

Bk3

R: Calculation up to 1000
 C: **Measurement of capacity:** ℓ, cl, ml
 E: *Numbers up to 2000*

Lesson Plan
65

Activity

1

Revision of capacity

What is capacity? (How much liquid a container can hold)

Who can tell me the standard units we use to measure capacity? (litre, cl, ml) Which is the biggest (smallest)? (litre, ml)

Elicit that: 1 litre = 100 centilitres = 1000 millilitres (BB)

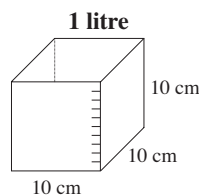
Remind Ps that 'centi' means 1 hundredth and 'milli' means 1 thousandth.

T has 4 containers on desk to show how much water is in 1 litre, 1 tenth, 1 hundredth (1 cl) and 1 thousandth (1 ml) of a litre.

1. 10 cm by 10 cm by 10 cm container (cube)

Elicit that the volume of the space inside this container is 1000 cm cubes (1000cc).

Demonstrate if necessary by filling with 10 layers of 10 rows of 10 1 cm cubes stuck together or use '10' rods from Cuisenaire.)



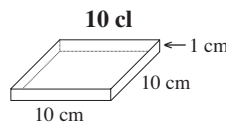
How much water do you think it can hold? (1 litre)

T demonstrates by filling cube with water, then pouring into a measuring jug.

2. 10 cm by 10 cm by 1 cm container (1 layer)

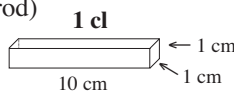
Elicit that volume of the space inside this container is 100 cm cubes (100 cc).

How much water do you think it can hold? (1 tenth of a litre or 10 cl or 100 ml) Demonstrate with cubes and water if necessary.

3. 10 cm by 1 cm by 1 cm container (1 row or rod)

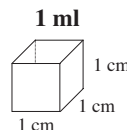
Elicit that volume of the space inside this container is 10 cm cubes (10 cc).

How much water do you think it can hold? (1 hundredth of a litre or 1 cl or 10 ml) Demonstrate with cubes and water if necessary.

4. 1 cm by 1 cm by 1 cm container (1 cm cube)

What is the volume of the space inside this container?

(1 cc) How much water can do you think it can hold? (1 thousandth of a litre or 1 ml)



T says, e.g., 1 litre (10 cl, 1 cl, 1 ml) Ps select appropriate container.

10 min

Notes

Whole class activity

T has items of different capacity on a table (e.g. litre bottles, cartons, measuring jugs, plastic medicine cups and spoons)

Already prepared from laminated card or foil and/or draw diagrams on BB or use enlarged copy master (for reference only)

(If possible, Ps have cubes and containers on desks too.)

$$1. V = 10 \text{ cm} \times 10 \text{ cm} \times 10 \text{ cm} = 1000 \text{ cm cubes (cc)}$$

$$\text{Capacity} = \underline{1 \text{ litre}}$$

T shows litre bottle/carton

$$2. V = 10 \text{ cm} \times 10 \text{ cm} \times 1 \text{ cm} = 100 \text{ cc} = 1 \text{ tenth of } 1000 \text{ cc}$$

$$\text{Capacity} = \underline{1 \text{ tenth}} \text{ of a litre} = 1 \text{ tenth of } 100 \text{ cl} = 10 \text{ cl}$$

T shows 10 cl medicine cup

$$3. V = 10 \text{ cm} \times 1 \text{ cm} \times 1 \text{ cm} = 10 \text{ cc} = 1 \text{ hundredth of } 1000 \text{ cc}$$

$$\text{Capacity} = \underline{1 \text{ hundredth}} \text{ of a litre} = 1 \text{ cl} = 10 \text{ ml}$$

T shows a 1 cl spoon

$$4. V = 1 \text{ cm} \times 1 \text{ cm} \times 1 \text{ cm} = 1 \text{ cc} = 1 \text{ thousandth of } 1000 \text{ cc}$$

T shows a 1 ml spoon.

Agreement, praising

2

Measuring capacity

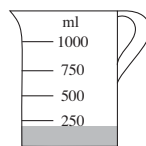
A recipe needs us to pour 20 cl of water into a pan. How could we measure this quantity? Ask several Ps for suggestions. e.g.

- Use the 10 cl (100 ml) measuring cup. Fill it to the 10 cl mark, then pour the water into the pan. Do the same again.
- Use the cl measuring jug and fill it to the 20 cl mark.

How could we use this measuring jug?

Elicit that scale is in ml and that 20 cl = 200 ml

- We can estimate the amount by filling the jug to just below the 250 ml mark.



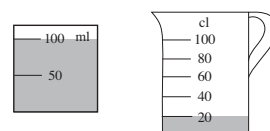
Repeat for other quantities, using available containers.

- Find approximate capacities of a cup, glass, bottle, etc. by filling with water, pouring into a measuring jug and reading the nearest mark on the scale.

20 min

Whole class activity

Ps come to T's desk to choose an appropriate measuring item, e.g.



Explanation, demonstration with T's help, agreement, praising only







Ps choose the container. Ps estimate its capacity first. Scale read with T's help

Bk3		<i>Lesson Plan 65</i>
Activity 3	Sequences T says first 3 terms of a sequence. Ps continue it in <i>Ex. Bks.</i> a) 5 cl, 20 cl, 35 cl, (50 cl, 65 cl, 80 cl, 95 cl, 110 cl, 125 cl, . . .) b) 1200 ml, 1150 cl, 1100 ml, (1050 ml, 1000 ml, 950 ml, . . .) c) 30 cl, 350 ml, 40 cl, (450 ml, 50 cl, 550 ml, 60 cl, 650 ml, . . .) T asks for the rule after each one. a) + 15 cl, b) – 40 ml, c) + 50 ml, but units given first in cl, then in ml, then in cl, etc. Underline all the quantities which are more than one 1 litre. Review orally round class. Ps change the units for each into litres and cl or litres and ml. e.g. 110 cl = 1 ℓ 10 cl; 1200 ml = 1 ℓ 200 ml Mistakes discussed and corrected. <p style="text-align: right;">25 min</p>	Notes Individual work, monitored (helped) T sets time limit for each Discussion at BB or SB or OHP Agreement, self-correction, praising a) <u>110 cl</u> , <u>125 cl</u> , . . . b) <u>1200 ml</u> , . . ., <u>1050 ml</u> c) <u>1050 ml</u> , . . .
4	Book 3, page 65 Q.1 Read: <i>Change the quantities.</i> Elicit that : 1 cl = 10 ml 1 ml = 1 tenth of a cl 10 cl = 100 ml 100 cl = 1000 ml = 1 ℓ Review orally with whole class. Mistakes discussed and corrected. Which are more than 1 litre? In what other way could you say them? <i>Solution:</i> a) 3 cl = 30 ml b) 40 ml = 4 cl 7 cl = 70 ml 320 ml = 32 cl 12 cl = 120 ml 400 ml = 40 cl 20 cl = 200 ml 1000 ml = 100 cl 105 cl = 1050 ml 1540 ml = 154 cl <p style="text-align: right;">29 min</p>	Individual work monitored, helped Agreement, self-correction, praising e.g. 105 cl = 1 ℓ 5 cl (= 1 ℓ 50 ml) 1540 ml = 1 ℓ 540 ml (= 1 ℓ 54 cl) Feedback for T
5 Extension	Book 3, page 65 Q.2 Read: <i>Follow the example. Fill in the missing quantities.</i> Do one part at a time. Who can explain the example in a)? (e.g. 10 ml = 1 cl; 45 ml = 4 × 10 ml + 5 ml = 4 cl + 5 ml) Review at BB with whole class. Mistakes discussed and corrected. Ask Ps to find quantities which can be expressed in other ways. e.g. 1999 ml = 199 cl 9 ml = 1 ℓ 99 cl 9 ml, or 1999 ml < 2 ℓ 1 ml <i>Solution:</i> a) 45 ml = 4 cl 5 ml b) 1009 ml = 100 cl 9 ml 145 ml = 14 cl 5 ml 1209 ml = 120 cl 9 ml 76 ml = 7 cl 6 ml 1054 ml = 105 cl 4 ml 376 ml = 37 cl 6 ml 1230 ml = 123 cl 999 ml = 99 cl 9 ml 1999 ml = 199 cl 9 ml <p style="text-align: right;">33 min</p>	Individual work, monitored, helped T has BB already prepared Discussion, agreement, self-correction, praising Whole class activity Ps choose a quantity and suggest alternative ways to express it. Class agrees/ disagrees. Praising, encouragement only
6	Book 3, page 65, Q3 Read: <i>An adult needs about 2 litres of water per day. Half of this amount is contained in food and other liquids.</i> T shows class a 2 litre bottle of water. Elicit that <u>1 litre</u> (half of 2 ℓ) is contained in other food/drink. Discuss what food and drink might contain water (e.g. milk, orange juice, tea, coffee, custard, sauces, gravy, stews, casseroles, etc.)	Whole class discussion involving several Ps Ask Ps to think of what they eat and drink in a day T gives hints if Ps cannot think of any.

Bk3		<i>Lesson Plan 65</i>																		
Activity	<p>Listen to the questions. Work out the answer in your <i>Pbs</i> books, then show me the result when I say. Remember to write the units too!</p> <p>a) Read: <i>If a man drinks the same amount of water 4 times per day to make up the extra, how much water should he drink each time?</i></p> <p>Show me your answer . . . now! (25 cl or 250 ml or 1 quarter of a ℓ) A, explain to us how you worked out the answer. Who agrees? Who did it a different way? etc. Mistakes discussed and corrected.</p> <p>BB: Half of 2 litres: 1 litre Litres remaining: 1 litre Amount in each drink: $1 \ell \div 4 = 100 \text{ cl} \div 4 = \underline{25 \text{ cl}}$</p> <p>b) Read: <i>How much water should he drink each time if he drinks 5 times per day?</i></p> <p>Show me your answer . . . now! (20 cl or 200 ml or 1 fifth of a ℓ) B, explain to us how you worked out the answer. Who agrees? Who did it a different way? etc. Mistakes discussed and corrected.</p> <p>BB: Amount in each drink: $1 \ell \div 5 = 100 \text{ cl} \div 5 = \underline{20 \text{ cl}}$</p> <p style="text-align: right;">37 min</p>	<p style="text-align: center;">Notes</p> <p>Individual work in <i>Pbs</i> Responses shown on scrap paper or plastic 'slates' T or P reads question. Another P repeats in own words. In unison Reasoning, agreement, self-correcting, praising or $1 \ell \div 4 = 1 \text{ quarter of a } \ell$ or $1000 \text{ ml} \div 4 = 250 \text{ ml}$</p> <p>T or P reads question. Another P repeats it. In unison Reasoning, agreement, self-correcting, praising or $1 \ell \div 5 = 1 \text{ fifth of a } \ell$ or $1000 \text{ ml} \div 5 = 200 \text{ ml}$</p>																		
7	<p>Book 3, page 65, Q4</p> <p>Read: <i>Sue and Jane share 2 litres of orange juice between them. Complete the table.</i></p> <p>Who can explain what the table means? (Top row is amount of juice that Sue drinks, bottom row is amount that Jane drinks.)</p> <p>Ps come out to choose a column and fill in the missing quantity, explaining reasoning. Class agrees/disagrees.</p> <p>Which column in the table shows how they shared the juice <u>equally</u>? (S: 1 litre, J: 1 litre)</p> <p>Who can write the rule? Who agrees? Who can write it another way?</p> <p><i>Solution:</i></p> <table border="1"> <tbody> <tr> <td>S</td> <td>1 litre</td> <td>half a litre</td> <td>130 cl</td> <td>70 ml</td> <td>1170 ml</td> <td>115 cl</td> <td>600 ml</td> <td>0 cl</td> </tr> <tr> <td>J</td> <td>1 litre</td> <td>1 and a half litres</td> <td>70 cl</td> <td>1930 ml</td> <td>830 ml</td> <td>85 cl</td> <td>1400 ml</td> <td>200 cl</td> </tr> </tbody> </table> <p><i>Rule: $S = 2 \text{ litres} - J$, $J = 2 \text{ litres} - S$, $S + J = 2 \text{ litres}$</i></p> <p>Extension Think of other ways to express the quantities in each column. (e.g. 50 cl + 150 cl, 7 cl + 193 cl, 1 ℓ 17 cl + 83 cl, 2 litres + 0, etc.)</p> <p style="text-align: right;">42 min</p>	S	1 litre	half a litre	130 cl	70 ml	1170 ml	115 cl	600 ml	0 cl	J	1 litre	1 and a half litres	70 cl	1930 ml	830 ml	85 cl	1400 ml	200 cl	<p>Whole class activity Drawn on BB or use enlarged copy master or OHP Discussion, reasoning, agreement, praising At a good pace</p> <p>(Or done as individual work, reviewed with whole class)</p> <p>Ps could also suggest other columns to add to table.</p>
S	1 litre	half a litre	130 cl	70 ml	1170 ml	115 cl	600 ml	0 cl												
J	1 litre	1 and a half litres	70 cl	1930 ml	830 ml	85 cl	1400 ml	200 cl												
8	<p>Rounding quantities</p> <p>a) T says a quantity in cl. Ps round it to the nearest litre. (e.g. T: 180 cl, P: 2 litres; T: 225 cl, P: 2 litres, etc.)</p> <p>b) T says a quantity in ml. Ps round it to the nearest cl. (e.g. T: 1577 ml, P: 158 cl; T: 121 ml, P: 12 cl, etc.)</p> <p>If problems, write on BB as, e.g., $\underline{2 \text{ litres}} < 225 \text{ cl} < 3 \text{ litres}$ <small>25 cl</small> <small>75 cl</small></p> <p>so 225 cl is nearer 2 litres than 3 litres.</p> <p style="text-align: right;">45 min</p>	<p>Whole class activity At speed round class Ps can suggest quantities to be rounded too. Praising, encouragement only In good humour!</p>																		

<h1>Bk3</h1>	<p>R: Mental calculation C: Estimating, changing, rounding measures of capacity E: <i>Numbers up to 2000. Decimal notation.</i></p>	<h2 style="text-align: center;">Lesson Plan 66</h2>																																																												
<p>Activity</p> <p style="text-align: center;">1</p>	<p>Estimating capacity</p> <p>T has various containers on desk at front of class. (e.g. cups, glasses, jugs, vases, etc.), a bucket of water and measuring cups, jugs, etc. for 1 litre, 10 cl, 1 cl (1 pint, half a pint).</p> <p>Ps come to front of class to choose a container, estimate its capacity, then choose an appropriate unit to measure it (with T's help).</p> <p style="text-align: right;">5 min</p>	<p style="text-align: center;">Notes</p> <p>Whole class activity At a good pace Show that 1 pint < 1 litre Class applauds close estimates.</p>																																																												
<p style="text-align: center;">2</p>	<p>Decimal notation</p> <p>T has a 1 and a half litre bottle to show to class. A, come and write on the BB the capacity written on the bottle.</p> <p>We read it as 'one point five litres'. Who knows what it means? (It means 1 litre and 5 tenths of a litre.) Let's show it in a place value table. Ps suggest where the digits should be written.</p> <p>BB:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Tens</th> <th>Units</th> <th>tenths</th> <th>hundredths</th> <th></th> </tr> <tr> <td></td> <td>1</td> <td>5</td> <td>(0)</td> <td>litres</td> </tr> </table> <p>Elicit or explain that: $1.5 \ell = 1 \ell$ and 5 <u>tenths</u> of a litre $= 15$ tenths of a litre $= 150$ cl</p> <p>It can also be shown as: $1.5 \ell = 1 \ell$ and 50 <u>hundredths</u> of a litre $= 150$ hundredths of a litre $= 150$ cl</p> <p>Let's change these quantities from litres to centilitres. T writes on BB as litres and Ps come out to write as cl. Class agrees/disagrees.</p> <p>BB: $3 \ell = 300$ cl, $3.5 \ell = 350$ cl, $3.2 \ell = 320$ cl $0.5 \ell = 50$ cl, $0.2 \ell = 20$ cl, $0.25 \ell = 25$ cl (half a litre) (1 quarter of a litre)</p> <p>Point out that 0.25 is read as 'nought point two five', not 'twenty-five'</p> <p>What is this quantity? T writes on BB: 2.5 cl. Let's read it together. (two point five centilitres) What does it mean? (It means 2 cl and 5 tenths of a cl.) Elicit that $2.5 \text{ cl} = 25 \text{ ml}$.</p> <p>Let's change these quantities into cl. Ps suggest to T what to write.</p> <p>BB: $37 \text{ ml} = 3.7 \text{ cl}$, $142 \text{ ml} = 14.2 \text{ cl}$, $3.2 \ell = 320 \text{ cl}$</p> <p>T elicits what is happening. (As $10 \text{ ml} = 1 \text{ cl}$, then to change ml to cl you must divide by 10). Show on a place value table.</p> <p>The dot separating whole units from parts of units is called the <u>decimal point</u>. The number is called a <u>decimal number</u>.</p> <p style="text-align: right;">10 min</p>	Tens	Units	tenths	hundredths			1	5	(0)	litres	<p>Whole class activity BB: 1.5ℓ</p> <p>Class repeats after T Agreement, praising Table drawn on BB or OHT</p> <p>BB: 1 tenth of a litre = 10 cl 1 hundredth of a litre = 1 cl</p> <p>Show on place value table.</p> <p>BB:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>H</th> <th>T</th> <th>U</th> <th>t</th> <th>h</th> </tr> <tr> <td></td> <td></td> <td>3</td> <td>(0)</td> <td>(0)</td> </tr> <tr> <td></td> <td></td> <td>3</td> <td>5</td> <td>(0)</td> </tr> <tr> <td>In</td> <td></td> <td>3</td> <td>2</td> <td>(0)</td> </tr> <tr> <td>litres</td> <td></td> <td>0</td> <td>5</td> <td>(0)</td> </tr> <tr> <td></td> <td></td> <td>0</td> <td>2</td> <td>(0)</td> </tr> <tr> <td></td> <td></td> <td>0</td> <td>2</td> <td>5</td> </tr> </table> <p>BB: $1 \text{ cl} = 10 \text{ ml}$</p> <p>Agreement, praising e.g.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>H</th> <th>T</th> <th>U</th> <th>t</th> <th>h</th> </tr> <tr> <td>ml</td> <td>1</td> <td>4</td> <td>2</td> <td></td> </tr> <tr> <td>cl</td> <td></td> <td>1</td> <td>4</td> <td>2</td> </tr> </table> <p>BB: $142 \div 10 = 14.2$ 14.2 is a <u>decimal number</u>.</p>	H	T	U	t	h			3	(0)	(0)			3	5	(0)	In		3	2	(0)	litres		0	5	(0)			0	2	(0)			0	2	5	H	T	U	t	h	ml	1	4	2		cl		1	4	2
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<p style="text-align: center;">3</p>	<p>Comparing capacities</p> <p>Which is more? How many more? Ps come out to write in missing signs, explaining reasoning. Elicit that it is easier to change the litres into cl to calculate how much more one side is. Ps change each value to cl and write difference. Show decimals in a place value table.</p> <p>BB:</p> <p>a) 5ℓ 35 cl $\text{\textcircled{=}}$ 5.35ℓ (535 cl) (535 cl)</p> <p>b) 2.15ℓ $\text{\textcircled{<}}$ 3ℓ (215 cl) (85 cl) (300 cl)</p> <p>c) 7ℓ $\text{\textcircled{>}}$ 6.85ℓ (700 cl) (15 cl) (685 cl)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>H</th> <th>T</th> <th>U</th> <th>t</th> <th>h</th> </tr> <tr> <td></td> <td></td> <td>5</td> <td>3</td> <td>5</td> </tr> <tr> <td></td> <td></td> <td>2</td> <td>1</td> <td>5</td> </tr> <tr> <td></td> <td></td> <td>6</td> <td>8</td> <td>5</td> </tr> </table> <p style="text-align: center;">litres</p> <p style="text-align: right;">15 min</p>	H	T	U	t	h			5	3	5			2	1	5			6	8	5	<p>Whole class activity T has BB (or SB or OHT) already prepared BB: $1 \text{ cl} = 1$ hundredth of a litre $10 \text{ cl} = 1$ tenth of a litre Let Ps suggest what to do. If problems show that, e.g. $7 \ell > 6.85 \ell > 6 \ell$ Do not expect too much!</p>																																								
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Bk3		<i>Lesson Plan 66</i>
<p>Activity</p> <p>4</p>	<p>Missing quantities</p> <p>Let's find the quantities which make the statements true.</p> <p>What should we do first? (Work out the value of the known side.)</p> <p>Ps come out to BB to do the calculations, then to fill in the missing quantities, explaining reasoning. Class agrees/disagrees.</p> <p>BB:</p> <p>a) $800 \text{ cl} - 3 \times 50 \text{ cl} = 400 \text{ cl} + \boxed{250 \text{ cl}}$ (or 2 l 50 cl)</p> <p>b) $2 \text{ l } 40 \text{ cl} + 2 \text{ l } \div 4 = 3 \text{ l} - \boxed{10 \text{ cl}}$ (300 cl – 290 cl = 10 cl)</p> <p>c) $6 \text{ l } 25 \text{ cl} + 1 \text{ l } 30 \text{ cl} > 7 \text{ l } 50 \text{ cl} + \boxed{}$ [(0, 1, 2, 3, 4) cl]</p> <p>d) $1 \text{ l } 25 \text{ cl } 4 \text{ ml} < 1 \text{ l } 24 \text{ cl} + \boxed{}$ (any quantity > 14 ml)</p> <p>Allow Ps to decide and to suggest alternatives. Do not try to cover all possible ways – only if Ps suggest them.</p> <p style="text-align: right;"><i>20 min</i></p>	<p>Notes</p> <p>Whole class activity</p> <p>T has BB or SB or OHT already prepared</p> <p>Discuss how to solve each one and what standard unit to use</p> <p>Possible solutions are shown opposite but other units could be used, e.g. in</p> <p>b) use l and cl,</p> <p>c) several solutions possible if ml is used,</p> <p>d) cl and ml could be used.</p> <p>In each statement, l could be used (as decimals), e.g.</p> <p>a) $8 \text{ l} - 1.5 \text{ l} = 4 \text{ l} + \underline{2.5 \text{ l}}$</p>
<p>5</p>	<p>Book 3, page 66</p> <p>Q.1 Read: <i>This baby's bottle has marks at every 10 ml up to 250 ml.</i></p> <p>a) <i>How many marks are on the bottle?</i></p> <p>How could we find out? (Count the marks or calculate how many 10 ml are in 250 ml.)</p> <p>B, come and write the division. Rest of the class count the marks on the diagram as a check. Is B correct?</p> <p>BB: $250 \text{ ml} \div 10 \text{ ml} = 25$ (times), so there are 25 marks.</p> <p>What does the first (2nd) mark show? (10 ml, 20 ml)</p> <p>Let's see if you can do part b) on your own.</p> <p>Read: b) <i>How much milk will be in the bottle if it is level with:</i></p> <p>i) <i>the 5th mark?</i> (5 × 10 ml = 50 ml)</p> <p>ii) <i>the 7th mark?</i> (7 × 10 ml = 70 ml)</p> <p>iii) <i>the 10th mark?</i> (10 × 10 ml = 100 ml)</p> <p>iv) <i>the 20th mark?</i> (20 × 10 ml = 200 ml)</p> <p>Review at BB with whole class. Mistakes corrected.</p> <p style="text-align: right;"><i>25 min</i></p>	<p>Whole class activity to start</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>T could have a real baby's bottle to show (if possible, marked as shown in the <i>Pbs.</i>)</p> <p>Agreement, praising</p> <p>Ps shout out in unison.</p> <p>Individual work, monitored, helped</p> <p>Reasoning, agreement, self-correction, praising</p> <p>If there was a mark at zero, how many marks would there be on the bottle? (26)</p>
<p>6</p>	<p>Book 3, page 66</p> <p>Q.2 What can you tell me about the measuring jug in the picture? (Unit used is ml. It has marks at every 250 ml. The most it can measure at a time is 1000 ml (or 1 litre).)</p> <p>If we needed to measure 1 litre 250 ml, could we use this jug? (Yes – fill it once to the 1000 ml then again to the 250 ml mark.)</p> <p>Read: <i>How many 5 cl glasses of water would it take to fill up this measuring jug to:</i></p> <p>a) <i>the 1st mark,</i> b) <i>the 2nd mark,</i> c) <i>the 3rd mark</i> d) <i>the 4th mark?</i></p> <p>What will you have to do first? (Change the ml marks to cl, e.g. 250 ml = 25 cl) Review at BB with whole class.</p> <p style="text-align: right;"><i>30 min</i></p>	<p>Whole class discussion to start.</p> <p>Jug drawn on BB or use enlarged copy master or OHP</p> <p>T could have a litre jug and 5 cl glass to show to class if possible</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Solution:</p> <p>a) $25 \text{ cl} \div 5 \text{ cl} = \underline{5}$ (times)</p> <p>b) $50 \text{ cl} \div 5 \text{ cl} = \underline{10}$ (times)</p> <p>c) $75 \text{ cl} \div 5 \text{ cl} = \underline{15}$ (times)</p> <p>d) $100 \text{ cl} \div 5 \text{ cl} = \underline{20}$ (times)</p>

Bk3		<i>Lesson Plan 66</i>																																				
<p>Activity</p> <p>7</p>	<p>Book 3, page 66</p> <p>Q.3 Read: <i>Complete the table.</i></p> <p>Study the table carefully. Who can explain it? (A quantity is shown in ml (top row), cl (2nd row), 10 cl (3rd row and litres (bottom row).</p> <p>How do the numbers change? (divided by 10 each time)</p> <p>Review at BB with whole class. Ps come out to fill in the missing numbers, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <table border="1"> <tr> <td>A</td> <td>ml</td> <td>1200</td> <td>2000</td> <td>800</td> <td>1230</td> <td>1500</td> <td>1900</td> <td>1850</td> </tr> <tr> <td>B</td> <td>cl</td> <td>120</td> <td>200</td> <td>80</td> <td>123</td> <td>150</td> <td>190</td> <td>185</td> </tr> <tr> <td>C</td> <td>10 cl</td> <td>12</td> <td>20</td> <td>8</td> <td>12 and 3 tenths</td> <td>15</td> <td>19</td> <td>18 and a half</td> </tr> <tr> <td>D</td> <td>litres</td> <td>1 and 2 tenths (1.2)</td> <td>2</td> <td>8 tenths (0.8)</td> <td>1 and 23 hundredths (1.23)</td> <td>1 and a half (1.5)</td> <td>1 and 9 tenths (1.9)</td> <td>1 and 85 hundredths (1.85)</td> </tr> </table> <p>Extension</p> <p>Let's label the rows A, B, C and D. Who can write equations about the numbers in the rows? Who agrees? Who can write another one? etc.</p> <p>(e.g. $A = 10 \times B = 100 \times C = 1000 \times D$; $B = 10 \times C = 100 \times D = 1 \text{ tenth of } A$; $C = 10 \times D = 1 \text{ tenth of } B = 1 \text{ hundredth of } A$; $D = 1 \text{ tenth of } C = 1 \text{ hundredth of } B = 1 \text{ thousandth of } A$)</p> <p style="text-align: right;">36 min</p>	A	ml	1200	2000	800	1230	1500	1900	1850	B	cl	120	200	80	123	150	190	185	C	10 cl	12	20	8	12 and 3 tenths	15	19	18 and a half	D	litres	1 and 2 tenths (1.2)	2	8 tenths (0.8)	1 and 23 hundredths (1.23)	1 and a half (1.5)	1 and 9 tenths (1.9)	1 and 85 hundredths (1.85)	<p>Notes</p> <p>Individual work, monitored, helped (Or as whole class activity)</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>If no P has used decimals, T suggests that shortest way to write bottom row is to use decimal numbers.</p> <p>Ps dictate what they should be.</p> <p>Whole class activity</p> <p>Reasoning, agreement, praising</p> <p>Extra praise if Ps suggest the fractions without help.</p>
A	ml	1200	2000	800	1230	1500	1900	1850																														
B	cl	120	200	80	123	150	190	185																														
C	10 cl	12	20	8	12 and 3 tenths	15	19	18 and a half																														
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<p>8</p>	<p>Book 3, page 66</p> <p>Q.4 Read: <i>Elephant drank 4 more litres of water than Rhino. Complete the table.</i></p> <p>As there is not much room in the table, T should encourage Ps to think of short ways to write the missing values (or to write very small on two lines inside the space).</p> <p>Review at BB with whole class. Ps come out to fill in the missing numbers, explaining reasoning. Class agrees/disagrees. Ask for values in litres (decimals) and also in cl. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <table border="1"> <tr> <td></td> <td>35 litres</td> <td>51 litres</td> <td>^(33.5 ℓ) 33 and a half litres</td> <td>1350 cl</td> <td>^(32.2 ℓ) 32 litres 20 cl</td> <td>^(23.3 ℓ) 23 and 3 tenths litres</td> <td>41.3 litres</td> </tr> <tr> <td></td> <td>31 litres</td> <td>47 litres</td> <td>29 and a half litres (29.5 ℓ)</td> <td>950 cl</td> <td>28 litres 20 cl (28.2 ℓ)</td> <td>19 and 3 tenths litres (19.3 ℓ)</td> <td>37.3 litres</td> </tr> </table> <p><i>Rule:</i> $E = R + 4 \text{ litres,}$ $R = E - 4 \text{ litres,}$ $4 \text{ litres} = E - R$</p> <p>Extension</p> <p>Think of other values which could be added to the table.</p> <p style="text-align: right;">41 min</p>		35 litres	51 litres	^(33.5 ℓ) 33 and a half litres	1350 cl	^(32.2 ℓ) 32 litres 20 cl	^(23.3 ℓ) 23 and 3 tenths litres	41.3 litres		31 litres	47 litres	29 and a half litres (29.5 ℓ)	950 cl	28 litres 20 cl (28.2 ℓ)	19 and 3 tenths litres (19.3 ℓ)	37.3 litres	<p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>e.g. 35 litres = 3500 cl 32 ℓ 20 cl = 3220 cl</p> <p>N.B. The last column in the table is to see what Ps do!)</p> <p>Feedback for T</p> <p>Orally or in <i>Ex. Bks.</i></p>																				
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<p>9</p>	<p>Book 3, page 66, Q5</p> <p>Read: <i>Write the rule and complete the table.</i></p> <p>Let Ps discuss in pairs for a couple of minutes to find the rule.</p> <p>Ask Ps what they think, then check with values in table.</p> <p>If no P knows, then T gives the rule. Ps fill in missing values in table.</p> <p><i>Rule:</i> The <u>number</u> in B is the <u>number</u> in A rounded to the nearest 10. (any unit)</p> <p style="text-align: right;">45 min</p>	<p>Individual or paired trial first</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Ps dictate numbers to T or come out to BB.</p> <p>Agreement, praising</p>																																				

<h1>Bk3</h1>	<p>R: Mental calculation C: Money problems. Changing units. Decimal notation for £. E: Calculation up to 2000</p>	<h2>Lesson Plan 67</h2>																																																						
<p>Activity</p> <p>1</p>	<p>Units of measure</p> <p>What different measures are there? (e.g. length, mass, capacity, money, time, (temperature).</p> <p>a) What are the standard units of length? Let's write them in increasing order.</p> <p>BB: 1 mm < 1 cm < 1 m < 1 km</p> <p style="text-align: center;"> × 10 × 100 × 1000 </p> <p>What must we multiply 1 mm by to get 1 cm? (1 cm by to get 1 m? 1 m by to get 1 km?) (× 10, × 100, × 1000)</p> <p>Explain that: BB: 1 <u>millimetre</u> = 1 <u>thousandth</u> of a metre 1 <u>centimetre</u> = 1 <u>hundredth</u> of a metre 1 <u>kilometre</u> = <u>1000</u> metres</p> <p>b) What are the standard units of capacity? Let's write them in increasing order. What must we multiply 1 ml by to get 1 cl? (1 cl by to get 1 litre?) T writes responses on BB.</p> <p>Elicit that: BB: 1 <u>millilitre</u> = 1 <u>thousandth</u> of a litre 1 <u>centilitre</u> = 1 <u>hundredth</u> of a litre</p> <p>c) What are the standard units of mass? Let's write them in increasing order. What must we multiply 1 g by to get 1 kg?</p> <p>Elicit that: BB: 1 <u>kilogram</u> = <u>1000</u> grams</p> <p>d) What are the standard units of money? (£ and pence). What must we multiply 1 p by to get £1? (100)</p> <p>Elicit that: BB: 1 p = 1 <u>hundredth</u> of £1</p> <p style="text-align: right;"><i>6 min</i></p>	<p style="text-align: center;">Notes</p> <p>Whole class activity Praise all contributions. Ps dictate to T or come to BB to write in order. Agreement, praising</p> <p>T writes responses on BB</p> <p>Discuss meanings of 'milli', 'centi' and 'kilo'</p> <p>[T could mention 'deci' meaning '1 tenth' but unit only used abroad, e.g. <u>decimetre</u> (dm)]</p> <p>At a good pace throughout</p> <p>BB:</p> <p>1 ml < 1 cl < 1 ℓ</p> <p style="text-align: center;"> × 10 × 100 </p> <p>BB: 1 g < 1 kg</p> <p style="text-align: center;">× 1000</p> <p>BB: 1 p < £1</p> <p style="text-align: center;">× 100</p>																																																						
<p>2</p>	<p>Sequences</p> <p>Continue these sequences.</p> <p>a) The first term is 321 cl and the sequence is decreasing by 20 cl. (321 cl, 301 cl, 281 cl, 261 cl, 241 cl, 221 cl, 201 cl, 181 cl, ...)</p> <p>b) The first 4 terms are: 1 mm, 2 mm, 4 mm, 8 mm, (16 mm, 32 mm, 64 mm, ...) What is the rule? (Every following term is <u>twice</u> the previous one.)</p> <p>c) The first 3 terms are: 1 kg 27 g, 1 kg 127 g, 1 kg 227 g, (1 kg 327 g, 1 kg 427 g, ...) What is the rule? (Every term is 100 g more than the previous one.)</p> <p style="text-align: right;"><i>10 min</i></p>	<p>Whole class activity</p> <p>At speed round class.</p> <p>If a P makes a mistake, the next P corrects it.</p> <p>T helps with part b)</p> <p>Agreement on the rules</p> <p>Praising, encouragement only</p> <p>In good humour!</p>																																																						
<p>3</p>	<p>Writing quantities</p> <p>T writes a quantity on BB. Ps write it in different ways in their <i>Ex. Bks.</i> Review orally with whole class. Mistakes corrected.</p> <p>e.g. a) 125 cl = (1250 ml = 1 ℓ 250 ml = 1 ℓ 25 cl = 1.25 ℓ) b) 18 cm 2 mm = (182 mm = 18.2 cm) c) 1245 mm = (1 m 245 mm = 1 m 24 cm 5 mm = 124 cm 5 mm = 124.5 cm = 1.245 m) d) 71 kg 600 g = (71.6 kg) e) £49 70 p = (£49.70 = 4970 p)</p> <p>Let's write some in the place value table. Ps choose the units.</p> <p style="text-align: right;"><i>15 min</i></p>	<p>Individual work first, then whole class filling in of table. Draw on BB or use copy master</p> <p>BB: e.g.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Th</th> <th>H</th> <th>T</th> <th>U</th> <th>t</th> <th>h</th> <th>th</th> <th></th> </tr> </thead> <tbody> <tr> <td>a)</td> <td></td> <td></td> <td></td> <td>1</td> <td>2</td> <td>5</td> <td></td> <td>ℓ</td> </tr> <tr> <td>b)</td> <td></td> <td></td> <td>1</td> <td>8</td> <td>2</td> <td></td> <td></td> <td>cm</td> </tr> <tr> <td>c)</td> <td>1</td> <td>2</td> <td>4</td> <td>5</td> <td></td> <td></td> <td></td> <td>mm</td> </tr> <tr> <td>d)</td> <td></td> <td></td> <td>7</td> <td>1</td> <td>6</td> <td>(0)</td> <td>(0)</td> <td>kg</td> </tr> <tr> <td>e)</td> <td></td> <td></td> <td>4</td> <td>9</td> <td>7</td> <td>0</td> <td></td> <td>£</td> </tr> </tbody> </table>		Th	H	T	U	t	h	th		a)				1	2	5		ℓ	b)			1	8	2			cm	c)	1	2	4	5				mm	d)			7	1	6	(0)	(0)	kg	e)			4	9	7	0		£
	Th	H	T	U	t	h	th																																																	
a)				1	2	5		ℓ																																																
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Bk3

Lesson Plan 67

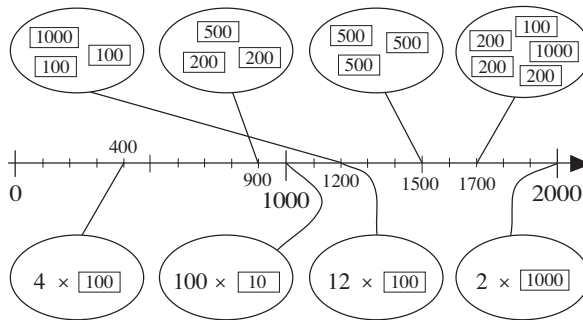
Activity

4

Number line

Let's join the amounts to the corresponding points on the number line. Elicit that the ticks on the number line show every 100 from 0 to 2000. Ps come out to choose a quantity and join it up, explaining reasoning. Class agrees/disagrees.

BB:



20 min

Notes

Whole class activity
 Drawn on BB or use enlarged copy master or OHP
 At a good pace
 Discussion, reasoning, agreement, praising
 Feedback for T

Extension

P points to a number not yet specified and other Ps say how it could be made up.

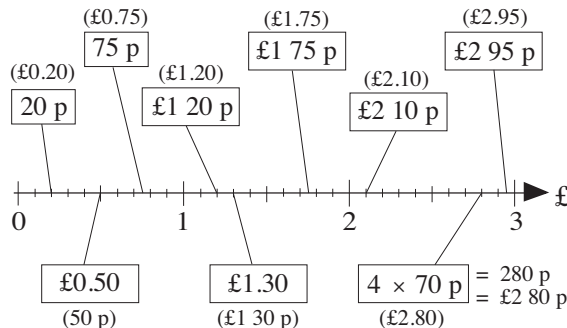
5

Money

What can you tell me about this number line? (It shows money from £0 to £3, with ticks at every 10 p). Let's join up the sums of money to the correct place on the number line.

Ps come out to choose a sum of money and join it up, explaining reasoning. Class agrees/disagrees.

BB:



How could we write them in a place value table? Elicit that the tens column would show £10s (but none in this question), the units column would show £1s, the tenths column would show 10 p's (1 tenth of a £) and the hundredths column would show 1 p's (1 hundredth of a £).

T writes what Ps dictate, or Ps come to BB to write amounts in table.

25 min

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

Table drawn on BB or OHT

BB:

£		p	
T	U	t	h
	0	2	0
	0	7	5
	1	2	0
	1	7	5
	2	1	0

etc.

Reasoning, agreement, praising

6

Book 3, page 67

Q.1 Read: *How much money is in each picture? Write the amount in pence.*

Make sure that Ps realise they have to write 1 digit in each box, i.e. number of 1 p coins in the units column, number of 10 p coins in the tens column and number of £1 coins (100 p) in the hundreds column.

Review at BB with whole class. Mistakes corrected.

In what other ways could we write these amounts of money? Ps come to BB. Class agrees/disagrees.

30 min

Individual work, monitored, helped

Drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

Solution:

a) 452 p b) 1402 p c) 1035 p
 £4 52 p £14 2 p £10 35 p
 £4.52 £14.02 £10.35

Extension

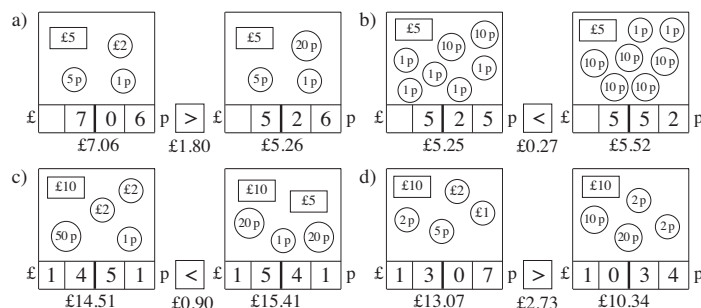
Bk3*Lesson Plan 67***Activity****7****PbY2b, page 67**

Q.2 Read: *How much money is in each box?*
Which box in each pair has more?

Do part a) on BB with the whole class first. Make sure that Ps realise that the thick line separates the £s from the pence (and is also where the decimal point would be).

Rest done as individual work. Review at BB with whole class.
 Discuss and correct all mistakes.

