Bk2	R: Practice of operations **C: Fractions: half, quarter, three quarters, etc.** E: *Third, sixth, fifth*	*Lesson Plan* *113*

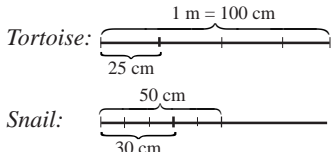| **Activity**	* **OHT 12 in MEP Transparency Collection at** http://www.cimt.org.uk/projects/mepres/primary/ohptrans/transmen.htm	*Notes*
1	***Logic puzzle*** *(OHT 12 *, LHS)* *Study this puzzle. What do you think the rule could be? (The number in the middle of each triangle is the product of the 3 numbers around it. The same colour means the same number.)* *Where should we start? (e.g. at the triangle with product 7.)* **A,** *come and write in the missing number and explain why you think so. (1 × 1 × 7 = 7) Who agrees?* **A,** *write '7' in all the blue circles.* *Where should we go next? (e.g. triangle with product 14)* **B,** *come and write in the missing number and explain why you think so. (1 × 7 × 2 = 14, so orange = 2)* **B,** *write '2' in all the orange circles.* *Continue in this way until puzzle is completed.* *Let's check that our solution is correct. Ps choose triangles at random and confirm that the 3 numbers multiply to give product in middle.*	Whole class activity If no OHP, use copy master, enlarged and coloured appropriately Let Ps suggest where to start and how to continue. *Solution:* Blue → 7 Orange → 2 Green → 5 Pink → 3 Red → 4 Agreement, checking, praising
Extension	*Ps could make up own puzzles.* ──────── *8 min* ────────	
2	***Recognising half*** *Study these pictures.* BB: *What do they have in common?* *(Only half of the pictures have been drawn.)* *Ps come out to draw in the other half. Class agrees/disagrees.* *Elicit that 2 halves make a whole. BB: 1 half + 1 half = 1 whole* ──────── *13 min* ────────	Whole class activity Drawn on BB or use enlarged copy master or OHP (or use any simple pictures cut out of magazines) Ps come to BB to draw in missing parts T (or class) corrects if necessary Discussion, agreement, checking, praising

3	***Book 2, page 113***
	
	Q.1 a) *Read: Draw half the number of shapes in the picture.*
	    Ps count the stars and draw half the number in Pbs.
	    Review at BB with whole class. How many stars are there? (10) How many did you draw? (5) How did you know how many to draw? (Divide 10 by 2) Let's write it on the BB.
	
	  b) *Read: Draw one third the number of shapes in the picture.*
	    Ps count the circles and draw 1 third of the number in their books.
	    Review at BB with whole class. How many circles are there? (6) How many did you draw? (2) How did you know how many to draw? (Divide 6 by 3) Let's write it on the BB.
	
	  c) *Read: Draw one quarter of the number of shapes in the picture.*
	    Ps count the triangles and draw 1 quarter of the number in Pbs.
	    Review at BB with whole class. How many triangles are there? (12) How many did you draw? (3) How did you know how many to draw? (Divide 12 by 4) Let's write it on the BB.
	
	    What would you have to do to find 1 sixth of the number of triangles? (Divide by 6) What is 1 sixth of 18 (30)? (3, 5)
	──────── *18 min* ────────
		Individual work, monitored (helped)
		
		Discussion at BB
		
		Agreement, checking, praising
		
		BB: a) $10 \div 2 = 5$
		    1 half of 10 = 2
		
		  b) $6 \div 3 = 2$
		    1 third of 6 = 2
		
		  c) $12 \div 4 = 3$
		    1 quarter of 12 = 3
		
		Elicit that:
		• 1 half means divide by 2
		• 1 third means divide by 3
		• 1 quarter means divide by 4
		• 1 sixth means divide by 6
		
		Ps show with fingers on command

Bk2		*Lesson Plan 113*

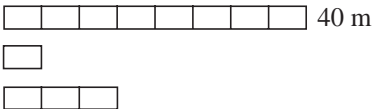| *Activity*		*Notes*

4
 	
Extension
	Book 2, page 113
	
	Q.2 Read: *There are 6 bananas in this bunch. Draw the bananas and fill in the numbers.*
	
	     a) 1 half of the bunch
	     b) 1 third of the bunch
	     c) 1 sixth of the bunch.
	
	Review at BB with whole class. T tells class that when we say 'a half', 'a third' we really mean '1 half', '1 third', etc
	
	How many bananas would be in 2 thirds (3 sixths, 5 sixths)?
	
	BB: 1 third of $6 = 6 \div 3 = 2$, so 2 thirds of $6 = 2 \times 2 = 4$
	
	Who could write it as one equation? Who agrees? etc.
	
	———— *24 min* ————
		Individual work, monitored, helped
		
		Discussion , agreement, checking, praising
		
		Self-correction
		
		Demonstrate with 6 Ps at front of class if necessary
		
		BB: (Note brackets)
		2 thirds of $6 = 2 \times (6 \div 3) = 4$
		3 sixths of $6 = 3 \times (6 \div 6) = 3$
		5 sixths of $6 = 5 \times (6 \div 6) = 5$

5	**Interlude** Song or rhyme ———— *26 min* ————	Whole class in unison

6
 	
Extension
	Book 2, page 113, Q.3
	
	Read: *Where will the parachutes land? Join them up to the correct hills.*
	
	T explains task. (If problems, T could relate the whole '12' to bags of 12 oranges the parachutists were given to put in their backpacks. Some of them did not have room for the whole bag of oranges in their packs and had to leave some oranges in the plane.)
	
	Ps come out to choose a parachute and join up to matching fraction, explaining reasoning. Class agrees/disagrees. T writes equations on BB with Ps' help.
	
	BB: 3 parts of 12 = 1 quarter because $12 \div 4 = 3$
	         6 parts of 12 = 1 half because $12 \div 2 = 6$
	         4 parts of 12 = 1 third because $12 \div 3 = 4$
	      12 parts of 12 = 1 whole because $12 \div 1 = 12$
	         2 parts of 12 = 1 sixth because $12 \div 6 = 2$
	
	Which parachute do you think will land first? Why? (All land at once)
	
	———— *33 min* ————
		Whole class activity
		
		Drawn on BB or use enlarged copy master or OHP
		
		BB: 1 whole = 12 parts
		     (bag) (oranges)
		
		Ps can join up parachutes to hills in *Pb*s too.
		
		Agreement, reasoning, checking, praising
		
		Demonstrate with 12 Ps at front of class if necessary
		
		Discussion about gravity. Experiment by dropping 2 objects of very different mass

7	***Book 2, page 113*** Q.4 Read: *Draw how many dumplings there are and write the amount in the box if. . .* Deal with one part at a time. Make sure Ps know that the dumplings already drawn are only part (a fraction) of the total amount and that Ps have to draw the whole amount on RHS, not just the extra required, so drawings should be small! Review at BB with whole class. Demonstrate if necessary. (Or done as a whole class activity with Ps as the dumplings.) ———— *39 min* ————	Individual work, monitored, helped Discussion, agreement, checking, praising BB: part or fraction a) $10 \div 2 = 5$ or $5 \times 2 = 10$ b) $5 \div 5 = 1$ or $1 \times 5 = 5$ c) $12 \div 3 = 4$ or $4 \times 3 = 12$ d) $8 \div 4 = 2$ or $2 \times 4 = 8$

8	***Book 2, page 113***
	
	Q.5 Read: *Draw a line 12 cm long and divide it into thirds.*
	
	T revises how to draw a certain length of line accurately. Ps draw 12 cm line first. Discuss how to divide it into thirds.
	
	BB: 3 thirds (1 whole) = 12 cm, 1 third = 12 cm $\div 3 = 4$ cm
	
	Ps mark with short, vertical lines every 4 cm from LHS.
	
