>160 \div 2 = \underline{80}</math> Check: <math>2 \times 80 = 160</math></p> <p>b) 4 children Show me ... now! (40) BB: <math>160 \div 4 = \underline{40}</math> Check: <math>4 \times 40 = 160</math></p> <p>c) 8 children Show me ... now! (20) BB: <math>160 \div 8 = \underline{20}</math> Check: <math>8 \times 20 = 160</math></p> <p>For each part, P who answered correctly explains to Ps who did not.</p> <p style="text-align: right;"><i>26 min</i></p>	<p>Individual work in doing calculations, monitored</p> <p>Whole class review</p> <p>Ps show in unison (number cards or on scrap paper)</p> <p>Reasoning, agreement, checking, self-correction, praising</p> <p>Feedback for T</p> <p>(or e.g. <math>16 \text{ tens} \div 8 = 2 \text{ tens}</math>)</p>																																																												
<p><b>6</b></p>	<p><b>Problem 2</b></p> <p>Listen carefully to the problem and do the calculations in your <i>Ex. Bks</i>. Show me the answer when I say.</p> <p><i>I have 82 marbles. I want to put the marbles in bags so that each bag has the same number of marbles. How many bags will I need if in each bag I put:</i></p> <p>a) 4 marbles Show me ... now! (20) BB: <math>82 \div 4 = \underline{20}, r 2,</math> Check: <math>4 \times 20 + 2 = 80 + 2 = 82</math></p> <p>b) 8 marbles Show me ... now! (10) BB: <math>82 \div 8 = \underline{10}, r 2,</math> Check: <math>8 \times 10 + 2 = 80 + 2 = 82</math></p> <p>c) 7 marbles Show me ... now! (11) BB: <math>82 \div 7 = \underline{11}, r 5,</math> Check: <math>7 \times 11 + 5 = 77 + 5 = 82</math></p> <p>For each part, P who answered correctly explains to Ps who did not.</p> <p style="text-align: right;"><i>30 min</i></p>	<p>Individual work in doing calculations, monitored</p> <p>Whole class review</p> <p>Ps show in unison (number cards or on scrap paper)</p> <p>Reasoning, agreement, checking, self-correction, praising</p> <p>Feedback for T</p> <p>(Or calculations done on BB as a whole class activity)</p>																																																												

<b>Bk3</b>		<i>Lesson Plan 36</i>
<p><b>Activity</b></p> <p><b>7</b></p>	<p><b>Problems</b></p> <p>Listen carefully to these problems. I will read each one twice. When I read it the second time, write down the data in your <i>Ex. Bks</i>.</p> <p>Do the calculation, check it and show me the answer when I say.</p> <p>a) <i>Ella has 8 books, 1 seventh of the number of books that Flora has. How many books does Flora have?</i></p> <p>Show me . . . now! (56)</p> <p><b>B</b>, how did you get your answer? Who agrees? etc.</p> <p>BB: E: 8 books, F: <math>7 \times 8</math> books = <u>56</u> books</p> <p><i>Answer:</i> Flora has 56 books.</p> <p>b) <i>Bob has 8 postcards and 1 eighth of them are from the USA. How many postcards are from the USA?</i></p> <p>Show me . . . now! (1)</p> <p><b>C</b>, how did you get your answer? Who agrees? etc.</p> <p>BB: Postcards: 8, USA: <math>8 \text{ postcards} \div 8 = \underline{1}</math> postcard</p> <p><i>Answer:</i> 1 postcard is from the USA.</p> <p>Discuss '8' as being a fraction (1 eighth) in part a) and the total (whole) in part b). (Ps can suggest similar problems using own contexts.)</p> <p style="text-align: right;">35 min</p>	<p><b>Notes</b></p> <p>Individual work, monitored (with number cards or written on scrap paper)</p> <p>P repeats in own words</p> <p>In unison</p> <p>Reasoning, agreement, self-correction, praising</p> <p>T reads and P repeats in own words</p> <p>In unison</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p> <p>Discussion, agreement, praising</p>
<p><b>8</b></p>	<p><b>Book 3, page 36</b></p> <p>Q.3 Read: <i>Practise multiplication and division.</i></p> <p>How many calculations are there? (<math>4 \times 3 = 12</math>; 6 multiplications and 6 divisions).</p> <p>Let's see how many you can do in 3 minutes! Start . . . now! . . . Stop!</p> <p>Review orally round class. Ps change pencils. Mistakes corrected. Who had 12 (11, 10, less than 10) correct? What were your mistakes? Who did the same? etc.</p> <p>Discuss similarities and connections, e.g.</p> <ul style="list-style-type: none"> <li>• if <u>either</u> factor (or multiplicand and multiplier) is 10 times more, then the product will be 10 times more;</li> <li>• if the dividend is 10 times more, the quotient will be 10 times more;</li> <li>• if the dividend <u>and</u> the divisor are 10 times more, the quotient will stay the same.</li> </ul> <p style="text-align: right;">40 min</p>	<p>Individual work, monitored</p> <p>Keep to time limit</p> <p>Discussion, agreement, self-correction, evaluation, praising</p> <p>Feedback for T</p> <p>Encourage Ps to use the names of the components</p> <p>T consolidates with other examples if necessary</p>
<p><b>9</b></p>	<p><b>Book 3, page 36, Q.4</b></p> <p>Read: <i>Fill in the missing numbers.</i></p> <p>Elicit that there are <math>3 \times 5 = 15</math> calculations, (10 multiplications and 5 divisions). Revise how to calculate missing factors (divisors, dividends).</p> <p>Do orally, with T choosing Ps. P says the multiplication (division) and checks with the reverse operation (division, multiplication).</p> <p>e.g. <math>6 \times \underline{3} = 18</math>, because <math>18 \div 6 = 3</math>; <math>\underline{36} \div 4 = 9</math>, because <math>9 \times 4 = 36</math></p> <p>T occasionally asks Ps which number is the product (multiplicand, multiplier, dividend, divisor, quotient).</p> <p style="text-align: right;">45 min</p>	<p>Whole class activity</p> <p>Initial discussion/revision</p> <p>Differentiation by question</p> <p>At a good pace</p> <p>Encourage Ps to speak out</p> <p>Agreement, checking, praising</p> <p>Feedback for T</p> <p>(Or done as individual work)</p>

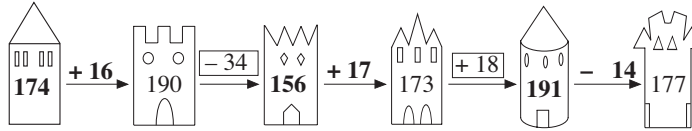
**Bk3**

R: Mental calculation  
 C: **Addition and subtraction up to 200**  
 E: *Puzzles*

**Lesson Plan  
37****Activity****1****Missing numbers**

Follow the arrows and fill in the missing numbers and signs.