Solution:

*35 min***8****Book 3, page 67**

Q.3 Read: *Exchange the money for 1 p coins.*

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

Solution:

$$\begin{array}{ll} \text{a) } 8 \text{ } (\text{10p}) = \underline{80} \text{ } (\text{1p}) & \text{b) } 8 \text{ } (\text{£1}) = \underline{800} \text{ } (\text{1p}) \\ \text{c) } 12 \text{ } (\text{10p}) = \underline{120} \text{ } (\text{1p}) & \text{d) } 12 \text{ } (\text{£1}) = \underline{1200} \text{ } (\text{1p}) \end{array}$$

*38 min***9****Book 3, page 67**

Q.4 Read: *Exchange the money for 10 p coins.*

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

Solution:

$$\begin{array}{ll} \text{a) } 60 \text{ } (\text{1p}) = \underline{6} \text{ } (\text{10p}) & \text{b) } 9 \text{ } (\text{£1}) = \underline{90} \text{ } (\text{10p}) \\ \text{c) } 180 \text{ } (\text{1p}) = \underline{18} \text{ } (\text{10p}) & \text{d) } 10 \text{ } (\text{£1}) = \underline{100} \text{ } (\text{10p}) \\ \text{e) } 900 \text{ } (\text{1p}) = \underline{90} \text{ } (\text{10p}) & \text{f) } 12 \text{ } (\text{£1}) = \underline{120} \text{ } (\text{10p}) \end{array}$$

*41 min***10****Book 3, page 67**

Q.5 Read: *Exchange the money for £1 coins.*

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

Solution:

$$\begin{array}{ll} \text{a) } 100 \text{ } (\text{1p}) = \underline{1} \text{ } (\text{£1}) & \text{b) } 60 \text{ } (\text{10p}) = \underline{6} \text{ } (\text{£1}) \\ \text{c) } 900 \text{ } (\text{1p}) = \underline{9} \text{ } (\text{£1}) & \text{d) } 100 \text{ } (\text{10p}) = \underline{10} \text{ } (\text{£1}) \\ \text{e) } 1400 \text{ } (\text{1p}) = \underline{14} \text{ } (\text{£1}) & \text{f) } 150 \text{ } (\text{10p}) = \underline{15} \text{ } (\text{£1}) \end{array}$$

*45 min***Notes**

Individual work, monitored, helped

Drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

Extension

Who can write each amount as a decimal?

How much more is the bigger amount?

T writes what Ps dictate, or Ps come to BB

Agreement, praising

Individual work, monitored, (helped)

Agreement, self-correction, praising

If problems, show on BB, e.g.

d) $12 \times 100 \text{ p} = 1200 \text{ p}$
and/or on place value table.

Individual work, monitored, (helped)

Agreement, self-correction, praising

Feedback for T

If problems, show on place value table

Individual work, monitored, (helped)

Agreement, self-correction, praising

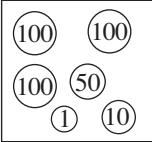
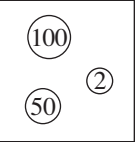
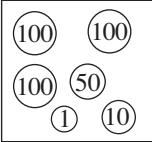
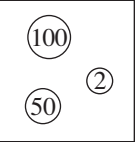
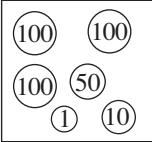
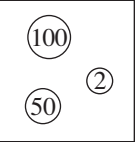
Feedback for T

N.B. Activities 8, 9 and 10 could be done as a whole class activity using response 'slates'

<h1>Bk3</h1>	<p>R: Mental calculation C: Calculating with quantities E: Numbers up to 2000</p>	<h2>Lesson Plan 68</h2>																												
<p>Activity</p> <p>1</p>	<p>Writing numbers</p> <p>T says a number; Ps write it in <i>Ex. Bks.</i> in different ways. Review at BB with whole class. Discuss all cases. Class agrees/disagrees.</p> <p>e.g.</p> <ul style="list-style-type: none"> Nine hundred and sixty eight = $(968 = 900 + 60 + 8)$ $= 9 \times 100 + 6 \times 10 + 8 \times 1 = 9H + 6T + 8U$ <p>Repeat for:</p> <ul style="list-style-type: none"> Seven hundred and ninety three = Six hundred and seven = One thousand, two hundred and thirty = One thousand, nine hundred and fifty four = One thousand and seventy six = One thousand and three = <p>As each number is reviewed, Ps write it in a place value table on BB.</p> <p style="text-align: right;">6 min</p>	<p>Notes</p> <p>Individual work, monitored.</p> <p>T has SB or BB or OHT already prepared with the numbers written in words</p> <p>Agreement, self-correction, praising</p> <p>BB:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Th</th> <th>H</th> <th>T</th> <th>U</th> </tr> </thead> <tbody> <tr> <td></td> <td>9</td> <td>6</td> <td>8</td> </tr> <tr> <td></td> <td>6</td> <td>0</td> <td>7</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>0</td> </tr> <tr> <td>1</td> <td>9</td> <td>5</td> <td>4</td> </tr> <tr> <td>1</td> <td>0</td> <td>7</td> <td>6</td> </tr> <tr> <td>1</td> <td>0</td> <td>0</td> <td>3</td> </tr> </tbody> </table> <p>Agreement, praising</p>	Th	H	T	U		9	6	8		6	0	7	1	2	3	0	1	9	5	4	1	0	7	6	1	0	0	3
Th	H	T	U																											
	9	6	8																											
	6	0	7																											
1	2	3	0																											
1	9	5	4																											
1	0	7	6																											
1	0	0	3																											
<p>2</p>	<p>Competition</p> <p>T divides class into 3 or 4 teams (of roughly equal ability). Each team chooses a 3-digit number. T writes them on different parts of the BB (or on SB, flip charts, or large sheets of paper stuck to wall).</p> <p>I will give you 3 minutes to write as many different ways as you can to describe your number. You must start and stop when I say.</p> <p>Start ... now! Ps from each team come to BB one after another to write different descriptions. Rest of team correct their team-mates' errors, point out repetitions and note ideas from other teams. . . . Stop!</p> <p>Review each team's descriptions. The team with most correct statements is the winner. If two teams have the same number of statements, the class chooses the team with the most creative descriptions as the winner.</p> <p style="text-align: right;">11 min</p>	<p>Whole class activity</p> <p>At a good pace</p> <p>e.g. <u>160</u></p> <p>80×2 $70 + 90$ $320 \div 2$ $1H + 6T$ 1 tenth of 1600 $200 - 40$ etc.</p> <p>Class applauds the winners</p>																												
<p>3</p>	<p>Secret quantity</p> <p>I am thinking of a quantity. You must ask me questions to find out what it is. I can answer only Yes or No.</p> <p>e.g. <u>1420 cm</u>: Is it a capacity? (No), Is it a length? (Yes) Is it in km? (No), Is it in m? (No), Is it in cm? (Yes) Is it more than 100 cm? (Yes), Is it less than 1000 cm? (No), Is it more than 2000 cm? (No), Is it less than 1500 cm? (Yes), Is its hundreds digit even? (Yes) Is its hundreds digit 2? (No), Is it more than 1450 cm? (No) Is it a whole ten? (Yes) Is its tens digit even? (Yes) Is its tens digit 2? (Yes) It is 1420 cm. Yes!</p> <p style="text-align: right;">16 min</p>	<p>Whole class activity</p> <p>Ps can make notes in <i>Ex. Bks</i></p> <p>Encourage Ps to ask logical questions and to keep in mind clues already given</p> <p>Involve majority of class</p> <p>Praise clever questions</p> <p>Ps say when questions are not very good and why.</p>																												
<p>4</p>	<p>Book 3, page 68</p> <p>Q.1 Read: <i>Fill in the missing values.</i></p> <p>Deal with one part at a time. Review at BB with whole class.</p> <p><i>Solution:</i></p> <p>a)</p> <pre> 560 ℓ / \ / \ + [200 ℓ] + [80 ℓ] / \ 360 ℓ + [280 ℓ] / \ + [80 ℓ] + [200 ℓ] \ / 440 ℓ 640 ℓ </pre> <p>b)</p> <pre> 320 kg / \ / \ - [400 kg] - [70 kg] / \ 720 kg - [470 kg] / \ - [70 kg] - [400 kg] \ / 650 kg 250 kg </pre> <p style="text-align: right;">21 min</p>	<p>Individual work, monitored, helped</p> <p>Use enlarged copy master/ OHP</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Discuss whether Ps think it is easier to add the tens or the hundreds first.</p>																												

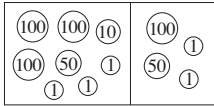
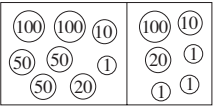
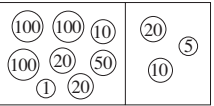
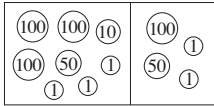
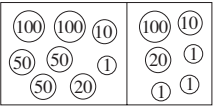
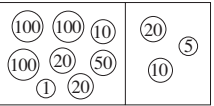
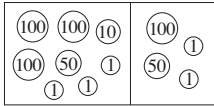
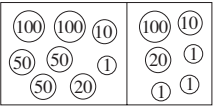
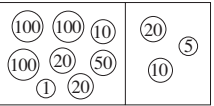
Bk3		<i>Lesson Plan 68</i>																				
<p>Activity</p> <p>5</p>	<p>Inequalities</p> <p>T has BB already prepared. Which is more? How much more?</p> <p>Ps come to BB to fill in the missing sign and to write the difference below it, explaining reasoning. Class agrees/disagrees.</p> <p>BB: a) $300 \text{ cl} + 400 \text{ cl}$ $\begin{matrix} < \\ 100 \text{ cl} \end{matrix}$ $300 \text{ cl} + 500 \text{ cl}$ 700 cl 800 cl</p> <p>b) $600 \text{ g} + 700 \text{ g}$ $\begin{matrix} > \\ 100 \text{ g} \end{matrix}$ $500 \text{ g} + 700 \text{ g}$ 1300 g 1200 g</p> <p>c) $400 \text{ m} + 800 \text{ m}$ $\begin{matrix} = \\ 1200 \text{ m} \end{matrix}$ $500 \text{ m} + 700 \text{ m}$ 1200 m 1200 m</p> <p>d) $900 \text{ ml} - 500 \text{ ml}$ $\begin{matrix} > \\ 100 \text{ ml} \end{matrix}$ $900 \text{ ml} - 600 \text{ ml}$ 400 ml 300 ml</p> <p>e) $1300 \text{ cm} - 600 \text{ cm}$ $\begin{matrix} = \\ 700 \text{ ml} \end{matrix}$ $1400 \text{ cm} - 700 \text{ cm}$ 700 ml 700 ml</p> <p>f) $1500 \text{ l} - 800 \text{ l}$ $\begin{matrix} > \\ 200 \text{ l} \end{matrix}$ $1400 \text{ l} - 900 \text{ l}$ 700 l 500 l</p> <p style="text-align: right;">26 min</p>	<p>Notes</p> <p>Whole class activity</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement, praising</p> <p>Extra praise if a P reasons without needing to work out each side of the inequality</p> <p>Which quantities could be written in another way?</p> <p>e.g. $300 \text{ cl} = 3 \text{ l}$, $700 \text{ g} = 0.7 \text{ kg}$, $1400 \text{ cm} = 14 \text{ m}$, etc.</p> <p>Agreement, praising</p>																				
<p>6</p>	<p>Book 3, page 68</p> <p>Q.2 Read: <i>Fill in the missing quantities to make the equations correct.</i></p> <p>Let's see how many of these you can do in 2 minutes!</p> <p>Review at BB with whole class. Mistakes discussed and corrected. Ps explain how they worked out the answers (with or without calculation, e.g. 360 cm is 10 cm <u>more</u> than 350 cm, so missing value must be 10 cm <u>less</u> than 260 cm, i.e. 250 cm).</p> <p><i>Solution:</i></p> <p>a) $260 \text{ cm} + 350 \text{ cm} = 360 \text{ cm} + \underline{250 \text{ cm}}$ (260 cm – 10 cm)</p> <p>b) $190 \text{ g} + 470 \text{ g} = \underline{480 \text{ g}} + 180 \text{ g}$ (470 g + 10 g)</p> <p>c) $470 \text{ ml} + 280 \text{ ml} = 480 \text{ ml} + \underline{270 \text{ ml}}$ (280 ml – 10 ml)</p> <p>d) $260 \text{ m} + 340 \text{ m} = \underline{431 \text{ m}} + 169 \text{ m}$ (600 m – 100 m – 60 m – 9 m)</p> <p>e) $750 \text{ l} - 160 \text{ l} = 740 \text{ l} - \underline{150 \text{ l}}$ (160 litres – 10 litres)</p> <p>f) $630 \text{ mm} - 470 \text{ mm} = \underline{640 \text{ mm}} - 480 \text{ mm}$ (630 mm + 10 mm)</p> <p style="text-align: right;">31 min</p>	<p>Individual work, monitored, helped</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Calculations can be done at side of <i>Pb</i> or in <i>Ex. Bks</i> – but Ps should be encouraged to notice whether it can be solved <u>without working out</u> the value of the given side. (only part d) needs to be calculated)</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Discuss other ways the values could have been written, e.g. $630 \text{ mm} = 63 \text{ cm}$</p>																				
<p>7</p>	<p>Book 3, page 68</p> <p>Q.3 Read: <i>Bella's piece of ribbon is 800 cm longer than Anne's. What length of ribbon could they each have? Complete the table and write the rule.</i></p> <p>Agree on one form of the rule. Ps complete the table.</p> <p>Review at BB with whole class. Mistakes corrected. Ps come out to write the rule in different ways. Class agrees/disagrees.</p> <p>What other unit could have been used in the table? (metres, mm)</p> <p>Agree that using metres would have made the task easier.</p> <p><i>Solution</i></p> <table border="1"> <tbody> <tr> <td>A</td> <td>100 cm</td> <td>200 cm</td> <td>300 cm</td> <td>600 cm</td> <td>500 cm</td> <td>1100 cm</td> <td>0 cm</td> <td>1200 cm</td> <td>700 cm</td> </tr> <tr> <td>B</td> <td>900 cm</td> <td>1000 cm</td> <td>1100 cm</td> <td>1400 cm</td> <td>1300 cm</td> <td>1900 cm</td> <td>800 cm</td> <td>2000 cm</td> <td>1500 cm</td> </tr> </tbody> </table> <p><i>Rule:</i> $A = B - 800 \text{ cm}$, $B = A + 800 \text{ cm}$, $800 \text{ cm} = B - A$</p> <p style="text-align: right;">36 min</p>	A	100 cm	200 cm	300 cm	600 cm	500 cm	1100 cm	0 cm	1200 cm	700 cm	B	900 cm	1000 cm	1100 cm	1400 cm	1300 cm	1900 cm	800 cm	2000 cm	1500 cm	<p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>e.g. $1 \text{ m} + \underline{8 \text{ m}} = 9 \text{ m}$</p> <p>Feedback for T</p>
A	100 cm	200 cm	300 cm	600 cm	500 cm	1100 cm	0 cm	1200 cm	700 cm													
B	900 cm	1000 cm	1100 cm	1400 cm	1300 cm	1900 cm	800 cm	2000 cm	1500 cm													

Bk3		<i>Lesson Plan 68</i>
Activity 8	Mental practice A and B have saved up £800 pounds altogether. How much could they each have? Ps stand up in pairs to be A and B. P ₁ says how much he/she has and P ₂ says the amount which makes it up to £800 (e.g. P ₁ : £500, P ₂ : £300; P ₃ : £750, P ₄ : £50; P ₅ : £794, P ₆ : £6, etc. Class points out errors or repetitions. Who can tell me the rule? Who agrees? Who can think of another way to write it? etc. (Rule: $A + B = £800$; $A = £800 - B$; $B = £800 - A$) 40 min	Notes Whole class activity At speed. Involve all Ps. Agreement, praising Encourage creativity Extra praise if Ps use £s and pence! If time, repeat for other total amounts
9 Extension	<i>Book 3, page 68</i> Q.4 Read: <i>Write the calculations and underline the answer.</i> Ps read the problems on their own and work out the answers. Review one part at a time. Ps show answers on command. Ps who responded correctly explain to Ps who did not. Mistakes corrected. <i>Solution:</i> a) E: £700, F: £500; $E + F: £700 + £500 = \underline{£1200}$ b) i) G: £700, H: $G - £500 = £700 - 500 = \underline{£200}$ ii) $G + H = £700 + £200 = \underline{£900}$ Listen carefully and think about how you would work out the answer to this problem. <i>Steve and Tom have £800 altogether in their bank accounts. Steve has £300 more than Tom. How much does Tom have?</i> X , how would you work it out? Who agrees? Who thinks another way? etc. <i>Most logical solution:</i> First take off Steve's extra £300: $£800 - £300 = £500$ Steve and Tom will have equal amounts of the £500: $£500 \div 2 = £250$ So Tom has <u>£250</u> and Steve has $£250 + £300 = \underline{£550}$. 45 min	Individual work, monitored, helped Written on scrap paper or on plastic response'slates' Reasoning, agreement, self-correction, praising Whole class activity T repeats slowly Give Ps time to think and discuss with their neighbours Reasoning, agreement, praising Or on one line: $(£800 - \overset{£500}{£300}) \div 2 = £250$ Check: $£250 + £550 = £800$

<h1>Bk3</h1>	<p>R: Mental calculation C: Estimation of sums E: Numbers up to 2000</p>	<h2>Lesson Plan 69</h2>				
<p>Activity</p> <p>1</p>	<p>Methods of Estimation 1</p> <p>Look at this diagram. How could we estimate the sum?</p> <p>BB:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">A</th> <th style="text-align: center;">B</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> </tr> </tbody> </table> <p>a) Estimate by rounding to the nearest hundred: BB: $A \approx 400$, $B \approx 200$, $A + B \approx 400 + 200 = \underline{600}$ $A < 400$ and $B < 200$, so $A + B < 600$</p> <p>b) Estimate by rounding to the nearest ten: BB: $A \approx 360$, $B \approx 150$, $A + B \approx 360 + 150 = \underline{510}$ $A > 360$ and $B > 150$, so $A + B > 510$</p> <p>c) BB: $360 < A < 370$ $150 < B < 160$ so $\underline{510 < A + B < 530}$</p> <p>What is the <u>exact</u> sum? (BB: $A + B = 361 + 152 = \underline{513}$) Which method do you think is best? (rounding to the nearest 10)</p> <p style="text-align: right;"><i>5 min</i></p>	A	B			<p>Notes</p> <p>Whole class activity Drawn on BB or use model coins stuck to BB.</p> <p>Ps suggest how to estimate Class agrees/disagrees.</p> <p>T confirms these 3 methods Reasoning, agreement, praising</p> <p>Ps copy into <i>Ex. Bks.</i></p> <p>(510 + 1 + 2) Discussion, agreement, praising</p>
A	B					
						
<p>2</p>	<p>Methods of Estimation 2</p> <p>Listen carefully and think how you could estimate the sum.</p> <p><i>In a shop window there is a dinosaur for £3 21 p and a teddy bear for £2 15 p. Estimate how much we would need to save if we wanted to buy both of them.</i></p> <p>What could we do to make it easier for us? (Change the £s and pence into pence.) BB: $D = 321$ p and $T = 215$ p</p> <p>a) Estimation after rounding to the nearest 100 p (£): BB: $D \approx 300$ p (= £3), $T \approx 200$ p (= £2), $D + T \approx 300$ p + 200 p = $\underline{500}$ p (= £5) $D > 300$ p and $T > 200$ p, so $D + T > 500$ p</p> <p>b) Estimation after rounding to the nearest 10 p: BB: $D \approx 320$ p, $T \approx 220$ p, $D + T \approx 320$ p + 220 p = $\underline{540}$ p $D > 320$ p but $T < 220$ p, so we can't add them.</p> <p>c) Estimation using inequalities: BB: 320 p < D < 330 p 210 p < T < 220 p so $\underline{530$ p < $D + T$ < 550 p</p> <p>What is the <u>exact</u> sum? (BB: $D + T = 321$ p + 215 p = 536 p = £5 36 p)</p> <p style="text-align: right;"><i>10 min</i></p>	<p>Whole class activity</p> <p>T could have soft toys to show if possible, with price tags attached</p> <p>Ps keep in mind what they did in Activity 1.</p> <p>Discussion, reasoning, agreement, praising</p> <p>Feedback for T</p> <p>Ps copy into <i>Ex. Bks.</i></p> <p>(4 p less than the estimate in b) Agree that method b) is closest</p>				

Bk3		<i>Lesson Plan 69</i>
Activity 3	<p>Estimation by rounding to the nearest 100</p> <p>Let's estimate these sums by rounding to the nearest hundred:</p> <p>BB: a) $213 + 342 \approx (200 + 300 = 500)$ b) $148 + 567 \approx (100 + 600 = 700)$ c) $527 + 261 \approx (500 + 300 = 800)$ d) $354 + 369 \approx (400 + 400 = 800)$</p> <p>Ps come out to BB, explaining reasoning. Class points out errors. Which estimate is more (less) than the exact sum? a) $500 < 213 + 342$, as both numbers have been rounded down d) $800 > 354 + 369$, as both numbers have been rounded up.</p> <p style="text-align: right;"><i>13 min</i></p>	<p style="text-align: center;">Notes</p> <p>Whole class activity</p> <p>T has BB (SB or OHT or flipchart) already prepared</p> <p>At a good pace</p> <p>Reasoning, agreement, praising</p> <p>Agree that in b) and c), one number has been rounded <u>up</u> and the other number has been rounded <u>down</u></p>
4	<p>Estimation by rounding to the nearest 10</p> <p>Let's estimate the same sums by rounding to the nearest ten:</p> <p>BB: a) $213 + 342 \approx (210 + 340 = 550)$ (both rounded <u>down</u>) b) $148 + 567 \approx (150 + 570 = 720)$ (both rounded <u>up</u>) c) $527 + 261 \approx (530 + 260 = 790)$ (One <u>up</u>, one <u>down</u>) d) $354 + 369 \approx (350 + 370 = 720)$ (One <u>down</u>, one <u>up</u>)</p> <p>Ps come out to BB, explaining reasoning. Class points out errors. Which estimates are more (less) than the exact sum? a) $213 + 342 > 550$ b) $148 + 567 < 720$</p> <p style="text-align: right;"><i>16 min</i></p>	<p>Whole class activity</p> <p>T has copy of previous activity's sums on another SB or flipchart or OHT</p> <p>At a good pace</p> <p>Reasoning, agreement, praising</p> <p>c) and d): one <u>up</u> and one <u>down</u>, so not easy to compare</p>
5	<p>Estimation using inequalities</p> <p>Let's estimate the same sums by writing inequalities:</p> <p>BB: a) $210 < 213 < 220$ b) $140 < 148 < 150$ $340 < 342 < 350$ $560 < 567 < 570$ $550 < 213 + 342 < 570$ $700 < 148 + 567 < 720$</p> <p>c) $520 < 527 < 530$ d) $350 < 354 < 360$ $260 < 261 < 270$ $360 < 369 < 370$ $780 < 527 + 261 < 800$ $710 < 354 + 369 < 730$</p> <p>Ps come out to BB, explaining reasoning. Class points out errors.</p> <p style="text-align: right;"><i>20 min</i></p>	<p>Whole class activity</p> <p>At a good pace</p> <p>Reasoning, agreement, praising</p> <p>Rest of class write inequalities in <i>Ex. Bks</i></p>
6	<p>Book 3, page 69</p> <p>Q.1 Read: a) Circle in red the 3-digit numbers in the 2nd row. b) Circle in green the 3-digit even numbers in the 3rd column from the left. c) Circle in yellow the 2-digit odd numbers in the 3rd row from the bottom. d) Circle in blue the odd numbers in the 6th column from the right.</p> <p>Review at BB with whole class. Mistakes discussed and corrected.</p> <p><i>Solution:</i> a) 100, 111, 126, 135 b) 160 c) 11, 37, 59 d) 11, 157</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 (Ppractice in following instructions and even/odd)</p> <p>Agreement, self-correction, praising</p> <p>Feedback for T</p> <p>What other questions could you ask about the numbers in the grid?</p> <p>Praise creativity</p>

Bk3*Lesson Plan 69*

Activity		Notes				
<p>7</p>	<p>Book 3, page 69</p> <p>Q.2 Read: <i>Write additions and subtractions about each picture.</i></p> <p>Ps first write value in each part, then write the sum above the diagram by counting the coins. Then they write additions/subtractions.</p> <p>Review at BB with whole class. Ps dictate to T what they have written. Class agrees/disagrees or suggests alternatives.</p> <p>Mistakes discussed and corrected and equations added where appropriate.</p> <p><i>Solution:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; vertical-align: top;"> <p>a)</p>  <p>$363 + 152 = 515$ $152 + 363 = 515$ $515 - 363 = 152$ $515 - 152 = 363$</p> </td> <td style="text-align: center; vertical-align: top;"> <p>b)</p>  <p>$381 + 133 = 514$ $133 + 381 = 514$ $514 - 381 = 133$ $514 - 133 = 381$</p> </td> <td style="text-align: center; vertical-align: top;"> <p>c)</p>  <p>$401 + 35 = 436$ $35 + 401 = 436$ $436 - 401 = 35$ $436 - 35 = 401$</p> </td> </tr> </table> <p>Ps estimate sums and differences by rounding to the nearest 10.</p> <p style="text-align: right;"><i>30 min</i></p>	<p>a)</p>  <p>$363 + 152 = 515$ $152 + 363 = 515$ $515 - 363 = 152$ $515 - 152 = 363$</p>	<p>b)</p>  <p>$381 + 133 = 514$ $133 + 381 = 514$ $514 - 381 = 133$ $514 - 133 = 381$</p>	<p>c)</p>  <p>$401 + 35 = 436$ $35 + 401 = 436$ $436 - 401 = 35$ $436 - 35 = 401$</p>	<p style="text-align: center;">Notes</p> <p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP (or coins stuck to BB)</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Orally round class Agreement, praising</p>	
<p>a)</p>  <p>$363 + 152 = 515$ $152 + 363 = 515$ $515 - 363 = 152$ $515 - 152 = 363$</p>	<p>b)</p>  <p>$381 + 133 = 514$ $133 + 381 = 514$ $514 - 381 = 133$ $514 - 133 = 381$</p>	<p>c)</p>  <p>$401 + 35 = 436$ $35 + 401 = 436$ $436 - 401 = 35$ $436 - 35 = 401$</p>				
<p>8</p> <p>Extension</p>	<p>Book 3, page 69</p> <p>Q.3 Read: <i>Estimate the sums by rounding the numbers to the nearest whole ten.</i></p> <p>Review at BB with whole class. Mistakes corrected. Elicit whether exact sum will be more or less than the estimate.</p> <p>What <u>is</u> the exact sum?</p> <p><i>Solution:</i></p> <p>a) $471 + 384 \approx 470 + 380 = 850$ ($471 + 384 > 850$) b) $326 + 75 \approx 330 + 80 = 410$ ($326 + 75 < 410$) c) $1365 + 524 \approx 1370 + 520 = 1890$ d) $1723 + 255 \approx 1720 + 260 = 1980$</p> <ul style="list-style-type: none"> • Estimate the sums by rounding numbers to the nearest hundred. <p>a) $471 + 384 \approx 500 + 400 = 900$ b) $326 + 75 \approx 300 + 100 = 400$ c) $1365 + 524 \approx 1400 + 500 = 1900$ d) $1723 + 255 \approx 1700 + 300 = 2000$</p> • Estimate the sums by writing inequalities. <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>a) $470 < 471 < 480$ $380 < 384 < 390$ $850 < \text{sum} < 870$</p> </td> <td style="width: 50%; vertical-align: top;"> <p>b) $320 < 326 < 330$ $70 < 75 < 80$ $390 < \text{sum} < 410$</p> </td> </tr> <tr> <td style="vertical-align: top;"> <p>c) $1360 < 1365 < 1370$ $520 < 524 < 530$ $1880 < \text{sum} < 1900$</p> </td> <td style="vertical-align: top;"> <p>d) $1720 < 1723 < 1730$ $250 < 255 < 260$ $1970 < \text{sum} < 1990$</p> </td> </tr> </table> <p style="text-align: right;"><i>36 min</i></p>	<p>a) $470 < 471 < 480$ $380 < 384 < 390$ $850 < \text{sum} < 870$</p>	<p>b) $320 < 326 < 330$ $70 < 75 < 80$ $390 < \text{sum} < 410$</p>	<p>c) $1360 < 1365 < 1370$ $520 < 524 < 530$ $1880 < \text{sum} < 1900$</p>	<p>d) $1720 < 1723 < 1730$ $250 < 255 < 260$ $1970 < \text{sum} < 1990$</p>	<p>Individual work, monitored, helped</p> <p>Reasoning, agreement, self-correction, praising</p> <p><u>Exact sums</u></p> <p>a) $471 + 384 = 855$ b) $326 + 75 = 401$ c) $1365 + 524 = 1889$ d) $1723 + 255 = 1978$</p> <p>Orally round class Agreement, praising</p> <p>Ps come out to BB to write inequalities. (3 Ps per sum, 1 row each. 4 Ps can work on different parts of the BB at once.) At a good pace. Agreement, praising</p>
<p>a) $470 < 471 < 480$ $380 < 384 < 390$ $850 < \text{sum} < 870$</p>	<p>b) $320 < 326 < 330$ $70 < 75 < 80$ $390 < \text{sum} < 410$</p>					
<p>c) $1360 < 1365 < 1370$ $520 < 524 < 530$ $1880 < \text{sum} < 1900$</p>	<p>d) $1720 < 1723 < 1730$ $250 < 255 < 260$ $1970 < \text{sum} < 1990$</p>					

Bk3*Lesson Plan 69***Activity****9****Book 3, page 69**Q.4 Read: *Katy went shopping.*

- a) Estimate to the nearest £ how much she spent if she bought:
- the pen and the book
 - the purse and the pencils.
- b) Estimate to the nearest 10 p how much she spent if she bought:
- the purse and the pen
 - the book and the pencils.

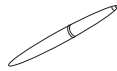
Review with whole class. Mistakes discussed and corrected

What would the prices be using only £s?

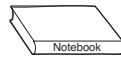
BB:



£5 73 p
(£5.73)



£4 58 p
(£4.58)



£3 12 p
(£3.12)



£2 36 p
(£2.36)

Solution:

- a) i) $£4\ 58\ p + £3\ 12\ p \approx £5 + £3 = \underline{£8}$
 ii) $£5\ 73\ p + £2\ 36\ p \approx £6 + £2 = \underline{£8}$
- b) i) $£5\ 73\ p + £4\ 58\ p \approx £5\ 70\ p + £4\ 60\ p = £9 + £1\ 30\ p$
 $= \underline{£10\ 30\ p}$
 ii) $£3\ 12\ p + £2\ 36\ p \approx £3\ 10\ p + £2\ 40\ p = \underline{£5\ 50\ p}$

Extension

What could she have bought if we know that she spent:

- a) between £8 and £10? (purse and book: £8 85 p, or purse and pencils: £8 09 p)
- b) between £6 and £8? (pen and pencils: £6 94 p; or pen and book: £7 70 p)

Notes

Individual work, monitored, helped

(Do first part with whole class first if necessary)

Drawn on BB (or pictures from magazines cut out and stuck to BB) or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

Whole class activity
Ps come to BB to write decimals below prices.

Agreement, praising

Reasoning, agreement, praising

(Ps can do calculations on 'slates' or in *Ex. Bks.*)

45 min

Bk3

R: Mental calculation
 C: Estimation and addition of sums (mentally)
 E: Numbers up to 2000

Lesson Plan 70

Activity

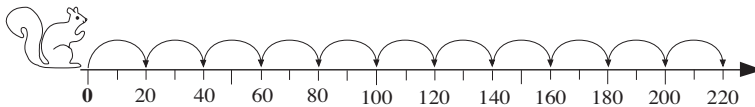
1

Jumps along the number line

- Let's start at zero and count up 20 at a time. (0, 20, 40, . . .)
- Let's start at 250 and count down 30 at a time. (250, 220, 190, . . .)

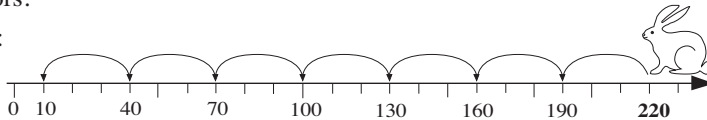
Squirrel starts at zero and jumps 20 units each time. Let's draw his jumps on the number line and label the numbers he lands on. Ps come to BB to draw jumps and write numbers. Class points out errors.

BB:



Rabbit starts at 220 and jumps 30 units at a time back along the number line. Let's draw his jumps and label the numbers he lands on. Ps come to BB to draw jumps and write numbers. Class points out errors.

BB:



Let's make a table about it and write in the data. T and Ps discuss how to draw the table .

BB:

Number of jumps	0	1	2	3	4	5	6	7	8	9	10	11
	0	20	40	60	80	100	120	140	160	180	200	220
	220	190	160	130	100	70	40	10	(-20)	(-50)	(-80)	(-110)

Show the last 4 columns for *Rabbit* on a number line. (Draw on BB or extend copy master.) Agree on negative values. Ps complete table in *Ex. Bks.* First P finished comes out to BB to complete T's table. Is he/she correct? Who had different values? etc. Mistakes corrected.

8 min

Notes

Whole class activity

In unison. At speed

In unison. At speed

Use class number line with cut-out animals on straws, or use enlarged copy master or OHP

Demonstration, agreement, praising

Ask what happens when *Rabbit* reaches 10. Allow Ps to explain if they can.

Discussion, demonstration on negative part of number line

Ps suggest what to do.

T draws on BB (use BB ruler) and Ps draw in *Ex. Bks.* (using rulers).

Individual work, monitored
 Discussion, reasoning, agreement, self-correction, praising

2

Sharing

I want to share £300 equally among 5 children. How could I do it?

Ask several Ps what they think. (e.g. Give £1 to each child in turn but agree that this would take a very long time.) Who can think of a shorter way to do it? (e.g. Give £10 to each child in turn.)

Let's show it in a table. Ps come out to complete table.

BB:

Anne	<input type="text" value="10"/>	<input type="text" value="10"/>
Ben	<input type="text" value="10"/>	
Cathy	<input type="text" value="10"/>	
David	<input type="text" value="10"/>	
Ella	<input type="text" value="10"/>	

or P might suggest division:

BB: $£300 \div 5 = \underline{£60}$

or

$5 \times \underline{£60} = £300$

11 min

Whole class activity

Reasoning, agreement, checking, praising

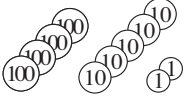
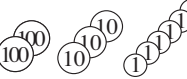
Use names of Ps in class.

T starts drawing, Ps come to BB to continue it (or stick on model money)

Extra praise if a P suggests division first of all.

Accept any correct method

If Ps have no ideas, T explains the different ways.

<h1>Bk3</h1>		<p>Lesson Plan 70</p>																		
<p>Activity</p> <p>5</p>	<p>Book 3, page 70</p> <p>Q.2 Read <i>Estimate each amount to the nearest 10 p.</i> Then write down the exact amount.</p> <p>T explains task, relating amounts to two pupils in class (e.g. Alan and Brian) Elicit that the amounts are shown in pence so Ps should write the answers in pence (adding 'p' after the amount).</p> <p>Review at BB with whole class. Ps come out to write their solutions, explaining reasoning. Class agrees/disagrees.</p> <p>Are the estimates more or less than the exact amount? Who can write the correct signs between them.</p> <p>What would each of the amounts be in £s? (decimal notation)</p> <p><i>Solution:</i></p> <p>A:  ≈ Estimate <table border="1"><tr><td>4</td><td>5</td><td>0</td></tr></table> p < Exact amount <table border="1"><tr><td>4</td><td>5</td><td>2</td></tr></table> p (£4.50) (€4.52)</p> <p>B:  ≈ Estimate <table border="1"><tr><td>2</td><td>4</td><td>0</td></tr></table> p > Exact amount <table border="1"><tr><td>2</td><td>3</td><td>6</td></tr></table> p (£2.40) (€2.36)</p> <p>A + B: ≈ Estimate <table border="1"><tr><td>6</td><td>9</td><td>0</td></tr></table> p > Exact amount <table border="1"><tr><td>6</td><td>8</td><td>8</td></tr></table> p (£6.90) (€6.88)</p> <p style="text-align: right;">35 min</p>	4	5	0	4	5	2	2	4	0	2	3	6	6	9	0	6	8	8	<p>Notes</p> <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>Reasoning, agreement, self-correction, praising</p> <p>Whole class activity</p> <p>Ps come to BB or T writes what Ps dictate.</p> <p>Agreement, praising</p> <p>Elicit that the estimates are quite close to the correct answer.</p> <p>Agree that estimating is a quick way to check that answers make sense.</p>
4	5	0																		
4	5	2																		
2	4	0																		
2	3	6																		
6	9	0																		
6	8	8																		
<p>6</p>	<p>Book 3, page 70</p> <p>Q.3 Read: <i>How can the butterfly get to the flower?</i> <i>Calculate the length of possible routes.</i></p> <p>Elicit the units used (m, cm) and that 100 cm = 1 m (BB).</p> <p>Talk about the fact that the diagram is not drawn to scale, so the lengths cannot be measured, only calculated.</p> <p>Ps do calculations in <i>Pbs</i> (using m, m + cm or cm as the units).</p> <p>How long is the shortest (longest) route. Show me . . . now! (7 m 72 cm, 9 m 54 cm)</p> <p>Ps explain how they got their answers. Mistakes discussed and corrected.</p> <p><i>Solution:</i> e.g. using cm</p> <ol style="list-style-type: none"> 532 cm + 240 cm = <u>772 cm</u> = 7 m 72 cm 532 cm + 111 cm + 212 cm = <u>855 cm</u> = 8 m 55 cm 603 cm + 212 cm = <u>815 cm</u> = 8 m 15 cm 603 cm + 111 cm + 240 cm = <u>954 cm</u> = 9 m 54 cm <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>Discussion, agreement, Demonstration</p> <p>Written on scrap paper or 'slates'. Shown in unison</p> <p>Reasoning, agreement, self-correction, praising</p> <p>(4 possible routes)</p>																		
<p>7</p>	<p>Problem</p> <p>Listen carefully, do the calculation in your <i>Ex. Bks</i> if you need to, then show me the answer when I say.</p> <p><i>Emma has £125 and Diane has £352. How much money do they have altogether?</i></p> <p>Show me . . . now! (£477) X, explain to us how you worked it out. Who agrees? Who did it another way? etc. (e.g adding hundreds first, then tens, then units; or adding units first, then tens, then hundreds)</p> <p style="text-align: right;">45 min</p>	<p>Whole class activity</p> <p>T repeats slowly and Ps repeat in own words.</p> <p>Written on scrap paper/slates</p> <p>In unison.</p> <p>Reasoning, agreement, praising</p> <p>Show in a place value table.</p>																		

Bk3

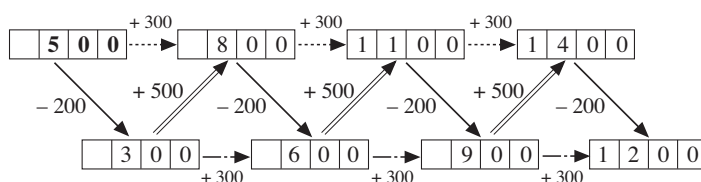
R: Mental calculation. Quantities
 C: **Addition. Pencil and paper methods. HTU + (H)TU**
 E: Numbers up to 2000

**Lesson Plan
71****Activity****1****Puzzle**

Study this puzzle. The \longrightarrow arrow means -200 and the \Longrightarrow arrow means $+500$. What are the missing numbers?

What do the $\cdots\longrightarrow$ and \dashrightarrow arrows mean?

BB:



Ps come to BB to write in missing numbers and operations.

Elicit that subtracting 200, then adding 500 is the same as adding 300, and that the $\cdots\longrightarrow$ and \dashrightarrow arrows both mean $+300$.

*5 min***Notes**

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

Reasoning, agreement, praising

Feedback for T

Extension

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

2**Competition**

T divides class into 3 or 4 teams (of roughly equal ability). T writes a number for each team on different parts of the BB (or on SB, flip chart, or large sheets of paper stuck to wall).

I will give you 3 minutes to write as many different ways as you can to describe your number. You must start and stop when I say.

Start ... now! Ps from each team come to BB one after another to write different descriptions. Rest of team correct their team-mates' errors, point out repetitions and note ideas from other teams. ... Stop!

Review each team's descriptions. The team with most correct statements is the winner. If two teams have the same number of statements, the class chooses the team with the most creative descriptions as the winner.

10 min

Whole class activity

At a good pace

e.g. 342

$300 + 42$
 $100 + 121 \times 2$

171×2

$3H + 4T + 2U$

$684 \div 2$

$150 + 192$

etc.

Class applauds the winners

3**Written exercises**

Do these calculations in your *Ex. Bks.* T dictates the numbers.

a) $140 + 30 = (170)$ b) $57 + 62 = (119)$

$110 - 50 = (60)$ $84 + 57 = (141)$

$500 + 800 = (1300)$ $62 - 40 = (22)$

$900 - 400 = (500)$ $91 - 37 = (54)$

c) $670 + 220 = (890)$ d) $6 \times 300 = (1800)$

$330 + 670 = (1000)$ $7 \times 200 = (1400)$

$1000 - 280 = (720)$ $70 \times 8 = (560)$

$1400 - 680 = (720)$ $1200 \div 3 = (400)$

Review after each part with the whole class. Ps explain how they did the calculations. Mistakes discussed and corrected.