	———— *45 min* ————
		Ps have rulers on desks
		
		Individual work, monitored, helped
		            12 cm
		BB: ⊢——┼——┼——⊣
		      4 cm 4 cm 4 cm
		Discussion, agreement, checking, praising accuracy
		
		Check: 3×4 cm = 12 cm

Bk2	R: Practice in calculation **C: Fractions: half, quarter, 3 quarters, etc.** E: *Position of 'half' on the number line. Eighths, sixths*	*Lesson Plan* *114*

Activity	** OHT 12 in MEP Transparency Collection at* http://www.cimt.org.uk/projects/mepres/primary/ohptrans/transmen.htm	*Notes*
1	**Logic puzzle** *(OHT 12, RHS)* Study this puzzle. What do you think the rule could be? (The number in the middle of each shape (diamond) is the product of the 4 numbers around it. The same colour means the same number.) Where should we start? (At the diamond with product 7 because the numbers are small.) (Discuss the fact that zero is impossible and 2 is too big for the yellow squares.) **A**, come and write in the missing numbers and explain why you think so. $(1 \times 1 \times 1 \times 7 = 7)$ Who agrees? **A** writes '1' in all the *yellow* squares and '7' in all the *pink* ones. Where should we go next? (e.g. diamond with product 63) **B**, come and write in the missing number and explain why you think so. $(1 \times 7 \times 9 = 63$, but $9 = 3 \times 3$, so *violet* = 3) **B** writes '3' in all the *violet* squares. Continue in this way until puzzle is completed. Let's check that our solution is correct. Ps choose diamonds at random and confirm that the 4 numbers multiply to give product in the middle.	Whole class activity If no OHP, use copy master, enlarged and coloured appropriately Let Ps suggest where to start and how to continue. *Solution:* Yellow → 1 Pink → 7 Violet → 3 Green → 2 Orange → 5 Agreement, checking, praising
Extension	Ps could make up own puzzles for their neighbours to solve.	(Could be done at home)
	10 min	
2	**Number sets** T has number cards stuck (or written) on BB. 12 6 15 19 21 30 24 16 41 Half of ⬜ is a whole number Half of ⬜ is NOT a whole number Let's put the numbers in the correct set. Class reads labels on sets. T explains meaning of each set by choosing, e.g. first the '6' and then the '19' cards. 6: Half of 6 = 6 ÷ 2 = 3 (3 is a whole number or integer (BB), so 6 belongs to the LH set.) P points to both 6 and 3 on class number line. 19: Half of 19 = 19 ÷ 2 = 9, remainder 1, or 9 and a half '9 and a half' is not a whole number (integer), so where should it go? (In set on RHS) Where do you think '9 and a half' would be on the number line? (halfway between 9 and 10) P comes out to point. Let's see if you are clever enough to put the rest of the numbers in the correct set. Ps come out to choose a card and stick in the correct set, explaining reasoning. What kind of numbers are in each set? (LHS: even, RHS: odd) If we labelled the sets 'a quarter' instead of 'half', would the numbers stay in the same set? (Elicit that only multiples of 4 would be in LH set: 4, 12, 16, 24; the others would be in RH set, because there would be remainders (quarters) when divided by 4, e.g. 19 ÷ 4 = 4, remainder 3)	Whole class activity Drawn on BB or use enlarged copy master or OHP, with cards cut out In unison Demonstrate with Ps at front of class if ncessary, BB: whole number or integer Discussion, agreement, checking, praising 9 ↑ 10 9 and a half Class agrees/disagrees. Ps show the positions of 'half' numbers on class number line Discussion, agreement, checking, praising Demonstrate with Ps at front of class if necessary
	18 min	
3	***Book 2, page 114*** Q.1 Read: *Four mice have found a lump of cheese. Draw where they should cut it so that they each have an equal amount.* Review at BB with whole class. Cut up a copy of 'cheese' to check. *Solution:* Each mouse has 1 quarter of the cheese. What fraction of the cheese would 3 mice have altogether? (3 quarters)	Individual work, monitored, helped. (Can use copy master) Discussion, agreement, checking, praising BB:
	23 min	

Bk2		*Lesson Plan 114*

Activity		*Notes*
4	**Interlude** Relaxation, with music playing ⎯⎯ *25 min* ⎯⎯	Whole class listening, resting
5	**Sixths** The mouse family (Mum, Dad and 4 children) found this bar of chocolate and want to share it out equally. How many equal parts should it be divided into? (2 adults + 4 children = 6 people altogether) Where should they cut the chocolate bar? BB: Ps come out to draw in the lines (with T's help). Class agrees/disagrees. What fraction of the chocolate do • they each get? (1 sixth) • Mum and Dad have altogether? (2 sixths) (or 1 third) • the 4 children have altogether? (4 sixths) (or 2 thirds) ⎯⎯ *30 min* ⎯⎯	Whole class activity Drawn on BB Discuss that dividing by 6 is the same as dividing by 3 and then by 2 (or by 2 and then 3) Ps can draw diagram in their exercise books too Reasoning, agreement, checking, praising (T could demonstrate with a real bar of chocolate or cut up a rectangular piece of card) Extra praise for '1 third', '2 thirds'
6 **Extension**	***Book 2, page 114*** Q.2 Read: *Write below each shape what part of it is shaded.* T tells Ps to think about, for each shape: • How many parts has the shape been divided into? • What is each part called? • How many of them are shaded? Review at BB with whole class. Discuss mistakes made. BB What part (fraction) of each shape has not been shaded? ⎯⎯ *35 min* ⎯⎯	Individual work, monitored, helped Drawn on BB or use enlarged copy master or OHP Discussion, agreement, checking, praising BB: *Not shaded* a) 1 half b) 1 half c) 3 quarters d) 1 quarter e) 7 eighths f) 5 eighths

7	***Book 2, page 114, Q.3***
	 T explains task. This is a plan of a garden. Into how many parts is the garden divided? (8) What is each part called? (1 eighth)
	 a) Read: *We have planted red roses in 2 eighths of the garden. Colour it red.*
	     Ps work in their books and T (or P) works on the BB. Does it matter which 2 squares we colour red? (No, any 2 squares will do.)
	 Repeat for parts b) to d). Who could equations about the story?
	 ⎯⎯ *40 min* ⎯⎯
		Individual work but class kept together, monitored
		 Drawn on BB or use enlarged copy master or OHP
		 Agreement, checking, praising
		 BB: 2 eights + 3 eighths +
		      2 eighths = 7 eighths
		 8 eighths – 7 eighths = 1 eighth

8	***Book 2, page 114, Q.4***
	 Read: *Tortoise and Snail are having a race. Colour the animal who is ahead.*
	 Ps suggest strategies for solution (with T's help). T draws diagrams on BB with help from Ps.
	 Tortoise: 1 metre = 100 cm, 100 cm ÷ 4 = 100 cm ÷ 2 ÷ 2 = 25 cm
	 Snail: 1 fifth: 50 cm ÷ 5 = 10 cm, 3 fifths: 3 × 10 cm = 30 cm
	 Answer: Snail is ahead (by 5 cm).
	 ⎯⎯ *45 min* ⎯⎯
		Whole class activity. Ps dictate answers. Agreement, checking, praising. BB:
		
		 Tortoise: 1 m = 100 cm
		               25 cm
		
		 Snail: 50 cm
		               30 cm

Bk2	R: Practice of operations **C: Fractions: half, quarter, three quarters, etc.** E: *Half, third of 2-digit numbers using the multiplication table.*	*Lesson Plan* *115*
Activity	*** OHT 13 in MEP Transparency Collection at** http://www.cimt.org.uk/projects/mepres/primary/ohptrans/transmen.htm	*Notes*
1	**Logic puzzle** *(OHT 13 *, LHS)* Study this puzzle. What do you think the rule could be? (The number in the middle of each large square is the product of the 4 numbers around it. The same colour means the same number.) Where should we start? (At the square with product 16 because all 4 missing numbers are the same colour.) Which number multiplied by itself 4 times equals 16? **A**, come and write in the missing numbers and explain why you think so. $(2 \times 2 \times 2 \times 2 = 16)$ Who agrees? **A** writes '2' in all the *green* squares. Where should we go next? (e.g. square with product 8) **B**, come and write in the missing number and explain why you think so. $(2 \times 2 \times 2 = 8$, so *orange* must be '1'. **B** writes '1' in all the *orange* squares. Continue in this way until puzzle is completed. Let's check that our solution is correct. Ps choose squares at random and confirm that the 4 numbers multiply to give product in the middle. *— 8 min —*	Whole class activity If no OHP, use copy master, enlarged and coloured appropriately Let Ps suggest where to start and how to continue. *Solution:* Green → 2 Orange → 1 Violet → 5 Yellow → 4 Pink → 3 Turquoise → 7 Agreement, checking, praising
2	**Number cards** Show me with number cards when I say: • half of 14, 20, 36, 42, 68, 50, 72, etc. (7, 10, 18, 21, 34, 25, 36) Ps with correct responses explain how they did the calculation. e.g. $36 \div 2 = 20 \div 2 + 16 \div 2 = 10 + 8 = 18$ (or $68 \div 2 = 6$ tens $\div 2 + 8$ units $\div 2 = 3$ tens $+ 4$ units $= 34$) • 1 third of 24, 30, 18, 42, etc. (8, 10, 6, 14) Ps with correct responses explain their calculations. e.g. $42 \div 3 = 21 \div 3 + 21 \div 3 = 7 + 7 = 14$ *— 14 min —*	Whole class activity Cards shown in unison Reasoning, agreement, checking, praising Underlined numbers can be replaced by easier multiples if necessary (or T shows calculations on BB)

3
 	
Extension
	Book 2, page 115
	Q.1 Read: *These things belong to a clown. Colour:*
	  a) half of his coat yellow
	  b) 3 quarters of his stick green
	  c) 1 half of the pair of shoes blue and the other half red
	  d) 5 eighths of his cake brown.
	
	Review at BB with whole class. Who made a mistake?
	What kind of mistake? (Class discusses all cases.)
	