BB:



Ps come out to BB to fill in missing items, explaining how they did the calculation. Class agrees/disagrees. Write difficult calculations on BB: e.g.

$$156 + 17 = 156 + 10 + 7 = 166 + 7 = \underline{173},$$

or

$$156 + 17 = 156 + 7 + 10 = 163 + 10 = \underline{173}$$

$$190 - 156 = 190 - 150 - 6 = 40 - 6 = \underline{34}$$

*5 min***Notes**

Whole class activity

Drawn on BB or use enlarged copy master or OHP

**Bold** numbers are given

At a good pace

Involve several Ps

Reasoning, agreement, praising

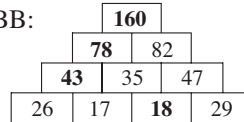
Ps read out numbers in towers in decreasing order.

'191, 190, 177, 174, 173, 156'

**2****Puzzle**

What do you think the rule of this puzzle could be? Ask several Ps what they think. (Sum of any two adjacent numbers is the number directly above them.)

BB:



Ps come out to BB to fill in numbers, explaining reasoning and writing relevant addition on BB. Class agrees/ disagrees.

BB: e.g.  $160 = 78 + \underline{82}$  or  $160 - 78 = \underline{82}$  ( $160 - 60 - 10 - 8$ )*10 min*

Whole class activity

Drawn on BB or use enlarged copy master

**Bold** numbers are given

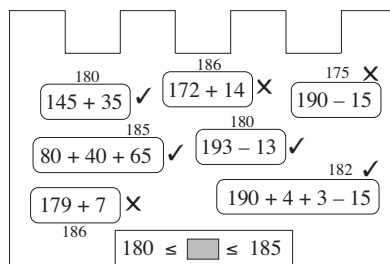
At a good pace

Reasoning, agreement, praising

**3****Inequality**

Study the diagram. Which of the cards should not be there?

BB:



Let's read the inequality, starting from the rectangle:

'the rectangle is greater than or equal to 180 and less than or equal to 185'.

A, come and point to 180 and 185 on the number line. Read out the numbers the rectangle could be. (180, 181, 182, 183, 184, 185)

Ps come to BB to remove (or cross out) cards which do not belong and check by doing calculations on BB. Class agrees or disagrees.

*15 min*

Whole class activity

Use enlarged copy master or OHP, or cards enlarged, cut out and stuck to BB

Relevant segment of number line drawn on BB

In unison

Reasoning, agreement, praising

BB:  $172 + 14 = 186 > 185$   
 $190 - 15 = 175 < 185$   
 $179 + 7 = 186 > 185$

**4****Addition**

T has BB or SB or OHP already prepared:

a)  $35 + \underline{62} = \underline{97}$     $35 + \underline{82} = \underline{117}$     $35 + \underline{85} = \underline{120}$     $35 + \underline{87} = \underline{122}$   
 b)  $24 + 53 = \underline{77}$     $24 + 93 = \underline{117}$     $24 + 96 = \underline{120}$     $24 + 98 = \underline{122}$   
 c)  $46 + 33 = \underline{79}$     $46 + 63 = \underline{109}$     $46 + 64 = \underline{110}$     $46 + 69 = \underline{115}$

Ps come to BB to fill in results, explaining how they did the calculation. Discuss relationships and similarities. Write details of calculations on BB if necessary. Show one or two on class number line.

*20 min*

Whole class activity

Encourage Ps to notice connections which make the calculations easier.

Reasoning, agreement, praising


BB:

e.g.  $35 + 87 = 35 + 7 + 80$   
 $= 42 + 80 = \underline{122}$

<b>Bk3</b>		<i>Lesson Plan 37</i>
<b>Activity</b>  <b>5</b>	<p><b>Subtraction</b></p> <p>T has BB or SB or OHP already prepared:</p> <p>a) <math>98 - 57 = \boxed{41}</math>   <math>198 - 57 = \boxed{141}</math>   <math>128 - 57 = \boxed{71}</math>   <math>125 - 57 = \boxed{68}</math>  b) <math>84 - 36 = \boxed{48}</math>   <math>184 - 36 = \boxed{148}</math>   <math>124 - 32 = \boxed{92}</math>   <math>124 - 36 = \boxed{88}</math>  c) <math>75 - 48 = \boxed{27}</math>   <math>175 - 48 = \boxed{127}</math>   <math>135 - 45 = \boxed{90}</math>   <math>135 - 48 = \boxed{87}</math></p> <p>Ps come to BB to fill in results, explaining how they did the calculation. Discuss relationships and similarities. Write details of calculations on BB if necessary. Show one or two on class number line.</p> <p style="text-align: right;"><i>25 min</i></p>	<p style="text-align: center;"><b>Notes</b></p> <p>Whole class activity</p> <p>Encourage Ps to notice connections which make the calculations easier.</p> <p>Reasoning, agreement, praising</p> <p>BB:  e.g. <math>124 - 36 = 124 - 30 - 6</math>  <math>= 94 - 6 = \underline{88}</math></p>
<b>6</b>	<p><b>Book 3, page 37</b></p> <p>Q.1 Read: <i>Write the calculations in two ways to match the arrows on the number line.</i></p> <p>Elicit that the two ways are:</p> <ol style="list-style-type: none"> <li>1) adding (subtracting) the tens first, then the units;</li> <li>2) adding (subtracting) the units first, then the tens.</li> </ol> <p>Ps read problems by themselves, then write the calculations.</p> <p>Review at BB with the whole class. Mistakes corrected.</p> <p>Ask Ps to give each answer as a sentence.</p> <p><i>Solution:</i></p> <p>a) <i>Dennis had saved £67. He was given £35 for his birthday. How much money does he have now?</i></p> <ol style="list-style-type: none"> <li>1) <math>£67 + £30 + £5 = £97 + £5 = £102</math></li> <li>2) <math>£67 + £5 + £30 = £72 + £30 = £102</math></li> </ol> <p><i>Answer:</i> Dennis now has £102.</p> <p>b) <i>Sandra had 84 p. She bought a drink for 28 p. How much money does Sandra have now?</i></p> <ol style="list-style-type: none"> <li>1) <math>84 \text{ p} - 20 \text{ p} - 8 \text{ p} = 64 \text{ p} - 8 \text{ p} = 56 \text{ p}</math></li> <li>2) <math>84 \text{ p} - 8 \text{ p} - 20 \text{ p} = 76 \text{ p} - 20 \text{ p} = 56 \text{ p}</math></li> </ol> <p><i>Answer:</i> Sandra has 56 p now.</p> <p>Which way did you think was easier? Why? (Agree that either method is correct – depends on personal choice.)</p> <p style="text-align: right;"><i>30 min</i></p>	<p>Individual work, monitored, (helped)</p> <p>Use enlarged copy master or OHP</p> <p>Discussion, agreement</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Break down calculations further if necessary.</p> <p>e.g.</p> <p>a) <math>67 + 35 = 67 + 30 + 3 + 2</math>  <math>= 97 + 3 + 2</math>  <math>= 100 + 2 = \underline{102}</math></p> <p>b) <math>84 - 28 = 84 - 20 - 4 - 4</math>  <math>= 64 - 4 - 4</math>  <math>= 60 - 4 = \underline{56}</math></p> <p>Discussion, agreement</p>
<b>7</b>	<p><b>Book 3, page 37</b></p> <p>Q.2 Do these additions and subtractions in any way you wish. Write the details in your <i>Ex. Bks</i> if you need to. Look out for connections between them to make calculating easier.</p> <p>Review orally with whole class. Ps explain how they did the calculations. Who did it a different way? Mistakes corrected.</p> <p>Write details on BB if necessary, e.g.</p> <p><math>192 - 56 = 192 - 50 - 6 = 142 - 2 - 4 = 140 - 4 = 136</math>, or  <math>192 - 50 = 142</math>, so <math>192 - 56 = 136</math> (6 more taken away so difference is 6 less)</p> <p style="text-align: right;"><i>35 min</i></p>	<p>Individual work, monitored (helped)</p> <p>Discussion, reasoning, agreement, self-correcting, praising</p> <p>Deal with all methods used and any mistakes made</p> <p>Praise all contributions</p>