Write details of difficult calculations on the BB.

e.g. $57 + 62 = 57 + 60 + 2 = 117 + 2 = 119$, or
 $(50 + 50 + 10) + (7 + 2) = 110 + 9 = 119$

$91 - 37 = 91 - 30 - 7 = 61 - 1 - 6 = 54$, or

$91 - 37 = 91 - 31 - 6 = 60 - 6 = 54$

$1400 - 680 = 1400 - 600 - 80 = 800 - 80 = 720$, or

$1400 - 680 = 1400 - 700 + 20 = 700 + 20 = 720$

18 min

Individual work

T could have SB or OHT already prepared in case of difficulties

Reasoning, agreement, self-correction, praising

Ps explain how they did the calculations.

Elicit that there are $4 \times 4 = 16$ operations.

Who had 16 correct? Who had more than 12 (less than 10) correct?

What were your mistakes? etc.

T notes Ps having difficulties

Stars, stickers, etc awarded.

Bk3

Lesson Plan 71

Activity

4

Vertical addition

Let's add two 3-digit numbers, 321 and 513. First let's estimate the sum to give us an idea of what the final answer should be. How can we estimate? (By rounding each number to the nearest 10)

BB: $321 + 513 \approx 320 + 510 = 830$

Let's show the numbers in this diagram BB:

T shows first number.

Ps come out to draw the correct number of hundreds, tens and units for the 2nd number.

Then they draw the total amount, explaining reasoning. Class agrees/disagrees.

Elicit that the total is 8H + 3T + 4U.

Let's write it in a place value table. Ps come out to write the digits. Class agrees/disagrees. T explains how to add vertically.

1. First we add the units.
1 Unit + 3 Units = 4 Units
2. Then we add the tens.
2 Tens + 1 Ten = 3 Tens
3. Then we add the hundreds
3 Hundreds + 5 Hundreds = 8 Hundreds

BB:

H	T	U
3	2	1
5	1	3
8	3	4

Let's read the sum: 'eight hundred and thirty four'.

Agree that $834 \approx 830$, so answer is probably correct.

We can write the table in a shorter way like this.

Does it matter whether we add up or down?

(No because in addition the order does not matter.)

We can check it by adding in the opposite direction.

	3	2	1
+	5	1	3
	8	3	4

24 min

Notes

Whole class activity

Tables and grids drawn on BB or use enlarged copy master or OHP

T demonstrates/explains by drawing or sticking coins on BB

At a good pace

T helps Ps where necessary

Reasoning, agreement, praising

With T's help if necessary

T explains and asks whether anyone does not understand.

In unison

Discussion, agreement

e.g. Calculation ↓ Check ↑

5

Book 3, page 71, Q.1

Read: *How much money do the two children have altogether?*

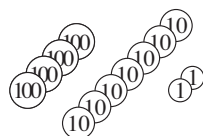
Complete the drawing, then estimate, calculate and check the answer.

Work through solution as in previous activity. Ps come out to BB to draw, write and explain (with T's guidance) and class points out errors.

Rest of pupils write in *Pbs*.

BB:

Alice:

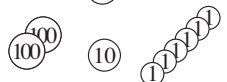


Estimation

≈

4	7	0
---	---	---

Sam:

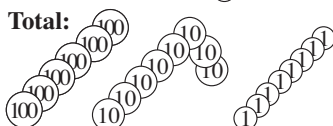


Estimation

≈

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

Total:



Estimation

≈

6	9	0
---	---	---

	H	T	U
A	4	7	2
S	2	1	6
T	6	8	8

	4	7	2
+	2	1	6
	6	8	8

Whole class activity

Drawn on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, praising

Whole class reading of vertical addition (down):

'2 Units + 6 Units = 8 Units'

'7 Tens + 1 Ten = 8 Tens'

'4 Hundreds + 2 Hundreds = 6 Hundreds'

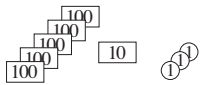
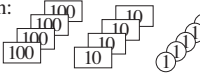
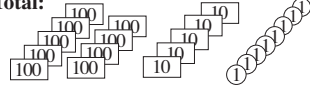
Agree that $688 \approx 690$, so answer is probably correct

Check further by adding up.

Elicit the short way to write the table.

Note that no unit of money is given. What could it be? (p)

29 min

<h1>Bk3</h1>		<p>Lesson Plan 71</p>																																																																												
<p>Activity</p> <p>6</p>	<p>Book 3, page 71</p> <p>Q.2 Read: <i>How much money do the two children have altogether? Complete the drawing, then estimate, calculate and check the answer.</i></p> <p>Let's see if you can do this question on your own. T talks Ps through question, but Ps write own solutions in Pbs.</p> <p>Review at BB with whole class. Ps come to BB to explain, draw and write. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p>Solution:</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Fred:</p>  </div> <div style="text-align: center;"> <p>Estimation</p> <p>≈ <table border="1" style="display: inline-table;"><tr><td>5</td><td>1</td><td>0</td></tr></table></p> </div> <div style="text-align: center;"> <p>Calculation</p> <table border="1" style="display: inline-table;"> <tr><td></td><td>H</td><td>T</td><td>U</td></tr> <tr><td>F</td><td>5</td><td>1</td><td>3</td></tr> <tr><td>G</td><td>4</td><td>4</td><td>5</td></tr> <tr><td>T</td><td>9</td><td>5</td><td>8</td></tr> </table> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <p>Gordon:</p>  </div> <div style="text-align: center;"> <p>Estimation</p> <p>≈ <table border="1" style="display: inline-table;"><tr><td>4</td><td>5</td><td>0</td></tr></table></p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <p>Total:</p>  </div> <div style="text-align: center;"> <p>Estimation</p> <p>≈ <table border="1" style="display: inline-table;"><tr><td>9</td><td>6</td><td>0</td></tr></table></p> </div> <div style="text-align: center;"> <table border="1" style="display: inline-table;"> <tr><td></td><td>5</td><td>1</td><td>3</td></tr> <tr><td>+</td><td>4</td><td>4</td><td>5</td></tr> <tr><td></td><td>9</td><td>5</td><td>8</td></tr> </table> </div> </div> <p style="text-align: right; margin-top: 10px;">35 min</p>	5	1	0		H	T	U	F	5	1	3	G	4	4	5	T	9	5	8	4	5	0	9	6	0		5	1	3	+	4	4	5		9	5	8	<p>Notes</p> <p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Remind Ps about checking addition in opposite direction.</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Elicit short way of writing the addition table.</p> <p>There are no units mentioned in this question. What do you think they are?</p> <p>(Probably £s as they look like notes, not coins.)</p> <p>Ps say answer as a sentence: 'The two children have £9 58 p altogether!'</p>																																							
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<p>7</p>	<p>Book 3, page 71</p> <p>Q.3 Read: <i>Write the numbers in the place value table.</i></p> <p>Elicit that 'E' means Estimation'. Deal with one part at a time</p> <p>Review at BB with whole class. Mistakes discussed and corrected.</p> <p>Solution:</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>a) $136 + 312$</p> <p>E: <table border="1" style="display: inline-table;"><tr><td>4</td><td>5</td><td>0</td></tr></table></p> <table border="1" style="display: inline-table;"> <tr><td></td><td>H</td><td>T</td><td>U</td></tr> <tr><td></td><td>1</td><td>3</td><td>6</td></tr> <tr><td>+</td><td>3</td><td>1</td><td>2</td></tr> <tr><td></td><td>4</td><td>4</td><td>8</td></tr> </table> </div> <div style="width: 45%;"> <p>b) $271 + 117$</p> <p>E: <table border="1" style="display: inline-table;"><tr><td>3</td><td>9</td><td>0</td></tr></table></p> <table border="1" style="display: inline-table;"> <tr><td></td><td>H</td><td>T</td><td>U</td></tr> <tr><td></td><td>2</td><td>7</td><td>1</td></tr> <tr><td>+</td><td>1</td><td>1</td><td>7</td></tr> <tr><td></td><td>3</td><td>8</td><td>8</td></tr> </table> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <p>c) $632 + 324$</p> <p>E: <table border="1" style="display: inline-table;"><tr><td>9</td><td>5</td><td>0</td></tr></table></p> <table border="1" style="display: inline-table;"> <tr><td></td><td>H</td><td>T</td><td>U</td></tr> <tr><td></td><td>6</td><td>3</td><td>2</td></tr> <tr><td></td><td>3</td><td>2</td><td>4</td></tr> <tr><td></td><td>9</td><td>5</td><td>6</td></tr> </table> </div> <div style="width: 45%;"> <p>d) $426 + 32$</p> <p>E: <table border="1" style="display: inline-table;"><tr><td>4</td><td>6</td><td>0</td></tr></table></p> <table border="1" style="display: inline-table;"> <tr><td></td><td>H</td><td>T</td><td>U</td></tr> <tr><td></td><td>4</td><td>2</td><td>6</td></tr> <tr><td>+</td><td></td><td>3</td><td>2</td></tr> <tr><td></td><td>4</td><td>5</td><td>8</td></tr> </table> </div> </div> <p style="text-align: right; margin-top: 10px;">40 min</p>	4	5	0		H	T	U		1	3	6	+	3	1	2		4	4	8	3	9	0		H	T	U		2	7	1	+	1	1	7		3	8	8	9	5	0		H	T	U		6	3	2		3	2	4		9	5	6	4	6	0		H	T	U		4	2	6	+		3	2		4	5	8	<p>Individual work, monitored, helped</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Remind Ps to check sum by doing calculation in opposite direction.</p> <p>Discussion, reasoning, agreement, checking, self-correction, praising</p> <p>T asks Ps to come to BB to write additions in a shorter way (with or without a grid).</p>
4	5	0																																																																												
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Bk3

Lesson Plan 71

Activity

8

Book 3, page 71, Q.4Read: *Estimate, then calculate the sum. Write the estimate in detail.*Elicit that *E* means *Estimation* and *C* mean *Calculation*.

Who can tell me what to do? T writes what Ps dictate.

BB: $336 + 452$

E: $336 + 452 \approx 340 + 450 = 790$

C:

	3	3	6
+	4	5	2
	7	8	8

Repeat for

a) $415 + 583$:

E: $415 + 583 \approx 420 + 580 = 1000$

C:

	4	1	5
+	5	8	3
	9	9	8

b) $416 + 584$:

E: $416 + 584 \approx 420 + 580 = 1000$

C:

	4	1	6
+	5	8	4
	9	9	10

 →

	4	1	6
+	5	8	4
	1	0	0

We estimated that it is about 1000 and it is exactly 1000 (990 + 10) and 2 more than the sum in part a). How can we explain it?

Let's use a place value table.

Elicit that: 10 units = 1 ten

10 tens = 1 hundred

10 hundreds = 1 thousand

c) $416 + 585$

E: $416 + 585 \approx 420 + 590 = 1010$

C:

	4	1	6
+	5	8	5
	9	9	11

 →

	4	1	6
+	5	8	5
	1	0	0

Elicit that this sum is 1 more than that in part c) so it is 1001.

Let's explain it in the place value table.

Elicit that: 11 units = 1 ten + 1 unit,

10 tens = 1 hundred

10 hundreds = 1 thousand

Do not worry if you do not understand. We will go over it again another day!

45 min

Notes

Whole class activity

(or sum in *Pb* done as individual work, reviewed with whole class. Following sums done with the whole class.)

Written on BB

Ps come to BB to fill in sums explaining reasoning.

Class agrees/disagrees

Discuss what should be done now, as only 1 digit can be in each column.

Ps suggest what should be done (with T's help).

BB:

Th	H	T	U
	4	1	6
	5	8	4
		1 ← 10	
	1 ← 10		
1	0	0	0

Again, allow Ps to try to explain (with T's help).

BB:

Th	H	T	U
	4	1	6
	5	8	5
		1 ← 11	
	1 ← 10		
1	0	0	1

Extra praise for good ideas!

Bk3	<p>R: Mental calculation C: Vertical addition, without crossing tens E: Numbers up to 2000</p>	<i>Lesson Plan</i> 72																																				
<p>Activity</p> <p>1</p>	<p>Mental practice</p> <p>T says a multiplication or division, Ps give product or quotient. e.g. 6×7, 10×15, 12×3, $60 \div 6$, $81 \div 9$, $140 \div 70$, etc.</p> <p style="text-align: right;"><i>5 min</i></p>	<p>Notes</p> <p>Whole class activity At speed round class If a P makes a mistake, next P says it correctly.</p>																																				
<p>2</p>	<p>Secret numbers</p> <p>What is the number I thought of? You may do any calculations in your <i>Ex. Bks.</i> Show me the number when I say.</p> <p>a) I thought of a number. I multiplied it by 2, then subtracted 300 and got 700. What was the number I first thought of?</p> <p>Show me . . . now! (500) A, tell us how you got your answer. Who did the same? Who did it another way? etc. Let's check it.</p> <p>BB: $(700 + 300) \div 2 = \underline{500}$ Check: $500 \times 2 - 300 = 700$ ✓</p> <p>b) I thought of a number. I added 2, then added 130 and got 300. What was the number I first thought of?</p> <p>Show me . . . now! (168) B, tell us how you got your answer. Who did the same? Who did it another way? etc. Let's check it.</p> <p>BB: $300 - 130 - 2 = \underline{168}$ Check: $168 + 2 + 130 = 300$ ✓</p> <p style="text-align: right;"><i>10 min</i></p>	<p>Whole class activity</p> <p>Ps show responses on scrap paper or on 'slates'.</p> <p>In unison</p> <p>Reasoning, agreement, praising</p> <p>Mistakes discussed</p> <p>In unison</p> <p>Reasoning, agreement, praising</p> <p>Mistakes discussed</p>																																				
<p>3</p>	<p>Problem</p> <p>Listen carefully, write the data, make a plan and do the calculation in your <i>Ex. Bks.</i> Show me the answer when I say.</p> <p><i>I have £320 in my bank account. I am saving £5 a week until I have enough money to buy a stereo system costing £400. How many £5 notes will I need to save?</i></p> <p>Show me . . . now! (16) C, tell us how you got your answer. Who did the same? Who did it another way? etc. Let's check it.</p> <p>BB: e.g. Have: £320 Need: £400 – £320 Save per week: £5 $(400 - 320) \div 5 = 80 \div 5 = 50 \div 5 + 30 \div 5$ $= 10 + 6 = \underline{16}$</p> <p>Check: $\underline{16} \times £5 + £320 = £80 + £320 = £400$ ✓</p> <p>Answer: I will need to save 16 £5 notes.</p> <p style="text-align: right;"><i>14 min</i></p>	<p>Individual work in <i>Ex. Bks.</i></p> <p>T repeats slowly. Ps repeat in own words</p> <p>Give Ps time to think and do calculations.</p> <p>In unison</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>Feedback for T</p>																																				
<p>4</p>	<p>Vertical addition</p> <p>a) Let's add 236 and 52. First let's estimate the sum. Do it in your head. D, what is your estimate? Who agrees? etc</p> <p>Show the addition in a diagram, table and grid. Ps come out to BB to draw and write, explaining reasoning. T helps where necessary.</p> <p>BB:</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th>Hundreds</th> <th>Tens</th> <th>Units</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">(100) (100)</td> <td style="text-align: center;">(10) (10) (10)</td> <td style="text-align: center;">(1) (1) (1) (1) (1) (1)</td> </tr> <tr> <td></td> <td style="text-align: center;">(10) (10) (10) (10)</td> <td style="text-align: center;">(1) (1)</td> </tr> <tr> <td style="text-align: center;">(100) (100)</td> <td style="text-align: center;">(10) (10) (10) (10) (10)</td> <td style="text-align: center;">(1) (1) (1) (1) (1)</td> </tr> </tbody> </table> <p>E: $236 + 52 \approx 240 + 50 = 290$</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th>H</th> <th>T</th> <th>U</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>3</td> <td>6</td> </tr> <tr> <td></td> <td>5</td> <td>2</td> </tr> <tr> <td>2</td> <td>8</td> <td>8</td> </tr> </tbody> </table> <table border="1" style="display: inline-table; margin-right: 20px;"> <tbody> <tr> <td></td> <td>2</td> <td>3</td> <td>6</td> </tr> <tr> <td>+</td> <td></td> <td>5</td> <td>2</td> </tr> <tr> <td></td> <td>2</td> <td>8</td> <td>8</td> </tr> </tbody> </table> <p>(Short form)</p>	Hundreds	Tens	Units	(100) (100)	(10) (10) (10)	(1) (1) (1) (1) (1) (1)		(10) (10) (10) (10)	(1) (1)	(100) (100)	(10) (10) (10) (10) (10)	(1) (1) (1) (1) (1)	H	T	U	2	3	6		5	2	2	8	8		2	3	6	+		5	2		2	8	8	<p>Whole class activity</p> <p>Tables drawn on BB or use enlarged copy master or OHP</p> <p>Allow Ps to dictate what to do under T's guidance.</p> <p>Agree that $288 \approx 290$.</p> <p>Check further by doing the addition in opposite direction.</p> <p>Reasoning, agreement, praising</p> <p>Ps write short form in <i>Ex. Bks.</i></p>
Hundreds	Tens	Units																																				
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2	8	8																																				
	2	3	6																																			
+		5	2																																			
	2	8	8																																			

Bk3

Lesson Plan 72

Activity

b) Now let's add 1526 and 41. First let's estimate the sum. Do it in your head. **F**, what is your estimate? Who agrees? etc.

Show the addition in a diagram, table and grid. Ps come out to BB to draw and write, explaining reasoning. T helps where necessary.

BB:

E: $1526 + 41 \approx 1530 + 40 = 1570$

Thousands	Hundreds	Tens	Units

Th	H	T	U
1	5	2	6
		4	1
1	5	6	7

$$+ \begin{array}{|c|c|c|c|} \hline 1 & 5 & 2 & 6 \\ \hline & & 4 & 1 \\ \hline 1 & 5 & 6 & 7 \\ \hline \end{array}$$

(Short form)

20 min

Notes

Allow Ps to dictate what to do under T's guidance.

Reasoning, agreement, praising

Agree that $1567 \approx 1570$.

Check further by doing the addition in the opposite direction.

e.g. calculate \downarrow , check \uparrow

Ps write short form in *Ex. Bks.*

5

Checking addition

Mr. Silly was given two additions to do for homework. This is what he wrote.

BB: a) $1235 + 243$

~~| | | | | |
|---|---|---|---|---|
| 1 | 2 | 3 | 5 | |
| + | 2 | 4 | 3 | |
| | 3 | 6 | 6 | 5 |~~

b) $1342 + 53$

~~| | | | | |
|---|---|---|---|---|
| 1 | 3 | 4 | 2 | |
| + | | 5 | 3 | |
| | 1 | 8 | 7 | 2 |~~

Let's check if he is correct by using estimation. Two Ps come out to estimate the sums on the BB. Class agrees/disagrees.

a) $1235 + 243 \approx 1240 + 240 = 1480$.

b) $1342 + 53 \approx 1340 + 50 = 1390$

What do you think of *Mr. Silly's* work? (He has made a mistake in both additions.)

Who can tell us what his mistakes are? (In both additions, the 2nd term is in the wrong place.) What numbers has he really added together? ($1235 + 2430$ and $1342 + 530$)

Let's cross out *Mr. Silly's* work and see if you can write the additions correctly in your *Ex. Bks.*

Review at BB with whole class. Mistakes corrected.

Solution:

a)

1	2	3	5	
+		2	4	3
	1	4	7	8

b)

1	3	4	2	
+			5	3
	1	3	9	5

26 min

Whole class activity

T has BB or SB or OHT already prepared

Reasoning, agreement, praising

Discussion, comparison of *Mr. Silly's* answers with estimates

Ask several Ps what they think.

Individual work

Comparison with estimates.

Further checking by adding in opposite direction

Reasoning, agreement, self-correcting, praising

Feedback for T

Bk3*Lesson Plan 72***Activity****6****Book 3, page 72**

Q.1 Read: *Estimate, then calculate the sums.*
Write the estimates in detail.

Review at BB with whole class. Mistakes corrected.

Solution:

a) $642 + 207 \approx 640 + 210 = 850$

6	4	2	
+	2	0	7
8	4	9	

b) $508 + 161 \approx 510 + 160 = 670$

5	0	8	
+	1	6	1
6	6	9	

c) $397 + 501 \approx 400 + 500 = 900$

3	9	7	
+	5	0	1
8	9	8	

d) $43 + 945 \approx 40 + 950 = 990$

	4	3	
+	9	4	5
9	8	8	

*33 min***Notes**

Individual work, monitored, (helped)

Reasoning, agreement, checking, self-correction, praising

Ask Ps to read the additions in detail

e.g. a) $2U + 7U = 9U$, etc (in both directions)

Compare the estimated and calculated sums.

Feedback for T

7**Book 3, page 72**

Q.2 Read: *Calculate the sums. Look at the diagram to see how the numbers change.*

Ps estimate in their heads, then do the calculations and check results against estimate, then by adding in opposite direction.

Review at BB with whole class. Mistakes corrected.

Discuss the diagram and elicit that:

- when the second term (number) is increased by 100, the sum also increases by 100.
- when the second term (number) is decreased by 100 (200), the sum also decreases by 100 (200).

Solution: a)

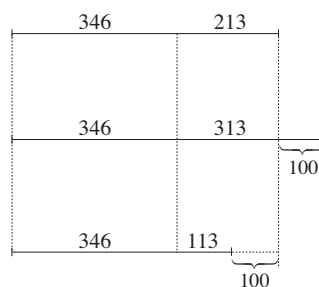
	3	4	6
+	2	1	3
5	5	9	

b)

	3	4	6
+	3	1	3
6	5	9	

c)

	3	4	6
+	1	1	3
4	5	9	

*38 min*

Individual work, monitored, helped

Diagram drawn on BB or use enlarged copy master or OHP

Deal with one part at a time

Discussion, reasoning, agreement, self-correction, praising

Bk3		<i>Lesson Plan 72</i>												
<p>Activity</p> <p>8</p>	<p>Book 3, page 72</p> <p>Q.3 Read: <i>Find the data and write a plan. Estimate, calculate and check the result. Write the answer as a sentence.</i></p> <p>Ps read problem and solve it by themselves.</p> <p>Review at BB with whole class. P explains method of solution. Class agrees/disagrees or suggests alternative method. Mistakes corrected.</p> <p><i>A greengrocer ordered 264 kg of apples and 525 kg of bananas. How many kg of fruit did he order altogether?</i></p> <p><i>Data: A: 264 kg, B: 525 kg</i></p> <p><i>Plan: A + B: 264 kg + 525 kg E: 260 + 530 = 790</i></p> <p><i>Answer: He ordered 789 kg of fruit altogether.</i></p>	<p>Notes</p> <p>Individual work, monitored, helped</p> <p>Remind Ps to check sum by estimating and adding twice</p> <p>Discussion, reasoning, checking, agreement, self-correcting, praising</p> <p>BB:</p> <table border="1"> <tr><td></td><td>2</td><td>6</td><td>4</td></tr> <tr><td>+</td><td>5</td><td>2</td><td>5</td></tr> <tr><td></td><td>7</td><td>8</td><td>9</td></tr> </table> <p>C:</p> <p>Whole class activity</p> <p>Involve several Ps</p> <p>Praise all suggestions</p> <p>Extra praise for clever contexts</p>		2	6	4	+	5	2	5		7	8	9
	2	6	4											
+	5	2	5											
	7	8	9											
<p>Extension</p>	<p>T (with Ps' help) provides a context for another two problems, one involving addition and the other subtraction. Ps supply the values (3-digit numbers).</p> <p>Work through each problem on BB with the whole class, as above.</p> <p style="text-align: right;"><i>45 min</i></p>													

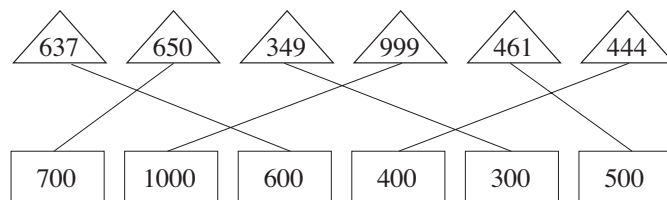
Bk3

R: Mental calculation
 C: **Vertical addition, crossing tens. Problems in context.**
 E: Numbers up to 2000

Lesson Plan
73**Activity****1****Rounding to the nearest 100**

Join up the numbers to the matching values if rounded to the nearest 100. Ps come out to join up the numbers, explaining reasoning. Class agrees/disagrees. Elicit that 50 rounds up to next 100.

BB:



T points to a number. Class rounds it to the nearest 10. (640, 650, 350, 1000, 460, 440)

*5 min***Notes**

Whole class activity

Drawn on BB or use enlarged copy master or OHP

(or shapes cut out and stuck to BB and Ps rearrange them into 'houses')

At a good pace

Agreement, praising

In unison. Praising

2**Addition 1**

X, tell me two 3-digit numbers. Let's add them up. Class agrees on the estimated sum. Ps volunteer to do calculation.

- If there is no crossing tens:

e.g. $345 + 231$

	3	4	5
+	2	3	1
	5	7	6

X comes to BB and does the addition, saying what he/she is doing.

'5 units + 1 unit = 6 units, so I write 6 in the units column in the answer.

4 tens + 3 tens = 7 tens, so I write 7 in the tens column in the answer.

3 hundreds + 2 hundreds = 5 hundreds, so I write 5 in the hundreds column in the answer.

The sum is 576.

Ps check it mentally. Who thinks **X** is correct? Who disagrees? etc.

- If there is crossing tens:

e.g. $364 + 476$

	3	6	4
+	4	7	6
	7	13	10

↓

	3	6	4
+	4	7	6
	8	4	0

Who can do this addition? **Y** comes out to BB to write and explain reasoning as above.

Allow mistakes to be made and ask rest of class to find them by comparing with the estimate.

Ps suggest how to correct the mistake.

If Ps have a good idea about what to do, T confirms it:

Start at the units column.

$4U + 6U = 10U = 1T$ (added to tens column)

$1T + 6T + 7T = 14T = 1H + 4T$

(1H is added to hundreds column,)

$1H + 3H + 4H = 8H$

Otherwise T says, 'Do not worry, we will learn it later in the lesson'.

Repeat for other pairs of numbers which do not involve crossing tens.

12 min

Whole class activity

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

Estimation can be done before or after the calculation.

E: $350 + 230 = 580$

Encourage Ps to speak out loudly and clearly

(With T's help if necessary)

Check by comparison with estimate and reverse addition

Agreement, praising

Estimation can be done before or after the calculation.

E: $360 + 480 = 760 + 40 + 40$
 $= 800 + 40$
 $= 840$

Discussion, reasoning, agreement, praising

Suggested by Ps

Bk3

Lesson Plan 73

Activity

3

Addition 2

Here is another sum. What numbers are being added? ($618 + 471$)
 What should we do first? (Estimate the sum). Ps come out to write estimate by rounding the terms to the nearest 10. Class agrees/disagrees.
 BB: $618 + 471 \approx 620 + 470 = 600 + 400 + 20 + 70 = 1000 + 90 = 1090$

Thousands	Hundreds	Tens	Units

Th	H	T	U
	6	1	8
	4	7	1
1	0	8	9

6	1	8	
+ 4	7	1	
1	0	8	9

Elicit that:
 10 hundreds = 1 thousand

Ps come to BB to complete the drawing and fill in the table and grid, explaining reasoning (with T's help). Class agrees/disagrees.
 Is the answer realistic? (Yes because $1089 \approx 1090$) What other check can we do? (Do the calculation in the opposite direction.)
 Agree that $618 + 471 = 1089$. Class reads equation in unison.

17 min

Notes

Whole class activity
 Tables and grid drawn on BB or use enlarged copy master or OHP (or use model money)
 Reasoning, agreement, praising
 At a good pace
 Ps suggest what should be done (with T's help).
 Encourage Ps to say clearly what they are doing, e.g.
 '8 units + 1 unit = 9 units, so I write 9 in the units column;
 1 ten + 7 tens = 8 tens, so I write 8 in the tens column;
 6 hundreds + 4 hundreds = 10 hundreds, but 10 hundreds = 1 thousand, so I write zero in the hundreds column and 1 in the thousands column.'
 Ps write short form in *Ex. Bks*

4

Book 3, page 73

Q.1 Read: Complete the drawing. Round the numbers to the nearest whole ten. Estimate, then calculate the sum.

Let's see if you can do this addition by yourselves. (T can guide Ps through it if necessary and review after each step: drawing, estimation, place value table, short form in grid.)
 If all done as individual work, review at BB with whole class.
 Ps dictate to T or come to BB (or T could have solution already prepared and uncover each part as it is dealt with).
 Checks done. Mistakes discussed and corrected.

Solution:

$342 + 753$ E: $340 + 750 = 300 + 700 + 40 + 50 = 1000 + 90 = 1090$

Thousands	Hundreds	Tens	Units

Th	H	T	U
	3	4	2
	7	5	3
1	0	9	5

	3	4	2
+ 7	5	3	
1	0	9	5

(10 hundreds = 1 thousand)

(If necessary, show interim step in diagram and place value table as in Activity 3.)

22 min

Individual trial, monitored, helped
 (or whole class activity if T thinks Ps are still unsure)
 Drawn on BB or use enlarged copy master or OHP
 Discussion, reasoning, checking, agreement, self-correction, praising
 Discuss why sum is more than estimate (both terms were rounded down)
 T encourages Ps to read out additions in detail:
 '2U + 3U = 5U, so I write 5 in the units column;
 4T + 5T = 9T, so I write 9 in the tens column;
 3H + 7H = 10H = 1Th + 0T, so I write 0 in the tens column and 1 in the thousands column.'
 Feedback for T

Bk3

Lesson Plan 73

Activity

5

Addition 3

What numbers are being added in this sum? ($236 + 347$)

What should we do first? (Estimate the sum). Ps come out to write estimate by rounding the terms to the nearest 10. Class agrees/disagrees.

BB: $236 + 347 \approx 240 + 350 = 200 + 300 + 40 + 50 = 590$

Ps come to BB to draw, explain and calculate (with T's help). Class agrees/disagrees. Discuss what to do about the 13 units and show in the diagram and place value table.

Discuss why the sum is less than the estimate (both terms were rounded up, so $\text{sum} < 590$) but agree that it is close, so is probably correct. Check further with addition in the opposite direction.

Solution:

	Hundreds	Tens	Units
Given			
Given			
Ps draw			

H	T	U
2	3	6
3	4	7
5	7	13
5	8	3

2	3	6
3	4	7
5	8	3

Elciti that:
13 units = 1 ten + 3 units

26 min

Notes

Whole class activity

Tables and grid drawn on BB or use enlarged copy master or OHP (or model money)

Reasoning, agreement, praising

Allow Ps to suggest what to do throughout and encourage other Ps to point out errors.

Encourage Ps to say clearly what they are doing, e.g.

" $6U + 7U = 13U$, but $13U = 1T + 3U$, so I write 3 in the units column in the answer and add 1 to the tens column;

$1T + 3T + 4T = 8T$, so I write 8 in the tens column in the answer;

$2H + 3H = 5H$, so I write 5 in the hundreds column in the answer. The sum is 583.

Ps write short form in *Ex.Bks.*

6

Book 3, page 73

Q.2 Read: *Complete the drawing. Round the numbers to the nearest whole ten. Estimate, then calculate the sum.*

Let's see if you can do this addition by yourselves. (T can guide Ps through it if necessary and reviews after each step: drawing, estimation, place value table, short form in grid.)

If all done as individual work, review at BB with whole class.

Ps dictate to T or come to BB (or T could have solution already prepared and uncover each part as it is dealt with).

Checks done. Mistakes discussed and corrected.

Solution:

$$537 + 259 \approx 540 + 260 = 800$$

Hundreds	Tens	Units

H	T	U
5	3	7
2	5	9
7	8	16
7	9	6

5	3	7
2	5	9
7	9	6

31 min

Individual trial, monitored, helped

(or whole class activity if T thinks Ps are still unsure)

Drawn on BB or use enlarged copy master or OHP

Discussion, reasoning, checking, agreement, self-correction, praising

Ps read addition aloud in detail:

$$7U + 9U = 16U = 1T + 6U$$

$$1T + 3T + 5T = 9T$$

$$5H + 2H = 7H$$

The sum is 796.

Agree that $796 \approx 800$, so sum is probably correct

Feedback for T

Bk3

Lesson Plan 73

Activity

7

Addition 4

Let's do one more to make sure that you understand. This time try to do it by yourselves!

What numbers are being added in this sum? ($362 + 283$)

Ps come out to write estimate. Class agrees/disagrees.

BB: $362 + 283 \approx 360 + 280 = 300 + 200 + 60 + 80 = 500 + 140 = 640$

Ps come to BB to draw, explain and calculate. Class agrees/disagrees.

Ps decide what to do about the 14 tens and show in the diagram and place value table. Rest of class helps where necessary.

Elicit why the sum is more than the estimate (both terms were rounded down, so sum > 640) but agree that it is still close, so is probably correct.

Solution:

Hundreds	Tens	Units

H	T	U
3	6	2
2	8	3
5	4	5
6	4	5

3	6	2
2	8	3
6	4	5

$14 T = 1H + 4T$

36 min

Notes

Whole class activity

Tables and grid drawn on BB or use enlarged copy master or OHP (or model money)

Reasoning, agreement

T helps only if absolutely necessary.

Ps say clearly what they are doing, e.g.

$2U + 3U = 5U$, so I write 5 in the units column;

$6T + 8T = 14T = 1H + 4T$, so I write 4 in the tens column and add 1H to the hundreds column;

$1H + 3H + 2H = 6H$, so I write 6 in the hundreds column. The sum is 645'.

Ps write short form in *Ex.Bks.*

T tells Ps that they have been very clever!

8

Book 3, page 73

Q.3 Read: *Fiona has 367 books and her brother Graham has 715 books. How many books do they have altogether?*

Ps write the data, estimate the sum, fill in the tables, check the calculation and write the answer as a sentence.

Review at BB with whole class. Ps can show result on scrap paper or 'slates' on commnd. Ps who answered correctly explain to Ps who did not (with T's help). Mistakes discussed and corrected.

Solution:

Data: F: 367 books, G: 715 books *E:* $370 + 720 = 1090$

Th	H	T	U
	3	6	7
+	7	1	5
	10	7	12
	1	0	8
			2

Calculation:

	3	6	7
+	7	1	5
	1	0	8
			2

Answer:
Fiona and Graham had 1082 books altogether.

(T shows interim line in table on BB but Ps need not do so in *Pbs.*)

N.B. Accept any correct calculation, even if done mentally.

42 min

Individual work, monitored, helped

If necessary, keep Ps together at each step.

Answers shown in unison

Discussion, reasoning, agreement, checking, self-correcting, praising

Elicit that sum < 1090 , as both terms were rounded up.

Ps give details of calculation: $7U + 5U = 12U = 1T + 2U$, so write 2 in the units column and add 1T to the tens column;

$1T + 6T + 1T = 8T$, etc.

$3H + 7H = 10H = 1Th + 0H$ etc. Ps read answer in unison.

9

Book 3, page 73

Q.4 Read: *Round these numbers to the nearest a) 10, b) 100.*

Review orally with whole class. Mistakes corrected.

If time, additional numbers for each part can be done orally.

45 min

Individual work, monitored

Agreement, self-correcting, praising

At speed round class. Praising.

<h1>Bk3</h1>	<p>R: Mental calculation. Vertical addition C: Problems in context (addition) E: Numbers up to 2000</p>	<h2>Lesson Plan 74</h2>																																																													
<p>Activity 1</p>	<p>Sequences T says first 3 terms of a sequence. Ps continue it and then give the rule. a) 867, 878, 889, (900, 911, 922, 933, 944, 955, ...) <i>Rule: +11</i> b) 432, 543, 654, (765, 876, 987, 1098, 1209, ...) <i>Rule: + 111</i> c) 333, 456, 579, (702, 825, 948, 1071, 1194, ...) <i>Rule: + 123</i></p> <p style="text-align: right;"><i>10 min</i></p>	<p>Notes Whole class activity T chooses Ps at random At difficult steps, T suggests that Ps do calculations in <i>Ex. Bks.</i> using vertical addition. Praising, encouragement only</p>																																																													
<p>2</p>	<p>Analysis of addition Let's do these additions. Ps come to BB to do calculations, explaining reasoning. Study the additions and the diagram. What do you notice? BB:</p> <div style="display: flex; align-items: flex-start;"> <div style="margin-right: 20px;"> <p>a)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td> </td><td>4</td><td>5</td><td>3</td></tr> <tr><td>+</td><td>2</td><td>7</td><td>5</td></tr> <tr><td> </td><td>7</td><td>2</td><td>8</td></tr> </table> </div> <div style="margin-right: 20px;"> <p>b)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td> </td><td>3</td><td>5</td><td>3</td></tr> <tr><td>+</td><td>3</td><td>7</td><td>5</td></tr> <tr><td> </td><td>7</td><td>2</td><td>8</td></tr> </table> </div> <div> <p>c)</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td> </td><td>5</td><td>5</td><td>3</td></tr> <tr><td>+</td><td>1</td><td>7</td><td>5</td></tr> <tr><td> </td><td>7</td><td>2</td><td>8</td></tr> </table> </div> </div> <div style="margin-left: 100px; margin-top: 20px;"> <table style="border-collapse: collapse; text-align: center;"> <tr> <td style="border: none; padding: 0 10px;">453</td> <td style="border: none; padding: 0 10px;">+</td> <td style="border: none; padding: 0 10px;">275</td> <td style="border: none; padding: 0 10px;">=</td> <td style="border: none; padding: 0 10px;">728</td> </tr> <tr> <td colspan="5" style="border: 1px solid black; height: 20px; margin: 5px 0;"></td> </tr> <tr> <td style="border: none; padding: 0 10px;">353</td> <td style="border: none; padding: 0 10px;">+</td> <td style="border: none; padding: 0 10px;">375</td> <td style="border: none; padding: 0 10px;">=</td> <td style="border: none; padding: 0 10px;">728</td> </tr> <tr> <td colspan="5" style="border: 1px solid black; height: 20px; margin: 5px 0;"></td> </tr> <tr> <td style="border: none; padding: 0 10px;">553</td> <td style="border: none; padding: 0 10px;">+</td> <td style="border: none; padding: 0 10px;">175</td> <td style="border: none; padding: 0 10px;">=</td> <td style="border: none; padding: 0 10px;">728</td> </tr> </table> </div> <p>Elicit that, e.g.:</p> <p>a) → b): The first number decreased by 100, but the 2nd number increased by 100, so the sums are the same. b) → c): The first number increased by 200 but the 2nd number decreased by 200, so the sums are the same. etc.</p> <p style="text-align: right;"><i>15 min</i></p>		4	5	3	+	2	7	5		7	2	8		3	5	3	+	3	7	5		7	2	8		5	5	3	+	1	7	5		7	2	8	453	+	275	=	728						353	+	375	=	728						553	+	175	=	728	<p>Whole class activity Drawn on BB or use enlarged copy master or OHP Reasoning, agreement, praising Ps can copy into <i>Ex. Bks</i> too Discussion, agreement, praising Feedback for T</p>
	4	5	3																																																												
+	2	7	5																																																												
	7	2	8																																																												
	3	5	3																																																												
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453	+	275	=	728																																																											
353	+	375	=	728																																																											
553	+	175	=	728																																																											
<p>3</p>	<p>Problem 1 Listen carefully and think how you would solve the problem. <i>Ally, Betty and Cindy Squirrel collected acorns for their winter store. Ally collected 325 acorns, Betty collected 231 acorns and Cindy collected 516 acorns. How many acorns did they collect altogether?</i></p> <p>What should we do first? Who agrees? What should we do next? etc. Ps come to BB to write data, plan, estimate, calculation in place value table and in short form in grid. Check by comparing with the estimate and by calculating in opposite direction. BB: e.g.</p> <p><i>Data:</i> A: 325, B: 231, C: 516 <i>Plan:</i> A + B + C = 325 + 231 + 516 <i>E:</i> 330 + 230 + 520 = 300 + 200 + 500 + 30 + 30 + 20 = 1000 + 80 = 1080</p> <div style="display: flex; align-items: flex-start;"> <table border="1" style="border-collapse: collapse; text-align: center; margin-right: 20px;"> <tr><th>Th</th><th>H</th><th>T</th><th>U</th></tr> <tr><td> </td><td>3</td><td>2</td><td>5</td></tr> <tr><td> </td><td>2</td><td>3</td><td>1</td></tr> <tr><td>+</td><td>5</td><td>1</td><td>6</td></tr> <tr><td> </td><td>0</td><td>6</td><td>2</td></tr> <tr><td> </td><td>1</td><td>0</td><td>7</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center; margin-right: 20px;"> <tr><td> </td><td> </td><td>3</td><td>2</td><td>5</td></tr> <tr><td> </td><td> </td><td>2</td><td>3</td><td>1</td></tr> <tr><td>+</td><td> </td><td>5</td><td>1</td><td>6</td></tr> <tr><td> </td><td>1</td><td>0</td><td>7</td><td>2</td></tr> </table> <div style="margin-left: 20px;"> <p>Ps say details of calculation: 5U + 1U + 6U = 12U = 1T + 2U 1T + 2T + 3T + 1T = 7T 3H + 2H + 5H = 10H = 1Th + 0H</p> </div> </div> <p><i>Answer:</i> They collected 1072 acorns altogether.</p> <p style="text-align: right;"><i>20 min</i></p>	Th	H	T	U		3	2	5		2	3	1	+	5	1	6		0	6	2		1	0	7			3	2	5			2	3	1	+		5	1	6		1	0	7	2	<p>Whole class activity T repeats slowly and Ps make a note of the data. Discussion, reasoning, agreement, checking, praising Calculate ↓ and check ↑ or vice versa Agree that 1072 ≈ 1080 Ps write short form in <i>Ex. Bks</i> T points out that it would have been easier to estimate by rounding to the nearest 100: <i>E:</i> 300 + 200 + 500 = 1000 but that rounding to the nearest 10 is closer. Ps say answer in unison.</p>																	
Th	H	T	U																																																												
	3	2	5																																																												
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Bk3		<i>Lesson Plan 74</i>
<p>Activity</p> <p>4</p>	<p>Missing digits</p> <p>What digits do you think are missing from this addition? Ps come out to fill in the digits, explaining reasoning. Class agrees/disagrees. Let's check it (by doing calculation again). Who can make other additions from these digits which also have sum 567? T writes what Ps dictate. Ps explain their reasoning. Class checks it by mentally calculating in opposite direction.</p> <p>BB: e.g. $\begin{array}{r} 429 \\ + 138 \\ \hline 567 \end{array}$ $\begin{array}{r} 428 \\ + 139 \\ \hline 567 \end{array}$ $\begin{array}{r} 219 \\ + 348 \\ \hline 567 \end{array}$ etc.</p> <p style="text-align: center;"><i>25 min</i></p>	<p style="text-align: center;">Notes</p> <p>Whole class activity</p> <p>BB: $\begin{array}{r} 1 \boxed{2} 9 \\ + \boxed{4} 3 8 \\ \hline \boxed{5} 6 \boxed{7} \end{array}$</p> <p>Agreement, praising (or individual work in <i>Ex. Bks</i> if Ps wish) Feedback for T</p>
<p>5</p>	<p>Book 3, page 74</p> <p>Q.1 Read: <i>Estimate, then calculate the sums. Write the estimates in detail.</i></p> <p>Deal with one part at a time. Review at BB with whole class. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) $513 + 521 \approx 510 + 520 = 1030 <$ $\begin{array}{r} 1 \ 5 \ 1 \ 3 \\ + 5 \ 2 \ 1 \\ \hline 1 \ 0 \ 3 \ 4 \end{array}$</p> <p>b) $634 + 723 \approx 630 + 720 = 1350 <$ $\begin{array}{r} 1 \ 6 \ 3 \ 4 \\ + 7 \ 2 \ 3 \\ \hline 1 \ 3 \ 5 \ 7 \end{array}$</p> <p>c) $358 + 411 \approx 360 + 410 = 770$ $\begin{array}{r} 3 \ 5 \ 8 \\ + 4 \ 1 \ 1 \\ \hline 7 \ 6 \ 9 \end{array}$</p> <p>d) $476 + 218 \approx 480 + 220 = 700 >$ $\begin{array}{r} 4 \ 7 \ 6 \\ + 2 \ 1 \ 8 \\ \hline 6 \ 9 \ 4 \end{array}$</p> <p>e) $563 + 295 \approx 560 + 300 = 860$ $\begin{array}{r} 5 \ 6 \ 3 \\ + 2 \ 9 \ 5 \\ \hline 8 \ 5 \ 8 \end{array}$</p> <p>Which addition is different from the others? (Part c) does not involve crossing tens.)</p> <p style="text-align: center;"><i>31 min</i></p>	<p>Individual work, monitored, helped</p> <p>T suggests to Ps who have difficulty keeping the number being carried over in their head to write the number (in a smaller size) above or below the column.</p> <p>T reminds Ps about checking sums by comparing with estimates.</p> <p>Discussion, reasoning, checking, agreement, self-correcting, praising</p> <p>Encourage Ps to say the calculations in detail.</p> <p>Who had all 5 sums correct? Class applauds excellent work Stars/stickers etc. awarded</p>
<p>6</p>	<p>Problem 2</p> <p>Listen carefully, write the data in your <i>Ex. Bks</i>, do the calculation, check it and show me the answer when I say.</p> <p><i>I am making a birthday cake from these ingredients.</i> <i>250 g of sugar, 190 g of butter, 300 g of flour, 100 g of raisins, 50 g of shelled walnuts, 50 g of chocolate, 100 g of cherries, 2 eggs.</i> <i>What will the total weight of the cake be if each egg weighs 60 g?</i></p> <p>Show me the answer . . . now! (1160 g)</p> <p>Ps with correct response explain to the rest of the class. Who agrees? Who did it a different way? etc. Mistakes discussed and corrected.</p> <p><i>Data:</i> S: 250 g, B: 190 g, F: 300 g, R: 100 g, W: 50 g, Cho: 50 g, Che: 100 g, 2 E: $2 \times 60 \text{ g} = 120 \text{ g}$</p> <p><i>Plan:</i> $(250 + 190 + 300 + 100 + 50 + 50 + 100 + 120) \text{ g}$</p> <p><i>Answer:</i> The total weight of the cake will be 1160 g. (= 1 kg 160 g)</p> <p style="text-align: center;"><i>36 min</i></p>	<p>Individual (or paired) work, monitored, helped</p> <p>T repeats slowly once or twice while Ps make a note of data.</p> <p>Give Ps time to do calculation</p> <p>In unison (on paper or slates)</p> <p>Reasoning, checking, agreement, self-correction, praising</p> <p><i>Calculation:</i> vertical, horizontal or mental (adding hundreds first, then tens)</p> <p>T can check with a calculator.</p>

Bk3*Lesson Plan 74***Activity**

7

Book 3, page 74

Q.2 Read: *Mum wants to make matching dresses for herself and her daughter, Julia. She needs 2 m 35 cm for her own dress and 1 m 25 cm for Julia's dress.*

How much material will she need to buy altogether?