	What fraction of the clown's coat, stick, shoes, cake are not coloured? (half, 1 quarter, none, 3 eighths)
	— 20 min —
		Whole class activity
		
		Drawn on BB or use enlarged copy master or OHP
		
		Discussion, agreement, checking, praising
		
		Discussion, reasoning, checking, praising

4	**Interlude** Action song *— 22 min —*	Whole class in unison
5	**Problem** Listen carefully and think about how you would work out the answer. *Len and Sam shared out some bars of chocolate equally between them. If Len got 1 and a half bars, how many bars of chocolate did they share?* What should we do first? (Draw diagram) T writes calculation on BB. BB: 1 and a half + 1 and a half $= 1 + 1 +$ half $+$ half $= 2 + 1 = 3$ *Answer:* They shared 3 bars of chocolate. (Demonstrate if needed.) *— 25 min —*	Whole class activity T writes on BB, Ps in exercise books **Len Sam** [one] and [a half] + [one] and [a half] = [one] + [one] + [a half] + [a half] = [one] + [one] + [one] = 3 bars

Bk2		*Lesson Plan 115*
Activity		***Notes***

6	***Book 2, page 115***
	
	Q. 2 Read: *Complete the sentences by drawing or writing.*
	
	T explains task and makes sure that Ps know what to do for each part, i.e. draw in a) and write in b) and c). Drawings need only be rough (and small).
	
	Review at BB with whole class. Ps come out to explain to class.
	
	  BB: a) 2 rabbits is 1 third of 6 rabbits
	          b) 3 cards is 3 quarters of 4 cards
	          c) 2 and a half apples is half of 5 apples
	
	———— *33 min* ————
		Individual trial, monitored, helped
		
		Drawn on BB or use enlarged copy master or OHP
		
		Discussion, agreement, checking, praising
		
		Demonstrate with Ps as rabbits, cards, apples at front of class. (half shown by P bent over)

7	***Book 2, page 115***, *Q.3*
	
	T has enlarged pictures of the elephant and giraffe stuck to BB.
	
	Who can tell me something about one of these animals? Who has seen one drink water? Where? How do they drink? etc. (Refer to keepers in a zoo needing to know how much water they need to bring for the animals.)
	
	Read: *Elephant drank 24 litres of water. Giraffe drank 3 quarters of that amount. How much water did they drink altogether?*
	
	What should we do first? Who agrees? Who thinks something else? etc.
	
	Plan: E: 24 litres G: 3 quarters of 24 litres
	
	Calculation: G: 24 litres ÷ 4 × 3 = 6 litres × 3 = 18 litres
	              (or 1 quarter of 24 litres = 24 litres ÷ 4 = 6 litres
	              3 quarters of 24 litres = 6 litres × 3 = 18 litres
	          E + G = 24 litres + 18 litres = 42 litres
	
	Answer: Altogether they drank 42 litres of water.
	
	———— *38 min* ————
		Whole class activity
		
		Use copy master, enlarged and animals cut out
		
		Discussion involving many Ps
		
		In unison
		
		Ps suggest what T should write Agreement, checking, praising
		
		Diagram:
		
		(or draw 4 × 6 litre buckets)

8	***Book 2, page 115***
	
	Q.4 Read: *Draw a line of length 8 cm. Draw over 3 quarters of it in red.*
	
	T revises how to draw a certain length of line accurately. Ps draw 8 cm line first. Discuss what to do next.
	
	Either:
	• divide the line into quarters.
	    BB: 1 quarter of 8 cm = 8 cm ÷ 4 = 2 cm
	    Ps mark with short, vertical lines every 2 cm from LHS, then draw over 3 of the quarters in red
	or
	• Do the whole calculation first:
	    BB: 3 quarters of 8 cm = 8 cm ÷ 4 × 3 = 6 cm
	    Ps mark with a short, vertical line 6 cm from LHS, then draw over LH segment in red.
	
	———— *43 min* ————
		Ps have rulers on desks
		Individual work, monitored, helped
		
		Discussion, agreement, checking
		
		Check: 4 × 2 cm = 8 cm
		
		 Praise accurate, neat work

9	**Mental practice** T says describes a number, e.g. 3, as a fraction, e.g. '1 quarter of 12' P describes same number with another fraction, e.g. 'half of 6'. ———— *45 min* ————	Whole class activity At speed round class Praising/encouraging only

Bk2	R: Practice of operations **C: Fractions: half, quarter, 3 quarters, etc.** E: *Problem solving. Divisibility*	*Lesson Plan* *116*
Activity		***Notes***

* OHT 13 in MEP Transparency Collection at
http://www.cimt.org.uk/projects/mepres/primary/ohptrans/transmen.htm

1	**Logic puzzle** *(OHT 13 * Centre)*
	
	Study this puzzle. What do you think the rule could be? (The number in the middle is the product of the 4 numbers around it. The same colour means the same number.)
	
	Where should we start? (At the shape with product 6 because the numbers are small.) Elicit that 2 numbers are the same and zero is impossible. What could the two *violet* numbers be? (1 or 2; 3 is too big) If *violet* is 2, the other 2 numbers are impossible, so *violet* must be 1. **A**, come and write '1' in all the *violet* circles.
	
	If *violet* is 1, what must the other two numbers be? (2 and 3) Let's check: $1 \times 2 \times 3 = 6$, but which of 2 and 3 should be *orange* and which *green*? Let's check with the numbers around 12: $12 = 1 \times 2 \times 2 \times 3$ but $12 \neq 1 \times 2 \times 3 \times 3$, so the *green* circles must be 3 and the *orange* circles must be 2. Let's fill in all the *green* and *orange* circles.
	
	Where should we go next? (e.g. shape with product 30 as there is only one unknown number) **B**, come and write in the missing number and explain why you think so. ($1 \times 2 \times 3 \times 5 = 30$, so *pink* must be '5'. **B** writes '5' in all the *pink* circles.
	
	Continue in this way until the puzzle is solved.
	
	—— 10 min ——
		Whole class activity
		
		If no OHP, use copy master, enlarged and coloured appropriately
		
		Let Ps suggest where to start and how to continue.
		
		Solution:
		    Violet → 1
		    Orange → 2
		    Green → 3
		    Pink → 5
		    Red → 7
		    Blue → 4
		
		Reasoning, agreement, checking, praising
		
		Ps choose shapes at random to check that solution is correct

2	**Secret number** I am thinking of a number. I will give you 4 clues. Listen carefully and after the last clue you should know the number I am thinking of. 1. The number is more than 30 and less than 40. (i.e. 31, 32, . . ., 39) 2. Half of the number is a whole number. (i.e. even) 3. A quarter of the number is NOT a whole number. (i.e. not 32 or 36) 4. Twice the number is more than 70. (i.e. not 34) Show me with number cards the number I am thinking of . . . now! (38) **C**, tell us how you worked out the answer. Who agrees? etc. *—— 16 min ——*	Whole class activity Ps could write possible numbers in their exercise books after 1st clue and cross out numbers as other 3 clues are given T repeats each clue slowly In unison Reasoning, agreement, checking, praising

3	*Book 2, page 116*
	
	Q.1 Read: *Colour 2 thirds, 1 quarter, 2 sixths, 3 quarters.*
	
	    For each picture, Ps count the elements, write the calculation either above the picture (or in their exercise books); colour appropriately.
	
	    Review at BB with whole class. Mistakes corrected.
	
	    BB: 2 thirds of 9 cups $= 9 \div 3 \times 2 = 3 \times 2 = 6$ cups
	              1 quarter of 8 glasses $= 8 \div 4 = 2$ glasses
	              2 sixths of 6 spoons $= 6 \div 6 \times 2 = 1 \times 2 = 2$ spoons
	              3 quarters of 12 forks $= 12 \div 4 \times 3 = 3 \times 3 = 9$ forks
	
	—— 22 min ——
		Individual work, monitored, (helped)
		
		Use enlarged copy master or OHP
		
		Discussion, agreement, checking, self-correction
		Praising
		(Demonstrate with Ps at front of class if necessary)

4	**Interlude** Song or rhyme *—— 24 min ——*	Whole class in unison

Bk2		*Lesson Plan 116*

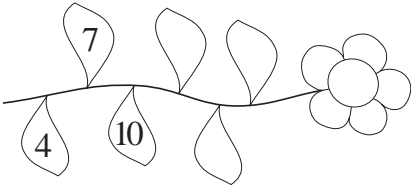| *Activity*		*Notes*

5	***Book 2, page 116***
	
	Q.2 Read: *Draw how many nuts there are if*
	
	       a) 2 is 1 quarter
	       b) 3 is 3 eighths
	       c) 4 is 2 sixths?
	
	What kind of nuts are these? (walnuts) Who has tasted one? (T could have some real walnuts to show and crack open.)
	
	If walnuts are too difficult for you to draw, just draw circles.
	
	Review orally round class. Ps come out to write calculations on BB. Mistakes corrected.
	
	(Demonstrate with Ps as walnuts at front of class if necessary.)
	