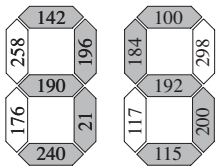
<b>Bk3</b>		<i>Lesson Plan 37</i>																									
<p><b>Activity</b></p> <p><b>8</b></p>	<p><b>Book 3, page 37</b></p> <p>Q.3 Read: The sum of any two adjacent numbers is the number directly above them.</p> <p>The numbers in the bottom row increase by 4.</p> <p>Fill in the missing numbers.</p> <p>Where should you start? (on bottom row, then work vertically)</p> <p>Review at BB with whole class. Ps come out to BB to write in their numbers, explaining reasoning. Class agrees/disagrees. Mistakes corrected.</p> <p>Compare calculation methods used.</p> <p style="text-align: right;">40 min</p>	<p><b>Notes</b></p> <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> <p><i>Solution:</i></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td></td><td></td><td>192</td><td></td><td></td></tr> <tr><td></td><td>80</td><td></td><td>112</td><td></td></tr> <tr><td></td><td>32</td><td>48</td><td>64</td><td></td></tr> <tr><td>12</td><td>20</td><td>28</td><td>36</td><td></td></tr> <tr><td>4</td><td>8</td><td>12</td><td>16</td><td>20</td></tr> </table>			192				80		112			32	48	64		12	20	28	36		4	8	12	16	20
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<p><b>9</b></p>	<p><b>Book 3, page 37, Q.4</b></p> <p>Read: Fill in the numbers missing from the magic square. The sums of the numbers in each row, column or diagonal are equal.</p> <p>Where do you think we should start? (At the diagonal which has all 4 numbers given so that we can find out what each <u>sum</u> is.)</p> <p>X, come and write the addition on the BB. Who agrees with the sum? Who thinks it should be something else? etc.</p> <p>BB: e.g. <math>5 + 35 + 65 + 95 = 95 + 5 + 65 + 35 = 100 + 100 = \underline{200}</math></p> <p>What should we do next? e.g. <math>5 + 89 + \square + 23 = 200</math></p> <p>BB: e.g. <math>200 - 5 - 89 - 23 = 195 - 90 - 22 = 105 - 22 = \underline{83}</math> or <math>200 - (5 + 89 + 23) = 200 - (94 + 23) = 200 - 117 = \underline{83}</math></p> <p>Continue in this way, with Ps coming to BB to choose a row or column and to write the calculation on the BB.</p> <p style="text-align: right;">45 min</p>	<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Ps suggest where to start and what to do next</p> <p>Reasoning, agreement, praising</p> <p>Ps suggests easy methods of doing calculations.</p> <p><i>Solution:</i></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>5</td><td>89</td><td>83</td><td>23</td></tr> <tr><td>71</td><td>35</td><td>41</td><td>53</td></tr> <tr><td>47</td><td>59</td><td>65</td><td>29</td></tr> <tr><td>77</td><td>17</td><td>11</td><td>95</td></tr> </table>	5	89	83	23	71	35	41	53	47	59	65	29	77	17	11	95									
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<h1>Bk3</h1>	R: Mental calculation C: <b>Order of operations and brackets</b> E: Numbers up to 500	<h2 style="text-align: right;">Lesson Plan 38</h2>
<b>Activity</b>  <b>1</b>	<b>Brackets 1</b> Listen carefully, picture the story in your head, then think about how you would do the calculation with, and without, brackets.  <i>Judith bought a bar of chocolate for 86 p in one shop, then went into another shop and bought a notebook for 60 p and a matching pencil for 20 p. How much did Judith spend altogether?</i>  <b>A</b> , come and write the calculation <u>with</u> brackets. BB: $86 p + (60 p + 20 p) = 86 p + 80 p = 166 p = \underline{\pounds 1.66}$  <b>B</b> , come and write the calculation <u>without</u> brackets. BB: $86 p + 60 p + 20 p = 146 p + 20 p = 166 p = \underline{\pounds 1.66}$  Are they correct? Who thinks something else? etc. What do you notice? (results are the same)  If we rub out the brackets, will it change the result? (No)  Elicit that in this calculation brackets can be removed.  <div style="text-align: right;">4 min</div>	<b>Notes</b>  Whole class activity  T repeats slowly, then Ps repeat in own words  With help of class if necessary  Reasoning, agreement, praising  (Working from left to right)  Ps write both methods in <i>Ex. Bks</i>  Discussion, agreement
<b>2</b>	<b>Brackets 2</b> Listen carefully, picture the story in your head, then think about how you would do the calculation with, and without, brackets.  <i>A shop had 235 kg of potatoes in stock. 170 kg of potatoes were sold and 3 kg went bad and had to be thrown out. How many kgs of potatoes were left in the shop?</i>  <b>C</b> , come and write the calculation <u>without</u> brackets. BB: $235 \text{ kg} - 170 \text{ kg} - 3 \text{ kg} = 65 \text{ kg} - 3 \text{ kg} = \underline{62 \text{ kg}}$  <b>D</b> , come and write the calculation <u>with</u> brackets. BB: $235 \text{ kg} - (170 \text{ kg} + 3 \text{ kg}) = 235 \text{ kg} - 173 \text{ kg} = \underline{62 \text{ kg}}$  Are they correct? Who thinks something else? etc. What do you notice? (results are the same)  If we rub out the brackets, will it change the result? (Yes)  Let's check. BB: $235 \text{ kg} - 170 \text{ kg} + 3 \text{ kg} = 65 \text{ kg} + 3 \text{ kg} = \underline{68 \text{ kg}}$  Elicit that in this calculation the brackets <u>cannot</u> be removed.  <div style="text-align: right;">8 min</div>	Whole class activity  T repeats slowly, then Ps repeat in own words  With T's help if necessary  Reasoning, agreement, praising  Ps write both methods in <i>Ex. Bks</i>  Discussion, agreement
<b>3</b>	<b>Order of operations 1</b> Let's help <i>Dizzie Dumble</i> with his calculations. Which should he do first? Ps come to BB to point to the operation(s) which should be done first and write the interim results above the signs. Class agrees/disagrees. Where relevant, discuss whether the brackets can be removed or not. BB:  a) $120 + 5 \times 20 + 6 \div 2 = 120 + 100 + 3 = \underline{223}$ (multiplication, then division) b) $(110 + 20) \times 2 = 130 \times 2 = \underline{260}$ (brackets first) c) $110 + 20 \times 2 = 110 + 40 = \underline{150}$ (multiplication first) d) $(160 - 40) \div 2 + 10 = 120 \div 2 + 10 = 60 + 10 = \underline{70}$ (brackets, then division) e) $240 - 20 + 160 = 220 + 160 = \underline{380}$ (subtraction first) f) $(240 - 20) + 160 = 220 + 160 = \underline{380}$ (brackets first, removable) g) $240 - (20 + 160) = 240 - 180 = \underline{60}$ (brackets first, <u>not</u> removable)	Whole class activity Written on BB or use enlarged copy master or OHP  Discussion, reasoning, agreement, praising  Ps can copy into <i>Ex. Bks</i>  T confirms the rules about order of operations: brackets first, then multiplication or division, otherwise work from left to right  Check whether the result is the same if brackets are removed.