Ps write the data, make a plan, estimate the sum, do the calculation, check it and write the answer as a sentence.

Review at BB with whole class. Ps can show result on scrap paper or 'slates' on command. Ps who answered correctly explain to Ps who did not (with T's help). Mistakes discussed and corrected.

Solution:

Data: M: 2 m 35 cm = 235 cm, J: 1 m 25 cm = 125 cm

Plan: M + J: 235 cm + 125 cm

Estimate: 235 cm + 125 cm \approx 240 cm + 130 cm = 370 cm

Calculation:

$$\begin{array}{r} 235 \\ + 125 \\ \hline 360 \end{array}$$

↓ ↑

Check: 360 \approx 370
or 2 m 35 cm + 1 m 25 cm
= 2 m + 1 m + 35 cm + 25 cm
= 3 m + 60 cm = 3 m 60 cm

Answer: Mum will need to buy 360 cm (= 3 m 60 cm) of material.

40 min

Notes

Individual work, monitored, helped

Ps may use *Ex. Bks* if there is not enough room in *Pbs*.

Ps do calculation in whichever way they wish, using whichever unit they prefer.

Results shown in unison

Reasoning, checking, agreement, self-correction, praising

T shows vertical addition in place value table, giving details of the additions

BB:

	H	T	U
	2	3	5
+	1	2	5
	3	5	0
	3	6	0

8

Book 3, page 74

Q.3 Ps read problems themselves and solve them. Set a time limit. Review at BB with whole class. Ps explain method of solution and discuss and correct mistakes.

a) *Kate used a 23 cm 5 mm piece of ribbon to tie up her hair. Linda used a piece 12 cm 5 mm less than Kate's. What length was Linda's ribbon?*

Solution:

Data: K: 23 cm 5 mm = 235 mm, L: K - 125 mm

Plan: 235 mm - 125 mm

Estimate: 235 mm - 125 mm \approx 240 mm - 130 mm = 110 mm

Check: Calculated difference = estimate

Answer: The length of Linda's ribbon was 110 mm. (= 11 cm)

b) *Dad bought a piece of wood and cut it into two pieces, one 2 m 35 cm and the other 3 m 15 cm long. What length of wood did Dad buy?*

Data: 2 m 35 cm = 235 cm, 3 m 15 cm = 315 cm

Plan: 235 cm + 315 cm

Estimate: 235 cm + 315 cm \approx 240 cm + 320 cm = 560 cm

Check: 550 cm \approx 560 cm (less because both rounded up)

Answer: The length of wood Dad bought was 560 cm (= 5 m 50 cm)

45 min

Individual work, monitored, helped

Differentiation by time limit

Reasoning, checking, agreement, self-correction, praising

Calculation:

$$\begin{array}{r} 235 \\ - 125 \\ \hline 110 \end{array}$$

or 23 cm 5 mm - 12 cm 5 mm
= 11 cm 0 mm = 11 cm

Calculation:

$$\begin{array}{r} 235 \\ + 315 \\ \hline 550 \end{array}$$

or 2 m 35 cm + 3 m 15 cm
= 2 m + 3 m + 35 cm + 15 cm
= 5 m + 50 cm = 5 m 50 cm

Bk3	R: Mental calculation C: Addition E: Numbers up to 2000	<i>Lesson Plan</i> 75																																				
Activity 1	Rounding practice Study this table and think what the rule is. Ps come out to choose a column and fill in missing numbers. Class agrees/disagrees. BB: <table border="1" style="margin-left: 20px;"> <tr> <td>A</td><td>618</td><td>344</td><td>192</td><td>396</td><td>155</td><td>743</td><td>608</td><td>222</td><td>555</td><td>999</td><td>1206</td></tr> <tr> <td>B</td><td>600</td><td>300</td><td>200</td><td>400</td><td>200</td><td>700</td><td>600</td><td>200</td><td>600</td><td>1000</td><td>1200</td></tr> <tr> <td>C</td><td>620</td><td>340</td><td>190</td><td>400</td><td>160</td><td>740</td><td>610</td><td>220</td><td>560</td><td>1000</td><td>1210</td></tr> </table> Elicit that: B is A rounded to the nearest 100 C is A rounded to the nearest 10 (B is also C rounded to the nearest 100) <div style="text-align: right;"><i>5 min</i></div>	A	618	344	192	396	155	743	608	222	555	999	1206	B	600	300	200	400	200	700	600	200	600	1000	1200	C	620	340	190	400	160	740	610	220	560	1000	1210	Notes Whole class activity Table drawn on BB or use enlarged copy master or OHP Bold numbers are given At a good pace Reasoning, agreement, praising Feedback for T
A	618	344	192	396	155	743	608	222	555	999	1206																											
B	600	300	200	400	200	700	600	200	600	1000	1200																											
C	620	340	190	400	160	740	610	220	560	1000	1210																											
2	Sequences T says first few terms of a sequence. Ps continue it and then give the rule. a) 920, 870, 820, (770, 720, 670, 620, 570, 520, ...) <i>Rule: - 50</i> b) 327, 368, 409, (450, 491, 532, 573, 614, 655, ...) <i>Rule: + 41</i> c) 2, 3, 5, 8, 12, 17, (23, 30, 38, 47, 57, 68, 80, 93, 107, ...) (1 2 3 4 5 6 7 8 9 10 11 12 13 14 ...) <i>Rule: The difference is increasing by 1.</i> <div style="text-align: right;"><i>10 min</i></div>	Whole class activity a) and b) done orally round class. If a P makes a mistake, the next P corrects it. c) Ps come to BB to write each term (or dictate to T) Discussion on the rule. Agreement, praising																																				
3	Addition practice Let's estimate these sums by rounding the terms to the nearest 10, then do the calculation. Ps check by comparing with estimate and by doing the calculation in reverse order. Show in place value table if necessary. BB: <table style="margin-left: 20px;"> <tr> <td>a)</td> <td>$328 + 17 + 114$ ($\approx 330 + 20 + 110 = 460$)</td> <td> $\begin{array}{r} \overset{1}{328} \\ 17 \\ + 114 \\ \hline 459 \end{array}$ </td> </tr> <tr> <td>b)</td> <td>$1326 + 9 + 35$ ($\approx 1330 + 10 + 40 = 1380$) ></td> <td> $\begin{array}{r} \overset{2}{1326} \\ 9 \\ + 35 \\ \hline 1370 \end{array}$ </td> </tr> <tr> <td>c)</td> <td>$34 + 128 + 1416$ ($\approx 30 + 130 + 1420 = 1580$)</td> <td> $\begin{array}{r} \overset{1}{34} \\ 128 \\ + 1416 \\ \hline 1578 \end{array}$ </td> </tr> </table> <div style="text-align: right;"><i>15 min</i></div>	a)	$328 + 17 + 114$ ($\approx 330 + 20 + 110 = 460$)	$\begin{array}{r} \overset{1}{328} \\ 17 \\ + 114 \\ \hline 459 \end{array}$	b)	$1326 + 9 + 35$ ($\approx 1330 + 10 + 40 = 1380$) >	$\begin{array}{r} \overset{2}{1326} \\ 9 \\ + 35 \\ \hline 1370 \end{array}$	c)	$34 + 128 + 1416$ ($\approx 30 + 130 + 1420 = 1580$)	$\begin{array}{r} \overset{1}{34} \\ 128 \\ + 1416 \\ \hline 1578 \end{array}$	Whole class activity T chooses Ps to work at BB and rest of class work in <i>Ex. Bks</i> (or on squared paper) Reasoning, agreement, checking, praising Ps explain additions in detail: a) '8U + 7U + 4U = 19U = 1T + 9U', so I write 9 in the units column and add 1T to the tens column', etc. Stress the importance of writing the digits in the correct column. T can check with a calculator.																											
a)	$328 + 17 + 114$ ($\approx 330 + 20 + 110 = 460$)	$\begin{array}{r} \overset{1}{328} \\ 17 \\ + 114 \\ \hline 459 \end{array}$																																				
b)	$1326 + 9 + 35$ ($\approx 1330 + 10 + 40 = 1380$) >	$\begin{array}{r} \overset{2}{1326} \\ 9 \\ + 35 \\ \hline 1370 \end{array}$																																				
c)	$34 + 128 + 1416$ ($\approx 30 + 130 + 1420 = 1580$)	$\begin{array}{r} \overset{1}{34} \\ 128 \\ + 1416 \\ \hline 1578 \end{array}$																																				

Bk3		<i>Lesson Plan 75</i>
<p>Activity</p> <p>4</p>	<p>Problem</p> <p>Listen carefully, write the data in your <i>Ex. Bks.</i> and think how you would solve it. Draw a rough picture of each toy if you want to.</p> <p><i>Molly wants to buy some toys. She can choose from a teddy bear at £6 41 p, a game at £7 16 p, a doll at £6 24 p, a ball at £3 28 p and a boat at £4 56 p.</i></p> <p><i>If she bought any 2 of them, she would have some money left, but not enough to buy 3 of the toys. How much money could Molly have?</i></p> <p>T asks several Ps what they think and class agrees on a method of solution. T writes what Ps dictate on BB and Ps write in <i>Ex. Bks.</i></p> <p><i>Solution:</i> e.g.</p> <p>1) Molly has <u>more</u> money than the total cost of the 2 most expensive toys.</p> $\begin{array}{r} \text{BB: } M > \text{£}7\ 16\ \text{p} + \text{£}6\ 41\ \text{p} \\ M > \text{£}13\ 57\ \text{p} \end{array} \quad \begin{array}{r} +\ 641 \\ \hline 1357 \end{array}$ <p>2) Molly has <u>less</u> money than the total cost of the 3 cheapest toys.</p> $\begin{array}{r} \text{BB: } M < \text{£}3\ 28\ \text{p} + \text{£}4\ 56\ \text{p} + \text{£}6\ 24\ \text{p} \\ M > \text{£}14\ 08\ \text{p} \end{array} \quad \begin{array}{r} +\ 328 \\ 456 \\ +\ 624 \\ \hline 1408 \end{array}$ <p>So Molly has more than £13 57 p, but less than £14 08 p.</p> <p>Who can write it mathematically? Who can write it in £s only?</p> <p style="text-align: right;"><i>20 min</i></p>	<p>Notes</p> <p>Whole class activity</p> <p>T could have drawings or pictures cut out of magazines stuck to BB with price labels beneath each one.</p> <p>T repeats slowly</p> <p>Give Ps time to think and discuss with their neighbours.</p> <p>Reasoning, agreement, checking, praising</p> <p>(or £7 + £6 + 16 p + 41 p)</p> <p>(or £3 + £4 + £6 + 28 p + 56 p + 24 p = £13 + 108 p = £14 08 p)</p> <p>BB:</p> <p>£13 57 p < M < £14 08 p</p> <p>£13.57 < M < £14.08</p>
<p>5</p> <p>Extension</p>	<p>Analysing mistakes</p> <p><i>Harry Harum-Scarum</i> has done his homework. Let's see if he has done it well. Ps come to BB to estimate the sums first and tick or cross out the answers, explaining reasoning. Class agrees/disagrees.</p> <p>Lets see if you can do the additions correctly in your <i>Ex. Bks.</i> Review quickly at BB with whole class. Mistakes corrected.</p> <p>BB:</p> <p>a) $\begin{array}{r} 385 \\ + 241 \\ \hline \end{array}$ b) $\begin{array}{r} 27 \\ + 46 \\ \hline \end{array}$ c) $\begin{array}{r} 946 \\ + 138 \\ \hline \end{array}$ d) $\begin{array}{r} 563 \\ + 845 \\ \hline \end{array}$ e) $\begin{array}{r} 56 \\ + 84 \\ \hline \end{array}$</p> <p>716 613 184 148 1310</p> <p>≈ 630 ≈ 80 ≈ 1090 ≈ 1410 ≈ 140</p> <p>(626) (73) (1084) (1408) (140)</p> <p style="text-align: right;"><i>25 min</i></p>	<p>Whole class activity in analysing mistakes</p> <p>T has BB or SB or OHT already prepared</p> <p>Reasoning, agreement, praising</p> <p>Individual work in finding correct answers, monitored</p> <p>Agreement, self-correction, praising</p>
<p>6</p>	<p>Book 3, page 75</p> <p>Q.1 Read: <i>Round the numbers to the nearest ten, then estimate and calculate the sums.</i></p> <p>Review at BB with whole class. Mistakes corrected.</p> <p><i>Solution:</i></p> <p>a) 428 + 541 b) 1328 + 661 c) 462 + 1417</p> <p>E: $\begin{array}{ c c c c } \hline 9 & 7 & 0 & \\ \hline \end{array}$ E: $\begin{array}{ c c c c } \hline 1 & 9 & 9 & 0 \\ \hline \end{array}$ E: $\begin{array}{ c c c c } \hline 1 & 8 & 8 & 0 \\ \hline \end{array}$</p> <p>$\begin{array}{ c c c c } \hline & 4 & 2 & 8 \\ \hline + & 5 & 4 & 1 \\ \hline & 9 & 6 & 9 \\ \hline \end{array}$ $\begin{array}{ c c c c } \hline & 1 & 3 & 2 & 8 \\ \hline + & & 6 & 6 & 1 \\ \hline & 1 & 9 & 8 & 9 \\ \hline \end{array}$ $\begin{array}{ c c c c } \hline & & 4 & 6 & 2 \\ \hline + & 1 & 4 & 1 & 7 \\ \hline & 1 & 8 & 7 & 9 \\ \hline \end{array}$</p> <p style="text-align: right;"><i>29 min</i></p>	<p>Individual work monitored, (helped)</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement, checking, self-correction, praising</p> <p>Feedback for T</p>

Bk3

Lesson Plan 75

Activity

7

Book 3, page 75

Q.2 Read: *Round the numbers to the nearest ten, then estimate and calculate the sums.*

Let's see how many of these you can do in 3 minutes!
Ps finished early can exchange *Pbs* with their neighbours to check each other's work.

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

Solution:

a) E: $\begin{array}{|c|c|c|c|} \hline 1 & 7 & 6 & 0 \\ \hline \end{array}$ E: $\begin{array}{|c|c|c|c|} \hline 1 & 4 & 5 & 0 \\ \hline \end{array}$ E: $\begin{array}{|c|c|c|c|} \hline & 9 & 3 & 0 \\ \hline \end{array}$ E: $\begin{array}{|c|c|c|c|} \hline & 9 & 6 & 0 \\ \hline \end{array}$

$\begin{array}{|c|c|c|c|} \hline & 1 & 4 & 3 & 6 \\ \hline + & & 3 & 2 & 2 \\ \hline & 1 & 7 & 5 & 8 \\ \hline \end{array}$ $\begin{array}{|c|c|c|c|} \hline & 1 & 3 & 6 & 2 \\ \hline + & & & 9 & 2 \\ \hline & 1 & 4 & 5 & 4 \\ \hline \end{array}$ $\begin{array}{|c|c|c|c|} \hline & & 5 & 7 & 2 \\ \hline + & & 3 & 5 & 6 \\ \hline & & 9 & 2 & 8 \\ \hline \end{array}$ $\begin{array}{|c|c|c|c|} \hline & & 6 & 3 & 8 \\ \hline + & & 3 & 2 & 2 \\ \hline & & 9 & 6 & 0 \\ \hline \end{array}$

b) E: $\begin{array}{|c|c|c|c|} \hline 1 & 1 & 7 & 0 \\ \hline \end{array}$ E: $\begin{array}{|c|c|c|c|} \hline 1 & 2 & 7 & 0 \\ \hline \end{array}$ E: $\begin{array}{|c|c|c|c|} \hline & 9 & 5 & 0 \\ \hline \end{array}$ E: $\begin{array}{|c|c|c|c|} \hline & 9 & 2 & 0 \\ \hline \end{array}$

$\begin{array}{|c|c|c|c|} \hline & & 8 & 5 & 6 \\ \hline + & & 3 & 1 & 2 \\ \hline & 1 & 1 & 6 & 8 \\ \hline \end{array}$ $\begin{array}{|c|c|c|c|} \hline & & 3 & 5 & 8 \\ \hline + & & 9 & 1 & 1 \\ \hline & 1 & 2 & 6 & 9 \\ \hline \end{array}$ $\begin{array}{|c|c|c|c|} \hline & & 8 & 6 & 2 \\ \hline + & & & 9 & 2 \\ \hline & & 9 & 5 & 4 \\ \hline \end{array}$ $\begin{array}{|c|c|c|c|} \hline & & 5 & 0 & 7 \\ \hline + & & 4 & 0 & 8 \\ \hline & & 9 & 1 & 5 \\ \hline \end{array}$

34 min

Notes

Individual work monitored, (helped)

Written on BB or use enlarged copy master or OHP

Ps may do rounding in *Ex. Bks* (or round to nearest 100 if T prefers)

Differentiation by time limit

Reasoning, agreement, checking, self-correction, praising

T notes Ps having difficulty with crossing tens

8

Book 3, page 75

Q.3 Read: *Uncle Tom gathered 468 kg of pears and 1335 kg of apples from the trees in his orchard. How much fruit did he gather altogether?*

Deal with one step at a time. Review after each step. Ps can round to nearest 100. Mistakes discussed/corrected.

Solution:

Data: P: 468 kg, A: 1335 kg

Plan: P + A: 468 kg + 1335 kg E: 500 + 1300 = 1800

Answer: He gathered 1803 kg of fruit altogether.

Individual work, monitored, but class kept together throughout

Ps suggest order of steps

Discussion, reasoning, checking, agreement, self-correction, praising

C: $\begin{array}{|c|c|c|c|} \hline & & 1 & 1 \\ \hline & & 4 & 6 & 8 \\ \hline + & 1 & 3 & 3 & 5 \\ \hline & 1 & 8 & 0 & 3 \\ \hline \end{array}$

38 min

9

Book 3, page 75

Q.4 Read: *Paul has a piece of wire 5 m 47 cm long but it is 602 cm shorter than he needs. What length of wire does Paul need?*

Discuss which unit of length it would be easiest to use (cm). Elicit that: 1 m = 100 cm (BB)

Deal with one step at a time. Review after each step. Ps can round to nearest 10. Mistakes discussed/corrected.

Solution:

Data: Has: 5 m 47 cm = 547 cm, Needs: 602 cm more

Plan: 547 cm + 602 cm E: 550 + 600 = 1150

Answer: Paul needs 1149 cm (= 11 m 49 cm) of wire.

Individual work, monitored, but class kept together throughout (unless Ps wish to try it on their own)

Ps suggest order of steps

Discussion, reasoning, checking, agreement, self-correction, praising

C: $\begin{array}{|c|c|c|c|} \hline & & 1 & 1 \\ \hline & & 5 & 4 & 7 \\ \hline + & & 6 & 0 & 2 \\ \hline & 1 & 1 & 4 & 9 \\ \hline \end{array}$

42 min

Bk3		<i>Lesson Plan 75</i>
Activity 10	<p>Book 3, page 75</p> <p>Q.5 Read: <i>Mark Barry Bear's sums with a tick or a cross. Correct his mistakes.</i></p> <p>You have 2 minutes to check <i>Barry Bear's</i> sums!</p> <p>Review quickly with whole class. Deal with one part at a time.</p> <p>Stand up if you marked part a) correct and hold your nose if you marked it wrong. Show me . . . now! Repeat for each part.</p> <p>P who responded incorrectly goes through sum on BB with help of class. Mistakes corrected.</p> <p><i>Solution:</i></p> <p>a) $\begin{array}{r} 221 \\ + 387 \\ \hline \cancel{0}8 \times \\ (608) \end{array}$</p> <p>b) $\begin{array}{r} 532 \\ + 209 \\ \hline 741 \checkmark \end{array}$</p> <p>c) $\begin{array}{r} 459 \\ + 111 \\ \hline 570 \checkmark \end{array}$</p> <p>d) $\begin{array}{r} 833 \\ + 74 \\ \hline \cancel{0}7 \times \\ (907) \end{array}$</p> <p>e) $\begin{array}{r} 567 \\ + 603 \\ \hline 11\cancel{0} \times \\ (1170) \end{array}$</p> <p style="text-align: right;">45 min</p>	<p style="text-align: center;">Notes</p> <p>Individual work, monitored</p> <p>Written on BB or use enlarged copy master or OH</p> <p>Differentiation by time limit</p> <p>In unison</p> <p>At a good pace</p> <p>Reasoning, agreement, self-correction, praising</p>

Bk3

R: Mental calculation
 C: **Addition. Missing digits.**
 E: *Puzzles*

Lesson Plan 76

Activity

1

Puzzle

Let's write the digits from 1 to 6 in the boxes so that the sum is:

$$\begin{array}{r} \text{BB: } \square \square \square \\ + \square \square \square \\ \hline \end{array}$$

- a) the smallest possible
- b) the greatest possible
- c) even
- d) odd
- e) at least 800
- f) at most 800
- g) divisible by 5
- h) divisible by 10
- i) between 600 and 700
- j) between 750 and 800.

Ps come to BB to show their additions. Who has thought of another one? etc. Class agrees/disagrees.

Solution:

a) $\begin{array}{r} 1 \\ 135 \\ + 246 \\ \hline 381 \end{array}$	b) $\begin{array}{r} 1 \\ 642 \\ + 531 \\ \hline 1173 \end{array}$	c) e.g. $\begin{array}{r} 154 \\ + 632 \\ \hline 786 \end{array}$	d) e.g. $\begin{array}{r} 451 \\ + 236 \\ \hline 687 \end{array}$	e) e.g. $\begin{array}{r} 1 \\ 561 \\ + 243 \\ \hline 804 \end{array}$
f) e.g. $\begin{array}{r} 154 \\ + 632 \\ \hline 786 \end{array}$	g) e.g. $\begin{array}{r} 654 \\ + 231 \\ \hline 885 \end{array}$	h) e.g. $\begin{array}{r} 1 \\ 234 \\ + 516 \\ \hline 750 \end{array}$	i) e.g. $\begin{array}{r} 451 \\ + 236 \\ \hline 687 \end{array}$	j) e.g. $\begin{array}{r} 154 \\ + 632 \\ \hline 786 \end{array}$

8 min

Notes

Whole class activity
 Grids drawn on BB (or use enlarged copy master or OHP)
 Ps can try each one in *Ex. Bks* first (or each P has a copy of the copy master sheet)
 Elicit strategies for solution. e.g.
 • for smallest sum, the two biggest digits should be in the units column;
 • for largest sum the two biggest digits should be in the hundreds column;
 • divisible by 5 means that 5 should be in the units column, etc.
 Ps might notice that some additions can be used in more than one part.

2

Missing numbers

How much money do Anne* and Brigit* have? Let's fill in the table. Ps come out to fill in the missing numbers, explaining reasoning and showing calculations at side of BB. Class agrees/disagrees.

BB:

A (£)	134	258	647	376	247	1326	178	579
B (£)	312	427	836	522	815	484	736	542
A + B (£)	446	685	1483	898	1062	1810	914	1121

The last three columns are the most difficult and might need to be shown in a place value table. Write problem calculations on BB.

15 min

Whole class activity
 Table drawn on BB or use enlarged copy master or OHP
 * Use names of Ps in class
Bold numbers are given
 Ps may do calculations in *Ex. Bks*.
 Reasoning, agreement, checking, praising
 Ps give details of difficult additions.

3

Book 3, page 76

Q.1 Read: *Fill in the missing digits. Check the addition.*

Deal with one part at a time. Review at BB with whole class. Ps come to BB to fill in their numbers, explaining reasoning. Class agrees/disagrees. Mistakes corrected.

Solution:

a) $\begin{array}{r} \square \square \square \square \\ + \square \square \square \square \\ \hline \square \square \square \square \end{array}$	b) $\begin{array}{r} 1 \\ \square \square \square \square \\ + \square \square \square \square \\ \hline \square \square \square \square \end{array}$	c) $\begin{array}{r} \square \square \square \square \\ + \square \square \square \square \\ \hline \square \square \square \square \end{array}$	d) $\begin{array}{r} 1 \quad 1 \\ \square \square \square \square \\ + \square \square \square \square \\ \hline \square \square \square \square \end{array}$
--	---	--	---

20 min

Individual work, monitored, (helped)
 Drawn on BB or use enlarged copy master or OHP
 Reasoning, checking, agreement, self-correction, praising
Bold numbers are missing.
 Feedback for T

Bk3

Lesson Plan 76

Activity

4

Written exercises

Add up these numbers using vertical addition. T dictates numbers and Ps write in columns in *Ex. Bks*, then add them up. Ps check answers by adding columns in opposite direction.

Deal with one part at a time. Review at BB or OHP with whole class. T could have BB or SB or OHT already prepared and uncover each answer as it is dealt with. Mistakes discussed and corrected.

- a) 321, 32, 3 b) 127, 6, 53 c) 265, 43, 1 d) 362, 13, 512

$$\begin{array}{r} 321 \\ 32 \\ + 3 \\ \hline 356 \end{array} \quad \begin{array}{r} 127 \\ 6 \\ + 53 \\ \hline 186 \end{array} \quad \begin{array}{r} 265 \\ 43 \\ + 1 \\ \hline 309 \end{array} \quad \begin{array}{r} 362 \\ 13 \\ + 512 \\ \hline 887 \end{array}$$

- e) 412, 5, 331, 41 f) 8, 325, 39, 430 g) 25, 671, 60, 251 f) 853, 4, 211, 20

$$\begin{array}{r} 412 \\ 5 \\ 331 \\ + 41 \\ \hline 789 \end{array} \quad \begin{array}{r} 128 \\ 325 \\ 39 \\ + 430 \\ \hline 802 \end{array} \quad \begin{array}{r} 25 \\ 671 \\ 60 \\ + 251 \\ \hline 1007 \end{array} \quad \begin{array}{r} 853 \\ 4 \\ 211 \\ + 20 \\ \hline 1088 \end{array}$$

28 min

Notes

Individual work, monitored, helped

Ps use squared grid in *Ex. Bks*.

Agreement, checking, self-correction, praising

Written beforehand on BB or SB or OHP

Stress the importance of writing the digits in the correct column.

(Ps can write Th, H, T, U above their columns if they need to.)

T asks Ps how many they had correct out of 8.

Class applauds excellent work

Feedback for T

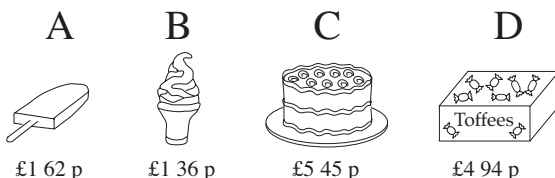
5

Book 3, page 76, Q.2

Read: *In how many different ways can Jenny choose from these treats?*

Talk about the pictures first. Let's label them A, B, C and D so that we do not have to write their names each time. (Ps label in *Pbs* too.)

BB:



T asks several Ps what they would choose if they could buy only 1 thing (2 things). Why?

- a) Read: *Write how much she would pay if she bought at most two things.*

Elicit that Jenny could buy either (1) thing or (2) things and relate to letters, numbers and missing amounts in *Pbs*.

Ps come to BB to fill in the amounts, explaining reasoning.

Details of calculations can be done at the side of the BB (or Ps can work in *Ex. Bks*). Class points out errors.

BB:

(1) A: £1 62 p or B: £1 36 p or C: £5.45 p or D: £4 94 p

(2) A + B: £2 98 p, or A + C = £7 07 p, or A + D = £6 56 p,
B + C = £6 81 p, or B + D = £6 30 p, or C + D = £10 39 p

(Details of additions can be written horizontally or vertically.)

Whole class activity

Pictures drawn on BB or use enlarged copy master or OHP (or cut out of magazines and stuck to BB)

Stress that in maths, we try to use short ways to express things whenever we can.

Discussion. Ps give reasons for their choice.

Discussion, reasoning, checking, agreement, praising

Rest of Ps write in *Pbs* too.

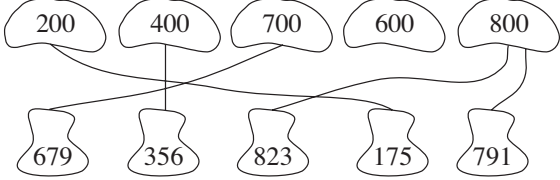
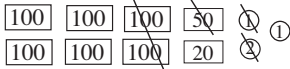
Agree that there are 4 cases

Ps suggest the missing cases.

Agree that there are

$1 \times 3 \times 2 = \underline{6}$ cases

<h1>Bk3</h1>		<p>Lesson Plan 76</p>																																																																																																
<p>Activity</p> <p>b) Read: <i>Write how much she would pay if she bought at least 3 things.</i> Elicit that Jenny could buy either (3) things or (4) things and relate to letters, numbers and missing amounts in <i>Pbs.</i> Ps come to BB to fill in the amounts, explaining reasoning. Details of calculations can be done at the side of the BB (or Ps can work in <i>Ex. Bks.</i>). Class points out errors.</p> <p>BB:</p> <p>(3) $A + B + C = \text{£}8\ 43\ \text{p}$, or $A + B + D = \text{£}7\ 92\ \text{p}$, or $A + C + D = \text{£}12\ 01\ \text{p}$, or $B + C + D = \text{£}11\ 75\ \text{p}$ (4 cases)</p> <p>(4) $A + B + B + C + D = \text{£}13\ 37\ \text{p}$ (1 case)</p> <p>Extension</p> <p>Who can write the prices in £s only? (£1.62, £1.36, £5.45, £4.94)</p>	<p style="text-align: right;">Notes</p> <p>Discussion, reasoning, checking, agreement, praising</p> <p>Rest of Ps work in <i>Pbs.</i></p> <p>Ps suggest missing cases. (Experience of combinations)</p> <p>P come to BB or dictate to T Agreement, praising</p> <p style="text-align: right;">38 min</p>																																																																																																	
<p>6</p> <p>Book 3, page 76</p> <p>Q.3 Do part a) then exercise your brains on part b)! T explains each part first.</p> <p>a) Read: <i>Fill in the missing digits.</i> Make sure that Ps realise that they should write digits only in the grid squares which have 'dashes' and that they should check by doing the additions again in their heads. Review quickly at BB with whole class. Mistakes corrected.</p> <p><i>Solution:</i></p> <p>a) i) <table style="display: inline-table; border-collapse: collapse;"><tr><td style="border: 1px dashed black; padding: 2px;">3</td><td style="border: 1px dashed black; padding: 2px;">2</td><td style="border: 1px dashed black; padding: 2px;">5</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">+</td><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">2</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">5</td><td style="border: 1px dashed black; padding: 2px;">6</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">8</td><td style="border: 1px dashed black; padding: 2px;">8</td><td style="border: 1px dashed black; padding: 2px;">8</td></tr></table> ii) <table style="display: inline-table; border-collapse: collapse;"><tr><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">3</td><td style="border: 1px dashed black; padding: 2px;">5</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">+</td><td style="border: 1px dashed black; padding: 2px;">9</td><td style="border: 1px dashed black; padding: 2px;">1</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">0</td><td style="border: 1px dashed black; padding: 2px;">4</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">8</td><td style="border: 1px dashed black; padding: 2px;">8</td><td style="border: 1px dashed black; padding: 2px;">8</td></tr></table> iii) <table style="display: inline-table; border-collapse: collapse;"><tr><td style="border: 1px dashed black; padding: 2px;">5</td><td style="border: 1px dashed black; padding: 2px;">3</td><td style="border: 1px dashed black; padding: 2px;">9</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">+</td><td style="border: 1px dashed black; padding: 2px;">8</td><td style="border: 1px dashed black; padding: 2px;">0</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">3</td><td style="border: 1px dashed black; padding: 2px;">4</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">0</td><td style="border: 1px dashed black; padding: 2px;">8</td><td style="border: 1px dashed black; padding: 2px;">8</td></tr></table> iv) e.g. <table style="display: inline-table; border-collapse: collapse;"><tr><td style="border: 1px dashed black; padding: 2px;">5</td><td style="border: 1px dashed black; padding: 2px;">0</td><td style="border: 1px dashed black; padding: 2px;">7</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">+</td><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">1</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">8</td><td style="border: 1px dashed black; padding: 2px;">8</td><td style="border: 1px dashed black; padding: 2px;">8</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">6</td><td style="border: 1px dashed black; padding: 2px;">9</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">5</td><td style="border: 1px dashed black; padding: 2px;">5</td><td style="border: 1px dashed black; padding: 2px;">5</td></tr></table> v) <table style="display: inline-table; border-collapse: collapse;"><tr><td style="border: 1px dashed black; padding: 2px;">9</td><td style="border: 1px dashed black; padding: 2px;">7</td><td style="border: 1px dashed black; padding: 2px;">5</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">+</td><td style="border: 1px dashed black; padding: 2px;">3</td><td style="border: 1px dashed black; padding: 2px;">6</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">3</td><td style="border: 1px dashed black; padding: 2px;">3</td></tr><tr><td style="border: 1px dashed black; padding: 2px;">6</td><td style="border: 1px dashed black; padding: 2px;">1</td><td style="border: 1px dashed black; padding: 2px;">6</td></tr></table></p> <p>b) Read: <i>Write an addition which uses each of the digits from 0 to 9 once only. Try out different solutions. Use your exercise books if you need to.</i> Make sure that Ps realise that each addition has 10 boxes (including the answer) and that there are 10 digits from 0 to 9. As soon as a P solves it, he/she shows solution to class. Class decides whether or not solution is valid.</p> <p><i>Possible solutions:</i></p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="text-align: center;"> <table style="border-collapse: collapse;"><tr><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">8</td><td style="border: 1px solid black; padding: 2px;">9</td></tr><tr><td style="border: 1px solid black; padding: 2px;">+</td><td style="border: 1px solid black; padding: 2px;">7</td><td style="border: 1px solid black; padding: 2px;">6</td></tr><tr><td style="border: 1px solid black; padding: 2px;">4</td><td style="border: 1px solid black; padding: 2px;">4</td><td style="border: 1px solid black; padding: 2px;">4</td></tr><tr><td style="border: 1px solid black; padding: 2px;">1</td><td style="border: 1px solid black; padding: 2px;">0</td><td style="border: 1px solid black; padding: 2px;">5</td></tr><tr><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">3</td></tr></table> </td> <td style="padding: 0 10px;">or</td> <td style="text-align: center;"> <table style="border-collapse: collapse;"><tr><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">6</td><td style="border: 1px solid black; padding: 2px;">9</td></tr><tr><td style="border: 1px solid black; padding: 2px;">+</td><td style="border: 1px solid black; padding: 2px;">7</td><td style="border: 1px solid black; padding: 2px;">8</td></tr><tr><td style="border: 1px solid black; padding: 2px;">8</td><td style="border: 1px solid black; padding: 2px;">4</td><td style="border: 1px solid black; padding: 2px;">4</td></tr><tr><td style="border: 1px solid black; padding: 2px;">1</td><td style="border: 1px solid black; padding: 2px;">0</td><td style="border: 1px solid black; padding: 2px;">5</td></tr><tr><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">3</td></tr></table> </td> <td style="padding: 0 10px;">etc.</td> </tr> </table> <p style="text-align: right;">45 min</p>	3	2	5	+	1	2	1	5	6	8	8	8	1	3	5	+	9	1	1	0	4	8	8	8	5	3	9	+	8	0	1	3	4	0	8	8	5	0	7	+	1	1	8	8	8	1	6	9	5	5	5	9	7	5	+	3	6	1	3	3	6	1	6	<table style="border-collapse: collapse;"><tr><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">8</td><td style="border: 1px solid black; padding: 2px;">9</td></tr><tr><td style="border: 1px solid black; padding: 2px;">+</td><td style="border: 1px solid black; padding: 2px;">7</td><td style="border: 1px solid black; padding: 2px;">6</td></tr><tr><td style="border: 1px solid black; padding: 2px;">4</td><td style="border: 1px solid black; padding: 2px;">4</td><td style="border: 1px solid black; padding: 2px;">4</td></tr><tr><td style="border: 1px solid black; padding: 2px;">1</td><td style="border: 1px solid black; padding: 2px;">0</td><td style="border: 1px solid black; padding: 2px;">5</td></tr><tr><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">3</td></tr></table>	2	8	9	+	7	6	4	4	4	1	0	5	3	3	3	or	<table style="border-collapse: collapse;"><tr><td style="border: 1px solid black; padding: 2px;">2</td><td style="border: 1px solid black; padding: 2px;">6</td><td style="border: 1px solid black; padding: 2px;">9</td></tr><tr><td style="border: 1px solid black; padding: 2px;">+</td><td style="border: 1px solid black; padding: 2px;">7</td><td style="border: 1px solid black; padding: 2px;">8</td></tr><tr><td style="border: 1px solid black; padding: 2px;">8</td><td style="border: 1px solid black; padding: 2px;">4</td><td style="border: 1px solid black; padding: 2px;">4</td></tr><tr><td style="border: 1px solid black; padding: 2px;">1</td><td style="border: 1px solid black; padding: 2px;">0</td><td style="border: 1px solid black; padding: 2px;">5</td></tr><tr><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">3</td><td style="border: 1px solid black; padding: 2px;">3</td></tr></table>	2	6	9	+	7	8	8	4	4	1	0	5	3	3	3	etc.	<p>a) Individual work, monitored helped Written on BB or use enlarged copy master/OHP Discussion, reasoning, checking, agreement, self-correction, praising Parts iv) and v) have several solutions – accept any correct answer. Feedback for T</p> <p>b) Individual or paired work, monitored This is a very challenging problem! Ps can manipulate number cards on desks, or use <i>Ex. Bks</i> to practice in and only write concrete solutions in <i>Pbs.</i> Extra praise if a P solves it during the lesson. Otherwise Ps can try to solve it at home if they wish.</p>
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<h1>Bk3</h1>	<p>R: Addition, subtraction. Multiplication and division by 2, 5, 10 C: Multiplication and division table for 3 E: <i>Product of more than two factors</i></p>	<h2>Lesson Plan 77</h2>
<p>Activity</p> <p>1</p>	<p>Rounding to the nearest 100</p> <p>Join up the numbers to the matching values if rounded to the nearest 100. Ps come out to join up the numbers, explaining reasoning. Class agrees/disagrees. Elicit that 50 rounds <u>up</u> to next 100.</p> <p>BB:</p>  <p>Which mushroom head does not have a matching stalk? (600) Which mushroom head belongs to more than one stalk? (800)</p> <p>T points to a number and Ps round it to the nearest 10.</p> <p style="text-align: right;">4 min</p>	<p>Notes</p> <p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP (or shapes cut out and stuck to BB and Ps rearrange them into 'mushrooms')</p> <p>At a good pace Agreement, praising</p> <p>Ps think of values for a stalk Which is closer to 800? (791)</p> <p>At speed round class</p>
<p>2</p>	<p>Subtraction 1</p> <p>What is the difference if I subtract from 950:</p> <p>a) 150 ($950 - 150 = 800$) b) 250 ($950 - 250 = 700$) c) 350 ($950 - 350 = 600$) d) 650 ($950 - 650 = 300$) e) 50? ($950 - 50 = 900$)</p> <p>What do you notice about how the differences change? Elicit that:</p> <ul style="list-style-type: none"> If I subtract 100 more from the same amount, then the difference will be 100 less. If I subtract 100 less from the same amount, then the difference will be 100 more. <p style="text-align: right;">9 min</p>	<p>Whole class activity</p> <p>Ps come to BB to write subtractions (or dictate to T)</p> <p>Class points out errors</p> <p>Discussion, agreement, praising</p>
<p>3</p>	<p>Subtraction 2</p> <p>What is the difference if I subtract 450 from:</p> <p>a) 850 ($850 - 450 = 400$) b) 950 ($950 - 450 = 500$) c) 750 ($750 - 450 = 300$) d) 650 ($650 - 450 = 200$) e) 500? ($500 - 450 = 50$)</p> <p>What do you notice about how the differences change? Elicit that:</p> <ul style="list-style-type: none"> If I subtract the same amount from a number which is 100 more, then the difference will be 100 more. If I subtract the same amount from a number which is 100 less, then the difference will be 100 less. <p style="text-align: right;">12 min</p>	<p>Whole class activity</p> <p>Ps come to BB to write subtractions (or dictate to T)</p> <p>Class points out errors</p> <p>Discussion, agreement, praising</p>
<p>4</p>	<p>Problem</p> <p>Listen carefully and think how you would work out the answer.</p> <p><i>Two brothers had £674 in their bank accounts altogether. They bought a television set for £253. How much money did they have left?</i></p> <p>Ps tell T what to do and dictate what to write on BB. Ps copy in <i>Ex. Bks.</i></p> <p>BB: <i>Data:</i> Had: £674, Spent: £253, <i>Plan:</i> Have left: $£674 - £253$ <i>E:</i> $£670 - £250 = £420$ <i>C:</i> $£674 - £253 = \underline{£421}$</p> <p><i>Answer:</i> They had £421 left.</p> <p style="text-align: right;">17 min</p>	<p>Whole class activity</p> <p>(T could have a picture of a TV and price stuck to BB)</p> <p>Discuss rounding: to nearest 100 is easier but to nearest 10 is closer.</p> <p>Show money model on BB:</p> 

Bk3

Lesson Plan 77

Activity

5

Estimation

Let's estimate the difference by rounding to the nearest 100, then calculate it exactly. Ps come out to BB or dictate to T.