	———— 30 min ————
		Individual work, monitored, helped
		
		Initial whole-class discussion
		
		Reasoning, agreement, checking praising
		
		BB:
		
		a) $2 \times 4 = 8$ or $\boxed{8} \div 4 = 2$
		
		b) $3 \div 3 \times 8 = 8$ or
		  $\boxed{8} \div 8 \times 3 = 3$
		
		c) $4 \div 2 \times 6 = 12$ or
		  $\boxed{12} \div 6 \times 2 = 4$

6	***Book 2, page 116*** Q.3 Read: *Join up the values to the corresponding points on the number line.* T explains task. Let's read out the labels together. Ps write numbers above relevant labels before joining to points on the number line. Review at BB with whole class. Calculations written on BB where necessary, e.g. BB: 2 quarters of $8 = 8 \div 4 \times 2 = 2 \times 2 = 4$ (or 2 quarters of $8 = $ half of $8 = 4$) *———— 35 min ————*	Individual work, monitored Drawn on BB or use enlarged copy master or OHP Reasoning, agreement, checking, praising Demonstrate where necessary, especially '2 halves of 6' and '1 half of 0'

7	***Book 2, page 116, Q.4***
	
	Read: *Compare the shaded parts. Which is more?*
	       Write in the correct sign.
	
	What can you say about the rectangles? (each has 6 rows of 3 squares = 18 squares, with 3 squares shaded in) Which do you think has more squares shaded? (Both the same, so missing sign must be '='.)
	
	Who can come and explain why the LH rectangle has '1 third of a half' to describe the 3 shaded squares? P comes out to show the 2 halves separated by the **bold** line (9 squares in each), then the 3 squares out of 9 shaded (1 third). Who can write it as one calculation? Who agrees? Who thinks something else? etc.
	
	Who can come and explain why the RH rectangle has '1 half of a third' to describe the 3 shaded squares? P comes out to show the 3 thirds separated by the **bold** lines (6 squares in each), then the 3 squares out of 6 shaded (1 half). Who can write it as one calculation? Who agrees? Who thinks something else? etc.
	
	Who can think of another fraction to describe the 3 shaded squares? (1 sixth, because $18 \div 6 = 3$)
	
	———— 40 min ————
		Whole class activity
		
		Drawn on BB or use enlarged copy master or OHP
		
		Discussion, agreement
		
		Reasoning, agreement, checking praising
		
		BB: LHS: 1 third of a half
		
		$18 \div 2 \div 3 = 9 \div 3 = 3$
		
		Reasoning, agreement, checking praising
		
		BB: RHS: 1 half of a third
		
		$18 \div 3 \div 2 = 6 \div 2 = 3$
		
		BB: 1 third of a half =
		    1 half of a third = 1 sixth

8	**Problems in context**
	
	Who can think up a problem for this diagram and plan?
	
	BB: *Diagram:* *Plan:*
	
	    ⬚⬚⬚⬚⬚⬚⬚⬚ 40 m 40 m $\div \square = \triangle$ m
	    ⬚
	    ⬚⬚⬚ $\triangle$ m $\times \bigcirc = $ m
	
	———— 45 min ————
		Whole class activity
		
		Drawn on BB or use enlarged copy master or OHP
		
		Ps suggest questions and solutions (with T's help).
		
		Agreement, checking
		
		Praise creativity

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Bk2	R: Practice of operations **C: Division with remainders in context** *E: Division with quotient larger than 10*	*Lesson Plan* *117*

Activity	* OHT 13 in MEP Transparency Collection at http://www.cimt.org.uk/projects/mepres/primary/ohptrans/transmen.htm	*Notes*
1	**Logic puzzle** *(OHT 13 *, RHS)* Study this puzzle. What do you think the rule could be? (The number in the middle is the product of the 4 numbers around it. The same colour means the same number.) Where should we start? (At the shape with product 9 because the numbers are small.) Elicit that there are 2 pairs, each with both numbers the same and that 0 is impossible. What could the two numbers be? (1, 2 or 3; 4 is too big) If the numbers in one pair are 1, then what must the numbers in the other pair be? (3, because $1 \times 1 \times 3 \times 3 = 9$) If the numbers in one pair are 2, the other pair is impossible, as $2 \times 2 = 4$ cannot be multiplied by another whole number to make 9. So the only possible numbers are 1 and 3. But which of 1 and 3 should be *pink* and which *yellow*? Let's check with the numbers around 27: $27 \neq 1 \times 1 \times 1 \times 3$ but $27 = 3 \times 3 \times 3 \times 1$, so the *pink* circles must be 1 and the *yellow* circles must be 3. Let's fill in all the *pink* and *yellow* circles. Where should we go next? (e.g. shape with product 63 as there is only one unknown number) **B**, come and write in the missing number and explain why you think so. ($1 \times 3 \times 3 \times 7 = 63$, so *blue* must be '7'). Are there any other *blue* circles in the puzzle? (No) Continue in this way until the puzzle is solved. *———— 10 min ————*	Whole class activity If no OHP, use copy master, enlarged and coloured appropriately Let Ps suggest where to start and how to continue. *Solution:* Pink → 1 Yellow → 3 Blue → 7 Green → 4 Turquoise → 2 Red → 5 Reasoning, agreement, checking, praising Ps choose shapes at random to check that solution is correct
2	**Divisibility by 2** T has numbers on cards and stuck to the side of the BB: BB: 27, 4, 3, 25, 11, 23, 10, 9, 29, 5, 24, 28 Which of these numbers can be divided exactly by 2 (with no remainder)? Ps come out to choose cards and stick to middle of BB in increasing order Let's put the next nearest whole numbers beside them: BB: 3, 4, 5 9, 10, 11 23, 24, 25 27, 28, 29 What do you notice if you divide these next nearest numbers by 2? There is a remainder of 1 (or a whole number + a half), e.g. BB: $3 \div 2 = 1$, remainder 1 (or $3 \div 2 = 1$ and a half) *———— 15 min ————*	Whole class activity Use copy master, enlarged and cut out (or write on BB) Agreement, checking, praising Discussion about whole numbers, even, odd, divisible by 2, indivisible by 2
3	***Book 2, page 117*** Q.1 Read: *Sally and Susy Squirrel want to divide up the acorns they collected so that they both have an equal amount.* *How could they do it? Complete the table.* P explains what each row of table means using the column already completed. (Middle row is top row divided by 2, bottom row is the remainder, top row is 2 times the middle row plus the bottom row.) Review at BB with whole class. Mistakes corrected. T uses expressions such as dividend (number being divided), divisor (number doing the dividing), quotient (answer), remainder. *———— 23 min ————*	Individual work, monitored (helped) Drawn on BB or use enlarged copy master or OHP Discussion, agreement, checking, praising If problems, Ps write equations on BB. Class agrees/disagrees. BB: e.g. $15 \div 2 = 7$, remainder 1 *Check:* $7 \times 2 + 1 = 15$
4	**Interlude** Song or rhyme *———— 25 min ————*	Whole class in unison

Bk2		*Lesson Plan 117*

Activity		*Notes*
5	***Book 2, page 117*** Q.2 Read: *We want to put 3 flowers into each vase. How many vases will we fill and how many flowers will remain? Fill in the missing numbers.* What kind of flowers are in the pictures? (daisy, tulip, harebell) Ps circle the flowers in groups of 3 (or colour in 3's), count the groups and write in missing numbers in *Pbs*. Review at BB with whole class. Mistakes corrected. How could we have worked it out without circling in 3s? (by division) Ps come out to BB to write a division for each picture Class agrees/disagrees. ——— *30 min* ———	Individual work, monitored, (helped) Drawn on BB or use enlarged copy master or OHP Discussion, agreement, checking, self-correction BB: $12 = 3 \times 4 + 0$, $12 \div 3 = 4$ $13 = 3 \times 4 + 1$, $13 \div 3 = 4$, remainder 1 $14 = 3 \times 4 + 2$, $14 \div 3 = 4$, remainder 2
6	***Book 2, page 117, Q.3*** Read: *A toy shop bought 35 teddy bears. The shop assistant could fit only 3 bears on each shelf. She put the remainder in the window.* *How many shelves were used?* *How many bears were put in the window?* What should we do first? Who agrees? Who thinks something else? etc. *Plan:* Number of bears: 35 Each shelf: 3 bears *Calculation:* $35 \div 3 = 30 \div 3 + 5 \div 3 = 10 + 1$, remainder 2 $\qquad\qquad\qquad\qquad\qquad\qquad\quad = 11$, remainder 2 *Answer:* 11 shelves were used and 2 bears were put in the window. ——— *35 min* ———	Whole class activity (Demonstrate if necessary with enlarged, cut-out bears or Ps at front of class) Ps suggest what to write Ps can work in their books too Discussion, agreement, checking, praising BB: *Check:* $3 \times 11 + 2 = 35$

7
 	
Extension
	Practice in Ps' exercise books
	
	T draws pictures on BB and Ps write a multiplication and addition, and a division and addition about each, e.g.
	