13 min

<b>Bk3</b>		<i>Lesson Plan 38</i>
<p><b>Activity</b></p> <p><b>4</b></p>	<p><b>Order of operations 2</b></p> <p><i>Dizzie Doble</i> has done his homework in a hurry and has gone out to play. Let's mark what he has done!</p> <p>Ps come to BB to mark each calculation with a tick or cross and to correct mistakes, explaining reasoning. Class agrees/disagrees.</p> <p>BB:</p> <p>a) <math>120 \div 6 + 4 \times 2 - 2 = 26</math> ✓</p> <p>b) <math>120 \div 6 + 4 \times (2 - 2) = 20</math> ✓</p> <p>c) <math>[120 \div (6 + 4)] \times 2 - 2 = 22</math> ✓</p> <p>d) <math>(120 \div 6 + 4) \times 2 - 2 = 46</math> ✓</p> <p>e) <math>120 \div (6 + 4 \times 2 - 2) = 10</math> ✗</p> <p>f) <math>120 \div (6 + 4) \times (2 - 2) = 0</math> ✗</p> <p>What mark would <i>Dizzie Doble</i> have got for his homework? (4/6)</p> <p style="text-align: right;"><i>18 min</i></p>	<p><b>Notes</b></p> <p>Whole class activity</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Discussion, reasoning, agreement, praising</p> <p>T reminds Ps that if there are 2 sets of brackets, calculations in inner brackets ( ) should be done first, then calculations in outer brackets [ ], then calculations outside the brackets</p>
<p><b>5</b></p>	<p><b>Sequence competition</b></p> <p>I will say the first few terms of a sequence and you must continue it for as many terms as you can in your <i>Ex. Bks.</i> You must start and stop when I say.</p> <p>a) <b>30, 45, 60, 75</b>, (90, 105, 120, 135, 150, 165, 180, 195, 210, 225, 240, 255, 270, 285, 300, 315, 330, 345, 360, 375, 390, 405 . . .)</p> <p>b) <b>500, 470, 440, 410</b>, (380, 350, 320, 290, 260, 230, 200, 170, 140, 110, 80, 50, 20, (− 10, − 40, − 70, − 100, − 130, − 160, . . .))</p> <p>c) <b>11, 22, 33</b>, (44, 55, 66, 77, 88, 99, 110, 121, 132, 143, 154, 165, 176, 187, 198, 209, 220, 231, 242, 253, 264, 275, 286, 297, 308, . . .)</p> <p style="text-align: right;"><i>25 min</i></p>	<p>Individual work, monitored</p> <p>Review orally with the whole class:</p> <p>Ps stand up, then list the terms one after the other.</p> <p>Ps sit down if they make a mistake or reach the end of their list.</p> <p>Class applauds the winner(s). Stars (stickers, etc.) awarded</p>
<p><b>6</b></p> <p><b>Extension</b></p>	<p><b>Book 3, page 38</b></p> <p>Q.1 Read: <i>Write the calculation without brackets so that the result is the same.</i></p> <p>Ps first calculate result of given equations, then write calculations without brackets and check that result is the same.</p> <p>Review at BB with whole class. Ps come out to write their results and equations, explaining reasoning. Class points out errors. Mistakes corrected.</p> <p><i>Solution:</i></p> <p>a) <math>128 + (30 + 5) = 163 = 128 + 30 + 5</math></p> <p>b) <math>127 - (50 + 1) = 76 = 127 - 50 - 1</math></p> <p>c) <math>146 - (90 - 16) = 72 = 146 - 90 + 16</math></p> <p>d) <math>(50 - 7) \times 3 = 129 = 50 \times 3 - 7 \times 3</math></p> <p>e) <math>(160 + 8) \div 8 = 21 = 160 \div 8 + 8 \div 8</math></p> <p>Let's try the same thing with these two calculations.</p> <p>BB: f) <math>80 \div (10 - 2)</math> g) <math>48 \div (2 + 4)</math></p> <p>Elicit that in both cases, the only way to write <u>without</u> brackets is:</p> <p style="text-align: center;"><math>80 \div 8 = 10</math>                      <math>48 \div 6 = 8</math></p> <p style="text-align: right;"><i>30 min</i></p>	<p>Individual work, monitored, helped</p> <p>(or whole class activity if T thinks Ps need more help)</p> <p>T has given part of equations written on BB or SB or OHP</p> <p>Discussion, reasoning, agreement, checking, self-correcting, praising</p> <p>T points out that Ps should take care in expanding brackets where there is subtraction or division, and always check result.</p> <p>Whole class discussion</p> <p>Ps suggest what to do, then check results.</p> <p>as. <math>80 \div 10 - 80 \div 2 \neq 10</math></p> <p style="text-align: center;"><math>48 \div 2 + 48 \div 4 \neq 8</math></p>