BB:

a) Had: $\boxed{5}$ Spent: $\boxed{5}$ Difference: (Too rough)
 $\boxed{100}$ $\boxed{20}$ $\boxed{20}$ $\boxed{20}$ Estimation: $200 - 100 = \overset{\downarrow}{100}$
 $\boxed{100}$ $\boxed{20}$ $\boxed{5}$ $\boxed{5}$ Exact amount: $245 - 55 = 190$
 $245 \approx 200$ $55 \approx 100$

b) Had: $\boxed{5}$ Spent: Difference: (Too rough)
 $\boxed{100}$ $\boxed{20}$ $\boxed{100}$ $\boxed{5}$ Estimation: $400 - 100 = \overset{\downarrow}{300}$
 $\boxed{100}$ $\boxed{20}$ $\boxed{20}$ $\boxed{20}$ Exact amount: $355 - 145 = 210$
 $\boxed{100}$ $\boxed{10}$
 $355 \approx 400$ $145 \approx 100$

c) Had: $\boxed{5}$ Spent: Difference: (o.k.)
 $\boxed{100}$ $\boxed{50}$ $\boxed{100}$ Estimation: $500 - 300 = \overset{\downarrow}{200}$
 $\boxed{100}$ $\boxed{10}$ $\boxed{100}$ Exact amount: $465 - 250 = 215$
 $\boxed{100}$ $\boxed{100}$ $\boxed{50}$
 $465 \approx 500$ $250 \approx 300$

d) Had: $\boxed{5}$ Spent: Difference: (o.k.)
 $\boxed{100}$ $\boxed{100}$ $\boxed{20}$ $\boxed{100}$ Estimation: $600 - 100 = \overset{\downarrow}{500}$
 $\boxed{100}$ $\boxed{100}$ $\boxed{20}$ $\boxed{20}$ Exact amount: $649 - 125 = 524$
 $\boxed{100}$ $\boxed{100}$ $\textcircled{2}$ $\textcircled{2}$ $\boxed{5}$
 $649 \approx 600$ $125 \approx 100$

Do you think the estimates are close enough to the exact amount?

- a) Number being subtracted from (reductant) has been rounded down and number being subtracted (subtrahend) has been rounded up, i.e. more is being subtracted from less. The estimate is too small.
- b) Number being subtracted from (reductant) has been rounded up and number being subtracted (subtrahend) has been rounded down, i.e. less is being subtracted from more. The estimate is too big.
- c) Both numbers have been rounded up, so estimate is quite close.
- d) Both numbers have been rounded down, so estimate is quite close.

26 min

Notes

Whole class activity

Use enlarged copy master or OHP or model money stuck to BB.

Reasoning, agreement, praising

Ps can do the calculations in their *Ex. Bks.*

Involve several Ps in discussion about the estimates.

Agreement that

- care must be taken when estimating in subtractions;
- it is better to use more accurate estimates (e.g. to nearest 10).

Ps do the estimates again orally by rounding to the nearest 10.

- a) *E*: $250 - 60 = 190$
 b) *E*: $360 - 150 = 210$
 c) *E*: $470 - 250 = 220$
 d) *E*: $650 - 130 = 520$

(Agree that all are closer than previous estimates)

6

Book 3, page 77

Q.1 Read: *Change the prices of the soft toys to pence. By rounding the prices to the nearest 10 p, estimate the difference between:*

- a) *the bear and the cat*
 b) *the elephant and the tortoise*
 c) *the elephant and the cat*
 d) *the tortoise and the bear.*

Prices in pence reviewed orally before Ps do parts a) to d).

Review at BB with whole class. Mistakes corrected.

Ask Ps to give estimates orally as £s and pence.

Calculate the exact costs. (T can check with a calculator.)

Individual work, monitored, helped

Drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correcting, praising

BB: (in pence)

- a) $B - C \approx 550 - 360 = \underline{190}$
 b) $E - T \approx 870 - 650 = \underline{220}$
 c) $E - C \approx 870 - 360 = \underline{510}$
 d) $T - B \approx 650 - 550 = \underline{100}$

Extension

32 min

Bk3		<i>Lesson Plan 77</i>																																
<p>Activity</p> <p>7</p>	<p>Book 3, page 77</p> <p>Q.2 Read: <i>Circle the correct answers.</i></p> <p>Make sure Ps know that only one number in each row should be circled. Ps can do calculations in <i>Ex. Bks.</i> Deal with one part at a time.</p> <p>a) Read: <i>Estimate the difference between 678 and 432</i></p> <p>i) by rounding to the nearest 100 [100, 200, <u>300</u>, 400]</p> <p>ii) by rounding to the nearest 10. [240, <u>250</u>, 260, 270]</p> <p>Review at BB with whole class. Ps explain their solutions. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p>b) Read: <i>Estimate the difference between 582 and 147</i></p> <p>i) by rounding to the nearest 100 [100, 300, <u>500</u>, 700]</p> <p>ii) by rounding to the nearest 10. [420, <u>430</u>, 440, 540]</p> <p>Review at BB with whole class. Ps explain their solutions. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p style="text-align: right;">36 min</p>	<p>Notes</p> <p>Individual work, monitored, helped</p> <p>T has possible numbers written on BB or SB or OHP</p> <p>Reasoning, agreement, self-correcting, praising</p> <p>BB: $678 - 432 \approx$</p> <p>i) $700 - 400 = \underline{300}$</p> <p>ii) $680 - 430 = \underline{250}$</p> <p>Reasoning, agreement, self-correcting, praising</p> <p>BB: $582 - 147 \approx$</p> <p>i) $600 - 100 = \underline{500}$</p> <p>ii) $580 - 150 = \underline{430}$</p>																																
<p>8</p>	<p>Book 3, page 77</p> <p>Q.3 Read: <i>Estimate the difference by rounding the numbers to the nearest 10.</i></p> <p>Let's see how many you can do in 2 minutes! Start . . . now!</p> <p>Review at BB with whole class. Mistakes discussed /corrected.</p> <p><i>Solution:</i></p> <p>a) $674 - 466 \approx 670 - 470 = \underline{200}$</p> <p>b) $682 - 444 \approx 680 - 440 = \underline{240}$</p> <p>c) $639 - 451 \approx 640 - 450 = \underline{190}$</p> <p>d) $926 - 543 \approx 930 - 540 = \underline{390}$</p> <p>e) $918 - 550 \approx 920 - 550 = \underline{370}$</p> <p style="text-align: right;">40 min</p>	<p>Individual work, monitored, helped</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Differentiation by time limit</p> <p>Reasoning, agreement, self-correcting, praising</p> <p>Extension</p> <p>Able Ps finished quickly can write <u>exact</u> differences beside estimates.</p>																																
<p>9</p>	<p>Rounding and calculation practice</p> <p>What could this table mean? Ask several Ps what they think.</p> <p>BB:</p> <table border="1"> <tbody> <tr> <td>A</td> <td>832</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>B</td> <td>543</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>H</td> <td>300</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>T</td> <td>290</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p style="text-align: right;">↖ 3-digit numbers suggested by Ps</p> <p>If nobody knows, T explains.</p> <p>A and B are 3-digit numbers. $A > B$</p> <p>$H = A - B$ after rounding A and B to the nearest 100. ($800 - 500$)</p> <p>$T = A - B$ after rounding A and B to the nearest 10. ($830 - 540$)</p> <p>Let's complete the table. Deal with one column at a time.</p> <p>Ps come to BB to write possible numbers in table (or dictate to T).</p> <p>Then Ps round the numbers and write the differences in rows H and T, explaining reasoning. Class checks whether they are correct.</p> <p style="text-align: right;">45 min</p>	A	832							B	543							H	300							T	290							<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Allow Ps to explain the table if they can. (T can give hints.)</p> <p>Ps suggest the pairs of 3-digit numbers.</p> <p>Involve as many Ps as possible (one step each)</p> <p>At a good pace</p> <p>Reasoning, checking, agreement, praising</p> <p>Feedback for T</p> <p>(Ps can have copies of table and complete it at home if they wish.)</p>
A	832																																	
B	543																																	
H	300																																	
T	290																																	

<h1>Bk3</h1>	<p>R: Mental calculation. Vertical addition C: Mental subtraction E: Numbers up to 2000</p>	<h2>Lesson Plan 78</h2>																														
<p>Activity</p> <p>1</p>	<p>Estimating differences</p> <p>Let's estimate the difference between the prices of the books. Talk about what the prices mean. (e.g. £7.67 means £7 and 67 hundredths of a £ (i.e. £7 and 67 p)</p> <p>What should we do first to make it easier for us? (Change the £s to p)</p> <p>Ps dictate the prices in pence to T and T writes inside the books.</p> <p>a) to nearest 100 p: $800 - 500 = 300$ to nearest 10 p: $770 - 460 = 310$</p> <p>b) to nearest 100 p: $1000 - 600 = 400$ to nearest 10 p: $960 - 630 = 330$</p> <p>c) to nearest 100 p: $800 - 500 = 300$ to nearest 10 p: $850 - 520 = 330$</p> <p style="text-align: right;">5 min</p>	<p>Notes</p> <p>Whole class activity</p> <p>Books drawn on BB or use enlarged copy master or OHP (or use real books with prices attached on card)</p> <p>Ps come to BB to round the numbers in their heads and to write the subtractions.</p> <p>Class agrees/disagrees</p> <p>At a good pace</p> <p>Discussion, reasoning, agreement, checking, praising</p> <p>Feedback for T</p>																														
<p>2</p>	<p>Sequences</p> <p>T says first few terms of a sequence. Ps continue and give the rule.</p> <p>a) 830, 760, 690, (620, 550, 480, 410, 340, 270, 200, 130, ...) Rule: Decreasing by 70 (-70)</p> <p>b) 60, 95, 130, (165, 200, 235, 270, 305, 340, 375, 410, ...) Rule: Increasing by 35 (+35)</p> <p>What is the connection between a) and b)? (terms in a) are also in b)</p> <p>c) Write 487 in your <i>Ex. Bks</i> in the middle of the row. Write the 5 terms before and the 5 terms after 487 if the rule is + 16.</p> <p>Review by class reading sequence aloud and Ps standing up if they made a mistake or did not reach that term.</p> <p>..., 407, 423, 439, 455, 471, 487, 503, 519, 535, 551, 567, ...</p> <p style="text-align: right;">12 min</p>	<p>Whole class activity</p> <p>T chooses Ps at random</p> <p>At a good pace</p> <p>Agreement on the rule</p> <p>Reasoning, agreement, praising</p> <p>Individual work, monitored</p> <p>Set a time limit</p> <p>In unison.</p> <p>Discussion, self-correction, praising. In good humour!</p>																														
<p>3</p>	<p>Book 3, page 78</p> <p>Q.1 Read: <i>Fill in the missing numbers.</i></p> <p>T (or P) explains task using completed column. (Ps might notice that numbers in bottom row are 100 less than those in top row.)</p> <p>Review at BB with the whole class. Mistakes corrected.</p> <p><i>Solution:</i></p> <table style="margin-left: 20px;"> <tr> <td></td> <td>↖</td> <td>340</td> <td>620</td> <td>530</td> <td>310</td> <td>900</td> <td>470</td> <td>783</td> <td>939</td> </tr> <tr> <td>- 60</td> <td>↖</td> <td>400</td> <td>680</td> <td>590</td> <td>370</td> <td>960</td> <td>530</td> <td>843</td> <td>999</td> </tr> <tr> <td>- 160</td> <td>↖</td> <td>240</td> <td>520</td> <td>430</td> <td>210</td> <td>800</td> <td>370</td> <td>683</td> <td>839</td> </tr> </table> <p style="text-align: right;">17 min</p>		↖	340	620	530	310	900	470	783	939	- 60	↖	400	680	590	370	960	530	843	999	- 160	↖	240	520	430	210	800	370	683	839	<p>Individual work, monitored, (helped)</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Ps come to BB or T writes what Ps dictate.</p> <p>Discussion, reasoning, agreement, self-correcting, praising</p> <p>Bold numbers are missing</p>
	↖	340	620	530	310	900	470	783	939																							
- 60	↖	400	680	590	370	960	530	843	999																							
- 160	↖	240	520	430	210	800	370	683	839																							

Bk3		<i>Lesson Plan 78</i>
<p>Activity</p> <p>4</p>	<p>Secret numbers</p> <p>Listen carefully and work out the number I am thinking of. You may do any calculations in your <i>Ex. Bks.</i> Show me the number when I say.</p> <p>a) <i>I am thinking of a number. It is 180 more than the difference between 730 and 390. What is the number?</i></p> <p>Show me . . . now! (520) A, explain to us how you worked it out. Who agrees? Who did it another way? etc.</p> <p>e.g. $730 - 390 + 180 = 340 + 180 = 440 + 80 = \underline{520}$ or $730 - 390 = 340$, $340 + 180 = \underline{520}$, or $x > \underset{180}{730} - \underset{340}{390}$</p> <p>b) <i>I am thinking of a number. It is 200 less than the difference between 580 and 250. What is the number?</i></p> <p>Show me . . . now! (130) B, explain to us how you worked it out. Who agrees? Who did it another way? etc.</p> <p>e.g. $580 - 250 - 200 = 330 - 200 = \underline{130}$, or $x < \underset{200}{580} - \underset{330}{250}$ or $580 - 250 = 330$, $330 - 200 = \underline{130}$</p> <p style="text-align: right;">22 min</p>	<p>Notes</p> <p>Whole class activity</p> <p>Answers written on scrap paper or 'slates'</p> <p>T repeats slowly</p> <p>Give Ps time to calculate</p> <p>In unison.</p> <p>Reasoning, agreement, praising</p> <p><i>Check:</i> $520 - 180 = 340$ ✓</p> <p>T repeats slowly</p> <p>Give Ps time to calculate</p> <p>In unison.</p> <p>Reasoning, agreement, praising</p> <p><i>Check:</i> $130 + 200 = 330$ ✓</p>
<p>5</p>	<p>Calculation practice</p> <p>I wonder how well you remember the 4 operations. (+, -, ×, ÷)</p> <p>Elicit the order of calculation. Do these calculations in your <i>Ex. Bks.</i></p> <p>T dictates and Ps write in <i>Pbs</i>, writing the answer too.</p> <p>a) $9 \times 6 + 110 = (164)$ b) $28 \div 4 = (7)$ c) $(100 - 20) \div 5 = (16)$ $145 - 10 \times 9 = (55)$ $4 \times 0 = (0)$ $(60 + 20) \times 6 = (480)$ $81 + 180 \div 9 = (101)$ $56 \div 7 = (8)$ $200 \div 4 - 48 = (2)$ $180 \div 6 + 97 = (127)$ $9 \times 8 = (72)$ $(200 - 48) \div 4 = (38)$</p> <p>Deal with one part at a time. Review with whole class. Ps explain how they did the calculations. Mistakes discussed and corrected.</p> <p>Write difficult calculations on the BB, e.g.</p> <p>$(100 - 20) \div 5 = 80 \div 5 = 50 \div 5 + 30 \div 5 = 10 + 6 = 16$ $(200 - 48) \div 4 = 152 \div 4 = 160 \div 4 - 8 \div 4 = 40 - 2 = 38$</p> <p style="text-align: right;">27 min</p>	<p>Individual work, monitored (part c) helped)</p> <p>T could have BB or SB or OHT already prepared and uncover each answer as it is dealt with.</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Deal with all cases</p> <p>or</p> <p>$100 \div 5 - 20 \div 5 = 20 - 4 = \underline{16}$ $200 \div 4 - 48 \div 4 = 50 - 12 = \underline{38}$</p>
<p>6</p>	<p>Book 3, page 78</p> <p>Q.2 Read: <i>Compare the two sides. Fill in the missing signs.</i></p> <p>Look carefully at the questions. You might not need to do all the calculations! Review at BB with whole class. Mistakes corrected. Ps explain their reasoning, with or without* calculation.</p> <p>How many more is the greater side?</p> <p>Solution:</p> <p>a) $300 + 800 \begin{matrix} \text{1100} \\ \text{200} \end{matrix} \begin{matrix} \leq \\ \end{matrix} \begin{matrix} 400 + 900 \\ \text{1300} \end{matrix}$ b) $126 - 34 \begin{matrix} \text{92} \\ \text{8} \end{matrix} \begin{matrix} \geq \\ \end{matrix} \begin{matrix} 46 + 38 \\ \text{84} \end{matrix}$ c) $1000 - 400 \begin{matrix} \text{600} \\ \text{200} \end{matrix} \begin{matrix} \leq \\ \end{matrix} \begin{matrix} 1200 - 400 \\ \text{800} \end{matrix}$ d) $6 \times 40 \begin{matrix} \text{240} \\ \text{240} \end{matrix} \begin{matrix} = \\ \end{matrix} \begin{matrix} 60 \times 4 \\ \text{240} \end{matrix}$ e) $1500 - 800 \begin{matrix} \text{700} \\ \text{200} \end{matrix} \begin{matrix} \geq \\ \end{matrix} \begin{matrix} 1400 - 900 \\ \text{500} \end{matrix}$ f) $420 \div 7 \begin{matrix} \text{60} \\ \text{60} \\ \text{x 10} \\ \text{(54)} \end{matrix} \begin{matrix} \geq \\ \end{matrix} \begin{matrix} 420 \div 70 \\ \text{6} \end{matrix}$</p> <p style="text-align: right;">32 min</p>	<p>Individual work, monitored (helped)</p> <p>T has BB or SB or OHT already prepared</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p>* e.g. in a): each term on RHS is 100 more than equivalent term on LHS, so RHS is 200 more than LHS.</p> <p>Extra praise for Ps who correctly reason in this way.</p>

Bk3

Lesson Plan 78

Activity

7

Book 3, page 78, Q.3

T chooses a P to come to front to read each part. Ps write subtractions and inequalities in *Pbs*, then write the **difference** on scrap paper or 'slate'. P at front asks class to show difference on command.

- a) *The smallest 4-digit number compared with the greatest 3-digit number.*
Allow time for calculations. Show me . . . now! (1)
B, explain how you got your answer. Who agrees? etc.
- b) *The smallest 4-digit number compared with the smallest 3-digit number.*
Allow time for calculations. Show me . . . now! (900)
C, explain how you got your answer. Who agrees? etc.
- c) *The smallest 4-digit number compared with the smallest 2-digit number.*
Allow time for calculations. Show me . . . now! (990)
D, explain how you got your answer. Who agrees? etc.
- d) *The greatest 3-digit whole ten compared with the greatest 3-digit hundred.*
Allow time for calculations. Show me . . . now! (90)
E, explain how you got your answer. Who agrees? etc.
- e) *The smallest 4-digit hundred compared with the smallest 4-digit whole ten.*
Allow time for calculations. Show me . . . now! (0)
F, explain how you got your answer. Who agrees? etc.
- f) *The smallest whole hundred compared with the smallest whole ten.*
Allow time for calculations. Show me . . . now! (90)
G, explain how you got your answer. Who agrees? etc.

38 min

Notes

Whole class activity
(or individual work if Ps prefer, reviewed orally with whole class)

Prepeats slowly

In unison

Reasoning, agreement, self-correcting, praising

BB:

$$\begin{array}{r} \text{a) } 1000 - 999 = 1 \\ 1000 > 999 \end{array}$$

$$\begin{array}{r} \text{b) } 1000 - 100 = 900 \\ 1000 > 100 \end{array}$$

$$\begin{array}{r} \text{c) } 1000 - 10 = 990 \\ 1000 > 10 \end{array}$$

$$\begin{array}{r} \text{d) } 990 - 900 = 90 \\ 990 > 900 \end{array}$$

$$\begin{array}{r} \text{e) } 1000 - 1000 = 0 \\ 1000 = 1000 \end{array}$$

$$\begin{array}{r} \text{f) } 100 - 10 = 90 \\ 100 > 10 \end{array}$$

8

Book 3, page 78

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




Look at the two complete columns to find the rule. Fill in the numbers missing from the next 3 columns.

T brings class together to discuss the rule and review the 3 columns. Ps explain reasoning. Class agrees/disagrees.

Ps complete the remaining columns in the table. (Difficult calculations can be done in *Ex. Bks.*)

Review at BB with whole class. Ps explain their reasoning. Class agrees/disagrees. Mistakes discussed and corrected.

Solution:

	670	1000	549	394	777	893	987	*	*
	420	814	231	384	555	618	555	348	59
	250	186	318	10	222	275	432	225	405

$$\begin{array}{l} \text{flower} = \text{mushroom} + \text{bag} \\ \text{mushroom} = \text{flower} - \text{bag} \\ \text{bag} = \text{flower} - \text{mushroom} \end{array}$$

Individual work, monitored, helped

Table drawn on BB or use enlarged copy master or OHP

Discussion, reasoning, self-correction, praising

e.g.

$$\begin{array}{r} 573 - 348 = 573 - 300 - 48 \\ = 273 - 40 - 8 \\ = 233 - 8 = \underline{225} \end{array}$$

$$\begin{array}{r} 464 - 59 = 464 - 60 + 1 \\ = 404 + 1 = \underline{405} \end{array}$$

Bold numbers are missing.

Bk3*Lesson Plan 78***Activity**

8

Q.4 (continued)

Read: *Do these calculations below.*

Ps write the pairs of numbers and the known answers in the grids as a vertical subtraction and try to explain the answers.

Ps reason at BB and class checks whether they are correct.

If nobody has a suggestion, T explains using a place value table.

(8U cannot be taken away from 1U, so we move 1T (= 10U) from the tens column to the units column, leaving 6 tens in the tens column and making $10U + 3U = 13$ units in the units column. $13U - 8U = 5U$, so I write 5 in the units column in the answer, $6T - 4T = 2T$, so I write 2 in the tens column in the answer; $5H - 3H = 2H$, so I write 2 in the hundreds column in the answer; the difference is 225.)

Do the last column in a similar way.

*45 min***Notes**

Reasoning, agreement, praising

BB:

H	T	U	-	H	T	U
5	⁶ 7	¹⁰ 3		4	⁵ 6	¹⁰ 4
3	4	8	-		5	9
2	2	5		4	0	5

If a P has understood, allow him/her to explain final column.

If Ps do not understand, T tells them not to worry – we will learn it in another lesson!

Bk3

R: Mental calculation
 C: Pencil and paper procedures: subtraction: HTU – (H)TU
 E: Numbers up to 2000

Lesson Plan 79

Activity

1

Problem 1

Listen carefully and think how you would solve this problem.

Roger has £354. How much more does he need to save if he plans to buy a computer which costs £567?

Ps come to BB to write the data, plan and estimation of answer after rounding to the nearest 10. (Or Ps dictate to T what to write.)

BB: Data: R: £354, C: £567
 Plan: $C - R = £567 - £354$
 E: $567 - 354 \approx 570 - 350 = 220$

We can do the calculation in two ways, as an incomplete addition, or as a subtraction. T explains using these diagrams.

BB: Addition (incomplete):

Hundreds	Tens	Units
100 100 100	10 10 10 10 10	1 1 1 1

H	T	U
3	5	4

Short form

3	5	4	
+	2	1	3
5	6	7	

+

Hundreds	Tens	Units
100	10	1 1

H	T	U
2	1	3

+

Hundreds	Tens	Units
100 100 100 100	10 10 10 10 10 10	1 1 1 1 1 1 1

4U + 3U = 7U
 5T + 1T = 6T
 3H + 2H = 5H

or Subtraction:

Hundreds	Tens	Units
100 100 100	10 10 10 10 10 10	1 1 1 1 1 1 1

H	T	U
5	6	7

Short form

5	6	7	
-	3	5	4
2	1	3	

-

Hundreds	Tens	Units
100 100 100	10 10 10 10	1 1 1 1

H	T	U
3	5	4

-

Hundreds	Tens	Units
100	10	1 1

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

Answer: Roger needs to save another £213.

11 min

Notes

Whole class activity
 Ps suggest how to solve it

Reasoning, agreement, praising

Diagrams drawn on BB or use enlarged copy master or OHP (or stick model money on BB)

Ps come to BB to draw or stick model money on BB, and complete table and grid, explaining reasoning.

Class agrees/disagrees

T gives guidance where necessary.

Ps write short form in Ex. Bks.

Money subtracted can be crossed off (or taken away if on cards)

Reasoning explained in detail

Check by comparing with the estimate and by an addition

Check:

2	1	3	
+	3	5	4
5	6	7	

In unison

2

Book 3, page 79

Q.1 Read: Complete the additions. Write a subtraction for each one.

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

Ps explain reasoning. Class points out errors. Mistakes corrected.

Solution:

a)	b)	c)	d)	e)
$\begin{array}{r} 543 \\ + 332 \\ \hline 875 \end{array}$	$\begin{array}{r} 156 \\ + 833 \\ \hline 989 \end{array}$	$\begin{array}{r} 217 \\ + 442 \\ \hline 659 \end{array}$	$\begin{array}{r} 632 \\ + 235 \\ \hline 867 \end{array}$	$\begin{array}{r} 1254 \\ + 642 \\ \hline 1896 \end{array}$
$\begin{array}{r} 875 \\ - 543 \\ \hline 332 \end{array}$	$\begin{array}{r} 989 \\ - 156 \\ \hline 833 \end{array}$	$\begin{array}{r} 659 \\ - 217 \\ \hline 442 \end{array}$	$\begin{array}{r} 867 \\ - 632 \\ \hline 235 \end{array}$	$\begin{array}{r} 1896 \\ - 1254 \\ \hline 642 \end{array}$

Individual work, monitored, helped

Written on BB or use enlarged copy master or OHP

Discussion, reasoning, agreement, self-correcting, praising

Bold numbers are missing

Compare the positions of the numbers in both operations.

Point out that adding the bottom 2 rows is a good check.

17 min

Bk3

Lesson Plan 79

Activity

3

Problem 2

Listen carefully and think how you would solve the problem.

Rory has 562 football cards, 237 cards more than Harry has.
How many cards does Harry have?

X, how would you solve it? Who agrees? Who would do it another way? etc. T writes what Ps dictate, or Ps come to BB. Show the calculations in a place-value table and a grid. Class agrees/disagrees.

Data: R: 562, H: R - 237 Plan: H: 562 - 237

E: (after rounding numbers to nearest 10) $560 - 240 = 320$

C:

H	T	U
3	2	5
+	2	3
5	6	0

or

H	T	U
5	5	2
-	2	3
3	2	5

Short form

5	6	2
-	2	3
3	2	5

Check:

3	2	5
+	2	3
5	6	2

$320 \approx 325$ ✓

Show as an incomplete addition, then as a subtraction. T demonstrates the subtraction in detail, pointing to the relevant columns, e.g.:

'I cannot take 7U away from 2U, so I move 1T across to the units column, leaving 5T in the tens column and making $10U + 2U = 12U$ in the units column; $12U - 7U = 5U$; $5T - 3T = 2T$; $5H - 2H = 3H$; the difference is 325.'

Let's read the the question again and give the answer in a sentence.

Answer: Harry has 325 cards.

25 min

Notes

Whole class activity

T repeats slowly. P repeats in own words.

Reasoning, agreement, praising

Discuss how to do the calculation.

Check by comparing with the estimate and with the matching addition.

Ps can join in if they wish.

In unison. Praising

4

Subtraction consolidation

Let's complete the addition and write a subtraction about it. T writes what Ps dictate or Ps come to BB. Class agrees/disagrees.

BB:

a)

	4	5	6
+	5	1	4
	9	7	0

$6U + 4U = 10U = 1T + 0U$

$1T + 5T + 1T = 7T$

$4H + 5H = 9H$

	9	7	0
-	4	5	6
	5	1	4

Let's explain the subtraction in a place-value table. (BB)

'I cannot take 6U away from 0U, so I move 1T across to the units column, leaving 6T in the tens column and making $10U + 0U = 10U$ in the units column; $10U - 6U = 4U$; $6T - 5T = 1T$; $9H - 4H = 5H$; the difference is 514.'

Let's do another subtraction this way: $474 - 372$.

b)

	4	7	4
+	3	7	2
	8	4	6

$2U + 4U = 6U$

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

$1H + 3H + 4H = 8H$

	8	4	6
-	3	7	2
	4	7	4

Let's explain the subtraction using a place-value table.

' $6U - 2U = 4U$; 7T cannot be taken away from 4T, so I move 1H across to the tens column, leaving 7H in the hundreds column and making $10T + 4T = 14T$ in the tens column; $14T - 7T = 7T$; $7H - 3H = 4H$; the difference is 474.'

30 min

Whole class activity

Written on BB

Ps say addition in detail, as shown.

Subtraction is written initially by rearranging the terms in the addition.

BB:

H	T	U
9	6	0
-	4	5
5	1	4

(T, with Ps joining in.)

Ps write short form in Ex. Bks.

Ps say addition in detail, as shown.

Subtraction is written initially by rearranging the terms in the addition.

BB

H	T	U
7	8	4
-	3	7
4	7	4

(T, with Ps joining in.)

Ps write short form in Ex. Bks.

Bk3

Lesson Plan 79

Activity

5

Book 3, page 79

Q.2 Read: *Estimate the difference (by rounding to the nearest 10), then do the calculation.*

Check your answer by comparing with your estimate and by doing an addition in your *Ex. Bks.*

Review at BB with whole class: Ps explain reasoning. Class agrees/disagrees. Mistakes discussed and corrected.

Solution:

$$876 - 345 \quad E: \quad 880 - 350 = 530$$

8	7	6
3	4	5
5	3	1

Extension

Do these subtractions in your *Ex. Bks.* (T writes on BB)

BB:

$$746 - 305 \quad E: \quad 750 - 310 = 440$$

7	4	6
3	0	5
4	4	1

$$975 - 43 \quad E: \quad 980 - 40 = 940$$

9	7	5
	4	3
9	3	2

Review with whole class. Mistakes discussed and corrected.

35 min

Notes

Individual work, monitored, helped

Reasoning, checking, agreement, self-correcting, praising

Check: $531 \approx 530$

$$\begin{array}{r} 531 \\ + 345 \\ \hline 876 \end{array}$$

Ps check answers as before.

Check: $441 \approx 440$

$$\begin{array}{r} 441 \\ + 305 \\ \hline 746 \end{array}$$

Check: $932 \approx 940$

$$\begin{array}{r} 932 \\ + 43 \\ \hline 975 \end{array}$$

6

Book 3, page 79

Q.3 Read: *Practise subtraction.*

Deal with one part at a time (a), b), c)). Ps check answers by estimating and adding mentally (or in *Ex. Bks.*)

Review at BB with whole class. Mistakes discussed and corrected. If there are difficulties, show in a place-value table.

Has anyone noticed something about each part? (Differences are decreasing by the same amount because numbers being subtracted (subtrahend) are increasing by that amount, while the numbers being subtracted from (reductant) do not change.)

Solution:

a) i)

3	8	6
2	1	5
1	7	1

 ii)

3	8	6
2	1	6
1	7	0

 iii)

3	8	6
2	1	7
1	6	9

 iv)

3	8	6
2	1	8
1	6	8

b) i)

7	6	8
2	4	5
5	2	3

 ii)

7	6	8
2	6	5
5	0	3

 iii)

7	6	8
2	8	5
4	8	3

 iv)

7	6	8
3	0	5
4	6	3

c) i)

5	0	4
3	0	1
2	0	3

 ii)

5	0	4
3	1	1
1	9	3

 iii)

5	0	4
3	2	1
1	8	3

 iv)

5	0	4
3	3	1
1	7	3

(Checking can also be done with a calculator.)

41 min

Individual work, monitored, helped

Written on BB or use enlarged copy master or OHP

If Ps are having difficulties, change to whole class activity

Discussion, reasoning, checking, agreement, praising

Problem calculations given in detail, e.g.

BB:

b) i)













H	T	U
6 7	¹⁰ 6	8
2	8	5
4	8	3

c) iii)

H	T	U
4 5	¹⁰ 0	4
3	3	1
1	7	3

Bk3		<i>Lesson Plan 79</i>
<p>Activity</p> <p>7</p>	<p>Book 3, page 79</p> <p>Q.4 Read: <i>Use the numbers in the clown to write subtractions. The difference should be the number in his hat.</i></p> <p>Review at BB with whole class. Ps discuss their strategies for solution and explain reasoning, Class checks that calculations are correct and suggests missed subtractions.</p> <p><i>Solution:</i></p> $ \begin{array}{r} \boxed{5} \ \boxed{7} \ \boxed{3} \\ - \boxed{2} \ \boxed{2} \ \boxed{1} \\ \hline \boxed{3} \ \boxed{5} \ \boxed{2} \end{array} \quad \begin{array}{r} \boxed{9} \ \boxed{4} \ \boxed{8} \\ - \boxed{5} \ \boxed{9} \ \boxed{6} \\ \hline \boxed{3} \ \boxed{5} \ \boxed{2} \end{array} \quad \begin{array}{r} \boxed{6} \ \boxed{2} \ \boxed{1} \\ - \boxed{2} \ \boxed{6} \ \boxed{9} \\ \hline \boxed{3} \ \boxed{5} \ \boxed{2} \end{array} \quad \begin{array}{r} \boxed{4} \ \boxed{6} \ \boxed{2} \\ - \boxed{1} \ \boxed{1} \ \boxed{0} \\ \hline \boxed{3} \ \boxed{5} \ \boxed{2} \end{array} $	<p>Notes</p> <p>Individual work, monitored, helped</p> <p>Use enlarged copy master or OHP of clown (or write numbers on BB)</p> <p>If Ps are having difficulties, change to whole class activity</p> <p>Discussion, reasoning, checking, agreement, praising</p> <p>Check by estimation and addition.</p> <p>Whole class discussion</p> <p>Involve several Ps</p> <p>Praise creative questions.</p>
<p>Extension</p>	<p>What other questions can you think of to ask about the numbers in the clown?</p> <p>(e.g. What is their total? How many odd (even) numbers? List them in increasing (decreasing) order, etc.)</p>	

45 min

<h1>Bk3</h1>	<p>R: Mental calculation C: Vertical subtraction E: Numbers up to 2000</p>	<h2>Lesson Plan 80</h2>																																									
<p>Activity</p> <p>1</p>	<p>Missing numbers</p> <p>Study this table. The rule is:  - 80 =  (BB)</p> <p>Ps come out to choose a column and fill in the missing number, explaining reasoning. Class points out errors.</p> <p>BB:</p> <table border="1"> <tr> <td></td> <td>790</td> <td>830</td> <td>400</td> <td>950</td> <td>440</td> <td>600</td> <td>750</td> <td>710</td> <td>620</td> <td>519</td> <td>857</td> </tr> <tr> <td></td> <td>710</td> <td>750</td> <td>320</td> <td>870</td> <td>360</td> <td>520</td> <td>670</td> <td>630</td> <td>540</td> <td>439</td> <td>777</td> </tr> </table> <p>Who can write the rule in a different way? (e.g.  -  = 80, or  + 80 = )</p> <p style="text-align: right;"><i>5 min</i></p>		790	830	400	950	440	600	750	710	620	519	857		710	750	320	870	360	520	670	630	540	439	777	<p>Notes</p> <p>Whole class activity Table drawn on BB or use enlarged copy master or OHP (or mushroom and flower can be cut out, coloured and stuck to BB for easier manipulation to show the rule)</p> <p>At a good pace</p> <p>Reasoning, agreement, praising</p> <p>Feedback for T</p>																	
	790	830	400	950	440	600	750	710	620	519	857																																
	710	750	320	870	360	520	670	630	540	439	777																																
<p>2</p>	<p>True or false?</p> <p>Are these statements true or false? Show me when I say. Hold your ears if you think it is true and knock once on your desk if you think it is false (or any other agreed actions, or T or F written on 'slates').</p> <ol style="list-style-type: none"> The difference between 680 and 450 is an even number. Show me . . . now! (T) The difference between 680 and 450 is less than 250. Show me . . . now! (T) The difference between 680 and 450 is 220. Show me . . . now! (F) The difference between 680 and 450 is divisible by 10. Show me . . . now! (T) <p style="text-align: right;"><i>9 min</i></p>	<p>Whole class activity Ps can decide on the actions T repeats each statement slowly to give Ps time to think.</p> <p>Responses shown in unison Ps who responded correctly explain to those who did not.</p> <p>Agree that: $680 - 450 = \underline{230}$</p>																																									
<p>3</p>	<p>Missing amounts</p> <p>Who can work out what value should be on the blank bank notes? Ps come to BB to write in missing values, explaining reasoning. Class agrees/disagrees.</p> <p>BB: (Shaded notes were blank)</p> <p>a) $440 =$ <table border="1"> <tr> <td>100</td><td>100</td><td>100</td><td>50</td><td>50</td><td>20</td><td>20</td> </tr> </table></p> <p>b) $540 =$ <table border="1"> <tr> <td>100</td><td>100</td><td>100</td><td>50</td><td>50</td><td>20</td><td>20</td><td>20</td><td>20</td><td>20</td><td>20</td><td>20</td> </tr> </table></p> <p>c) $400 =$ <table border="1"> <tr> <td>100</td><td>50</td><td>50</td><td>50</td><td>50</td><td>20</td><td>20</td><td>20</td><td>20</td><td>10</td><td>10</td> </tr> </table></p> <p>d) $580 =$ <table border="1"> <tr> <td>100</td><td>50</td><td>100</td><td>50</td><td>50</td><td>50</td><td>100</td><td>20</td><td>20</td><td>20</td><td>20</td> </tr> </table></p> <p style="text-align: right;"><i>13 min</i></p>	100	100	100	50	50	20	20	100	100	100	50	50	20	20	20	20	20	20	20	100	50	50	50	50	20	20	20	20	10	10	100	50	100	50	50	50	100	20	20	20	20	<p>Whole class activity. Drawn on BB or use enlarged copy master or OHP (or model money stuck to BB)</p> <p>At a good pace Discussion, reasoning, e.g.</p> <p>a) $390 + \underline{50} = 440$ b) $540 - 520 = \underline{20}$ c) $380 + \underline{10} = 400$ d) $580 - 480 = \underline{100}$</p> <p>Agreement, praising</p>
100	100	100	50	50	20	20																																					
100	100	100	50	50	20	20	20	20	20	20	20																																
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Bk3

Lesson Plan 80

Activity

4

Differences

What is the difference between the amounts of money in the 2 wallets?
Ps come out to BB to point to the bigger amount, then to estimate mentally and write a subtraction about it, saying each step loudly and clearly. Class checks with mental addition. (e.g. $2U + 4U = 6U$, $4T + 5T = 9T$, $3H + 1H = 4H$, etc.) Show part c) in a place-value table.