	BB: a) △ △ ｜ △ △ ｜ △ △ ｜ △
	
	b) ◯ ◯ ◯ ｜ ◯ ◯ ◯ ｜ ◯ ◯
	
	Review at BB with whole class, Mistakes corrected.
	
	T writes a multiplication/division + addition on BB and Ps draw a picture to match.
	
	——— *40 min* ———
		Individual work, monitored (helped)
		
		Heading: Lesson number and date
		
		Reasoning, agreement, checking, praising
		BB: e.g.
		a) $3 \times 2 + 1 = 7$
		    $7 \div 2 = 3$, remainder 1
		b) $2 \times 3 + 2 = 8$
		    $8 \div 3 = 2$, remainder 2

8	***Book 2, Page 1β17*** Q.4 Read: *Fill in the missing numbers* Let's see how quickly you can do these! Sit up with your arms folded when you have finished. Review orally round class. Mistakes corrected at number line. ——— *45 min* ———	Individual work (or as a competition) Encourage quick, accurate calculation and checking Agreement, self-correction, praising

Bk2	R: Practice of operations **C: Division with remainders, in context** *E: Problem solving. Constructing problems*	*Lesson Plan* *118*

Activity		**Notes**
1	**Oral work** Tell me numbers which have a remainder of 1 (2) when divided by 3. e.g. 1, 4, 7, 10, 13, . . . (2, 5, 8, 11, . . .) Ar e there anynumbers which have a remainder of 3 when divided by 3? (No, because if there are 3 remaining, there is enough to make another group of 3, e.g. we do not say $12 \div 3$ is '3, remainder 3' but rather $12 \div 3 = 4$, with no remainder.) ——— *5 min* ———	Whole class activity T chooses Ps at random At speed Agreement, checking, praising

2	***Book 2, page 118***
	Q.1 Read: *What do the pictures tell us? Write equations about them.*
	Review at BB with whole class. Mistakes corrected.
	BB:
	a) $3 \times 3 + 2 = 11$ b) $3 \times 2 + 1 = 7$ c) $2 \times 4 + 1 = 9$
	    $11 \div 3 = 3,$ $7 \div 2 = 3,$ $9 \div 4 = 2,$
	     remainder 2 remainder 1 remainder 1
	Ps think of a problems in context for each of the pictures.
	Class discusses whether or not they match the pictures.
	——— *12 min* ———
		Individual work, monitored, helped
		Drawn on BB or use enlarged copy master or OHP
		Discussion, agreement, checking, praising
		Extra praise for creativity

3	***Book 2, page 118***
	Q.2 Read: *Alice has been given some flowers. She wants to put 3 flowers in each vase. How many vases will she fill and how many flowers remain?*
	    Draw in the flowers and write equations about the pictures, if she had:
	    a) 13 flowers, b) 14 flowers, c) 15 flowers.
	Ps draw flowers, then write equations. Review at BB with whole class. Mistakes corrected. Demonstrate if there are problems.
	Refer to *Copy Master 118/1* (multiples of 3)
	BB: a) $13 \div 3 = 4,$ b) $14 \div 3 = 4,$ c) $15 \div 3 = 5$
	     remainder 1 remainder 2 remainder 0
	   or $13 = 4 \times 3 + 1$ $14 = 4 \times 3 + 2$ $15 = 5 \times 3$
	——— *20 min* ———
		Individual work, monitored, (helped)
		Drawn on BB or use enlarged copy master or OHP
		Discussion, agreement, checking, self-correction
		Answers:
		a) Alice will fill 4 vases, and 1 flower will remain
		b) Alice will fill 4 vases, and 2 flowers will remain
		c) Alice will fill 5 vases, and no flowers will remain

4	**Interlude** Action song ——— *22 min* ———	Whole class in unison

5	***Book 2, page 118***
	Q.3 Read: *A photo album can hold only 4 photos on each page. How many pages will be filled and how many photos will remain if there are:*
	    a) 24 photos, b) 25 photos, c) 26 photos, d) 27 photos?
	T explains task by showing a real photo album to class. (Ps could talk about their own family photo albums).
	Let's see how quickly you can write the divisions!
	Review orally with whole class. Ps give answer in context.
	We have worked out how many pages we can fill, but how many pages will we need for the photos? (6, 7, 7, 7)
	——— *28 min* ———
		Individual work, monitored, helped
		Discussion, agreement, checking, praising
		Refer to *Copy Master 118/1* (multiples of 4)
		BB:
		a) $35 \div 4 = 8$, remainder 3
		   Check: $8 \times 4 + 3 = 35$
		b) $25 \div 4 = 6$, remainder 1
		   Check: $6 \times 4 + 1 = 25$, etc.
		Praising

Bk2		*Lesson Plan 118*

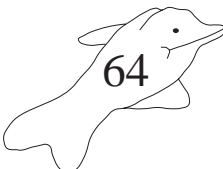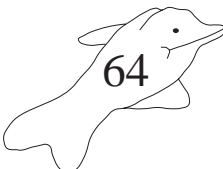| *Activity*		*Notes*

6	**Problem**
	
	 Listen carefully, picture the story in your head and work out the answer. in your exercise books. Let's see if you can write a plan, do the calculation and write the answer as a sentence.
	
	 In a class, each girl was wearing a pair of earrings. One of the girls lost an earring at playtime and the girls in the class now have only 35 earrings altogether. How many girls are in the class?
	
	 A, come and tell us how you worked out the answer. Who agrees? Who did it another way? etc.
	
	 BB: *Plan:* Each girl: 2 earrings Earrings now: 35
	    Calculation: $35 \div 2 = 20 \div 2 + 10 \div 2 + 5 \div 2$
	                      $= 10 + 5 + 2$, remainder 1
	                      $= 17$, remainder 1
	
	 or *Plan:* Each girl: 2 earrings Earrings at first: $35 + 1 = 36$
	    Calculation: $36 \div 2 = 20 \div 2 + 10 \div 2 + 6 \div 2$
	                      $= 10 + 5 + 3$
	                      $= 18$
	
	 Answer: There are 18 girls in the class. (Only 17 are wearing a pair of earrings, the 18th girl is wearing only 1 earring, as 1 has been lost)
	
	 —————— *35 min* ——————
		Individual work in exercise books, closely monitored, helped.
		
		 T repeats slowly
		
		 Discussion, reasoning, agreement, checking, praising
		
		 (or $35 \div 2 = 20 \div 2 + 15 \div 2$)
		
		 Check: $2 \times 17 + 1 = 35$
		
		 (or $36 \div 2 = 20 \div 2 + 16 \div 2$)
		
		 Check: $2 \times 18 - 1 = 35$
		
		 Extra praise for Ps who calculated correct answer without help

7	**Problems in context**
	
	 Who can think up a problem for this division? BB: $43 \div 3 = ?$
	
	 Ps suggest contexts and class chooses the best one.
	
	 (e.g. 43 marbles wer packed into bags, with 3 marbles in each bag. How many bags were filled and how many marbles wer left over?)
	
	 Let's work out the answer together. on the BB.
	
	    BB: $43 \div 3 = 30 \div 3 + 13 \div 3 = 10 + 4$, remainder 1
	                            $= 14$, remainder 1
	
	 Answer: 14 bags were filled and 1 marble was left over.
	
	 —————— *40 min* ——————
		Whole class activity
		 Involve several Ps.
		 T repeats unclear problems correctly. Praise creativity
		 Class agrees/disagrees
		 T writes what Ps dictate
		 Agreement, checking:
		 BB: $3 \times 14 + 1 = 43$
		
		 Ps recite answer in unison

8	***Book 2, Page 118***
	
	 Q.4 Look carefully at the equations. What do you notice?
	
	      (No need to work out the LHS first, because as LHS = RHS:
	
	      28 is 1 more than 27, so missing number must be 1 less than 35,
	
	      24 is 10 less than 34, so missing number must be 10 more than 39, etc.)
	
	      Let's see how quickly you can do them! Sit up with your arms folded when you have finished.
	
	      Review orally round class. Mistakes corrected at number line.
	