**Bk3***Lesson Plan 38*

Activity		<b>Notes</b>
<p><b>7</b></p>	<p><b>Book 3, page 38</b></p> <p>Q.2 Read: <i>Calculate.</i></p> <p>Deal with one part at a time. Ps fill in missing results in <i>Pbs</i>. Review orally round class. Mistakes corrected.</p> <p>What do you notice about the calculations? Ps point out relationships, e.g.</p> $20 \times 6 > 20 \times (6 - 1) \text{ and } 20 \times 6 < 20 \times (6 + 2)$ $160 \div (8 \times 2) < 160 \div 8 < 160 \div (8 \div 2), \text{ etc.}$ <p style="text-align: right;">35 min</p>	<p>Individual work, monitored</p> <p>Reasoning, agreement, checking, self-correcting, praising</p> <p>Write problem calculations on BB</p> <p>Discussion. Involve several Ps</p> <p>T gives hints if nobody notices</p>
<p><b>8</b></p>	<p><b>Book 3, page 38</b></p> <p>Q.3 Read: <i>Fill in the results and colour the matching sections to find the hidden number.</i></p> <p>T explains task at BB. Ps do the calculations, check them and colour appropriate sections in the diagram.</p> <p>Show me the number you have coloured . . . now! (35)</p> <p>Ps who have responded incorrectly dictate their results. Class points out when errors are made and Ps correct them.</p> <p><i>Solution:</i></p> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <math>142 - 6 \times 7 = \boxed{100}</math>    <math>(20 + 3) \times 8 = \boxed{184}</math>  <math>(120 - 40) \times 3 = \boxed{240}</math>    <math>(140 + 7) \div 7 = \boxed{21}</math>  <math>(70 - 25 + 55) \times 2 = \boxed{200}</math>    <math>62 + 20 \times 4 = \boxed{142}</math>  <math>(30 + 8) \times 5 = \boxed{190}</math>    <math>30 \times 4 - 5 = \boxed{115}</math>  <math>(20 + 8) \times 7 = \boxed{196}</math>    <math>6 \times (30 + 2) = \boxed{192}</math> </div> </div> <p style="text-align: right;">40 min</p>	<p>Individual work, monitored, helped</p> <p>Drawn/written on BB or use enlarged copy master or OHP</p> <p>In unison (with number cards or written on scrap paper)</p> <p>Reasoning, agreement, checking, self-correcting, praising</p> <p>Write details of calculations on BB if problems</p> <p>(Or done as a whole class activity, with Ps coming to BB to calculate and colour)</p>
<p><b>9</b></p>	<p><b>Book 3, page 38, Q.4</b></p> <p>Read: <i>Write calculations in two ways, with and without brackets.</i></p> <p>Deal with one problem at a time. P reads out problem and other Ps repeat in own words. T elicits important data. Ps suggest two ways of calculating. Show details on BB. Class checks results are the same.</p> <p>a) <i>Seven children went to gather chestnuts. They gathered 56 kg. Three of the children just played and did not collect any. Share the chestnuts equally among the children who collected them. How many chestnuts will each child take home?</i></p> <p><i>Data:</i> 7 children, 3 children played, 56 kg of nuts collected</p> <p><i>Calculations:</i> 1) <math>56 \text{ kg} \div (7 - 3) = 56 \text{ kg} \div 4 = \underline{14 \text{ kg}}</math></p> <p style="padding-left: 40px;">2) <math>7 - 3 = 4; 56 \text{ kg} \div 4 = \underline{14 \text{ kg}}</math></p> <p><i>Answer:</i> 4 children will each take home 14 kg of chestnuts, and 3 children will take home no chestnuts.</p> <p>b) <i>Steve had £1 50 p. The 6 members in Steve's gang spent £1 80 p altogether on sweets. Each paid the same amount. How much did Steve have left?</i></p> <p><i>Data:</i> Steve had £1.50 = 150 p, 6 boys spent £1.80 = 180 p</p> <p><i>Calculations:</i> 1) <math>150 \text{ p} - (180 \text{ p} \div 6) = 150 \text{ p} - 30 \text{ p} = \underline{120 \text{ p}}</math></p> <p style="padding-left: 40px;">2) <math>150 \text{ p} \div 6 = 30 \text{ p}; 150 \text{ p} - 30 \text{ p} = \underline{120 \text{ p}}</math></p> <p><i>Answer:</i> Steve had £1.20 left.</p> <p style="text-align: right;">45 min</p>	<p>Whole class activity</p> <p>(or individual work if Ps wish)</p> <p>Discussion, reasoning, agreement, checking, praising</p> <p>Ps dictate to T or come out to write on BB</p> <p>Elicit that:</p> $56 \div (7 - 3) \neq 56 \div 7 - 3$ <p>BB: <math>56 \div 4 = 40 \div 4 + 16 \div 4 = 10 + 4 = \underline{14}</math></p> <p>Discuss what should be written as a comprehensive answer</p> <p>BB: £1 50 p = £1.50 = 150 p</p> <p>Elicit that, e.g.</p> $150 - (180 \div 6) = 150 - 180 \div 6$ <p>(Brackets can be removed and order of calculation will be the same)</p>

# Bk3

R: Calculation practice  
 C: **Number sequences**  
 E: Numbers up to 500

## Lesson Plan 39

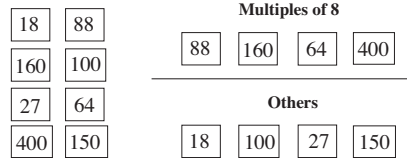
### Activity

1

#### Competition

T has numbers stuck to side of BB and BB divided by a horizontal line into two parts. Which of these numbers are multiples of 8?

BB: e.g.



T chooses 2 teams of 4 Ps each (e.g. girls v boys) and tosses a coin to decide which team chooses their heading ('Multiples of 8' or 'Others').

T says 'Start' and one P after another in each team runs to BB to choose a card and put in appropriate place. Next P must wait until previous P sits down before leaving desk. If a P from the other team recognises a mistake, they can take the card from other team's half and stick in their own.

Team with most correct numbers after 2 minutes is the winner. Rest of class checks whether numbers are correct.

5 min

### Notes

Whole class activity

(T can have another set of numbers on back of cards in case Ps are very quick and there is time for another game.)

At speed

Discussion on how to check:

e.g. 27 is an odd number,

$$100 = 80 + 20 = 80 + 16 + 4$$

$$\text{or } 100 \div 8 = 12, \text{ r}4$$

$$150 = 80 + 70 = 80 + 64 + 4$$

$$\text{or } 150 \div 8 = 18, \text{ r}6$$

so are not multiples of 8

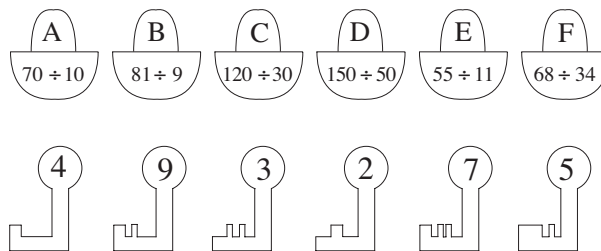
'3 cheers' for winning team

2

#### Equal values

Which key can open which padlock?