BB:

a) $E: 500 - 150 = 350$

£496	£154
------	------

4	9	6
1	5	4
3	4	2

$350 \approx 342$
↑ Check:

b) $E: 590 - 330 = 260$

£332	£585
------	------

5	8	5
3	3	2
2	5	3

$260 \approx 253$
↑ Check:

c) $E: 800 - 680 = 120$

£798	£679
------	------

7	9	8
6	7	9
1	1	9

$120 \approx 119$
↑ Check:

H	T	U
7	8 ¹⁰	8
6	7	9
1	1	9

Discuss other methods of checking. (horizontal subtraction, calculator)
e.g. $798 - 679 = 798 - 600 - 79 = 198 - 80 + 1 = 118 + 1 = 119$

18 min

Notes

Whole class activity

Drawn on BB or use enlarged copy master or OHP

Ps can do calculations in *Ex. Bks* first if they wish and then dictate to T what to write on the BB.

Discussion, reasoning, checking, agreement, praising

Detailed reading of calculations, e.g. in c):

'I can't take 9U away from 8U, so I move 1T across to the units column, leaving 8T in the tens column and making 18U in the units column; $18U - 9U = 9U$; $8T - 7T = 1T$; $7H - 6H = 1H$; the difference is 119.'

Also explain part c) with model money stuck to BB if necessary

5

Equal values

Let's join up the differences to their value rounded to the nearest 10.

Ps come to BB to choose a subtraction, do the calculation (explaining reasoning in detail) and join it to its nearest 10 (or rearrange 'roofs' and 'walls'). Class checks with mental addition. If problems, show reasoning in place-value tables.

BB:

230	540	410	270
-----	-----	-----	-----

628 - 214 <hr/> 414	574 - 341 <hr/> 233	845 - 573 <hr/> 272	837 - 299 <hr/> 538
---------------------------	---------------------------	---------------------------	---------------------------

↑ Check (+)

Discuss the different rounded values when rounding is done before calculation (in estimating) and after calculation (as here).

(e.g. $E: 628 - 214 \approx 630 - 210 = 420$ but $628 - 214 = 414 \approx 410$)

$E: 845 - 573 \approx 850 - 570 = 280$ but $845 - 573 = 272 \approx 270$

Why is that? (e.g. 628 is rounded up and 214 is rounded down so the estimated difference is much more than the calculated difference.)

Extension

Who can think of other quick ways we could check the subtractions?
T gives hints if nobody can think of any.

24 min

Whole class activity

Drawn on BB or use enlarged copy master or OHP

(or the 'roofs' and 'walls' enlarged, cut out and stuck separately to BB for Ps to make 'houses')

Ps write the operations in their *Ex. Bks*. first.

At a good pace

Discussion, explanation, reasoning, checking, agreement, praising

Other quick checks: e.g.

$$628 - 214 = 628 - 228 + 14 = 400 + 14 = 414$$

$$837 - 299 = 837 - 300 + 1 = 537 + 1 = 538$$

Extra praise if Ps suggest it.

Bk3

Lesson Plan 80

Activity

6

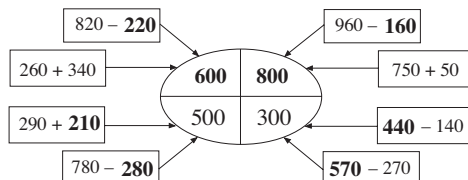
Book 3, page 80

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

Discuss and agree on the rule. Ps complete diagram in *Pbs*.

Review at BB with whole class. Mistakes corrected.

Solution:



29 min

Notes

Individual work, monitored (helped)

Initial whole class discussion

Drawn on BB or use enlarged copy master or OHP

Reasoning, checking, agreement, self-correction, praising

Bold numbers are missing

7

Book 3, page 80

Q.2 Read: *How much money did we have left after our holiday?*

Complete the drawing. Estimate by rounding to the nearest whole ten. Do the calculation and check it.

T explains task in context. Deal with one part at a time, keeping Ps together at each step. Agree that check can be done by comparing with the estimate and then by writing an addition.

Review at BB with whole class. Ps come to BB to write and explain (or dictate to T). Class agrees/disagrees. Mistakes discussed and corrected.

Solution:

a)

Had:		Estimation	\approx <table border="1"><tr><td>3</td><td>4</td><td>0</td></tr></table>	3	4	0	Calculation	<table border="1"><tr><td>Th</td><td>H</td><td>T</td><td>U</td></tr><tr><td></td><td>3</td><td>4</td><td>2</td></tr><tr><td></td><td>-</td><td>2</td><td>3</td><td>1</td></tr><tr><td></td><td>1</td><td>1</td><td>1</td><td></td></tr></table>	Th	H	T	U		3	4	2		-	2	3	1		1	1	1		Check	<table border="1"><tr><td>Th</td><td>H</td><td>T</td><td>U</td></tr><tr><td></td><td>1</td><td>1</td><td>1</td></tr><tr><td></td><td>+</td><td>2</td><td>3</td><td>1</td></tr><tr><td></td><td>3</td><td>4</td><td>2</td></tr></table>	Th	H	T	U		1	1	1		+	2	3	1		3	4	2
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Had left:		Estimation	\approx <table border="1"><tr><td>1</td><td>1</td><td>0</td></tr></table>	1	1	0																																							
1	1	0																																											

b)

Had:		Estimation	\approx <table border="1"><tr><td>5</td><td>5</td><td>0</td></tr></table>	5	5	0	Calculation	<table border="1"><tr><td>Th</td><td>H</td><td>T</td><td>U</td></tr><tr><td></td><td>5</td><td>4</td><td>5</td></tr><tr><td></td><td>-</td><td>3</td><td>4</td><td>2</td></tr><tr><td></td><td>2</td><td>0</td><td>3</td><td></td></tr></table>	Th	H	T	U		5	4	5		-	3	4	2		2	0	3		Check	<table border="1"><tr><td>Th</td><td>H</td><td>T</td><td>U</td></tr><tr><td></td><td>2</td><td>0</td><td>3</td></tr><tr><td></td><td>+</td><td>3</td><td>4</td><td>2</td></tr><tr><td></td><td>5</td><td>4</td><td>5</td></tr></table>	Th	H	T	U		2	0	3		+	3	4	2		5	4	5
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2	1	0																																											

35 min

Individual work, monitored (helped)

Drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, checking, self-correction, praising

Ps explain calculations in detail.

In b) Ps write in the column headings too. (Agree that the thousands column is not needed here)

Discuss why estimate for b) is 210 although $203 \approx 200$.

(Reductant rounded up, subtrahend rounded down, so estimated difference is much more than exact difference.)

Bk3

Lesson Plan 80

Activity

8

Book 3, page 80

Q.3 Read: *Estimate the difference by rounding the numbers to the nearest whole ten. Do the calculation, then check it in your head with an addition.*

Elicit that there are 2×10 subtractions. Let's see how many you can do in 3 minutes! Start . . . now! . . . Stop!

Review at BB with whole class. Ps explain reasoning in detail. Class agrees/disagrees. Mistakes discussed and corrected.

Solution:

a) i)	ii)	iii)	iv)	v)
$\begin{array}{r} 943 \\ - 612 \\ \hline 331 \end{array}$	$\begin{array}{r} 785 \\ - 245 \\ \hline 540 \end{array}$	$\begin{array}{r} 847 \\ - 346 \\ \hline 501 \end{array}$	$\begin{array}{r} 1864 \\ - 1352 \\ \hline 512 \end{array}$	$\begin{array}{r} 1756 \\ - 652 \\ \hline 1104 \end{array}$
E: $\boxed{330}$	E: $\boxed{540}$	E: $\boxed{500}$	E: $\boxed{510}$	E: $\boxed{1110}$
b) i)	ii)	iii)	iv)	v)
$\begin{array}{r} 872 \\ - 356 \\ \hline 516 \end{array}$	$\begin{array}{r} 780 \\ - 357 \\ \hline 423 \end{array}$	$\begin{array}{r} 825 \\ - 609 \\ \hline 216 \end{array}$	$\begin{array}{r} 735 \\ - 482 \\ \hline 253 \end{array}$	$\begin{array}{r} 903 \\ - 571 \\ \hline 332 \end{array}$
E: $\boxed{510}$	E: $\boxed{420}$	E: $\boxed{220}$	E: $\boxed{260}$	E: $\boxed{330}$

40 min

9

Problem

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

Sam and Rosie were on holiday at the seaside. They collected 342 shells altogether. If Sam collected 127 shells, how many did Rosie collect?

Show me . . . now! (215)

X, explain to us how you got your answer. Who agrees? Who did it a different way? Who made a mistake? What was your mistake? etc.

BB:

Data: S + R: 342, S: 127 *Plan:* R: 342 – 127

$$E: 342 - 127 \approx 340 - 130 = 210$$

$$\begin{aligned} \text{or } 342 - 127 &= 342 - 100 - 27 \\ &= 242 - 20 - 7 \\ &= 222 - 7 = \underline{215} \end{aligned}$$

Answer: Rosie collected 215 shells.

$$C: \begin{array}{r} 342 \\ - 127 \\ \hline 215 \end{array} \uparrow \text{Check (+)}$$

45 min

Notes

Individual work, monitored helped

(Or part b) done as whole class activity if T prefers)

Written on BB or use enlarged copy master or OHP

Differentiation by time limit

Reasoning, checking, agreement, self-correction, praising

How did you check your answers? e.g. mentally by adding bottom 2 rows in subtraction to make the top row, or doing subtraction again horizontally, e.g.

$$\begin{aligned} 872 - 356 &= 872 - 300 - 56 \\ &= 572 - 50 - 6 \\ &= 522 - 6 = \underline{516} \end{aligned}$$

Whole class activity

T repeats slowly and P repeats in own words.

Give Ps time to think/calculate

In unison (on scrap paper or 'slates')

Reasoning, checking with estimate, agreement, self-correcting, praising

Accept any method which gives the correct answer.

Explain calculation in a place-value table if necessary.

Further checks can be done mentally, in *Ex. Bks.*, or with a calculator

Bk3

R: Mental calculation
 C: **Subtraction. Problems in context**
 E: Numbers up to 2000

Lesson Plan
81**Activity****1****Number snake**

Which numbers do you think are missing from the snake? Ps come out to fill in the missing terms, explaining reasoning. What is the rule? (Decreasing by 40, or -40)

BB:

*3 min***Notes**

Whole class activity

Drawn on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, praising

Bold numbers are given.**2****Analysing mistakes**

Tommy Turtle did these subtractions for homework. Let's estimate to see whether he is correct or not and find what mistakes he has made.

Ps come to BB or OHP to estimate, cross out wrong answers, explain the mistakes and do the calculations again correctly.

BB:

$$\begin{array}{r} \text{a) } 1648 \\ - 132 \\ \hline \end{array} \quad \begin{array}{l} E: 1650 - 130 = 1520 \\ \\ \end{array} \quad \begin{array}{r} 1648 \\ - 132 \\ \hline \end{array} \quad \text{or} \quad \begin{array}{r} 1648 \\ - 1320 \\ \hline \end{array}$$

~~328~~

Correction:

1516328

$$\begin{array}{r} \text{b) } 1679 \\ - 56 \\ \hline \end{array} \quad \begin{array}{l} E: 1680 - 60 = 1620 \\ \\ \end{array} \quad \begin{array}{r} 1679 \\ - 56 \\ \hline \end{array} \quad \text{or} \quad \begin{array}{r} 1679 \\ - 560 \\ \hline \end{array}$$

~~1119~~

Correction:

16231119

$$\begin{array}{r} \text{c) } 725 \\ - 467 \\ \hline \end{array} \quad \begin{array}{l} E: 730 - 470 = 260 \\ \\ \end{array} \quad \begin{array}{r} 725 \\ - 467 \\ \hline \end{array} \quad \begin{array}{r} 258 \\ + 467 \\ \hline \end{array}$$

~~342~~

Correction:

258Check: 725 ✓

$$\begin{array}{r} \text{d) } 845 \\ - 325 \\ \hline \end{array} \quad \begin{array}{l} E: 850 - 330 = 520 \\ \\ \end{array} \quad \begin{array}{r} 845 \\ - 325 \\ \hline \end{array} \quad \begin{array}{r} 520 \\ + 325 \\ \hline \end{array}$$

~~52~~

Correction:

520Check: 845 ✓

How can we check that the new answer is correct? (Compare with estimate, then addition or horizontal subtraction*, or use a calculator)

* e.g. a) $1648 - 132 = 1648 - 100 - 32 = 1548 - 32 = 1516$

10 min

Whole class activity

Written on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, checking, praising

Feedback for T

Show part c) in a place value table, giving the steps of the calculation in detail.

$$\begin{array}{|c|c|c|} \hline \text{H} & \text{T} & \text{U} \\ \hline 6 & 7 & 5 \\ \hline - 4 & 6 & 7 \\ \hline 2 & 5 & 8 \\ \hline \end{array} \quad \text{or} \quad \begin{array}{|c|c|c|} \hline \text{H} & \text{T} & \text{U} \\ \hline 7 & 10 & 5 \\ \hline - 4 & 6 & 7 \\ \hline 2 & 5 & 8 \\ \hline \end{array}$$

T introduces another way of doing subtraction (adding 10U to the reductant and 1T to the subtrahend) Agree that if the same amount is added to each number, the difference will be the same. e.g. $7 - 5 = 17 - 15$ T explains the steps in detail.

3**Missing numbers**

Let's fill in the missing numbers to make the statements true.

BB:

$$\begin{array}{r} \text{a) } 845 \\ - 672 \\ \hline \end{array} \quad \begin{array}{l} \downarrow \\ \text{173} \\ \leftarrow \end{array} \quad \begin{array}{r} \boxed{945} \\ - 672 \\ \hline \end{array} \quad \begin{array}{l} \uparrow \\ \text{273} \\ \rightarrow \end{array} \quad \begin{array}{r} \text{b) } 1076 \\ - 491 \\ \hline \end{array} \quad \begin{array}{l} \leftarrow \\ \text{585} \\ \rightarrow \end{array} \quad \begin{array}{r} 976 \\ - \boxed{591} \\ \hline \end{array} \quad \begin{array}{l} \leftarrow \\ \text{385} \\ \rightarrow \end{array}$$

$$\begin{array}{r} \text{c) } 856 \\ - 245 \\ \hline \end{array} \quad \begin{array}{l} \leftarrow \\ \text{611} \\ \rightarrow \end{array} \quad \begin{array}{r} 756 \\ - \boxed{145} \\ \hline \end{array} \quad \begin{array}{l} \leftarrow \\ \text{611} \\ \rightarrow \end{array} \quad \begin{array}{r} \text{d) } 917 \\ - 583 \\ \hline \end{array} \quad \begin{array}{l} \leftarrow \\ \text{334} \\ \rightarrow \end{array} \quad \begin{array}{r} \boxed{717} \\ - 383 \\ \hline \end{array} \quad \begin{array}{l} \leftarrow \\ \text{334} \\ \rightarrow \end{array}$$

Ps come to BB to do calculations on LHS, explaining reasoning. Then they write the answer in the RHS and find the missing number by doing an addition. Class points out errors.

15 min

Whole class activity

Written on BB or use enlarged copy master or OHP

Ps suggest where to start and how to continue.

Discussion, reasoning, checking, agreement, praising

Extra praise if Ps reason how to find the missing numbers without calculation

e.g. in a):

same number is subtracted so reductant must be 100 more.

Bk3

Lesson Plan 81

Activity

4

How does it work?

I saw another interesting way to do subtraction. This is it.
Can anyone explain how it works?

$$\text{BB: a) } \begin{array}{r} 476 \\ - 345 \\ \hline 131 \end{array} \qquad \text{b) } \begin{array}{r} 345 \\ - 138 \\ \hline 21\textcircled{3} \end{array} \rightarrow 210 - 3 = \underline{207}$$

$$\text{c) } \begin{array}{r} 539 \\ - 294 \\ \hline 3\textcircled{6}5 \end{array} \rightarrow 305 - 60 = \underline{245} \qquad \text{d) } \begin{array}{r} 643 \\ - 389 \\ \hline 3\textcircled{4}6 \end{array} \rightarrow 300 - 46 = \underline{254}$$

Give several Ps the chance to explain what they think. If no P is on the right track T can give hints. Then T explains step by step. e.g. in:

- b) In all columns, subtract the bigger digit from the smaller digit. Only the units column was wrong, so ignore the 3U in the answer, leaving 2H and 1T = 210. But 8U is 3U more than 5U, so another 3U must be taken away from 210: $210 - 3 = \underline{207}$.
- c) In all columns, subtract the bigger digit from the smaller digit. The tens and units columns were wrong, so ignore the 4T and the 6U in the answer, leaving 3H = 300. But 8T is 4T more than 4T and 9U is 6U more than 3U, so $4T + 6U (= 46)$ must be taken away from 300: $300 - 40 - 6 = 260 - 6 = \underline{254}$.

20 min

Notes

Whole class activity

Written on BB or use enlarged copy master or OHP

Give Ps time to discuss it with their neighbours.

Discussion, explanation, agreement, praising

i.e. we have only subtracted 130 from 340 so far.

Ps check it is correct using another method.

i.e. we have only subtracted 300 from 600 so far.

Extra praise if Ps realise what is happening by themselves!

5

Book 3, page 81

Q.1 Read: *Fill in the missing numbers. Continue the pattern once more.*

T explains task. (The answer to the first subtraction is the top number in the 2nd, the answer to the 2nd subtraction is the top number in the 3rd, etc. Ps make up a 6th subtraction, using the answer from the 5th as the reductant.)

Review at BB with whole class. Ps explain reasoning and class agrees/disagrees. Mistakes discussed and corrected.

Ask Ps for methods of calculating $302 - 149$: e.g.

- horizontal subtraction:
 $302 - 149 = 202 - 49 = 162 - 2 - 7 = 160 - 7 = \underline{153}$, or
 $302 - 149 = 300 - 147 = 200 - 47 = 160 - 7 = \underline{153}$, etc.
- using new method from *Activity 2*: $\begin{array}{r} 302 \\ - 149 \\ \hline 153 \end{array}$ T explains steps in detail. Use a place-value table if necessary.
- using method from *Activity 4*: $\begin{array}{r} 302 \\ - 149 \\ \hline 2\textcircled{4}7 \end{array} \rightarrow 200 - 47 = \underline{153}$ T explains steps (with Ps' help)

Solution:

$$\begin{array}{r} 868 \\ - 213 \\ \hline 655 \end{array} \rightarrow \begin{array}{r} 655 \\ - 132 \\ \hline 523 \end{array} \rightarrow \begin{array}{r} 523 \\ - 221 \\ \hline 302 \end{array} \rightarrow \begin{array}{r} 302 \\ - 149 \\ \hline 153 \end{array} \rightarrow \begin{array}{r} 153 \\ - 33 \\ \hline 120 \end{array} \rightarrow \begin{array}{r} 120 \\ - 20 \\ \hline 100 \end{array} \quad \text{e.g.}$$

Individual work, monitored, helped

Drawn on BB or use enlarged copy master or OHP

Discussion, agreement, checking, self-correction

Praise each correct subtraction.

Extra praise for doing the difficult calculation correctly and for creating a new one.

e.g.

BB:

	H	T	U
	3	$\begin{array}{c} +0 \\ 0 \end{array}$	$\begin{array}{c} +0 \\ 2 \end{array}$
-	$\begin{array}{c} +1 \\ 1 \end{array}$	$\begin{array}{c} +1 \\ 4 \end{array}$	9
	1	5	3

T tells Ps not to worry if they do not understand all the methods of calculation as we will do them again in another lesson.

You have all been very clever!

26 min

Bk3*Lesson Plan 81***Activity****6****Book 3, page 81**

Q.2 Read: *One of these statements is not correct. Circle its sign.*

Ps read statements themselves and do any calculations in their *Ex. Bks.*

Review with whole class. Ps can draw large sign on scrap paper or 'slates' and show on command. (☆)

Ps with correct responses explain to Ps who were wrong. Mistakes discussed and corrected.

Solution:

$$\begin{array}{r} * \text{ The difference between 597 and 389 is 208.} \\ 389 + 200 + 8 = 589 + 8 = 597 \quad \checkmark \end{array} \quad \begin{array}{r} 597 \\ - 389 \\ \hline 208 \end{array}$$

$$\begin{array}{r} \boxtimes \text{ The difference between 589 and 397 is less than} \\ \text{one thousand. (Difference } < 589 < 1000) \quad \checkmark \end{array} \quad \begin{array}{r} 589 \\ - 397 \\ \hline 192 \end{array}$$

$$\begin{array}{r} (\star) \text{ The difference between 687 and 265} \\ \text{is an odd number.} \\ 7U - 5U = 2U, \text{ so number must be } \underline{\text{even}}, \text{ not odd.} \end{array} \quad \begin{array}{r} 687 \\ - 265 \\ \hline 422 \end{array}$$

30 min

Notes

Individual work, monitored, helped

Ps can use any method they wish to deduce the answer.

In unison

T could have statements written on BB or SB or OHT to make discussion easier.

Discussion, reasoning, agreement, self-correcting, praising

Extra praise if Ps used reasoning, not calculation, to work out the correct answer.

7**Book 3, page 81**

Q.3 Read: *Write down the data. Make a plan. Estimate, calculate and check the answer.*

Deal with one part at a time. Ps read problem themselves and solve it. Review at BB with whole class. (Ps can show solutions on scrap paper or 'slates' on command.)

Ps explain method of solution and discuss and correct mistakes.

- a) *There are 857 fruit trees in an orchard. 614 are apple trees and the rest are plum trees. How many plum trees are in the orchard?*

Data: T: 857, A: 614.

Plan: P: T - A = 857 - 614

Estimation: 857 - 614 \approx 860 - 610 = 250

Answer: There are 243 plum trees in the orchard.

- b) *Mary and Jane are collecting buttons. Mary has 857 buttons. Jane has 641 fewer buttons than Mary. How many buttons does Jane have?*

Data: M: 857, J: M - 641 (or J $\overset{641}{<}$ M)

Plan: J: 857 - 641

Estimation: 857 - 641 \approx 860 - 640 = 220

Answer: Jane has 216 buttons.

37 min

Individual work, monitored, helped

T reminds Ps to use initial letters for names to save time.

In unison

Discussion, reasoning, checking, agreement, self-correcting, praising

Calculation

8	5	7
-	6	14
2	4	3

Check

2	4	3
+	6	14
8	5	7

$$243 \approx 250$$

Check by comparing with estimate and then by doing addition,

Calculation

8	5	7
-	6	41
2	1	6

Check

2	1	6
+	6	41
8	5	7

$$216 \approx 220$$

Bk3*Lesson Plan 81***Activity****8****Book 3, page 81**

Q.4 a) Read: *Alan and Barry have 945 stamps altogether. Complete the table to show how many stamps they could each have.*

Let's see how many columns you can complete in 2 minutes!

Ps do any calculations in *Ex. Bks.* then write the missing numbers in *Pbs.*

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

X, come and write the rule in a mathematical way. Who agrees? Who can think of another way? etc.

Solution:

A	321	430	238	536	372	264	537	222	73	27
B	624	515	707	409	573	681	408	723	872	918

$$A = 945 - B \quad B = 945 - A \quad A + B = 945$$

How many stamps would Barry have if Alan had 946 stamps? (- 1 mathematically but not possible in real life!)

b) Read: *Cindy and Diana are collecting 1 p coins. Cindy has 345 more coins than Diana. Complete the table to show how many coins they could each have.*

Again, set a time limit. Ps do any calculations in *Ex. Bks.* then write the missing numbers in *Pbs.*

Review at BB with whole class. Ps come to BB or dictate to T, explain their reasoning. Class agrees/disagrees. Mistakes discussed and corrected.

Y, come and write the rule in a mathematical way. Who agrees? Who can think of another way? etc.

Solution:

C	756	468	876	754	909	662	1058	1068	1567	1628
D	411	123	531	409	564	317	713	723	1222	1283

$$C = D + 345 \quad D = C - 345 \quad C - D = 345$$

How much money could they each have collected?

- T (or a P) points to a number in the table and Ps say it in £s and p, e.g. 468 p = £4 68 p.
- T (or a P) points to a number in the table and Ps say it in £s, e.g. 564 p = £5.64 ('five point six four pounds'), Elicit that, e.g. £5.64 = £5 + 64 hundredths of a £.

45 min

Notes

Individual work, monitored, helped

Table drawn on BB or use enlarged copy master or OHP

Differentiation by time limit

Reasoning, agreement, self-correcting, praising

Whole class discussion on the rule. Involve several Ps. Agreement, praising

Discussion, agreement
In good humour!

Individual work, monitored, helped

Table drawn on BB or use enlarged copy master or OHP

Differentiation by time limit

Reasoning, agreement, self-correcting, praising

Whole class discussion on the rule. Involve several Ps. Agreement, praising

At speed orally round class

Class points out errors.

Praising, encouragement only

Extension**Extension**

<h1>Bk3</h1>	<p>R: Mental calculation C: Problems in context: addition and subtraction E: Numbers up to 2000</p>	<h2>Lesson Plan 82</h2>
<p>Activity</p> <p>1</p>	<p>Sequences competition</p> <p>a) I will describe a sequence and I will give you 1 minute to continue it as far as you can in your <i>Ex. Bks.</i></p> <p>The first term is 217 and it is decreasing by 16. Start ... now! ... Stop! Everyone stand up. Ps say terms in order round class. (217, 201, 185, 169, 153, 137, 121, 105, 89, 73, 57, 41, 25, 9, - 7, - 23, ...)</p> <p>Ps left standing are the winners. Let's give them a round of applause!</p> <p>b) T says first 3 terms of a sequence. Ps continue it. What is the rule? 128, 142, 156, (170, 184, 198, 212, 226, 240, 254, 268, ...)</p> <p><i>Rule:</i> Increasing by 14 (+14)</p> <p style="text-align: right;">5 min</p>	<p>Notes</p> <p>Individual work in <i>Ex. Bks.</i></p> <p>Keep to time limit</p> <p>At speed</p> <p>Ps sit down if they have made a mistake or reached the end of their written terms.</p> <p>Whole class activity</p> <p>At speed round class</p> <p>If a P makes a mistake, next P corrects it. Praising</p>
<p>2</p>	<p>Problems</p> <p>Listen carefully, think how you can solve the problem and write a plan in your <i>Ex. Bks.</i> Choosing the correct operation is more important but you may do the calculation too if you have time.</p> <p>a) <i>A family went on a 2-day trip. They spent £345 on the 1st day. On the second day they spent £169 less. How much did they spend on the second day?</i></p> <p>A, what is your plan? Who wrote the same? Who did it another way? etc. Who did the calculation? (If so, P explains answer, otherwise T does calculation quickly on the BB (or dictated by Ps). BB: <i>Plan:</i> £345 - £169 or £(345 - 169) (= £176)</p> <p>What other question could we ask about this problem? (How much money did the family spend altogether?) (£345 + £176)</p> <p>b) <i>A school football team reached the final. The match was watched by 314 boys and 96 fewer girls. How many girls were at the match?</i></p> <p>B, what is your plan? Who wrote the same? Who did it another way? etc. Who did the calculation? (If so, P explains answer, otherwise T does calculation quickly on the BB (or dictated by Ps). BB: <i>Plan:</i> G: 314 - 96 (= 218)</p> <p>What other question could we ask about this problem? (How many boys and girls watched the match altogether?) (314 + 218)</p> <p>c) <i>In a cinema, there were 314 children. If 96 of them were girls, how many boys were there?</i></p> <p>C, what is your plan? Who wrote the same? Who did it another way? etc. Elicit that the calculation is the same as for b). BB: <i>Plan:</i> B: 314 - 96 (= 218)</p> <p>What other question could we ask about this problem? (How many more boys than girls were at the cinema?) (218 - 96)</p> <p style="text-align: right;">11 min</p>	<p>Individual work, monitored</p> <p>Deal with one problem at a time.</p> <p>T repeats slowly</p> <p>Set a short time limit</p> <p>Quick discussion, agreement, self-correction, praising</p> <p>N.B. Aim of activity is for Ps to write the correct operation.</p> <p>Discussion, agreement on correct operation, praising</p> <p>T repeats slowly</p> <p>Set a short time limit</p> <p>Quick discussion, agreement, self-correction, praising</p> <p>Discussion, agreement on correct operation, praising</p> <p>T repeats slowly</p> <p>Set a short time limit</p> <p>Quick discussion, agreement, self-correction, praising</p> <p>Discussion, agreement on correct operation, praising</p>
<p>3</p>	<p>Puzzle 1</p> <p>The same shape stands for the same number.</p> <p>The number in each shape is the sum of the two numbers directly below it.</p> <p>What are the missing numbers?</p> <div style="text-align: center;"> <pre> graph TD 500[500] --- 200[200] 500 --- 300[300] 200 --- 100c((100)) 200 --- 100b((100)) 300 --- 100a((100)) 300 --- 200d[200] </pre> </div> <p style="text-align: right;">14 min</p>	<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Ps come to BB to write/explain. Class agrees/disagrees.</p> <p>At a good pace. Praising</p>

Bk3

Lesson Plan 82

Activity

4

Puzzle 2

Write in the missing numbers BB: and signs so that the equations are correct horizontally and vertically. Ps come to BB to write and explain reasoning. Class agrees/disagrees.

555		444	=	999
-		-		-
333	+	111	=	444
=		=		=
222	+	333	=	555

20 min

Notes

Whole class activity
 Drawn on BB or use enlarged copy master or OHP
 At a good pace. Agreement, praising. **Bold** numbers given
 Feedback for T

5

Making subtractions

Listen carefully and write possible subtractions in your *Ex. Bks.*

What can the difference be if you subtract from 1001:

- a 3-digit number less than 110,
- a 2-digit number more than 96,
- a 3-digit number more than 995?

Deal with one part at a time. Review at BB with the whole class. T writes what Ps dictate (or Ps come to BB). Class agrees/dsagrees.

Elicit that only the first subtraction in each part needs to be calculated as other differences can be obtained by adding on (subtracting) 1U.

In c), agree that $005 = 5$, $004 = 4$, etc. so leading zeros are not needed, but a zero after or between numbers are very important!

T chooses 1 or 2 subtractions for Ps (with T's help) or T to explain in detail in a place-value table.

e.g.

Th	H	T	U
1	0	0	1
	1	0	9
	8	9	2

25 min

Individual work in writing subtractions

BB: 1001 -

T repeats slowly

Reasoning, agreement, praising

BB:

$$\begin{array}{r} \text{a) } 1001 \\ - 109 \\ \hline 892 \end{array} \quad \begin{array}{r} 1001 \\ - 108 \\ \hline 893 \end{array} \quad \dots \quad \begin{array}{r} 1001 \\ - 100 \\ \hline 901 \end{array}$$

$$\begin{array}{r} \text{b) } 1001 \\ - 97 \\ \hline 904 \end{array} \quad \begin{array}{r} 1001 \\ - 98 \\ \hline 903 \end{array} \quad \begin{array}{r} 1001 \\ - 99 \\ \hline 902 \end{array}$$

$$\begin{array}{r} \text{c) } 1001 \\ - 996 \\ \hline 005 \end{array} \quad \begin{array}{r} 1001 \\ - 997 \\ \hline 004 \end{array} \quad \begin{array}{r} 1001 \\ - 998 \\ \hline 003 \end{array} \quad \begin{array}{r} 1001 \\ - 999 \\ \hline 002 \end{array}$$

6

Book 3, page 82

Q.1 Read: Write down the data. Make a plan. Estimate, calculate and check the answer.

Ps read problems themselves and solve them. Set a time limit.

Review at BB with whole class. (Ps can show solutions on scrap paper or 'slates' on command.)

Ps explain method of solution and discuss and correct mistakes.

- a) A large barrel can hold 578 litres and a small barrel can hold 256 litres. How much more liquid can the large barrel hold than the small one?

Data: L: 578 litres, S: 256 litres

Plan: $L - S = (578 - 256)$ litres

Estimation: $578 - 256 \approx 580 - 260 = 320$ (litres)

Answer: The large barrel holds 322 litres more.

- b) The length of Molly's bedroom is 4 m 32 cm, which is 1 m 27 cm more than its width.

What is the width of Molly's bedroom?

Ps change units to cm (or calculate horizontally in m and cm).

Data: L: 4 m 32 cm = 432 cm, W: L - 1 m 27 cm (127 cm)

Plan: W: 432 cm - 127 cm (or 4 m 32 cm - 1 m 27 cm)

Estimation: $(432 - 127 \approx 430 - 130 = 300)$ cm

Answer: The width of Molly's bedroom is 3 m 5 cm.

32 min

Individual work, monitored, helped

Differentiation by time limit

In unison

Discussion, reasoning, checking, agreement, self-correcting, praising

Calculation	Check
$\begin{array}{r} 578 \\ - 256 \\ \hline 322 \end{array}$	$\begin{array}{r} 322 \\ + 256 \\ \hline 578 \end{array}$

$$320 \approx 322$$

Check by comparing with estimate, then by addition.

Calculation	Check
$\begin{array}{r} 432 \\ - 127 \\ \hline 305 \end{array}$	$\begin{array}{r} 305 \\ + 127 \\ \hline 432 \end{array}$

$$300 \approx 305$$

BB: 305 cm = 3 m 5 cm

Bk3		<i>Lesson Plan 82</i>
Activity 7	<p>Book 3, page 82</p> <p>Q.2 Read: <i>What number is:</i></p> <p>a) <i>the difference between 677 and 352?</i> b) <i>352 more than 677?</i> c) <i>352 less than 677?</i> d) <i>the sum of 677 and 352?</i></p> <p>Deal with one part at a time. Review at BB with whole class. Elicit that a) is the same as c) and b) is the same as d). Ps explain reasoning (using vertical or horizontal calculations). Mistakes discussed and corrected.</p> <p style="text-align: right;"><i>36 min</i></p>	<p style="text-align: center;">Notes</p> <p>Individual work (monitored, helped)</p> <p>Discussion, reasoning, agreement, self-correction, praising</p> <p><i>Solution:</i></p> <p>a) $\begin{array}{r} 677 \\ - 352 \\ \hline 325 \end{array}$ b) $\begin{array}{r} 677 \\ + 352 \\ \hline 1029 \end{array}$</p> <p>c) 325 d) 1029</p>
8	<p>Book 3, page 82, Q.3</p> <p>Read: <i>There were 236 women, 347 men, 163 boys and 148 girls on a beach.</i></p> <p>Deal with one part at a time. Ps discuss what data and operations are needed to answer the questions. P comes to BB to do calculations, explaining reasoning. Class checks that they are correct (e.g. mental estimation or reverse addition). Ps say answer to question as a sentence in unison.</p> <p>a) <i>How many people were on the beach altogether?</i> BB: $\begin{array}{r} 236 \\ 347 \\ \hline 163 \\ + 148 \\ \hline 894 \end{array}$</p> <p><i>Answer:</i> There were 894 people on the beach.</p> <p>b) <i>How many of them were adults?</i> BB: $\begin{array}{r} 236 \\ + 347 \\ \hline 583 \end{array}$</p> <p><i>Answer:</i> 583 of them were adults.</p> <p>c) <i>How many more adults than children were there?</i> BB: $\begin{array}{r} \text{No. of children:} \\ 583 \\ - 311 \\ \hline 272 \end{array}$</p> <p><i>Answer:</i> There were 272 more adults than children.</p> <p>d) i) <i>Were there more males or females on the beach?</i> BB: $\begin{array}{r} \text{No. of males:} \\ 347 \\ + 163 \\ \hline 510 \end{array} > \begin{array}{r} \text{No. of females:} \\ 236 \\ + 148 \\ \hline 384 \end{array}$</p> <p><i>Answer:</i> There were more males on the beach.</p> <p>ii) <i>How many more?</i> BB: $\begin{array}{r} 510 \\ - 384 \\ \hline 126 \end{array} \quad \begin{array}{l} M > F \\ 126 \end{array}$</p> <p><i>Answer:</i> There were 126 more males on the beach.</p> <p style="text-align: right;"><i>41 min</i></p>	<p>Whole class activity (or individual work in <i>Ex. Bks</i>, monitored, with answers shown on scrap paper or 'slates' on command)</p> <p>Discussion, reasoning, agreement, praising</p> <p>In unison</p> <p>Discussion, reasoning, agreement, praising</p> <p>In unison</p> <p>Discussion, reasoning, agreement, praising</p> <p>In unison</p> <p>Discussion, reasoning, agreement, praising</p> <p>In unison</p> <p>Discussion, reasoning, agreement, praising</p> <p>In unison</p>

Bk3*Lesson Plan 82***Activity****9****Book 3, page 82**Q.4 Read: *Complete the subtractions.*

Let's see how many of these you can do in 2 minutes! Use any method you wish to find the missing number.

Review at BB with whole class. Ps explain how they did the calculations. Who did the same? Who did it another way? etc. How can we check it? (Ps suggest ways)

Accept any valid reasoning, e.g. in:

b) $48 + \text{what makes } 52?$ (4), $200 + \text{what makes } 900?$ (700), so missing number is $700 + 4 = \underline{704}$.

c) add bottom 2 numbers (difference and subtrahend) to get the top one (reductant).

e) $1764 - 246 = 1564 - 40 - 6 = 1524 - 6 = \underline{1518}$;
or 64 minus what is 46? (18), 17H minus what is 2H? (15H), so missing number is $18 + 1500 = \underline{1518}$

Mistakes discussed and corrected

(Or done as a whole class activity if T prefers.)