	 —————— *45 min* ——————
		Individual work, monitored, (helped)
		
		 Discussion, agreement
		 Praising if Ps notice, but T gives hint otherwise
		
		 Agreement, checking, self-correction, praising

Bk2	R: Practice of calculation **C: Division with remainders: in context** E: *Problem solving*	*Lesson Plan* *119*

Activity		*Notes*
1	**What is the rule?** Study the picture carefully. BB: What numbers could be missing from the leaves? Ps come out to write in the missing numbers, explaining reasoning. What could the rule be? (increasing by 3) What else do you notice about the numbers? (If divided by 3, there is a remainder of 1; or they are all multiples of 3, plus 1.) Who can write the sum of the leaf numbers in the flower? (91)	Whole class activity Drawn on BB or use enlarged copy master (or write numbers on BB and cover with cut-out leaves) Class agrees/disagrees Discussion of rule Extra praise if Ps notice this by themselves, T gives hint if not Agreement, checking, praising
	————— 5 min —————	

2	**Division by 2, 3**
	Put 11 unit cubes (counters, items from Ps' collection) on your desk.
	• Arrange them in groups of 2. How many groups of 2 are there? How many are left over? Write equations about it in your exercise books. (*Heading*: Lesson number and date)
	    A, come and show us what you wrote. Who agrees? Who wrote a different equation? Let's check, etc.
	• Now let's put the 11 cubes in groups of 3. (Repeat as above.)
		Ps have manipulatives on desks
		Individual work, monitored
		Discussion at BB, agreement, checking, praising
		BB: $11 \div 2 = 5$, remainder 1
		    Check: $5 \times 2 + 1 = 11$
		    $11 \div 3 = 3$, remainder 2
		    Check: $3 \times 3 + 2 = 11$

	————— 12 min —————	

3	***Book 2, page 119***
	Q.1 Read: *Write in the missing numbers. Draw pictures to match the calculation.*
	    Deal with one part at a time. Ps do top calculation first, then draw enough simple (small!) shapes to match the answer, then circle the shapes in the appropriate groups, then fill in the numbers missing from the calculation below.
	    Review at BB with whole class. Mistakes corrected
	    BB: a) $3 \times 5 + 1 = 16$ b) $3 \times 5 + 4 = 19$ c) $3 \times 5 + 3 = 18$
	        $16 \div 5 = 3$, $19 \div 5 = 3$, $18 \div 5 = 3$,
	        remainder 1 remainder 4 remainder 3
		Individual trial, monitored, helped
		T gives hints about order of tasks only if necessary
		Drawn on BB or use enlarged copy master or OHP
		Ps come out to show drawings and equations
		Reasoning, agreement, checking, praising

	————— 22 min —————	
4	**Interlude** Song, rhyme, exercises	Whole class in unison
	————— 24 min —————	
5	***Book 2, page 119**, Q.2* Read: *Grandad wants to put his 35 rabbits into hutches, with an equal number of rabbits in each hutch. Complete the table.* Who has a pet rabbit? How many do you have? Where do you keep it? What is a hutch? What do you need to put inside it? (food, water, sawdust) Talk about the size of hutches: the larger it is, the more rabbits it can hold. T (or P) explains meaning of each row in table by completing the first column. (3rd row is top row divided by 2nd row, bottom row is the remainder) Ps come out to complete the columns, explaining reasoning. Class points out errors. Which of these hutches do you think would be best for Grandad's rabbits? (e.g. those which hold 5 or 7 rabbits, so that no rabbit will be on its own)	Whole class activity Drawn on BB or use enlarged copy master or OHP Initial discussion Involve as many Ps as possible Agreement, checking, praising Some Ps may need to use their × tables. Show details of difficult calculations on BB Demonstrate if problems Discussion, agreement
	————— 30 min —————	

Bk2		*Lesson Plan 119*

Activity		**Notes**
6	**Problem**	Whole class activity
	Listen carefully, picture the story in your head and think how you would work out the answer.	
	Aunt Julia cut out 37 scones from the dough she had made.	T repeats slowly
	a) *She put them on a baking sheet, 3 in a row.* *How many rows of scones did she make?*	Discussion, reasoning, agreement, checking, praising
	B, how you would you work out the answer? Who agrees? Who would do it another way? etc.	Ps suggest plan /calculation
	BB: *Plan:* No.of scones: 37 In each row: 3	*Check:* $12 \times 3 + 1 = 37$
	Calculation: $37 \div 3 = 30 \div 3 + 7 \div 3$ $= 10 + 2$, remainder 1 $= 12$, remainder 1	Discussion about answer. Ps copy into *Ex. Bks.*
	Answer: She made 13 rows of scones. (12 full rows and only 1 scone in the 13th row)	
	b) *If Aunt Julia could fit only 5 rows on a baking sheet., how many baking sheets did whe need?*	T repeats slowly
	C, how would you work out the answer? Who agrees? Who would do it another way? etc.	Discussion, agreement, checking, praising Ps suggest plan /calculation
	BB: *Plan:* No. of rows: 13 Each baking sheet: 5 rows	*Check:* $2 \times 5 + 3 = 13$
	Calculation: $13 \div 5 = 2$, remainder 3	Discussion about answer
	Answer: She needed 3 baking sheets. (2 full baking sheets and one with only 3 rows of scones)	If problems, demonstrate with trays and plasticine 'scones'
	35 min	
7	***Book 2, page 119, Q.3***	Whole class activity (Or done as individual trial, monitored, helped, if Ps wish)
	Read: *The children were playing a game and had to stand in rows.* *If they stood 2, 3, or 4 in a row, there was always 1 child left out.*	
	What was the smallest possible number of children who played the game? Try these numbers. Write a cross or a tick to show whether they are possible.	Table drawn on BB or use enlarged copy master or OHP
	Why do the numbers 2 and 3 already have a cross? (Not enough to make a row of 4, so not possible)	Ask several Ps what they think
	How could we solve it? Ps suggest ways: e.g.	Discussion, agreement, trying out, checking, praising
	• try out each number in turn with Ps at front of class, or with counters on desks; or	BB 2 3 4 5 6 7 8 9 10 11 12 13 14 15 ✗ ✗ ✗ ✗ ✗ ✗ ✗ ✗ ✗ ✗ ✗ ✗
	• if 2 in a row, there was always 1 over, so number must be odd, so put a cross below all even numbers, try out the odd numbers; or	T gives hints if necessary
	• as rows of 2, 3 and 4 (plus 1) are possible, we need a number which is 1 more than the smallest multiple of 2, 3 and 4. Elicit that the smallest multiple of 2, 3 and 4 is 12. (Ps may use their × tables if necessary) $12 + 1 = 13$. Let's check it.	BB: $13 = 2 \times 6 + 1$ $13 = 3 \times 4 + 1$ $13 = 4 \times 3 + 1$, so ✔
	Answer: 13 was the smallest number possible.	Discussion, agreement: last bullet point is quickest / uses mathematical logic best
	Which method do you think is best? Why?	
	40 min	
8	***Book 2, page 119***	Individual work, monitored
	Q.4 Read: *Fill in the missing numbers.*	Agreement, checking, self-correcting, praising
	Let's see who can solve them all in 4 minutes! Review orally round class. Who had them all correct? Who made a mistake? What kind of mistake? etc.	Quick discussion of problems at BB.
	45 min	

Bk2	R: Practice of calculation **C: Division with remainder: in context** E: *Problem solving*	*Lesson Plan* *120*

Activity		**Notes**
1	**Divisibility** Tell me numbers which are divisible by 2 (3, 4). Tell me numbers which have a remainder of: • 1 when divided by 2 • 1 (2) when divided by 3 • 1 (2, 3) when divided by 4. ——— *8 min* ———	Whole class activity At speed. Involve all Ps Agreement, checking, praising
2	***Book 2, page 120*** Q.1 Read: *A school was taking its pupils on a trip on a steam railway. The carriages in the train were so small that they could seat only 6 people.* *Complete the table to show how many carriages were needed.* Elicit that middle row is top row divided by 6, bottom row is the remainder. Review at BB with whole class. Mistakes corrected. Which of these numbers of children do you think would be best for the school to take on the trip? Why? (24 or 30, so that nobody will be on their own and everyone will know each other.) ——— *16 min* ———	Individual work, monitored, (helped) Table drawn on BB or use enlarged copy master or OHP (Ps may use their × tables.) Discussion, agreement, checking, self-correcting Praising Discussion, agreement
3	**Problem** Listen carefully, picture the story in your head and work out the answer in your exercise books. Let's see if you can write a plan on your own, do the calculation and write the answer as a sentence. *On a parachute jump, the parachutists jumped from the aeroplane and floated to the ground, joined up in groups of 3.* *41 parachutists jumped from the aeroplane.* *How many groups were there? Did anyone jump alone?* **A**, come and tell us how you worked out the answer. Who agrees? Who did it another way? etc. BB: *Plan:* Parachutists: 41 Each group: 3 *Calculation:* $41 \div 3 = 30 \div 3 + 11 \div 3$ $= 10 + 3$, remainder 2 $= 13$, remainder 2 *Answer:* There were 13 groups. of 3 and 2 parachutists jumped alone (or as a pair) ——— *21 min* ———	Individual work in exercise books, closely monitored, helped. T repeats slowly BB: parachutist Discussion, reasoning, agreement, checking, praising *Check:* $3 \times 13 + 2 = 39 + 2$ $= 41$ Extra praise for Ps who calculated correct answer without help
4	**Interlude** Song, rhyme, exercises ——— *23 min* ———	Whole class in unison