BB:



Ps come out to BB to join up keys to padlocks, explaining reasoning. Write details of problem calculations on BB. Class points out errors.

10 min

Whole class activity

Drawn on BB or use enlarged copy master or OHP (or copy master enlarged, cut out and items stuck to BB)

At a good pace

Reasoning, agreement, praising

BB: e.g.

$$150 \div 50 = 15 \text{ tens} \div 5 \text{ tens} = 3 \text{ tens} = 30$$

$$68 = 34 + 34 = 2 \times 34$$

3

#### Book 3, page 39

Q.1 Read: *Fill in the missing quantities.*

Revise standard units of length. What is the rule of the table?

(In each column, value in top row + value in bottom row = 1 m.)

Ps write missing values in table in *Pbs* and check that each column adds up to 1 metre.

Review at BB with whole class. Mistakes discussed/corrected.

*Solution:*

1 metre	30 cm	half a metre	600 mm	75 cm	8 cm	500 mm	10 cm
	70 cm	50 cm	400 mm	25 cm	92 cm	500 mm	90 cm

Who can think of other pairs of lengths which add up to 1 m?

15 min

Individual work, monitored

BB: 1 cm = 10 mm

1 m = 100 cm = 1000 mm

Table drawn on BB or use enlarged copy master or OHP

Initial discussion on rule

Reasoning, agreement, self-correction, praising

Class agrees/disagrees.

Praising

### Extension

# Bk3

## Lesson Plan 39

### Activity

4

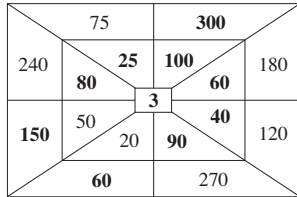
#### Puzzle

What can the rule be? Ask several Ps what they think.

*Rule:* Outer number in each segment is 3 times the inner number.

Ps come to BB to fill in a missing number, explaining reasoning. Class agrees/disagrees. Write details of problem calculations on BB.

*Solution:*



BB: e.g.

$$3 \times 80 = 80 + 80 + 80 = 240, \text{ or}$$

$$3 \times 80 = 3 \times 8 \text{ tens} = 24 \text{ tens} = 240$$

$$150 \div 3 = 15 \text{ tens} \div 3 = 5 \text{ tens} = 50 \text{ etc.}$$

20 min

### Notes

Whole class activity

Drawn on BB or use enlarged copy master or OHP

Discussion, agreement on rule

At a good pace

Reasoning, agreement, praising

Show different methods of calculation

5

#### Sequences

Let's continue this sequence in different ways. T writes on BB: 1, 2, 4, Ps suggest other ways to continue it and give the rule in each case.

T writes on BB what Ps dictate. e.g.

$$P_1: 1, 2, 4, 7, 11, 16, 22, 29, 37, 46, 56, 67, \dots$$

$$1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, \dots$$

(difference increases by 1 each time)

$$P_2: 1, 2, 4, 1, 2, 4, 1, 2, 4, \dots \quad (\text{1st 3 terms are repeated})$$

$$P_3: 1, 2, 4, 2, 1, 2, 4, 2, 1, 2, 4, 2, 1, \dots \quad (\text{pattern is repeated})$$

$$P_4: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, \dots \quad (2 \times \text{previous term})$$

etc.

25 min

Whole class activity

Ps dictate what T should write.

Discussion, agreement on rule

← difference sequence

← periodic sequences

If Ps have difficulties, T gives hints

Praise creativity

6

#### Book 3, page 39

Q.2 a) Read: *Add up the first 10 positive whole numbers.*

Quick review with whole class.

$$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = 55$$

b) Read: *Find an easier way to do the calculation, using the diagram to help you.*

Let Ps try without help for 2 minutes. Who has thought of an easy way of doing it? Ask several Ps what they think.

If nobody suggests anything anything, T demonstrates.

Show on diagram that:

$$10 + 1 = 11, 9 + 2 = 11, 8 + 3 = 11, 7 + 4 = 11, 6 + 5 = 11$$

$$\text{i.e. } 11 + 11 + 11 + 11 + 11 = 5 \times 11 = 55$$

If a P suggest using both sets of numbers, 1 to 10 and 10 to 1, then the calculations would be:

$$(1 + 10 + 2 + 9 + 3 + 8 + 4 + 7 + 5 + 6 + 6 + 5 + 7 + 4 + 8 + 3 + 9 + 2 + 10 + 1) \div 2 = (10 \times 11) \div 2 = 110 \div 2 = 55$$

(Ps could use number strips, Cuisenaire rods or multilink cubes if necessary.)

30 min

Individual work

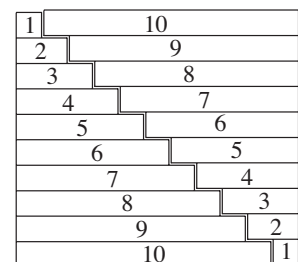
Ps explain how they did the calculation (e.g. one number after another, or combining certain numbers first)

Individual trial first, then whole class discussion


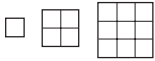
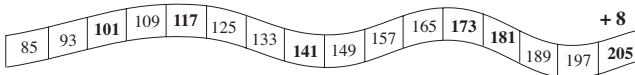
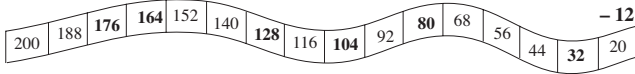
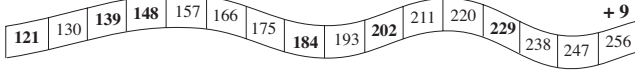
Drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, praising all ideas

BB:





<b>Bk3</b>		<i>Lesson Plan 39</i>
<p><b>Activity</b></p> <p><b>7</b></p>	<p><b>Book 3, page 39</b></p> <p>Q.3 Read: <i>Continue the sequences by writing the next 6 terms. What is the rule?</i></p> <p>Ps can do drawings in <i>Ex. Bks</i> to help them if necessary.</p> <p>Review at BB with whole class. <b>A</b>, what numbers did you write? What rule did you use? Who wrote another rule? etc.</p> <p><i>Solution:</i></p> <p>a)  1, 3, 5, 7, 9, 11, 13, 15, 17, 19, ...  <i>Rule:</i> increasing by 2, or the <u>odd</u> numbers</p> <p>b)  1, 4, 9, 16, 25, 36, 49, 64, 81, 100, ...  <i>Rule:</i> 1 × 1, 2 × 2, 3 × 3, 4 × 4, ...  or the <u>square</u> numbers</p> <p>Why do you think they are called square numbers?</p> <p style="text-align: right;">35 min</p>	<p><b>Notes</b></p> <p>Individual trial, monitored, helped</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>Ps could have cubes on desk to check whether suggested sequences are valid</p> <p>BB: <u>Square numbers</u> (product of a number × itself)</p> <p>Praising</p>
<p><b>8</b></p>	<p><b>Book 3, page 39</b></p> <p>Q.4 Read: <i>Fill in the numbers missing from the number strips.</i></p> <p>Who can tell us what we should do? (Find two adjacent terms and calculate the difference between them. Then use this to fill in the missing terms.)</p> <p>Deal with one part at a time. For each part, elicit rule, then Ps fill in numbers in <i>Pbs</i>. Review at BB with whole class.</p> <p>Deal with all mistakes. Ps say how they did the calculations.</p> <p><i>Solution:</i></p> <p>a)  + 8</p> <p>b)  - 12</p> <p>c)  + 9</p> <p>Let's continue the sequences.</p> <p style="text-align: right;">40 min</p>	<p>Individual work, monitored, helped.</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Let Ps suggest strategy for solution.</p> <p>Discussion, agreement, self-correction, praising</p> <p>Feedback for T</p> <p>(Or done as whole class activity)</p> <p>Orally at speed round class</p>
<p><b>9</b></p> <p><b>Extension</b></p>	<p><b>Book 3, page 39, Q.5</b></p> <p>Read: <i>Continue the sequences and write the rules.</i></p> <p>Deal with one part at a time. Give Ps a minute to work out the rule.</p> <p>Class stands up. Ps continue sequence orally.</p> <p>If a P makes a mistake, he/she sits down and next P says it correctly.</p> <p>a) 100, 106, 103, 109, 106, 112, 109, 115, 112, 118, 115, ...  Who can tell me the rule? (+ 6, - 3)</p> <p>b) 150, 143, 157, 150, 164, 157, 171, 164, 178, 171, 185, ...  Who can tell me the rule? (- 7, + 14)</p> <p>What would the terms be in part a) <u>before</u> the first number given?</p> <p style="text-align: right;">45 min</p>	<p>Whole class ctivity</p> <p>At a good pace</p> <p>Ps sitting down point out mistakes of those continuing</p> <p>Agreement on rules</p> <p>Orally in unison, at speed</p>

**Bk3**

R: Calculation practice  
 C: **Rounding to nearest whole 10**  
 E: Numbers up to 500

**Lesson Plan  
40****Activity****1****Rounding 1**

T has BB already prepared. Ps come to BB to fill in:

- i) the next whole numbers    ii) the next whole tens  
 less than and more than the given number. Show on number line.

BB:

- a)  $\boxed{122} < 123 < \boxed{124}$     b)  $\boxed{144} < 145 < \boxed{146}$   
 $\boxed{120} < 123 < \boxed{130}$      $\boxed{140} < 145 < \boxed{150}$   
 c)  $\boxed{178} < 179 < \boxed{180}$     d)  $\boxed{197} < 198 < \boxed{199}$   
 $\boxed{170} < 179 < \boxed{180}$      $\boxed{190} < 198 < \boxed{200}$   
 e)  $\boxed{237} < 238 < \boxed{239}$     f)  $\boxed{404} < 405 < \boxed{406}$   
 $\boxed{230} < 238 < \boxed{240}$      $\boxed{400} < 405 < \boxed{410}$

Which whole ten is nearest the number in the middle? Ps come to BB to tick the nearest 10. Discuss the case of 145. (equal distance from both tens) T tells class the rounding rule: '5' is always rounded up.

T shows Ps the sign which means 'approximately (nearly) equal to'. Who could write 123 as 'approximately equal to' 120? (BB)

Ps come to BB to write other numbers in a similar way and class reads the statements together.

*6 min***Notes**

Whole class activity  
 Written on BB or use enlarged copy master or OHP

At a good pace  
 Reasoning, agreement, checking on class number line, praising

Ps read out inequalities too

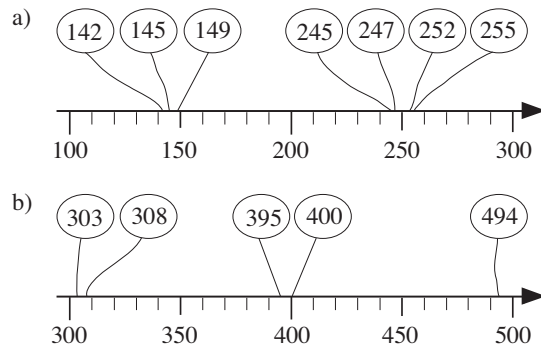
BB:  $\approx$ Rounding to nearest 10

- a)  $123 \approx 120$   
 b)  $145 \approx 150$   
 c)  $179 \approx 180$   
 d)  $198 \approx 200$   
 e)  $238 \approx 240$   
 f)  $405 \approx 410$

In unison. Praising

**2****Number line**

Where are these numbers on the number line? Ps come out to BB to join to approximate point on number line. Class agrees/disagrees.



What are the next nearest whole numbers (the nearest whole ten)?  
 How could you write it? e.g.  $143 \approx 140$ ,  $395 \approx 400$

*10 min*

Whole class activity

Drawn on BB or use enlarged copy master or OHP (or use class number line)

At a good pace

Ps find corresponding point on number line first, then join to number

Accept approximate points

Agreement, praising

BB: e.g.

$143 \approx 140$ ,  $395 \approx 400$

**3****Book 3, page 40**

Q.1 Read: *Draw a red dot at the whole ten nearest the number given.*  
 Elicit that there is a different segment of the number line in each part and that there is a 'tick' at every whole number.

Review at BB with whole class. Ps come to BB to draw dots and to write the approximation. Class agrees/disagrees.

*Solution:*

- a)  $134 \approx 130$     b)  $188 \approx 190$     c)  $253 \approx 250$ ,  
 d)  $309 \approx 310$     e)  $175 \approx 180$     f)  $246 \approx 250$

*15 min*

Individual work, monitored

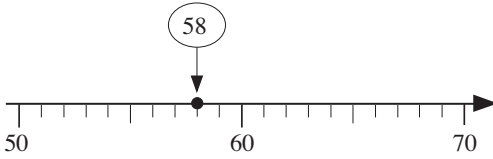
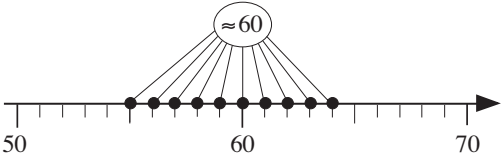
Drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