45 min

Notes

Individual work, monitored, helped

Written on BB or use enlarged copy master or OHP

Differentiation by time limit

Discussion, reasoning, checking, agreement, self-correction, praising

Solution:

$$\begin{array}{r} \text{a) } \begin{array}{|c|c|c|} \hline 8 & 7 & 6 \\ \hline - & 1 & 5 & 4 \\ \hline 7 & 2 & 2 \\ \hline \end{array} \quad \text{b) } \begin{array}{|c|c|c|} \hline 9 & 5 & 2 \\ \hline - & 7 & 0 & 4 \\ \hline 2 & 4 & 8 \\ \hline \end{array} \end{array}$$

$$\begin{array}{r} \text{c) } \begin{array}{|c|c|c|} \hline 9 & 6 & 9 \\ \hline - & 4 & 5 & 6 \\ \hline 5 & 1 & 3 \\ \hline \end{array} \quad \text{d) } \begin{array}{|c|c|c|} \hline 8 & 5 & 9 \\ \hline - & 3 & 2 & 7 \\ \hline 5 & 3 & 2 \\ \hline \end{array} \end{array}$$

$$\begin{array}{r} \text{e) } \begin{array}{|c|c|c|c|} \hline 1 & 7 & 6 & 4 \\ \hline - & 1 & 5 & 1 & 8 \\ \hline & 2 & 4 & 6 \\ \hline \end{array} \end{array}$$


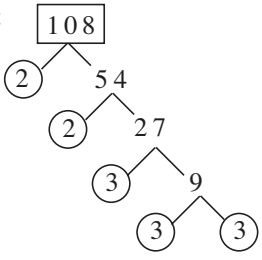
<h1>Bk3</h1>	R: Mental calculation C: Addition and subtraction E: Numbers up to 2000	<h2>Lesson Plan</h2> <h1>83</h1>																									
Activity 1	Competition T divides class into 3 or 4 teams (of roughly equal ability). Each team writes on different parts of the BB (or on SB, flip chart, or large sheets of paper stuck to the wall, unseen by the other teams). I will give you 2 minutes to write the number 725 in as many different ways as you can. You must start and stop when I say. Start ... now! Ps from each team come out one after another to write different descriptions. Rest of team correct their team-mates' errors, point out repetitions and suggest ideas. . . . Stop! Review each team's descriptions. The team with the most correct statements (and fewest wrong ones) is the winner. <p style="text-align: right;">5 min</p>	Notes Whole class activity At a good pace e.g. <u>725</u> $420 + 305$ $1000 - 275$ 145×5 $7H + 2T + 5U$ $1450 \div 2$ $7 \times 100 + 5 \times 5$ etc. Class applauds the winners																									
2	Subtraction practice If possible, T has drawings or pictures of squirrels and acorns on BB. <i>Ginny and Minny Mouse</i> have collected 1534 acorns altogether to put in their store for the winter. How many acorns could they each have collected? Let's complete the table. Ps come to BB to choose a column and fill in the missing numbers, explaining reasoning. Class checks that they are correct. Who can write the rule? Who agrees? Who can write it another way? etc. BB: <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;"><i>G</i></td> <td style="padding: 2px;">521</td> <td style="padding: 2px;">1121</td> <td style="padding: 2px;">920</td> <td style="padding: 2px;">709</td> <td style="padding: 2px;">689</td> <td style="padding: 2px;">766</td> <td style="padding: 2px;">767</td> </tr> <tr> <td style="padding: 2px;"><i>M</i></td> <td style="padding: 2px;">1013</td> <td style="padding: 2px;">413</td> <td style="padding: 2px;">614</td> <td style="padding: 2px;">825</td> <td style="padding: 2px;">845</td> <td style="padding: 2px;">768</td> <td style="padding: 2px;">767</td> </tr> </table> $G = 1534 - M, \quad M = 1534 - G, \quad G + M = 1534$ <p style="text-align: right;">10 min</p>	<i>G</i>	521	1121	920	709	689	766	767	<i>M</i>	1013	413	614	825	845	768	767	Whole class activity BB: 1534 At a good pace Ps can do calculations in <i>Ex. Bks.</i> if they wish. Reasoning, checking, agreement, praising Show problem calculations in detail, e.g. BB: <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">$15\overset{2}{\cancel{3}}4$</td> <td style="padding: 2px;">or</td> <td style="padding: 2px;">$153\overset{10}{\cancel{4}}$</td> </tr> <tr> <td style="padding: 2px;">$- 825$</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">$- 82\overset{5}{\cancel{5}}$</td> </tr> <tr> <td style="padding: 2px;">$\hline 709$</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">$\hline 709$</td> </tr> </table>	$15\overset{2}{\cancel{3}}4$	or	$153\overset{10}{\cancel{4}}$	$- 825$		$- 82\overset{5}{\cancel{5}}$	$\hline 709$		$\hline 709$
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3	Problems Listen carefully and think how you can solve the problem. You can do the calculation in your head or in your <i>Ex. Bks.</i> Sit up with your arms folded when you are ready. Show me the answer when I say. a) <i>Mum made 123 sandwiches for a birthday party. After the party, 39 sandwiches were left. How many sandwiches had been eaten?</i> Show me your answer . . . now! (84) A, explain to us how you worked out the answer. Who did the same? Who did it another way? etc. Discuss all mistakes. e.g. $123 - 39 = 123 - 40 + 1 = 83 + 1 = 84$, or $\begin{array}{r} 123 \\ - 39 \\ \hline 84 \end{array}$ $123 - 39 = 123 - 30 - 9 = 93 - 9 = 84$. or $\begin{array}{r} 123 \\ - 39 \\ \hline 84 \end{array}$ <i>Answer:</i> 84 sandwiches had been eaten. b) <i>There were 39 sandwiches left after a party. If 123 sandwiches had been eaten, how many sandwiches did Mum make for the party?</i> Show me your answer . . . now! (162) B, explain to us how you worked out the answer. Who did the same? Who did it another way? etc. Discuss all mistakes. e.g. $123 + 39 = 123 + 40 - 1 = 122 + 40 = 162$, or $\begin{array}{r} 123 \\ + 39 \\ \hline 162 \end{array}$ $123 + 39 = 123 + 30 + 9 = 153 + 9 = 162$, or $\begin{array}{r} 123 \\ + 39 \\ \hline 162 \end{array}$ <i>Answer:</i> Mum made 162 sandwiches for the party.	Whole class activity Answers written on scrap paper or on 'slates' T repeats slowly In unison Reasoning, agreement, praising T chooses a P to say the answer in a sentence. T repeats slowly In unison Reasoning, agreement, praising Class says the answer as a sentence in unison.																									


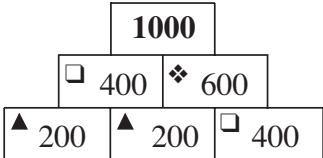
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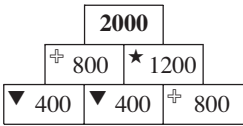
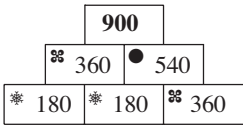
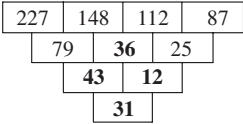
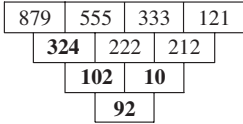
Bk3		<i>Lesson Plan 83</i>
<p>Activity</p> <p>4</p>	<p>Written exercises</p> <p>T dictates operations. Ps copy into <i>Ex. Bks</i> and do the calculations.</p> <p>a) $80 \times 5 - 128 = (400 - 128 = 300 - 28 = 280 - 8 = \underline{272})$</p> <p>b) $200 \div 5 + 136 = (40 + 136 = \underline{176})$</p> <p>c) $50 \times 7 + 61 \times 3 = (350 + 183 = 450 + 83 = 500 + 33 = \underline{533})$</p> <p>Review at BB with whole class. Ps explain how they did the calculations. Deal with all cases. Mistakes discussed and corrected.</p> <p style="text-align: right;"><i>20 min</i></p>	<p>Notes</p> <p>Individual work, monitored (helped)</p> <p>T has questions already written on BB (SB or OHT)</p> <p>Discussion, agreement, self-correcting, praising</p> <p>or a) $\begin{array}{r} 400 \\ - 128 \\ \hline 272 \end{array}$ c) $\begin{array}{r} 350 \\ + 183 \\ \hline 533 \end{array}$</p>
<p>5</p>	<p>Making plans</p> <p>Listen carefully, think how you would solve the problem and write <u>only the calculation</u> on your 'slates' (or in your <i>Ex. Bks.</i> first). You do not need to work out the answer.</p> <p>a) <i>In a school, there are 288 girls and 155 boys. How many pupils are in the school?</i></p> <p>Show me the calculation . . . now! $(228 + 155) \quad (= 383)$</p> <p>Ps who responded correctly explain to those who did not.</p> <p>b) <i>There are 228 pupils in a school. 155 of them are girls. How many of them are boys?</i></p> <p>Show me the calculation . . . now! $(228 - 155) \quad (= 73)$</p> <p>Ps who responded correctly explain to those who did not.</p> <p>c) <i>In a school, there are 228 girls, 155 more than the number of boys. How many boys are in the school?</i></p> <p>Show me the calculation . . . now! $(228 - 155) \quad (= 73)$</p> <p>Ps who responded incorrectly work through it on BB with help of class. Elicit that c) means the same as b) but is worded differently.</p> <p style="text-align: right;"><i>25 min</i></p>	<p>Whole class activity</p> <p>T repeats slowly</p> <p>In unison</p> <p>Reasoning, agreement</p> <p>T repeats slowly</p> <p>In unison</p> <p>Reasoning, agreement</p> <p>T repeats slowly</p> <p>In unison</p> <p>Reasoning, agreement</p> <p>Praising. Feedback for T</p>
<p>6</p>	<p>Book 3, page 83</p> <p>Q.1 Read: <i>Complete the additions. Write a subtraction for each one.</i></p> <p>Set a time limit. Review at BB with whole class. Ps come to BB or dictate to T. Ps explain reasoning. Mistakes corrected. Agree that the subtractions are checks for the additions.</p> <p><i>Solution:</i></p> <p>a) $\begin{array}{r} 455 \\ + 142 \\ \hline 597 \end{array}$ b) $\begin{array}{r} 373 \\ + 305 \\ \hline 678 \end{array}$ c) $\begin{array}{r} 554 \\ + 1325 \\ \hline 1879 \end{array}$ d) $\begin{array}{r} 1356 \\ + 250 \\ \hline 1606 \end{array}$ e) $\begin{array}{r} 553 \\ + 460 \\ \hline 1013 \end{array}$</p> <p>$\begin{array}{r} 597 \\ - 142 \\ \hline 455 \end{array}$ $\begin{array}{r} 678 \\ - 305 \\ \hline 373 \end{array}$ $\begin{array}{r} 1879 \\ - 1325 \\ \hline 554 \end{array}$ $\begin{array}{r} 1606 \\ - 250 \\ \hline 1356 \end{array}$ $\begin{array}{r} 1013 \\ - 460 \\ \hline 553 \end{array}$</p> <p style="text-align: right;"><i>31 min</i></p>	<p>Individual work, monitored</p> <p>Differentiation by time limit</p> <p>(Do part e) with the whole class if necessary.)</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Discussion, reasoning, agreement, self-correcting, praising</p> <p>T chooses 1 or 2 subtractions for Ps to explain in detail (by adding or transferring 10s).</p>

Bk3		<i>Lesson Plan 83</i>
<p>Activity</p> <p>7</p>	<p>Book 3, page 83</p> <p>Q.2 Read: <i>Complete the subtractions. Write the differences in increasing order.</i></p> <p>Ps can use either method of subtraction (adding or transferring tens), or T can decide which method Ps should use. Ps check work by mental addition.</p> <p>Review at BB with whole class. Ps come to BB or dictate to T, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) $\begin{array}{r} 673 \\ - 321 \\ \hline 352 \end{array}$ b) $\begin{array}{r} 496 \\ - 272 \\ \hline 224 \end{array}$ c) $\begin{array}{r} 893 \\ - 628 \\ \hline 265 \end{array}$ d) $\begin{array}{r} 541 \\ - 352 \\ \hline 189 \end{array}$</p> <p>BB: 189 < 224 < 265 < 352</p> <p style="text-align: right;">36 min</p>	<p>Notes</p> <p>Individual work, monitored, helped</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Discussion, reasoning, checking, agreement, self-correcting, praising</p> <p><i>Check:</i> + ↑</p> <p>Ps dictate to T. Praising</p>
<p>8</p>	<p>Book 3, page 83</p> <p>Q.3 Read: <i>Solve the problem in your exercise book. Check your result. Write the answer.</i></p> <p>Ps read problem themselves, write the data, make a plan, do the calculations in their <i>Ex. Bks</i>, check the result and then write the answer as a sentence in their <i>Pbs</i>.</p> <p><i>On Monday, the children picked 253 apples in their grandparent's orchard.</i></p> <p><i>On Tuesday they picked 89 more apples than they did on Monday. How many apples did the children pick altogether?</i></p> <p>Review at BB with whole class. D, read us your answer. D, come and explain what you did. Who did the same? Who got the same answer in another way? Who got a different answer? etc.</p> <p><i>Solution:</i></p> <p><i>Data:</i> M: 253 apples, T: (M + 89) apples or $T > M$</p> <p><i>Plan:</i> M + T: 253 + 253 + 89 E: 250 + 250 + 90 = 590</p> <p>C: $\begin{array}{r} T: 253 \\ + 89 \\ \hline 342 \end{array}$ $\begin{array}{r} M + T: 253 \\ + 342 \\ \hline 595 \end{array}$ or $\begin{array}{r} M + T: 253 \\ 253 \\ + 89 \\ \hline 595 \end{array}$</p> <p><i>Answer:</i> They picked 595 apples altogether.</p> <p style="text-align: right;">40 min</p>	<p>Individual work, monitored, helped</p> <p>If necessary, T could keep class together for each step.</p> <p>(T o save time, T could have solution already prepared on BB or SB or OHT and uncover each step as it is dealt with.)</p> <p>Discussion, reasoning, checking, agreement, self-correcting, praising</p> <p>Ps check by comparing with estimation and by doing addition in opposite direction.</p> <p>or $2 \times 253 + 89 = 400 + 100 + 6 + 89 = 500 + 95 = 595$</p>

<h1>Bk3</h1>		<p>Lesson Plan 83</p>
<p>Activity</p> <p>9</p>	<p>Book 3, page 83, Q.4</p> <p>T explains task. T shows a dice, elicits possible digits and writes them on the BB: 1, 2, 3, 4, 5, 6</p> <p>Make sure that Ps know that only one of each of these digits can be used in the reductant and subtrahend, but any digit can be repeated in the difference.)</p> <p>Deal with one part at a time. Discuss strategies for solution. e.g.</p> <p>a) <i>at least 300</i> (H digits must have a difference of 3 or more)</p> <p>b) <i>the smallest possible</i> (the two closest 3-digit numbers)</p> <p>c) <i>between 200 and 300</i> (Hundreds digits must have a difference of 2)</p> <p>d) <i>even</i> (both Units digits must be odd or both must be even)</p> <p>e) <i>the greatest possible</i> (biggest possible number – smallest possible)</p> <p>f) <i>divisible by 10</i> (Units digit must be 0, but 0 is not shown on a dice, so the question is impossible!)</p> <p>Ps dictate to T or come to BB. (Or pairs of Ps could work on each part at the same time.)</p> <p>Solution:</p> <p>a) at least 300 b) the smallest possible c) between 200 and 300</p> <p>e.g. $\begin{array}{r} \boxed{6} \boxed{5} \boxed{4} \\ - \boxed{2} \boxed{3} \boxed{1} \\ \hline \boxed{4} \boxed{2} \boxed{3} \end{array}$</p> <p>$\begin{array}{r} \boxed{4} \boxed{1} \boxed{2} \\ - \boxed{3} \boxed{6} \boxed{5} \\ \hline \boxed{} \boxed{4} \boxed{7} \end{array}$</p> <p>e.g. $\begin{array}{r} \boxed{6} \boxed{5} \boxed{3} \\ - \boxed{4} \boxed{1} \boxed{2} \\ \hline \boxed{2} \boxed{4} \boxed{1} \end{array}$</p> <p>d) even e) the greatest possible f) divisible by 10</p> <p>e.g. $\begin{array}{r} \boxed{4} \boxed{6} \boxed{5} \\ - \boxed{3} \boxed{2} \boxed{1} \\ \hline \boxed{1} \boxed{4} \boxed{4} \end{array}$</p> <p>$\begin{array}{r} \boxed{6} \boxed{5} \boxed{4} \\ - \boxed{1} \boxed{2} \boxed{3} \\ \hline \boxed{5} \boxed{3} \boxed{1} \end{array}$</p> <p>$\begin{array}{r} \boxed{} \boxed{} \boxed{} \\ - \boxed{} \boxed{} \boxed{} \\ \hline \boxed{} \boxed{} \boxed{} \end{array}$</p> <p>Impossible!</p> <p style="text-align: right;">45 min</p>	<p>Notes</p> <p>Whole class activity (Or individual trial if Ps wish)</p> <p>Grids drawn on BB or use enlarged copy master or OHP</p> <p>Discussion, agreement, praising</p> <p>Other Ps could try them out in <i>Pbs</i> too.</p> <p>Discussion, reasoning, agreement, praising</p> <p>Extra praise if Ps find the solution to part b) without help.</p> <p>If not enough time, Ps could finish it at home if they wish.</p>

<h1>Bk3</h1>	<p>R: Mental calculation C: Equations. Puzzles. Four operations E: Challenges</p>	<h2 style="text-align: right;">Lesson Plan</h2> <h1 style="text-align: right;">84</h1>
<p>Activity</p> <p>1</p>	<p>Ordering numbers</p> <p>a) Let's put the fruit in order so that the numbers are decreasing. BB: </p> <p>Ps come to BB to rearrange the fruit or to write the numbers in order. BB: $963 > 758 > 632 > 419 > 347$</p> <p>b) In your <i>Ex. Bks</i>, calculate the difference between each adjacent number. Ps come to BB to write subtractions or dictate to T what to write. Class agrees/disagrees.</p> <p>BB: $\begin{array}{r} 963 \\ - 758 \\ \hline 205 \end{array} \quad \begin{array}{r} 758 \\ - 632 \\ \hline 126 \end{array} \quad \begin{array}{r} 632 \\ - 419 \\ \hline 213 \end{array} \quad \begin{array}{r} 419 \\ - 347 \\ \hline 72 \end{array}$</p> <p>c) How many more is, e.g.</p> <ul style="list-style-type: none"> the 1st number on the left than the 2nd number from the right? the greatest number than the smallest number? etc. <p>(or Ps could choose the numbers.)</p> <p style="text-align: right;"><i>8 min</i></p>	<p style="text-align: center;">Notes</p> <p>Whole class activity</p> <p>Use enlarged copy master, enlarged, coloured and fruit cut out and stuck at random on BB</p> <p>Agreement, praising</p> <p>Individual work, monitored</p> <p>Encourage quick work</p> <p>Reasoning, agreement, praising.</p> <p>BB: e.g. $\begin{array}{r} 963 \\ - 632 \\ \hline 331 \end{array} \quad \begin{array}{r} 963 \\ - 347 \\ \hline 616 \end{array}$</p>
<p>2</p> <p>Written exercises</p> <p>Listen carefully and do the calculation in your head or in your <i>Ex. Bks</i>. Show me the result when I say.</p> <p>a) i) <i>108 is 2 times which number?</i> Show me ... now! (54) (BB: $108 \div 2 = 100 \div 2 + 8 \div 2 = 50 + 4 = 54$)</p> <p>ii) <i>108 is half of which number?</i> Show me ... now! (216) (BB: $108 \times 2 = 100 \times 2 + 8 \times 2 = 200 + 16 = 216$)</p> <p>b) i) <i>108 is 3 times which number?</i> Show me ... now! (36) (BB: $108 \div 3 = 90 \div 3 + 18 \div 3 = 30 + 6 = 36$)</p> <p>ii) <i>108 is 1 third of which number?</i> Show me ... now! (324) (BB: $108 \times 3 = 100 \times 3 + 8 \times 3 = 300 + 24 = 324$)</p> <p>c) i) <i>108 is 4 times which number?</i> Show me ... now! (27) (BB: $108 \div 4 = 80 \div 4 + 28 \div 4 = 20 + 7 = 27$)</p> <p>ii) <i>108 is 1 quarter of which number?</i> Show me ... now! (432) (BB: $108 \times 4 = 100 \times 4 + 8 \times 4 = 400 + 32 = 432$)</p> <p>Ps who responded correctly explain their reasoning (writing relevant equations on BB) to those who did not.</p> <p>Extension</p> <p>Here is another way we could have used. T revises what the factors of a number are. Who remembers how to break a number down into its lowest factors? T might need to start off to stir Ps' memories.</p> <p>As 108 is an even number, what must the lowest factor be? (2) 2 times what equals 108? (54) T writes 2nd line in diagram. Does 2 have any factors other than itself and 1? (No) So we circle '2'.</p> <p>What is the lowest factor of 54? (even number, so must be 2) 2 times what equals 54? (27). Continue in this way until all the factors have been circled. Then relate these to the questions above.</p> <p>a) $2 \times (2 \times 3 \times 3 \times 3)$ b) $3 \times (2 \times 2 \times 3 \times 3)$</p> <p>c) $(2 \times 2) \times (3 \times 3 \times 3)$</p> <p style="text-align: right;"><i>14 min</i></p>	<p>Whole class activity</p> <p>Responses written on scrap paper or on 'slates'</p> <p>In unison</p> <p>Reasoning, agreement, praising</p> <p>Or Ps might reason with addition, e.g. $\begin{array}{r} 108 \\ + 108 \\ \hline 216 \end{array} \quad \begin{array}{r} 108 \\ + 108 \\ \hline 324 \end{array}$</p> <p>Discussion, explanation, demonstration, agreement</p> <p>BB: </p> <p>$108 = 2 \times 2 \times 3 \times 3 \times 3$</p>	

Bk3		<i>Lesson Plan 84</i>
<p>Activity</p> <p>3</p>	<p>Time problem</p> <p>Listen carefully. If you think the statement is true, stand up and if it is false clap your hands when I say.</p> <p><i>Eve sunbathed for 3 quarters of an hour and swam for 1 quarter of an hour. She said that she was on the beach for 1 hour. Is Eve correct?</i></p> <p>Show me . . . now! (correct)</p> <p>Who can come and write an equation about it? Who agrees? etc.</p> <p>BB: 3 quarters of an hour + 1 quarter of an hour = 1 hour</p> <p>Let's write it in minutes too. Elicit that:</p> <p>BB:  1 hour = 60 minutes 1 quarter of an hour = 15 minutes 3 quarters of an hour = 15 min. \times 3 = 45 min.</p> <p>Who can write the equation about Eve in minutes?</p> <p>BB: 45 minutes + 15 minutes = 60 minutes (= 1 hour)</p> <p>Extension</p> <p>T (or Ps) think of other similar questions to review fractions of time.</p> <p style="text-align: right;"><i>18 min</i></p>	<p>Notes</p> <p>Whole class activity Or other agreed actions</p> <p>T repeats slowly</p> <p>In unison</p> <p>Agreement, praising</p> <p>Discussion, agreement, praising</p> <p>Show on real clock if possible or draw on BB</p> <p>P come to BB or dictate to T Agreement, praising</p> <p>Praise creative contexts</p>
<p>4</p>	<p>Missing numbers</p> <p>What numbers could we write in the boxes to make the equations correct?</p> <p>Deal with one part at a time. Ps suggest where to start and what to do next. Ps come to BB to do calculations and fill in missing numbers. Class points out errors or suggests alternative methods of solution.</p> <p>BB:</p> <p>a) $\underbrace{86 \times 2}_{172} + 128 = \underbrace{120 \times 3}_{360} - \boxed{60}$ ($300 = 360 - 60$)</p> <p>b) $\underbrace{200 \times 5}_{1000} - 136 = \underbrace{800 \div 4}_{200} + \boxed{664}$</p> <p>c) $\underbrace{50 \times 7}_{350} + 319 = \underbrace{600 \times 2}_{1200} - \boxed{531}$</p> <p style="text-align: right;"><i>23 min</i></p>	<p>Whole class activity</p> <p>T has BB or SB or OHT already prepared</p> <p>Discussion, reasoning, checking, agreement, praising</p> <p>Encourage Ps to say what they are doing loudly and clearly.</p> <p>Addition/subtraction can be done mentally or written on BB horizontally or vertically</p> <p>Feedback for T</p>
<p>5</p>	<p>Puzzle</p> <p>The same symbol means the same number. Each number is the sum of the two numbers directly below it. Let's fill in the missing numbers.</p> <p>BB:</p> <div style="text-align: center;">  </div> <p>Ps come to BB to write a number, explaining reasoning. Class agrees/disagrees. (Ps might notice the similarity to the puzzle in LP 102/3.)</p> <p style="text-align: right;"><i>26 min</i></p>	<p>Whole class activity</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Bold number is given</p> <p>At a good pace</p> <p>Reasoning, checking mentally, agreement, praising</p> <p>Extra praise if a P notices.</p>

Bk3		<i>Lesson Plan 84</i>
<p>Activity</p> <p>6</p>	<p>Book 3, page 84</p> <p>Q.1 Read: <i>The sum of any two adjacent numbers is the number directly above them. The same sign means the same number. Fill in the missing numbers.</i></p> <p>Deal with one part at a time. Elicit that the rule is the same as the previous activity but written in a different way.</p> <p>Let's see if you can solve them in 2 minutes!</p> <p>Review quickly at BB with whole class. Mistakes corrected.</p> <p>(Ps might notice the similarity in these 3 puzzles + LP 102/3.*)</p> <p><i>Solution:</i></p> <p>a) </p> <p>b) </p> <p style="text-align: right;"><i>29 min</i></p>	<p>Notes</p> <p>Individual work, monitored Only help given is, 'Are you sure?'</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Differentiation by time limit Bold numbers are given.</p> <p>Discussion, agreement, checking, praising</p> <p>* i.e. 1 whole 2 fifths 3 fifths 1 fifth 1 fifth 2 fifths</p> <p>Extra praise if a P notices.</p>
<p>7</p>	<p>Book 3, page 84</p> <p>Q.2 Read: <i>Work out the rule and fill in the missing numbers.</i></p> <p>Let's see if you can solve them in 3 minutes!</p> <p>Review at BB with whole class. What is the rule? T asks several Ps what they think and why. Ps come to BB or dictate to T, explaining reasoning. Class agrees/disagrees. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <p>a) </p> <p>b) </p> <p><i>Rule:</i> The difference between two adjacent numbers is the number directly below them. (or equivalent)</p> <p style="text-align: right;"><i>34 min</i></p>	<p>Individual work, monitored (helped)</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Differentiation by time limit Bold numbers are missing</p> <p>Discussion, agreement, checking, praising</p>
<p>8</p>	<p>Book 3, page 84</p> <p>Q.3 Read: <i>Write your answer as an operation.</i></p> <p>T tells Ps just to write the operations. If they have time at the end, they can do the calculations in their <i>Ex. Bks</i> if they wish.</p> <p>Read: <i>What number is:</i></p> <p>a) 189 more than the sum of 372 and 476? (372 + 476 + 189)</p> <p>b) 189 more than the difference between 372 and 476? (476 - 372 + 189)</p> <p>c) 189 less than the sum of 372 and 476? (372 + 476 - 189)</p> <p>d) 178 less than 4 times 80? (4 × 80 - 178)</p> <p>e) 593 more than 1 sixth of 480? (480 ÷ 6 + 593)</p> <p>Review at BB with whole class. Mistakes corrected.</p> <p>If Ps did not have time to do the calculations, they could do them in their <i>Ex. Bks.</i> in <i>Lesson 105</i> (or at home) if they want to.</p> <p style="text-align: right;"><i>38 min</i></p>	<p>Individual work, monitored, helped (or whole class activity if T prefers)</p> <p>If Ps are able, allow them to complete all parts before reviewing, otherwise deal with one part at a time.</p> <p>Ps dictate to T what to write, explaining reasoning.</p> <p>Agreement, self-correction, praising</p> <p><u>Answers to calculations:</u></p> <p>a) 1037 b) 293 c) 659 d) 142 f) 673</p>

Bk3		<i>Lesson Plan 84</i>
<p>Activity</p> <p>9</p>	<p>Book 3, page 84</p> <p>Q.4 Read: <i>Which numbers can be written instead of the letters to make the statements true?</i></p> <p>T first shows/elicits how to write a long list of numbers in a short space. e.g.</p> <p>BB: 21 onwards: 21, 22, ...</p> <p> 21 to 30: 21, 22, ..., 29, 30</p> <p> up to 21: ..., 20, 21</p> <p>Deal with one part at a time. Ps can do calculations in <i>Ex. Bks</i>. Review each column at BB with whole class. Ps come to BB to write possible numbers (or dictate to T) and explain reasoning. Class agrees/disagrees. Mistakes discussed and corrected. If problems, show on number line (appropriate segment drawn on BB if necessary).</p> <p><i>Solution:</i></p> <p>i) $589 + \boxed{a} = 832$ ii) $645 - \boxed{d} = 331$ iii) $\boxed{g} - 375 = 412$ $a = 243$ $d = 314$ $g = 787$</p> <p>$589 + \boxed{b} > 832$ $645 - \boxed{e} \geq 331$ $\boxed{h} - 375 < 412$ $b : 244, 245, 246, \dots$ $e : 314, 313, \dots$ $h : 786, 785, \dots$</p> <p>$589 + \boxed{c} \leq 832$ $645 - \boxed{f} < 331$ $\boxed{i} - 375 > 412$ $c : 243, 242, \dots$ $f : 315, 316, \dots, 645$ $i : 788, 789, \dots$</p> <p style="text-align: center;"><i>43 min</i></p>	<p style="text-align: center;">Notes</p> <p>Individual work, monitored, helped (or whole class activity)</p> <p>Give Ps the chance to explain if they can</p> <p>Written on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement If disagreement, Ps do calculations in detail on BB</p> <p>Ps read statements using a number chosen from correct list. Class checks that statement is true.</p> <p>Praising, encouragement only</p> <p>Feedback for T</p>
<p>10</p>	<p>Book 3, page 84</p> <p>Q.5 Read: <i>The same letter stands for the same digit. What is the value of each letter? Write the sum with digits.</i></p> <p>Let's see if you can solve it in 2 minutes! You can discuss it with your neighbour if you wish.</p> <p>As soon as Ps have a solution, they show it on the BB. Class agrees whether it is valid or not. If nobody solves it in the time, Ps can try it at home if they wish.</p> <p><i>Solution:</i> e.g. ONE 189 324 + FOUR +5160 or +1370 etc. FIVE 5349 1694</p> <p style="text-align: center;"><i>45 min</i></p>	<p>Individual (or paired) work (or whole class activity if T prefers)</p> <p>Sum in letters written on BB or OHT</p> <p>Reasoning, checking, agreement</p> <p>Extra praise if Ps find a solution within the time without help.</p>

Bk3	<p>R: Four operations C: Geometry: sorting 1-D, 2-D and 3-D shapes E: <i>Drawing shapes</i></p>	<p><i>Lesson Plan</i> 85</p>
Activity		Notes
1	<p>Sequences Let's continue these sequences for 3 terms in each direction. Ps come out to BB to write the terms. Class agrees on the rule.</p> <p>BB: <i>Rule:</i> a) (425, 465, 505), 545, 585, 625, (665, 705, 775) [+ 40] b) (305, 355, 505), 455, 505, 555, (605, 655, 705) [+ 50] c) (1374, 1254, 1134), 1014, 894, 774, (654, 534, 414) [- 120]</p> <p style="text-align: right;"><i>5 min</i></p>	<p>Whole class activity 3 bold terms already written on BB Discussion on the rule. At a good pace Reasoning, agreement, praising</p>
2	<p>Mental multiplication and division practice T says a multiplication or division. P says the result. e.g.</p> <p>a) 8×7, 4×9, 6×8, 7×3, etc.; $63 \div 7$, $42 \div 6$, $25 \div 5$, etc. b) 7×1, 7×10, 7×100; 18×1, 18×10, 18×100; 19×10, 10×130, 100×15, etc.; c) $12 \div 2$, $120 \div 2$, $120 \div 20$; $15 \div 5$, $150 \div 5$, $150 \div 50$; $10 \div 10$, $100 \div 10$, $100 \div 100$, etc.; d) 0×0, 1×1, 2×2, 3×3, 4×4, 5×5, 6×6, 7×7, 8×8, 9×9, 10×10, (11×11), 12×12</p> <p style="text-align: right;"><i>10 min</i></p>	<p>Whole class activity T chooses Ps at random If a P makes a mistake, the next P corrects it, so all Ps should concentrate all the time! At speed. Praising Ps explain reasoning for: $11 \times 11 = 11 \times 10 + 11 = 121$ $12 \times 12 = 12 \times 10 + 12 \times 2 = 120 + 24 = 142$</p>
3	<p>Written exercises T dictates operations. Ps write in <i>Ex. Bks</i> and do calculations.</p> <p>a) $130 + 12 \div 2 = (136)$ b) $712 - 40 \times 7 = (432)$ c) $90 \times 5 - 265 = (185)$ d) $140 \div 7 + 498 = (518)$ e) $380 - 60 \div 4 = (365)$ f) $(380 - 60) \div 4 = (80)$ g) $240 \div 6 + 2 = (42)$ h) $240 \div (6 + 2) = (30)$</p> <p>Deal with two at a time. Ps explain how they did the calculations. (Order of operations) Mistakes discussed and corrected.</p> <p style="text-align: right;"><i>15 min</i></p>	<p>Individual work, monitored (T walks round while reading out the questions) Questions and answers already prepared on BB or SB or OHT and T uncovers each one as it is reviewed. Reasoning, agreement, self-correction, praising Feedback for T</p>
4	<p>Shapes</p> <p>a) T has various real objects (e.g. tin, carton, brick, ball, randomly shaped objects) and geometrical <u>solids</u> (e.g. cube, cuboid, pyramid, etc.) on desk at front of class. How could we sort these things? Ps suggest various ways. (e.g. size; material; curved surface or flat (plane) faces or a mixture of the two; number of faces (edges, vertices); parallel or perpendicular edges or neither; etc.) Class discusses the various groupings. Agree that all items are 3-dimensional, i.e. have height, width and depth.</p> <p>b) T has various <u>plane</u> shapes stuck to (or drawn on) BB. (e.g. square, rectangle, circle, triangle, pentagon, semicircle, random shapes, etc.) How could we sort these shapes? Ps suggests ways. (e.g. curved or straight sides or mixed, number of sides (vertices), etc. Class discusses the various groupings. Agree that all are 2-dimensional. (width, height)</p> <p>c) T draws various (unclosed) line patterns on BB. What kind of shapes are these? Agree that they are not solids or plane shapes but only <u>lines</u>. How could we sort them? (e.g. curved or straight or mixed; length) Agree that lines can be thought of as being 1-dimensional. (length)</p> <p style="text-align: right;"><i>20 min</i></p>	<p>Whole class activity T decides on number and variety Discussion, demonstration, agreement, praising Encourage Ps to use correct geometrical names. BB: <u>3-D</u></p> <p>Discussion, demonstration, agreement, praising. BB: <u>2-D</u> Extra praise if Ps mention perpendicular (parallel) sides, right angles, perimeter, etc.</p> <p>Discussion, demonstration, agreement, praising. BB: <u>1-D</u> Feedback for T</p>

Bk3

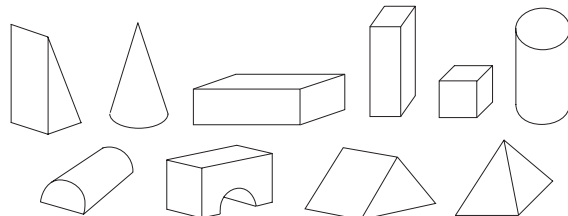
Lesson Plan 85

Activity

5

Building solids

a) T and/or Ps have set of (wooden) building blocks on desks. e.g.



Ps use the elements to make different combined shapes. Ps show their shapes to class and name and describe the elements.

b) Ps have Cuisenaire rods or unit cubes or multi-link on desks. Ps freely construct various shapes. T chooses Ps to show their shapes to class and to describe them. Class suggests missed criteria (e.g. number of vertices, edges, faces, type of edges, faces)

25 min

Notes

Individual (or paired) work, monitored

If Ps do not have own building blocks, they come out to select from large models on T's desk
Naming/describing, agreement, praising

Extra praise for creative shapes or good descriptions

And/or paired discussion:

Ps describe their shapes to their neighbours who agree/disagree or suggest missed criteria, as preparation for review with whole class.

6

Book 3, page 85

Q.1 Read: *Count the number of faces, vertices and edges of each solid and fill in the table.*

If possible, T has large models on desk. Otherwise T refers to BB or OHP. Make sure that Ps know what a face (vertex, edge) is. Ps come out to point to them on the diagrams or models.

T explains that the dotted lines in the diagrams are edges which cannot be seen from the front, but must be included in counting.

Review at BB with whole class. Ps come out to fill in columns or dictate to T. Class agrees/disagrees. If disagreement, T confirms on model. Mistakes corrected.

When dealing with each shape, ask Ps to name the faces and to identify faces or edges which are parallel or perpendicular.

Solution:

	Square-based pyramid	Triangle-based prism	Cuboid	Cube	Hexagonal prism	Triangle-based pyramid
Faces	5	5	6	6	8	4
Vertices	5	6	8	8	12	4
Edges	8	9	12	12	18	6

Whole class discussion to start
Drawn on BB or use enlarged copy master or OHP
Agreement, praising

Individual work, monitored (helped)

At a good pace

Reasoning, checking, agreement, self-correcting, praising

Ps could hold their *Pbs* or 'slates' parallel (perpendicular) to their desks to reinforce the concepts if needed.

Whole class activity

Reasoning, agreement, checking with values from table
Praising

Extension

Who could write a rule for the table? Who agrees? Who could write it in another way? etc.

$$\text{BB: } E = F + V - 2, \quad F = E - V + 2, \quad V = E - F + 2$$

$$(F + V = E + 2)$$

30 min

Bk3

Lesson Plan 85

Activity

7

Book 3, page 85, Q.2

a) Let's draw around all the sides of this cuboid. T demonstrates on BB, turning the solid over until all the sides have been drawn. This is called a net for a solid. This is what it looks like when it is cut out in one piece. T has the net already prepared and pre-folded. T asks a P to come out to front and fold the net around the solid. Does it fit? (Yes)
T (or P) repeats with, e.g. a pyramid.

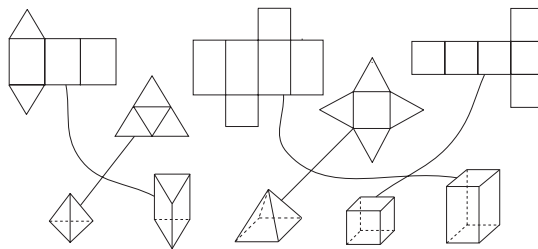
b) T has 2 or 3 nets already prepared and pre-folded. T shows them to class and Ps try to work out what the solid is. Ask several Ps what they think before checking by folding.

c) Read: *Join up the solids to the correct net.*

First make sure that Ps know which are the solids (3-D) and which are the nets (2-D).

Review at BB with whole class. Ps come out to join up matching pairs. Class agrees/disagrees. (T could have nets and shapes on hand in case of disagreement.)

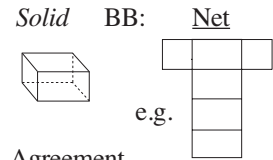
Solution:



35 min

Notes

Whole class demonstration to start



Agreement

Whole class activity

In good humour!

Agreement, checking, praising

Individual work, monitored (helped)

Drawn on BB or use enlarged copy master or OHP

Reasoning, checking, agreement, self-correcting, praising

Ps might notice that the net for the cuboid is different from the one above.

T could show by manipulation how other nets are possible for some solids.

8

Book 3, page 85

Q.3 Read: *Colour the plane shapes which are bordered by an unbroken line.*

Tick any circle with red, any rectangles with blue and any triangles with green.

Agree that all plane shapes are bordered by an unbroken line. Who remembers the name of this line? (perimeter)

Ps colour plane shapes in *Pbs*. Review at BB with whole class. Ps come out to point to plane shapes and to describe them. (e.g. curved or straight sides, number of sides and vertices; parallel and perpendicular lines, right angles)

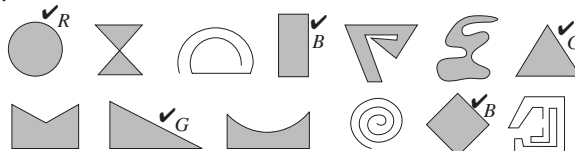
Ps point out the circle, 2 rectangles and 2 triangles.

What is this shape called?