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Bk2

Lesson Plan 120

Activity		Notes
5	**Book 2, page 120** Q.2　Read: *How many weeks and days are there in each month?* 　　　　　*Fill in the table.* 　　　Revise number of days in a week and in a normal month. 　　　Talk about leap years and normal years, e.g. 2000 and 1999. 　　　Let's fill in the table for a normal year.　(e.g. 1999) 　　　T (or P) explains table by completing first 2 columns. 　　　(Middle row is top row divided by 7, bottom row is the remainder, 　　　*Check:* top row is middle row times 7, plus bottom row) 　　　Ps complete the rest of table in *Pbs*, with help of calendar. 　　　Review at BB with whole class.　Mistakes corrected 　　　　　　　　　　　　　── *31 min* ──	Whole class discussion to start, followed by individual work, monitored, helped Use enlarged copy master/OHP (Ps have copy on desks too) Discussion, agreement, checking, praising BB: $31 \div 7 = 4$, remainder 3 　　$28 \div 7 = 4$ 　　$30 \div 7 = 4$, remainder 2
6	**Book 2, page 120** Q.3　Read: *A train had carriages which could seat 8 people. Three* 　　　　*carriages were full and the 4th carriage was half full.* 　　　　*How many passengers were on the train?* 　　　**X**, come and tell us how you worked out the answer. Who 　　　agrees? Who did it another way? etc. 　　　BB: *Plan:*　Each carriage: 8 passengers 　　　　　　　　3 full carriages: 3×8 passengers 　　　　　　　　1 half full carriage: $8 \div 2$ passengers 　　　*Calculation:* $3 \times 8 + 8 \div 2 = 24 + 4 = 28$ 　　　How could we check it? (with a division) 　　　*Check:* $28 \div 8 = 3$, remainder 4 (so 4 carriages, 3 full with 　　　　　　　　8 people each and 4th half full with 4 people) *Answer:* There were 28 passengers on the train 　　　　　　　　　　　　　── *35 min* ──	Individual work, monitored, helped Reasoning, agreement, checking, praising or $3 \times 8 = 24$, $8 \div 2 = 4$, 　$24 + 4 = 28$ Demonstrate with Ps at front of class if necessary Make sure that Ps write the answer in context
7	**Problem** Listen carefully and think how you would solve this problem *Some children were playing a game and had to stand in rows.* *If they stood 2 in a row, then 1 child was left out.* *If they stood 3 in a row, then 2 children were left out.* *If they stood 4 in a row, then 3 children were left out.* *What was the smallest possible number of children playing the game?* Who can suggest what we should do? Who agrees? Who thinks something else? (If nobody knows, T gives hints about using mathematical reasoning: •　number must be equal to, or more than, 7 (as 4 in row + 3 possible) •　if 2 in a row, there was 1 over, so number must be odd •　if 3 in a row, there were 2 over, so 7, 9, 13, 15 not possible. Only number left is 11. Let's check it is possible for 4 in a row, plus 3. *Answer:* 11 was the smallest number possible. 　　　　　　　　　　　　　── *40 min* ──	Whole class activity T repeats slowly and asks Ps to repeat in own words Ask several Ps what they think Discussion, agreement, checking, praising BB　7 8 9 10 11 12 13 14 15 　　✗ ✗ ✗　　✗　✗ ✗ ✗ BB: $11 = 2 \times 5 + 1$ 　　$11 = 3 \times 3 + 2$ 　　$11 = 4 \times 2 + 3$, so ✔
8	**Book 2, page 120** Q.4　Read: *Practise calculation.* 　　　Let's see who can solve them all in 4 minutes! 　　　Review orally round class. Mistakes discussed/corrected. 　　　　　　　　　　　　　── *45 min* ──	Individual work, monitored T notes Ps' problems Quick checking, correcting Praising

| **Bk2** | R: Mental calculation
C: Revision and practice
E: *0 and 1 in multiplication and division* | *Lesson Plan*
121 |

Activity		**Notes**
1	**Logic puzzle** Let's fill in the grid with the numbers 2, 5 or 10, so that the product of the 3 numbers in each row or column is the number shown. = 8 / = 50 / = 100 / 20 50 40 Where should we start? (e.g. 1st row because 8 is the smallest product.) **A**, come and write in the missing numbers, giving your reasoning. Who agrees? etc. (All 3 numbers must be '2' because 5 and 10 would be too big.) *Check:* $2 \times 2 \times 2 = 8$ Where should we go next? (e.g. 3rd column: $2 \times 20 = 2 \times 2 \times 10 = 40$) But where should we put the 2 and 10? (If we put 10 in middle square, the other 2 squares in the middle row would need a product of 5, which is impossible, so '2' must go in the middle square). etc. ———— *5 min* ————	Whole class activity (or individually in exercise books if Ps wish) Drawn on BB or use enlarged copy master or OHP Ps suggest what to do Reasoning, agreement, checking BB: | 2	2	2	= 8 | 5	5	2	= 50 | 2	5	10	= 100 20 50 40 Praising

2	**Multiplication and division**
	
	T writes the numbers 0, 1, 2 and 3 on LHS of BB and 0, 1, 5 on RHS.
	
	a) Let's make multiplications with a number from each side. How many different multiplications can we make? (Each number on LHS can multiply the 3 numbers on RHS: $4 \times 3 = 12$)
	
	BB: $0 \times 0 = 0$ $0 \times 1 = 0$ $0 \times 5 = 0$
	         $1 \times 0 = 0$ $1 \times 1 = 1$ $1 \times 5 = 5$
	         $2 \times 0 = 0$ $2 \times 1 = 2$ $2 \times 5 = 10$
	         $3 \times 0 = 0$ $3 \times 1 = 3$ $3 \times 5 = 15$
	
	What do you notice about these multiplications?
	
	• Zero times (multiplied by) any number is zero.
	• 1 times (multiplied by) any number is the number itself.
	
	b) Let's make divisions, with a number from LHS as the dividend and a number from RHS as the divisor. But be careful!
	
	BB: $0 \div 0$ is impossible $0 \div 1 = 0$ $0 \div 5 = 0$
	         $1 \div 0$ is impossible $1 \div 1 = 1$ $1 \div 5 = 1$ fifth
	         $2 \div 0$ is impossible $2 \div 1 = 2$ $2 \div 5 = 2$ fifths
	         $3 \div 0$ is impossible $3 \div 1 = 3$ $3 \div 5 = 3$ fifths
	
	What do you notice about these divisions? (T gives hints if necessary.)
	
	• Zero divided into any number of parts is still zero.
	• Dividing by zero, i.e. dividing a number into groups of zero, is impossible;
	• Any number divided by 1 is the number itself.
	
	———— *15 min* ————
		Whole class activity
		BB:
		
		0 2 1
		  3 $\times$ 0 5
		             1
		
		T writes Ps' suggestions in logical order on BB and underlines those containing '0' or '1'
		
		Discussion, agreement, checking, praising
		
		T reminds Ps which number is dividend and which is divisor
		
		If necessary, T writes on BB:
		$3 \div 0 \neq 0$, as $0 \times 0 \neq 3$
		$3 \div 0 \neq 3$, as $3 \times 0 \neq 3$)
		
		Discussion, agreement, checking, praising
		
		Ps recite bullet points in unison
		
		(Quick mental practice round class as consolidation)

3	*Book 2, page 121,* Q.1 Read: *In a farmyard there are hens and rabbits. They have 52 legs altogether. How many hens and how many rabbits could there be in the farmyard?* *Complete the table. Write calculations for some of the columns.* Ps come out to choose a column and fill in missing number, explaining reasoning and writing equations on BB. Class checks that they are correct. If problems, T leads Ps through by asking relevant questions: e.g. *1st column:* How many hens? (12) How many hens' legs? (24) How many rabbits legs? (28) How many rabbits? (7) ———— *23 min* ————	Whole class activity Table drawn on BB or use enlarged copy master or OHP At a good pace. Reasoning, agreement, checking, praising BB: e.g. *1st column:* $12 \times 2 = 24$, $52 - 24 = 28$, $28 \div 4 = 7$ or $12 \times 2 + 7 \times 4 = 52$ or $(52 - 12 \times 2) \div 4 = 7$