Deal with all mistakes

Remind Ps that '5' is rounded up Feedback for T

**Bk3***Lesson Plan 40*

<b>Activity</b>		<b>Notes</b>
<p><b>4</b></p>	<p><b>Exact or approximate?</b></p> <p>Listen to my statement. Stand up if you think it is an exact value. Put your hands on your heads if you think it is only approximate (nearly correct).</p> <p>a) About 400 people live in my village. Show me . . . now! (<math>\approx</math>)  b) There are 7 days in one week. Show me . . . now! (<math>=</math>)  c) This box contains at least 100 oranges. Show me . . . now! (<math>\approx</math>)  d) Bob says that his house is 400 m from the school. Show me . . . now! (<math>\approx</math>)  e) There are 24 hours in 1 day. Show me . . . now! (<math>=</math>)</p> <p>Who got all 5 (4, 3, 2, 1, 0) correct? (Ps can say a statement too!)</p> <p style="text-align: right;"><i>20 min</i></p>	<p>Whole class activity</p> <p>Have a trial first, so that Ps exactly what to do.</p> <p>Ps stand up or put hands on head in unison</p> <p>T asks some Ps to explain their responses</p> <p>Agreement on correct response</p> <p>In good humour!</p> <p>Praising</p>
<p><b>5</b></p>	<p><b>Quantities</b></p> <p>Where would these amounts of money be on the number line?</p> <p>a) <i>Pears cost 58 p per kg.</i>  Is it an exact or an approximate price? (Exact price)  Who can show me where it would be on the number line.  BB:</p>  <p>b) <i>In the market, 1 kg of apples costs about 60 p.</i>  Is it an exact price or an approximate price? (Approximate price)  Who can show me what the cost might be on the number line?  What other values could it be?  BB:</p>  <p>Discuss the case of 55 p and 65 p. (5 units round <u>up</u> to nearest 10)</p> <p style="text-align: right;"><i>25 min</i></p>	<p>Whole class activity</p> <p>Number line drawn on BB or use enlarged copy master or OHP or class number line</p> <p>As several Ps what they think P comes to number line to mark the possible value</p> <p>Class agrees/disagrees</p> <p>BB:</p> <p>a) cost = 58 p</p> <p>Ps come to number line to mark possible values</p> <p>Class agrees/disagrees</p> <p>BB:</p> <p>a) cost <math>\approx</math> 60 p,  possible values:  55 p, 56 p, 57 p, 58 p, 59 p,  60 p, 61 p, 62 p, 63 p, 64 p</p> <p>Discussion, agreement</p>
<p><b>6</b></p> <p><b>Extension</b></p>	<p><b>Book 3, page 40</b></p> <p>Q.2 Read: <i>List the whole numbers for which the nearest whole ten would be:</i></p> <p>a) 60 b) 100 c) 210</p> <p>Review at BB with whole class. Ps come out to write solutions and show on class number line. Mistakes corrected.</p> <p><i>Solution:</i></p> <p>a) 55, 56, 57, 58, 59, 60, 61, 62, 63, 64 <math>\approx</math> 60  b) 95, 96, 97, 98, 99, 100, 101, 102, 103, 104 <math>\approx</math> 100  c) 205, 206, 207, 208, 209, 210, 211, 212, 213, 214 <math>\approx</math> 210</p> <p>Discuss the case of 0. Show on class number line. Elicit that:  - 5, - 4, - 3, - 2, - 1, 0, 1, 2, 3, 4 <math>\approx</math> 0</p> <p style="text-align: right;"><i>30 min</i></p>	<p>Individual work, monitored, helped</p> <p>Discussion, agreement, checking, self-correcting, praising. Feedback for T.</p> <p>Draw appropriate segments of number line on BB if necessary</p> <p>Elicit that:  65 <math>\approx</math> 70, 105 <math>\approx</math> 110 and  215 <math>\approx</math> 220</p> <p>Extra praise if Ps suggest this without help</p>

<b>Bk3</b>		<i>Lesson Plan 40</i>
<b>Activity</b> <b>7</b>	<b>Rounding 2</b> T says a number and Ps round it to nearest ten .e.g. 123 (120), 21 (20), 106 (110), 256 (260), 358 (360), 208 (210), 400 (400), 310 (310), 296 (300), 105 (110), 455 (460), etc. Then Ps can say a number and next P rounds it to nearest 10. <p style="text-align: right;">35 min</p>	<b>Notes</b> Whole class activity T chooses Ps at random Class points out errors If problems, confirm on class number line
<b>8</b>	<b>Book 3, page 40</b> Q.3 Read: <i>Which digits can be written instead of the squares so that the nearest whole ten is 260?</i> <i>List all the possible 3-digit numbers.</i>  Review at BB with whole class. Ps come out to write solutions Class agree/disagree. If problems, check on class number line. Who had all correct? Who made a mistake? What was your mistake? Who did the same? etc. All mistakes dealt with. <i>Solution:</i> a) $\square 52 \approx 260$ (no numbers are possible) b) $\square 64 \approx 260$ (264) c) $2 \square 5 \approx 260$ (255) d) $2 \square 3 \approx 260$ (263) e) $25 \square \approx 260$ (255, 256, 257, 258, 259) d) $26 \square \approx 260$ (260, 261, 262, 263, 264) <p style="text-align: right;">40 min</p>	Individual work, monitored, helped  Discussion, agreement, checking, self-correction, evaluation, praising Feedback for T  In each case, Ps underline the digits that the square could be.  Confirm again that 5 units rounds <u>up</u> to next whole ten
<b>9</b>	<b>Book 3, page 40, Q.4</b> Read: <i>Two different numbers can be rounded to 70 as the nearest whole ten.</i> Think about what the numbers they could be. I will ask a question and you must show me if you think it is possible or impossible when I say. a) <i>Is it possible that both numbers are less than 70?</i> Show me . . . now! (Possible) <b>D</b> , tell me two possible numbers. (e.g. 65. 66) b) <i>Is it possible that one of the numbers is 10 less than the other?</i> Show me . . . now! (Impossible) <b>E</b> , why do you think so? (Smallest possible number is 65 and largest is 74, so greatest possible difference is 9) c) <i>Is it possible that one of them has 5 and the other has 0 as the units digits?</i> Show me . . . now! (Possible) <b>F</b> , tell me two possible numbers. (e.g. $\underline{65} \approx 70$ and $\underline{70} = 70$ ) d) <i>Is it possible that both numbers are whole tens?</i> Show me . . . now! (Impossible) <b>G</b> , why do you think so? (Only possible whole ten is 70, but there is no other possible <u>different</u> number) <p style="text-align: right;">45 min</p>	Whole class activity (Ps could write possible numbers at bottom of page in <i>Pbs</i> or in <i>Ex. Bks.</i> ) Ps can show with cards or stand up for 'possible' and remain seated for 'impossible' Responses given in unison  After each, Ps explain reasoning and give examples where relevant. Class agrees/disagrees  Praising, encouragement only  In good humour!  (Or as individual trial first, reviewed with whole class)