(pentagon – 5 sides, but not all the same size so is not regular pentagon like . It is an irregular pentagon)

What are the shapes which are not coloured? (lines)

Solution:



40 min

Individual work, monitored, helped

Drawn on BB or use enlarged copy master or OHP

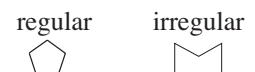
BB: perimeter

Discussion, explanation, agreement, praising

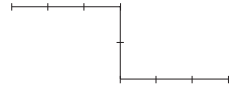



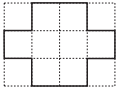
Class suggests missed criteria

Agreement, praising

BB: pentagon



Discussion on regular and irregular shapes, e.g. a square is a regular rectangle (all its sides are equal)

<h1>Bk3</h1>		<p>Lesson Plan 85</p>
<p>Activity</p> <p>9</p>	<p>Book 3, page 85</p> <p>Q.4 Read: <i>Draw the shapes described on a squared grid sheet (or in your exercise books).</i></p> <p>Deal with one part at a time. Discuss that the unit length is not stated so can be any length, but must be consistent throughout the question. Ps read description and draw the shape.</p> <p>Review at BB with whole class. T shows an example.</p> <p>Who drew something similar? Who drew something different? Come and show us. Class decides whether or not solutions are correct.</p> <p>a) <i>A line 8 units long which is divided into 3 segments, 2 of them are equal.</i></p> <p>BB: e.g. </p> <p>b) <i>A rectangle which has perimeter 8 units.</i></p> <p>BB:  or </p> <p>c) <i>A plane shape which has area 8 square units and perimeter 14 units.</i></p> <p>BB: e.g.  or </p> <p>45 min</p>	<p>Notes</p> <p>Individual work, monitored, helped (Ps can use 1 cm grid sheets from Y1 or appropriate grids on copy master)</p> <p>Demonstration, discussion, agreement</p> <p>T reminds Ps what a segment is. Elicit that the line need not be completely horizontal or vertical.</p> <p>Only 2 possible solutions unless fractions of units are used.</p> <p>Other solutions are possible.</p>

Bk3	R: Calculation practice C: Perimeter, area (on square and triangular grids) E: Area of combined shapes	<i>Lesson Plan</i> 86
<i>Activity</i>		<i>Notes</i>
1	<p>Multiplication and division practice</p> <p>T says a multiplication or division. P says the result.</p> <p>Listen carefully, because if the P before you makes a mistake, you must correct it!</p> <p style="text-align: right;">4 min</p>	<p>Whole class activity</p> <p>At speed. T chooses Ps at random</p> <p>Praising, encouragement only</p>
2	<p>Mental calculation practice</p> <p>T says mixed operations. Ps write only the result in their <i>Ex. Bks.</i> e.g.</p> <p>a) $10 \times 23 + 300 = (530)$ b) $250 - 8 \times 5 = (210)$ c) $630 + 370 = (1000)$ d) $1000 \div 10 - 35 = (65)$ e) $990 \div 9 + 140 = (250)$ f) $320 \div 8 \times 2 = (80)$ g) $450 \div 5 + 10 = (100)$ h) $854 + 123 - 77 = (900)$ i) $1500 - 25 \times 2 = (1450)$ j) $789 - 11 \times 10 = (679)$</p> <p>Review orally with whole class. Ps change pencils to mark own work. Ps give the answers and explain reasoning. Mistakes discussed/ corrected. Who had all correct? Who had 1 mistake (2, 3, 4, 5 or more) mistakes?</p> <p style="text-align: right;">10 min</p>	<p>Individual work, monitored</p> <p>T walks round class while reading the questions</p> <p>T can substitute other operations according to needs and ability of class</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Stars, stickers, etc. awarded</p>
3	<p>Inequalities</p> <p>Let's find the numbers which make these statements true.</p> <p>Class reads statement in unison. Ps come to BB to do calculations and to write possible numbers, explaining reasoning. Rest of class helps where necessary, points out errors or suggests easier ways to calculate.</p> <p>BB:</p> <p>a) $648 + 50 \times a = 998,$ $50 \times a = 998 - 648 = 350$ $\begin{array}{r} 998 \\ - 648 \\ \hline 350 \end{array}$ $a = 350 \div 50 = 35 \div 5 = 7$ $\underline{7}$</p> <p>$648 + 50 \times b < 998,$ $b < 7$ (6, 5, 4, ...)</p> <p>$648 + 50 \times c \geq 998,$ $c \geq 7$ (7, 8, 9, ...)</p> <p>b) $200 \times d - 126 = 674,$ $200 \times d = 674 + 126 = 800$ $\begin{array}{r} 674 \\ + 126 \\ \hline 800 \end{array}$ $d = 800 \div 200 = 8 \div 2 = 4$ $\underline{4}$</p> <p>$200 \times e - 126 > 674,$ $e > 4$ (5, 6, 7, ...)</p> <p>$200 \times f - 126 \leq 674,$ $f \leq 4$ (4, 3, 2, ...)</p> <p>c) $1234 - 90 \times g = 604,$ $90 \times g = 1234 - 604 = 630$ $\begin{array}{r} 1234 \\ - 604 \\ \hline 630 \end{array}$ $g = 630 \div 90 = 63 \div 9 = 7$ $\underline{7}$</p> <p>$1234 - 90 \times h \leq 604,$ $h \geq 7$ (7, 8, ...)</p> <p>$1234 - 90 \times i > 604,$ $i < 7$ (6, 5, ...)</p> <p>d) $j \div 3 + 567 = 867,$ $j \div 3 = 867 - 567 = 300$ $j = 300 \times 3 = \underline{900}$</p> <p>$k \div 3 + 567 \leq 867,$ $k \leq 900$ (900, 899, ...)</p> <p>$l \div 3 + 567 \geq 867,$ $l \leq 900$ (900, 901, 902, ...)</p> <p style="text-align: right;">18 min</p>	<p>Whole class activity</p> <p>T has BB or SB or OHT already prepared an uncovers each as it is dealt with.</p> <p>Allow Ps to suggest what to do first and how to continue. T gives hints if necessary.</p> <p>Reasoning, agreement, checking, praising</p> <p>Check by replacing the letters with 1 or 2 possible numbers.</p> <p>Expect only whole positive numbers but give extra praise if Ps suggest fractions and negative numbers too.</p> <p>In part c), Ps might have difficulty understanding why the signs are reversed. Show that, e.g. $h = 6$ and $i = 8$ do not make the statements true. Also show on appropriate segments of the number line if possible.</p> <p>In part d), use multiples of 3 to check k (e.g. 900, 666) and l (e.g. 900, 936).</p>

Bk3

Lesson Plan 86

Activity

4

Perimeter

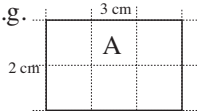
Ps each have the same copies of shapes on desk cut from coloured paper (e.g. rectangles, square, right-angled triangle) and rulers or measuring grids (parts of 1 cm or 0.5 cm grids copied onto A4 transparencies and cut into smaller pieces) on desks.

We want to find out what the perimeter of each shape is. Elicit that perimeter means 'all the the way round the outside'. How could we do it? (Measure each side, then add them up). T reminds Ps that, e.g. 3 and a half cm can be written as 3.5 cm.

Ps measure one shape at a time in pairs, one measures and the other notes the data. Both do the necessary calculations in their *Ex. Bks.*

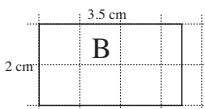
Review at BB with whole class. Discuss different ways to do the calculations.

e.g.



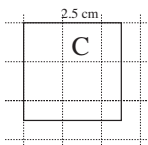
$$P = 2 \text{ cm} + 3 \text{ cm} + 2 \text{ cm} + 3 \text{ cm} = \underline{10 \text{ cm}}, \text{ or}$$

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



$$P = 2 \text{ cm} + 3.5 \text{ cm} + 2 \text{ cm} + 3.5 \text{ cm} = \underline{11 \text{ cm}}, \text{ or}$$

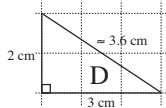
$$P = 2 \times (2 \text{ cm} + 3.5 \text{ cm}) = 2 \times 5.5 \text{ cm} = \underline{11 \text{ cm}}$$



$$P = 2.5 \text{ cm} + 2.5 \text{ cm} + 2.5 \text{ cm} + 2.5 \text{ cm} = \underline{10 \text{ cm}}$$

or

$$P = 4 \times 2.5 \text{ cm} = 8 \text{ cm} + 2 \text{ cm} = \underline{10 \text{ cm}}$$



$$P = 2 \text{ cm} + 3 \text{ cm} + 3.6 \text{ cm} = \underline{8.6 \text{ cm}}, \text{ or}$$

$$P = 20 \text{ mm} + 30 \text{ mm} + 36 \text{ mm} = \underline{86 \text{ mm}}$$

25 min

Notes

Paired work in measuring and recording data.

Individual work in calculating
T can use copy master, copied on coloured paper and cut out

BB: Perimeter

Discussion on shapes such as :
square (only need to measure 1 side as all sides are the same;
rectangle (only need to measure 1 long and 1 short side, as other 2 sides are the same as these)

Ps use rulers or measuring grids from *LP 106/9.2.*

Reasoning, agreement, praising

Accuracy of measurements will vary according to the ability of Ps.

Ps might give measurements involving fractions of a cm in decimals or in mm. Praise both ways.

Extension

Ps measures perimeter of faces on cubes and cuboids

5

Book 3, page 86

Q.1 Read: *How long is the perimeter of this shape?*

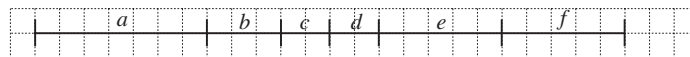
First draw the perimeter as one horizontal line.

Draw each side in letter order and label it.

Ps draw in *Pbs*, then count the total number of grid squares. (24)

Review at BB with whole class. Mistakes corrected. Elicit that the side of each grid square measures half a cm (0.5 cm or 50 mm).

Solution:



$$7 + 3 + 2 + 2 + 5 + 5 = 24$$

Deal with parts a), b) and c) one at a time.

a) *If the unit used is half a cm, then Perimeter = how many units? (24 units)*

b) *If the unit used is 2 half cm (1 cm), then Perimeter = how many units? (12 units)*

c) *If the unit used is 3 half cm (1 and a half cm), then Perimeter = how many units? (8 units)*

Extension

What is the area of the shape if we use the units in a), b) and c)?

Ps come to BB to reason and demonstrate. Class agrees/disagrees.

30 min

Individual work, monitored, (helped)

Drawn on BB or use enlarged copy master or OHP

Ps use rulers to draw lines and measure grid squares.

Reasoning, agreement, self-correcting, praising

Reasoning, agreement, praising

Ps can check a) by counting. Rest can be done by calculation

BB: $24 \div 2 = \underline{12}$ units

$$24 \div 3 = \underline{8}$$
 units

Discussion, agreement, praising

$$A = 31 \square = 7 \frac{3}{4} \square = 3 \frac{4}{9} \square$$

Bk3

Lesson Plan 86

Activity

6

Book 3, page 86

Q.3 Read: Complete the table to show the perimeter (P) and area (A) of each shape.

Ps could label the shapes A, B, C, D, E and F to make discussion easier. Ps count the grid units around and inside each shape and complete the table.

Ps can check the perimeter of each shape by drawing the sides as one long horizontal line in *Ex. Bks.* or on 0.5 cm grid sheets.

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

Solution:

	A	B	C	D	E	F
P	16	12	16	24	16	12
A	16	8	12	11	9	5

Notes

Individual work, monitored, helped

Draw on BB or use enlarged copy master or OHP

Use photocopied copy master

Discussion, reasoning, agreement, self-correction, praising

Extension

What would the perimeter and area of each shape be in cm?

T shows Ps the short way to write 'cm squares' and fractions.

Elicit perimeter of shapes: A: 8 cm, B: 6 cm, C: 8 cm, D: 12 cm, E: 8 cm, F: 6 cm

Elicit area of shapes. A: 4 cm², B: 2 cm², C: 3 cm²,

D: 2 $\frac{3}{4}$ cm², E: 2 $\frac{1}{4}$ cm², F: 1 $\frac{1}{4}$ cm²

38 min

Whole class activity

If a P already knows, let him/her show to class.

Reasoning, demonstration, agreement, praising

7

Book 3, page 86

Q.3 Read: What is the area of each shape? Write the number of units inside each one. (Shape 12 has been divided up into easier parts.)

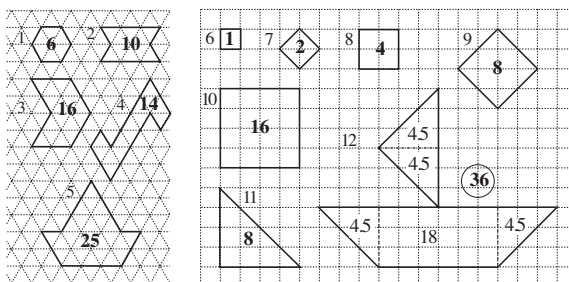
What is different about the grid on the LHS? (The grid units are triangles, not squares).

Ps count triangles (squares) by putting a pencil dot in each unit as it is counted Deal with shapes 1–5, then 6–11.

Review at BB with whole class. Ps give their areas. Class agrees/disagrees. If problems, Ps come to BB to count.

Shape 12 can be done with the whole class. Elicit that 4.5 + 4.5 = 9, so area = (9 + 9 + 18 = 36) unit squares.

Solution:



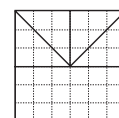
Individual work, monitored, helped

Draw on BB or use enlarged copy master or OHP

Discussion, agreement, self-correction, praising

(Or as individual work if Ps wish)

T could show Shape 12 cut up into pieces to form a 6 × 6 square.



Area = 36 unit squares

Extension

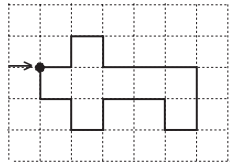
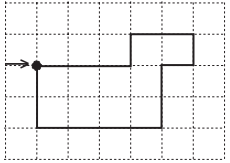
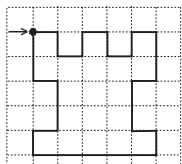
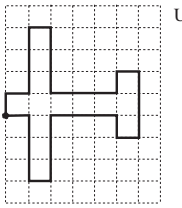
What is the perimeter of each shape?

Discussion, agreement, praising

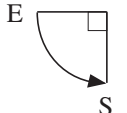
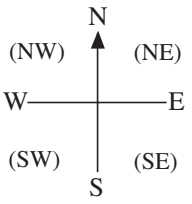
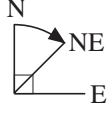
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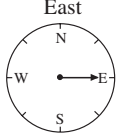
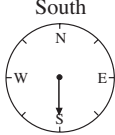
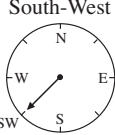

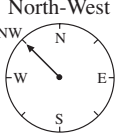
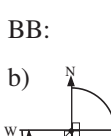
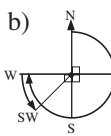

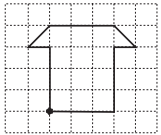
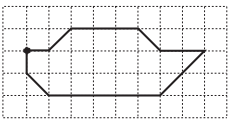

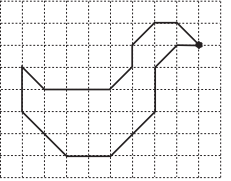
<h1>Bk3</h1>	<p>R: Calculation practice C: Position. Direction. Motion. Points of the compass (N, S, E, W) E: <i>Compass</i></p>	<h2>Lesson Plan 87</h2>																																	
<p>Activity</p> <p>1</p>	<p>Missing numbers</p> <p>Study this table and think about what the rule could be. Class agrees on one form of the rule. Ps come out to BB to choose a column and fill in the missing numbers, explaining reasoning. Ps write difficult calculations at side of BB. Class agrees/disagrees.</p> <p>Who can write the rule in a mathematical way? Who agrees? Who can think of another way? etc.</p> <p>BB:</p> <table border="1"> <tr> <td><i>a</i></td> <td>300</td> <td>160</td> <td>235</td> <td>400</td> <td>230</td> <td>533</td> <td>633</td> <td>1406</td> <td>473</td> <td>547</td> </tr> <tr> <td><i>b</i></td> <td>200</td> <td>620</td> <td>340</td> <td>600</td> <td>620</td> <td>326</td> <td>162</td> <td>590</td> <td>254</td> <td>396</td> </tr> <tr> <td><i>c</i></td> <td>500</td> <td>780</td> <td>575</td> <td>1000</td> <td>850</td> <td>859</td> <td>795</td> <td>1996</td> <td>727</td> <td>943</td> </tr> </table> <p style="text-align: center;"><i>Rule: $c = a + b$, $b = c - a$, $a = c - b$</i></p> <p style="text-align: right;">8 min</p>	<i>a</i>	300	160	235	400	230	533	633	1406	473	547	<i>b</i>	200	620	340	600	620	326	162	590	254	396	<i>c</i>	500	780	575	1000	850	859	795	1996	727	943	<p>Notes</p> <p>Whole class activity Table drawn on BB or use enlarged copy master or OHP At a good pace Discussion, reasoning, agreement, praising e.g. BB: $\begin{array}{r} 473 \quad 943 \\ + 254 \quad - 547 \\ \hline 727 \quad 396 \end{array}$</p> <p>(Only last 2 columns involve crossing tens)</p>
<i>a</i>	300	160	235	400	230	533	633	1406	473	547																									
<i>b</i>	200	620	340	600	620	326	162	590	254	396																									
<i>c</i>	500	780	575	1000	850	859	795	1996	727	943																									
<p>2</p>	<p>Problems</p> <p>Listen carefully to the data and the questions. You can write the data and do any calculations in your <i>Ex. Bks</i> if you wish. You might even be able to do some in your head!</p> <p>a) <i>Sam has £8.15 and Ted has £5.73. What is the difference between their amounts of money?</i></p> <p>A, come and show us how you worked out the answer. Who agrees? Who did it another way? etc.</p> <p>BB: e.g. S: £8.15 = 815 p, T: £5.73 = 573 p</p> $\begin{array}{r} 815 \text{ p} \\ - 573 \text{ p} \\ \hline 242 \text{ p} \end{array} \quad \text{or} \quad \begin{array}{r} 573 \text{ p} \\ - 242 \text{ p} \\ \hline 331 \text{ p} \end{array}$ <p>b) <i>What would the difference be if :</i></p> <p>i) <i>Sam was given an extra £1?</i> ($£2.42 + £1 = \underline{£3.42}$)</p> <p>ii) <i>Ted was given an extra £1.20?</i> ($£2.42 - £1.20 = \underline{£1.22}$)</p> <p>ii) <i>Sam spent £2?</i> ($£2.42 - £2 = \underline{£0.42}$ or 42 p)</p> <p>iii) <i>Ted spent £1.50?</i> ($£2.42 + £1.50 = \underline{£3.92}$)</p> <p>iv) <i>they were both given £1?</i> ($\underline{£2.42}$ – difference doesn't change)</p> <p>v) <i>they both spent £2?</i> ($\underline{£2.42}$ – difference doesn't change)</p> <p>vi) <i>Sam was given 50 p and Ted spent 50p?</i> ($£2.42 + £1 = \underline{£3.42}$)</p> <p>vii) <i>Sam spent 50 p and Ted was given 50 p?</i> ($£2.42 - £1 = \underline{£1.42}$)</p> <p style="text-align: right;">15 min</p>	<p>Whole class activity</p> <p>T repeats slowly</p> <p>Give Ps time to think and calculate</p> <p>Discussion, reasoning, agreement, praising</p> <p>Deal with one part at a time.</p> <p>T chooses Ps to give answers and explain reasoning. Class agrees/disagrees (or responses shown in unison on command)</p> <p>Extra praise if Ps realise part b) can be done mentally.</p> <p>At a good pace</p> <p>Show the changes on a number line if necessary.</p> <p>Praising, encouragement only</p>																																	
<p>3</p>	<p>Position</p> <p>N.B. This needs to be adapted according to the seating in your class.</p> <p>T gives Ps instructions. (Columns counted from front, rows from left.)</p> <ul style="list-style-type: none"> The pupil in the 2nd row and 3rd column, stand up and put your hands on your head! . . . now! The pupil in the 6th column and 5th row, stand up and clap your hands. Pupils in the 1st row, stand up and shout 'Abracadabra'. . . now! Pupils in the 1st column, stand up and turn around. . . now! Pupils in either the 4th column or the 3rd row, stand up and hold your ears. . . now! <p style="text-align: right;">20 min</p>	<p>Whole class activity</p> <p>Actions, rows and columns can be suggested by Ps.</p> <p>Actions carried out in unison</p> <p>Class points out mistakes.</p> <p>Agreement, praising</p> <p>All done in good humour!</p> <p>Feedback for T</p>																																	

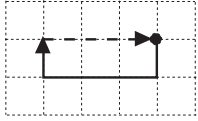
Bk3		<i>Lesson Plan 87</i>																
<p>Activity</p> <p>4</p>	<p>Direction</p> <p>a) Class stands up and T gives instructions. e.g.</p> <ul style="list-style-type: none"> • Put up your left hand . . now! • Put your right hand on your head . . . now! • Put your right hand on your left shoulder . . . now! • Hold your right ear with your left hand . . . now! • Put your left hand on your left elbow . . now! (Impossible!) <p>b) B, stand up. You will be my robot and you must do what I say. Move 4 steps forwards. Make a quarter turn to the right. Make half a turn to the left. Make a quarter turn to the left. Move 4 steps backwards. Move 8 steps forwards. Make a whole turn to the right. Sit down.</p> <p>c) T shows a local map. This is where we are. If we travelled north, how would we move? B, come and show us. (up) Who agrees? If we travelled south, how would we move? (down) Repeat for East and West. (to right and left)</p> <p>This is a <u>compass</u>. Its arrow always points North. I wonder which direction is North in the classroom? P comes out to read the compass and points to North. T sticks a large 'N' on the wall. Everyone stand up and face North. Where is South? (Behind us) Let's turn to face South. T sticks a large 'S' on the wall. Elicit that Ps made half a turn from North to face South.</p> <p>Everyone turn to face North again. Repeat for East (West). Elicit that Ps made a quarter turn to the right (left) from North.</p> <p style="text-align: right;"><i>25 min</i></p>	<p>Notes</p> <p>Whole class activity At speed. In unison. In good humour! T notes Ps having problems Praising, encouragement only</p> <p>Class gives hints or points out errors. Repeat with a different P as the robot and other Ps giving instructions. T repeats unclear instructions correctly. Ps could have maps and compasses on desks too if possible. BB: <u>Compass</u> Letters need only be kept on walls until T is sure that the majority of Ps know the directions. If time, Ps practice turning to face compass directions given by T (or Ps) in random order.</p>																
<p>5</p>	<p>Book 3, page 87</p> <p>Q.1 Read: <i>Write the opposite part of each pair.</i> Review at BB with whole class. Mistakes discussed and corrected. T asks for (or Ps suggests) other pairs of opposites. (e.g. near – far, under – over, few – many, positive – negative, North – South, etc.)</p> <p><i>Solution:</i></p> <table style="width: 100%; border: none;"> <tbody> <tr> <td style="text-align: center;">Low</td> <td style="text-align: center;">High</td> <td style="text-align: center;">Small</td> <td style="text-align: center;">Large</td> </tr> <tr> <td style="text-align: center;">Under</td> <td style="text-align: center;">Over</td> <td style="text-align: center;">Less</td> <td style="text-align: center;">More</td> </tr> <tr> <td style="text-align: center;">Right</td> <td style="text-align: center;">Left</td> <td style="text-align: center;">Front</td> <td style="text-align: center;">Back</td> </tr> <tr> <td style="text-align: center;">Up</td> <td style="text-align: center;">Down</td> <td style="text-align: center;">Thick</td> <td style="text-align: center;">Thin</td> </tr> </tbody> </table> <p style="text-align: right;"><i>30 min</i></p>	Low	High	Small	Large	Under	Over	Less	More	Right	Left	Front	Back	Up	Down	Thick	Thin	<p>Individual work, monitored Written on BB or use enlarged copy master or OHP Agreement, self-correcting, praising Extra praise for good suggestions</p>
Low	High	Small	Large															
Under	Over	Less	More															
Right	Left	Front	Back															
Up	Down	Thick	Thin															

Bk3		<i>Lesson Plan 87</i>
<p>Activity</p> <p>6</p>	<p><i>Book 3, page 87, Q.2</i></p> <p>T has a similar plan of own classroom drawn on BB or SB or OHT (or with individual items cut out and stuck to BB)</p> <p>a) T calls Ps out to point to certain rows, columns, or Ps.</p> <p>b) Ps come to BB to point to their own usual position in the class room and describe where it is. (e.g. Column 2, Row 3)</p> <p>c) Read: <i>This is a plan of a classroom. Follow the instructions.</i></p> <p>T explains that the rows are counted from the front and columns are counted from the left. Elicit that, e.g., C2, R1 means Column 2, Row 1. Ps tick or colour according to the instructions.</p> <p>Review at BB with whole class. Ps come out to BB to show their solutions. Class agrees/disagrees. Mistakes corrected.</p> <p>d) T chooses Ps at random. They describe where they are relative to other Ps. e.g. 'I am behind A and in front of B, C is on my left and D is on my right', or 'A is in front of me and B is behind me, I am on the right of C and on the left of D'.</p> <p>Extension</p> <p>Ps could be given copies of their own classroom plan and write the initials of their classmates in the correct positions.</p> <p style="text-align: right;"><i>37 min</i></p>	<p>Notes</p> <p>Whole class activity to start</p> <p>If seats are in arcs instead of rows, adapt the terms to suit.</p> <p>At a good pace</p> <p>Agreement, praising</p> <p>Individual work, monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Agreement, self-correcting, praising</p> <p>Involve several Ps</p> <p>Class points out errors.</p> <p>Agreement, praising</p> <p>Can be done at home If Ps wish.</p>
<p>7</p> <p>Extension</p>	<p><i>Book 3, page 87</i></p> <p>Q.3 Read: <i>Follow the instructions and draw the pictures.</i></p> <p>Elicit that R = Right, L = Left, D = Down, U = Up, the starting point is the black dot, the first move is in the direction of the arrow and that P = Perimeter and A = Area.</p> <p>Deal with one part at a time. Ps complete the drawing according to the instructions, then count the units and write in the perimeter and area. Review at BB with whole class. Ps come out to show what they have done and class agrees/disagrees. Mistakes corrected.</p> <p>Read: <i>Write instructions on how to draw the pictures.</i></p> <p>Deal with one part at a time. Ps start at the dot and write instructions at side of diagram in <i>Pbs</i>. Then they count the units and write in the perimeter and area. Review at BB with whole class. Ps dictate to T and class agrees/disagrees. Mistakes corrected.</p> <p><i>Solution:</i></p> <p>a) </p> <p>$P = 18$ units $A = 8$ square units</p> <p>b) </p> <p>$P = 16$ units $A = 10$ square units</p> <p>c) </p> <p>$P = 28$ units $A = 19$ square units</p> <p>d) </p> <p>$P = 30$ units $A = 14$ square units</p> <p style="text-align: right;"><i>45 min</i></p>	<p>Individual work monitored, helped</p> <p>Diagrams drawn on BB or use enlarged copy master or OHP</p> <p>Initial whole class discussion on meaning of abbreviations</p> <p>Agreement, self-correction, praising</p> <p>What do the drawings remind you of? Ask several Ps what they think. (In good humour!)</p> <p>Instructions for:</p> <p>c) R1, D1, R1, U1, R1, D1, R1, U1, R1, D2, L1, D2, R1, D1, L5, U1, R1, U2, L1, U2</p> <p>d) U1, R1, U3, R1, D3, R3, U1, R1, D3, L1, U1, L3, D3, L1, U3, L1</p> <p>Ps take grid sheets home, draw own shape and write instructions on how to draw it. Ps draw neighbour's shapes in <i>Lesson 110</i>.</p>

<h1>Bk3</h1>	<p>R: Review: calculation C: Compass directions. Right-angle turns E: NW, NE, SW, SE</p>	<h2>Lesson Plan 88</h2>																																													
<p>Activity</p> <p>1</p>	<p>Mental multiplication and division practice</p> <p>T says a multiplication or division. P says the result. e.g.</p> <p>7×6, 3×8, 5×7, 6×4, etc.; $48 \div 6$, $49 \div 7$, $63 \div 9$, etc.;</p> <p>9×1, 9×10, 9×100; 17×1, 17×10, 17×100, etc.;</p> <p>$24 \div 3$, $140 \div 7$, $160 \div 40$; $27 \div 9$, $270 \div 9$, $270 \div 90$, etc.;</p> <p>0×100, 10×21, 2×50, 3×33, 4×25, 5×50, 8×51, etc.</p> <p style="text-align: right;">4 min</p>	<p>Notes</p> <p>Whole class activity</p> <p>T chooses Ps at random</p> <p>If a P makes a mistake, the next P corrects it.</p> <p>At speed</p> <p>Praising, encouragement only</p>																																													
<p>2</p>	<p>Missing numbers</p> <p>Study this table and think about what the rule could be. Class agrees on one form of the rule. Ps come out to BB to choose a column and fill in the missing numbers, explaining reasoning. Ps write difficult calculations at side of BB or in <i>Ex. Bks.</i> Class agrees/disagrees.</p> <p>Who can write the rule in a mathematical way? Who agrees? Who can think of another way? etc.</p> <p>BB:</p> <table border="1" style="margin-left: 20px;"> <tbody> <tr> <td><i>a</i></td><td>700</td><td>670</td><td>835</td><td>1365</td><td>1453</td><td>790</td><td>1629</td><td>1675</td><td>555</td><td>320</td></tr> <tr> <td><i>b</i></td><td>200</td><td>150</td><td>210</td><td>1132</td><td>343</td><td>375</td><td>518</td><td>1220</td><td>268</td><td>173</td></tr> <tr> <td><i>c</i></td><td>500</td><td>520</td><td>625</td><td>233</td><td>1110</td><td>415</td><td>1111</td><td>455</td><td>287</td><td>147</td></tr> </tbody> </table> <p style="text-align: center;"><i>Rule: $c = a - b$, $b = a - c$, $a = b + c$</i></p> <p style="text-align: right;">11 min</p>	<i>a</i>	700	670	835	1365	1453	790	1629	1675	555	320	<i>b</i>	200	150	210	1132	343	375	518	1220	268	173	<i>c</i>	500	520	625	233	1110	415	1111	455	287	147	<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>Discussion, reasoning, agreement, praising</p> <p>BB: e.g.</p> <table style="margin-left: 20px;"> <tbody> <tr> <td style="text-align: right;">415</td><td style="text-align: right;">518</td><td style="text-align: right;">1675</td><td style="text-align: right;">555</td></tr> <tr> <td style="text-align: right;">+ 375</td><td style="text-align: right;">+ 1111</td><td style="text-align: right;">- 455</td><td style="text-align: right;">- 268</td></tr> <tr> <td style="text-align: right; border-top: 1px solid black;">790</td><td style="text-align: right; border-top: 1px solid black;">1629</td><td style="text-align: right; border-top: 1px solid black;">1220</td><td style="text-align: right; border-top: 1px solid black;">287</td></tr> </tbody> </table> <p>Encourage Ps to use the words: 'reductant,' 'subtrahend' and 'difference' in their reasoning.</p>	415	518	1675	555	+ 375	+ 1111	- 455	- 268	790	1629	1220	287
<i>a</i>	700	670	835	1365	1453	790	1629	1675	555	320																																					
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<p>3</p>	<p>Problems</p> <p>Listen carefully, write the data and do the calculation in your <i>Ex. Bks.</i> Show me your answer when I say.</p> <p>a) <i>After a sponsored run for charity, a school collected 196 £1 coins, 55 £2 coins and 23 £10 notes. How much money did the school collect altogether?</i></p> <p>Show me your answer . . . now! (£536)</p> <p>A, tell us how you worked it out. Who agrees? Who did it a different way? B, what mistake did you make? etc.</p> <table style="margin-left: 20px;"> <tbody> <tr> <td style="text-align: right;">BB: $196 \times \text{£}1 + 55 \times \text{£}2 + 23 \times \text{£}10$</td><td style="text-align: right;">196</td></tr> <tr> <td style="text-align: right;">$= \text{£}196 + \text{£}110 + \text{£}230$</td><td style="text-align: right;">110</td></tr> <tr> <td style="text-align: right;">$= \text{£}536$</td><td style="text-align: right;">+ 230</td></tr> <tr> <td></td><td style="text-align: right; border-top: 1px solid black; border-bottom: 3px double black;">536</td></tr> </tbody> </table> <p><i>Answer:</i> The school collected £536 altogether.</p> <p>b) <i>Bella had £15.67. She bought 20 postcards at 45 p each. How much money did she have left?</i></p> <p>Show me your answer . . . now! (£6.67 or £6 67 p or 667 p)</p> <p>C, tell us how you worked it out. Who agrees? Who did it a different way? D, what mistake did you make? etc.</p> <table style="margin-left: 20px;"> <tbody> <tr> <td style="text-align: right;">BB: Had: $\text{£}15.67 = 1567 \text{ p}$</td><td></td></tr> <tr> <td style="text-align: right;">Spent: $20 \times 45 \text{ p} = 2 \times 10 \times 45 \text{ p} = 2 \times 450 \text{ p} = 900 \text{ p}$</td><td></td></tr> <tr> <td style="text-align: right;">Had left: $1567 \text{ p} - 900 \text{ p} = 667 \text{ p}$</td><td style="text-align: right;">1567</td></tr> <tr> <td style="text-align: right;">$= \text{£}6 \text{ 67 p}$</td><td style="text-align: right;">- 900</td></tr> <tr> <td style="text-align: right;">$= \text{£}6.67$</td><td style="text-align: right; border-top: 1px solid black; border-bottom: 3px double black;">667</td></tr> </tbody> </table> <p><i>Answer:</i> She had £6.67 left.</p>	BB: $196 \times \text{£}1 + 55 \times \text{£}2 + 23 \times \text{£}10$	196	$= \text{£}196 + \text{£}110 + \text{£}230$	110	$= \text{£}536$	+ 230		536	BB: Had: $\text{£}15.67 = 1567 \text{ p}$		Spent: $20 \times 45 \text{ p} = 2 \times 10 \times 45 \text{ p} = 2 \times 450 \text{ p} = 900 \text{ p}$		Had left: $1567 \text{ p} - 900 \text{ p} = 667 \text{ p}$	1567	$= \text{£}6 \text{ 67 p}$	- 900	$= \text{£}6.67$	667	<p>Individual work, monitored</p> <p>T repeats slowly.</p> <p>In unison (on scrap paper or plastic 'slates')</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Check by adding in opposite direction.</p> <p>Ps say answer as a sentence.</p> <p>T repeats slowly.</p> <p>In unison (on scrap paper or plastic 'slates')</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Check by doing addition.</p> <p>Ps give answer in different ways: pence, £s and p, £s.</p> <p>Ps say answer as a sentence.</p>																											
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<h1>Bk3</h1>		<h2>Lesson Plan 88</h2>
<p>Activity</p> <p>3</p>	<p>(Continued)</p> <p>c) Last month, Cilla saved up 198 1 p coins, 25 5 p coins and 40 2 p coins. This month she saved up another £8.96. How much money does Cilla have now? Show me your answer . . . now! (£12.99)</p> <p>E, tell us how you worked it out. Who agrees? Who did it a different way? F, what mistake did you make? etc.</p> <p>BB: Last month: $198 \times 1 \text{ p} + 25 \times 5 \text{ p} + 40 \times 2 \text{ p}$ $\begin{array}{r} 198 \\ 125 \\ + 80 \\ \hline 403 \end{array}$</p> <p>e.g. = 198 p + 125 p + 80 p = 403 p</p> <p> This month: £8.96 = 896 p $\begin{array}{r} 403 \\ + 896 \\ \hline 1299 \end{array}$</p> <p> Now has: 403 p + 896 p $\begin{array}{r} 403 \\ + 896 \\ \hline 1299 \end{array}$</p> <p> = 1299 p = <u>£12.99</u></p> <p>Answer: Cilla now has £12.99.</p> <p style="text-align: right;">20 min</p>	<p>Notes</p> <p>T repeats slowly.</p> <p>Ps sit up with arms folded when ready.</p> <p>In unison (on scrap paper or plastic 'slates')</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Or calculation done as one addition:</p> $\begin{array}{r} 198 \\ 125 \\ + 80 \\ \hline 1299 \end{array}$ <p>or 403 p = £4.03</p> <p>£4.03 + £8.96 = <u>£12.99</u></p>
<p>4</p>	<p>Direction</p> <p>a) Everyone stand up and face North. Follow my instructions and tell me in which direction you end up facing when I say.</p> <ul style="list-style-type: none"> • Make a quarter turn to the left. Tell me . . . now! (West) • Make a half turn to your left. Tell me . . . now! (East) • Turn a right angle to your right. Tell me . . . now! (South) (If a P does it correctly, allow P to explain. Otherwise T demonstrates that turning through a <u>right angle</u> is the same as a making a quarter turn.) • Turn 2 right angles to your left. Tell me . . .now! (North) Elicit that turning through 2 right angles is the same as making half a turn. <p>b) T shows class a real compass. Who has seen a compass being used? Ps tell class their experiences. If nobody has, T talks about its uses. (e.g. orienteering, hiking, sailing, being lost on a moor or in the snow or at sea or in the desert (where there are no landmarks to guide you) etc, and how the sun rises in the East and sinks in the West, etc.)</p> <p>T draws a cross on BB. Ps dictate where T should write N, S, E, W. Who knows where North-West (South-East,) etc. would be? Ps come out to show them. Class agrees/disagrees. Elicit that, e.g. North-West is exactly half-way between North and West.</p> <p>Ps draw the compass points in their <i>Ex. Bks</i>. Lay your pencil on the arrow pointing towards North on the diagram. Turn it through a right angle to the right. Where is it pointing now? (East)</p> <p>Repeat with other similar instructions.</p> <p>Lay your pencil along the arrow pointing to North again. Now turn it so that it points NE. What kind of turn has it made? (half a right angle, or 1 eighth of a turn) T demonstrates on BB too.</p> <p>Now point the arrow showing North in your <i>Ex. Bks</i> to the <u>real</u> direction North (towards 'N' on the wall). T checks quickly.</p> <p style="text-align: right;">26 min</p>	<p>Whole class activity</p> <p>'N' still on classroom wall</p> <p>Ps shout out in unison</p> <p>In good humour!</p> <p>BB: <u>1 right angle turn</u></p>  <p>= 1 quarter of a turn</p> <p>If possible, Ps have small compasses on desks .</p> <p>Discussion on the compass and compass points.</p> <p>BB:</p>  <p>Ps shout out in unison</p> <p>Ps can choose the compass points too.</p> <p>BB: <u>half a right angle turn</u></p>  <p>= 1 eighth of a turn</p>

<h1>Bk3</h1>		<p style="text-align: right;">Lesson Plan 88</p>
<p>Activity</p> <p style="text-align: center;">5</p>	<p>Book 3, page 88</p> <p>Q.1 Read: <i>Draw an arrow on each compass so that it points in the given direction.</i></p> <p>Encourage Ps to use rulers to draw the arrows.</p> <p>Review at BB with whole class. Mistakes discussed and corrected.</p> <p><i>Solution:</i></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>East</p>  </div> <div style="text-align: center;"> <p>South</p>  </div> <div style="text-align: center;"> <p>South-West</p>  </div> <div style="text-align: center;"> <p>North-East</p>  </div> <div style="text-align: center;"> <p>North-West</p>  </div> </div> <p>What kind of turn has been made from one compass to another? (e.g. E to S: 1 quarter turn (or 1 right angle turn) to the right); S to SW: 1 eighth of a turn (half a right angle turn) to the right); etc.</p> <p style="text-align: right;">30 min</p>	<p style="text-align: center;">Notes</p> <p>Individual work. monitored, helped</p> <p>Drawn on BB or use enlarged copy master or OHP</p> <p>Reasoning, agreement, self-correction, praising</p> <p>Discussion, agreement, praising. Encourage Ps to explain in sentences.</p>
<p style="text-align: center;">6</p>	<p>Book 3, page 88, Q.2</p> <p>Read: <i>Start facing North. Follow the instructions. In which direction are you facing?</i></p> <p>Everyone stand up and face North. (N should still be on the wall of classroom but other letters can be removed if T thinks Ps can cope.)</p> <p>T gives directions and Ps turn accordingly. In which direction are you facing now? Class shouts out compass point. T confirms by showing on diagram on BB. (Draw or use enlarged copy master.)</p> <ol style="list-style-type: none"> Turn 2 right angles to the left, then 1 right angle to the right. (W) Turn 3 right angles to the right, then half a right angle to the left. (SW) Turn 2 right angles to the right, then 1 and a half right angles to the right. (NW) <p style="text-align: right;">35 min</p>	<p>Whole class activity</p> <p>Ps could practice turning 1 right angle (half a right angle, 2 right angles) first.</p> <p>In good humour!</p> <p>Direction given on command</p> <p>BB:</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>a)</p>  </div> <div> <p>b)</p>  </div> </div> <p>c)</p>  <p>Discussion</p> <p>Agreement, praising</p>
<p style="text-align: center;">7</p> <p>Extension</p>	<p>Book 3, page 88</p> <p>Q.3 Read: <i>Start from the point. Follow the instructions and draw the shape.</i></p> <p>Elicit that N = North, S = South, E = East, W = West</p> <p>Deal with one part at a time. Review at BB with whole class.</p> <p>Ps who drew a different shape analyse their mistakes.</p> <p>Which shape was drawn in a different way from the others? (Only shape c was drawn in an anti-clockwise direction.)</p> <p><i>Solution:</i></p> <div style="display: grid; grid-template-columns: 1fr 1fr; gap: 10px;"> <div style="text-align: center;"> <p>a)</p>  </div> <div style="text-align: center;"> <p>b)</p>  </div> <div style="text-align: center;"> <p>c)</p>  </div> <div style="text-align: center;"> <p>d)</p>  </div> </div> <p>What is the area (perimeter) of each shape?</p> <p style="text-align: right;">42 min</p>	<p>Individual work, monitored, helped</p> <p>T has solution already prepared on BB, SB or OHT for discussion.</p> <p>T asks Ps what each shape reminds them of.</p> <p>In good humour!</p> <p>Whole class activity or individual work in Pbs, reviewed with whole class</p>

Bk3		<i>Lesson Plan 88</i>
<p>Activity</p> <p style="text-align: center;">8</p>	<p>Book 3, page 88, Q.4</p> <p>Read: <i>A man walked 1 km South, then 3 km West, then 1 km North. How far in which direction does he still have to walk to get back to his starting point?</i></p> <p>Ps suggest how to start and what to do next. Ps come to BB or dictate to T. Class discusses how to write the solution.</p> <p><i>Method of solution:</i></p> <ul style="list-style-type: none"> • Use a large grid drawn on BB or OHT. (Scale: 1 grid unit → 1 km) • Start with a dot. (Ps decide where it should be drawn) and draw the man's route. • Count how many units still to go in which direction to get back to starting dot. (3 units) • Answer question in a sentence. <p style="text-align: right;"><i>45 min</i></p>	<p style="text-align: center;">Notes</p> <p>Whole class activity (or individual work in <i>Ex. Bks</i> if Ps wish)</p> <p>Grid drawn on BB</p> <p>Reasoning, agreement, praising</p> <p>Agreement, praising</p> <p><i>Solution:</i></p> <div style="text-align: center;">  </div> <p>He still has to walk <u>3 km East</u>.</p>