Bk2		*Lesson Plan 121*
Activity		*Notes*
4	**Interlude** Song or rhyme ———— *25 min* ————	Whole class in unison
5 **Extension**	***Book 2, page 121*** Q.2　Read:　*Match up the dogs to their bones. Join them up or colour them.* 　　　Review at BB with whole class. Deal with all mistakes. 　　　BB: $49 = 9 \times 5 + 4 = 100 - 51 = 8 \times 6 + 1$ 　　　　　$32 = 8 \times 4 = 100 - 68 = (36 - 20) \times 2 = 16 \times 2 = 2 \times 12 + 8$ 　　　Draw another bone, with a different label, for each dog. ———— *30 min* ————	Individual work, monitored, (helped) Drawn on BB or use enlarged copy master or OHP Discussion at BB Agreement, checking, praising
6	***Book 2, page 121*** Q.3　Read: *Practise multiplication.* 　　　Let's see how quickly you can do these! You may use your multiplication tables if you need them but try to answer without them first. Sit up with your arms folded when you have finished. 　　　Review orally round class. Who had all correct? Who made a mistake? What kind of mistake? Who needed to look at their multiplication tables? Try to learn these facts at home. ———— *35 min* ————	Individual work, monitored T notes Ps having problems Quick checking, agreement, self-correcting, evaluation Praising, encouragement only
7	**Operations** T sticks two pictures on BB, each containing a number. e.g. BB: 　　e.g. 　　　　　　　$11 + 16$ 　　　　　　　$52 - 25$ 　　　　　　　3×9 　　　　　　　$81 \div 3$ 　　e.g. 　　　　　　　$19 + 45$ 　　　　　　　$100 - 36$ 　　　　　　　8×8 　　　　　　　$64 \div 1$ Who can tell me an operation $(+, -, \times, \div)$ for each dophin? T chooses Ps at random. P says an operation. T writes it beside relevant picture on BB. Class agrees or points out errors or repeats. (Or done as a quick team competition, with Ps coming out one after another to write on BB. Team with most correct, different equations in a set time limit is the winner.) ———— *40 min* ————	Whole class activity (or team competition) Pictures drawn or stuck to BB (use enlarged, cut-out copy master, or pictures cut out from magazines with numbers written or stuck on) At a good pace Agreement, checking, praising (If competition, stars/stickers etc. could be awarded)
8	***Book 2, page 121*** Q.4　Read: *Practise addition and subtraction* 　　　Let's see how quickly you can do these! You may use your number lines if you need them but try to answer without them first. Sit up with your arms folded when you have finished. 　　　Review orally round class. Who had all correct? Who made a mistake? What kind of mistake? Who needed to look at their number line? 　　　Which equation is the odd one out? Why? (e.g. $15 + 72$ is the only equation with two 2-digit numbers on the LHS.) ———— *45 min* ————	Individual work, monitored T notes Ps having problems Quick checking, agreement, self-correcting Praising, encouragement only Discussion, agreement

Bk2	R: Mental calculation **C: Revision and practice** E: *Problem solving*	*Lesson Plan* *122*

Activity		Notes
1	**Number cards** Show me with number cards when I say the number which is: • 5 more than 20 Show me . . . now! (25) $20 + 5 = 25$ • 5 times 20 Show me . . . now! (100) $5 \times 20 = 100$ • 5 less than 20 Show me . . . now! (15) $20 - 5 = 15$ • A fifth of 20 Show me . . . now! (4) $20 \div 5 = 4$ • 2 fifths of 20 Show me . . . now! (8) $20 \div 5 \times 2 = 8$ ——— *5 min* ———	Whole class activity Number cards shown in unison Quick feedback If problems, write equations on BB Praising

2
 	
Extension
	Book 2, page 122, Q.1
	T has equations written (or stuck) on BB. What do you notice about the equations? (All have the same numbers on LHS.)
	Ps come out to fill in missing signs, explaining reasoning. Class checks that they are correct. T gives hints only if necessary.
	
	BB: e.g. a) $40 \div 4 \div 5 = 2$ b) $40 + 4 + 5 = 49$
	  $40 \div 4 + 5 = 15$ $40 \div 4 \times 5 = 50$
	  $40 + 4 \times 5 = 60$ $40 - 4 - 5 = 31$
	
	Make up your own equations using 40, 4 and 5 on the LHS.
	
	——— *13 min* ———
		Whole class activity
		Written on BB or use enlarged copy master
		Reasoning, agreement, checking, praising
		Ps can write in their books too
		
		e.g. $40 - 4 \times 5 = 20$
		Praise creativity

3	***Book 2, page 122***
	Q.2 Read: *What is the connection between the shapes? Complete the table. Write the rule in different ways.*
	  Study the 3 columns already done. What could the rule be? T gives hint if nobody knows but give Ps time to think first. (Agree on one form of the rule, even if expressed only in words, e.g. 'the star plus the sun equals half of the moon ', or 'the bottom row equals twice the sum of the top and middle rows'.)
	  Let's use this rule to complete the table. Review at BB with whole class. Mistakes corrected. (Final column can have many answers – deal with all cases. Class agrees/disagrees.)
	  How could we write the rule? T writes with help from Ps, saying the equation in words too. Could we write it another way?
	  Ps suggest different ways. T (or Ps) writes on BB, Ps in *Pb*s.
	
	BB:
	
	| ☆
		5	6	1	7	**3**	**6**	**1**	8	1	**0**

---	---	---	---	---	---	---	---	---	---	---
☀	4	3	4	1	3	2	9	**3**	2	**1**
☽	18	18	10	**16**	12	16	20	22	**6**	**2** | *Rule:* ☽ = (☆ + ☀) × 2, ☆ = ☽ ÷ 2 – ☀, ☀ = ☽ ÷ 2 – ☆ ——— *22 min* ———	Whole class introduction Drawn on BB or use enlarged copy master or OHP Ask several Ps what they think Individual work, monitored, helped Agreement, checking, praising Discussion, reasoning, agreement, checking, praising
4	**Interlude** Physical exercises to music ——— *24 min* ———	Whole class in unison

Bk2		*Lesson Plan 122*

Activity		*Notes*
5	**One operation instead of 2** Study these diagrams. What is missing from them? BB: a) b) c) c) Elicit that: a) adding 40 and subtracting 2 is the same as adding 38; b) subtracting 50 and adding 6 is the same as subtracting 44; c) multiplying by 6 and then dividing by 2 is the same as multiplying by 3; d) dividing by 4 and then multiplying by 8 is the same as multiplying by 2. Which do you think is easier? Why? ——— *29 min* ———	Whole class, activity Drawn on BB or use enlarged copy master or OHP Ps come out to write in the missing numbers and operation signs, saying the equation. Class points out errors Discussion, agreement, checking, praising T could ask Ps for other examples of each type Discussion. Involve several Ps

6	**Problem**
	Listen carefully, picture the story in your head and think how you would work out the answer.
	Pooh Bear has 1 litre 20 cl of honey and wants to put it into two jugs so that one jug contains twice as much as the other. How much honey will he put in each jug?
	Think about how many equal parts the honey should be divided into.
	B, how you would you work out the answer? Who agrees? Who would do it another way? etc. (Draw a diagram. Write a plan)
	BB: *Plan:* Honey: 1 litre 20 cl = 120 cl No of equal parts: 3
	   Calculation: 120 ÷ 3 = 12 tens ÷ 3 = 4 tens = 40
	      (or 120 ÷ 3 = 30 ÷ 3 + 30 ÷ 3 + 30 ÷ 3 + 30 ÷ 3)
	   1st jug: 40 cl *2nd jug:* 2 × 40 cl = 80 cl
	Answer: He will put 40 cl in one jug and 80 cl in the other jug.
	——— *35 min* ———
		Whole class activity
		
		T repeats slowly and one or two Ps repeat problem in own words
		
		T gives hint to Ps to steer their thoughts in right direction
		
		Ps suggest what T should write
		Agreement, checking, praising
		Diagram:
		
		Check: 40 cl + 80 cl = 120 cl

7	***Book 2, page122***
	Q.3 Read: *Practise addition and subtraction*
	    Let's see how quickly you can do these! Sit up with your arms folded when you have finished. Check them if you have time.
	    Review orally round class. Mistakes corrected. If problems, Ps show calculation on BB. How many correct out of 18?
	——— *40 min* ———
		Individual work, monitored (helped)
		Encourage quick, accurate work
		Agreement, checking, self-correction, praising, evaluation

8	***Book 2, page 122***
	Q.4 Read: *Practise multiplication.*
	    Let's see how many of these you can do in 4 minutes!
	    Review orally round class. Who had all correct? Who made a mistake? What kind of mistake? etc.
	    Let's check each one with a division.
	——— *45 min* ———
		Individual work, monitored
		Ps may use × tables if needed
		Agreement, checking, self-correction, praising
		At speed orally round class

Bk2	R: Calculation **C: Revision and practice Probability (games with dice)** *E: Extending numbers beyond 100*	*Lesson Plan* *123*

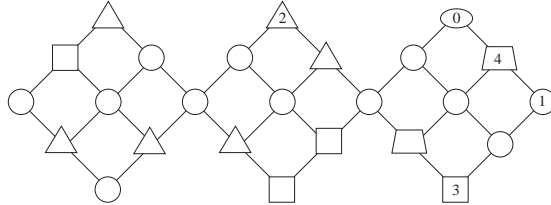| **Activity**		**Notes**
1	**Logic puzzle** Let's find ways through the maze so that the product of the numbers passed through is a) 24, b) 72, c) 1, d) 0. The same shape means the same number. We can only move along the lines given. BB: What should we do first? (Write appropriate numbers in all the shapes, e.g. 1 in all the circles, 2 in all the triangles, etc.) Ps come out to show routes and class keeps check. *Solution:* a) several routes possible, e.g. $1 \times 3 \times 1 \times 2 \times 1 \times 2 \times 1 \times 2 \times$ $1 \times 1 \times 1 \times 1 \times 1 = 24$ b) several routes possible, e.g. $1 \times 2 \times 1 \times 2 \times 1 \times 2 \times 3 \times$ $3 \times 1 \times 1 \times 1 \times 1 \times 1 = 72$ c) route for '1' is impossible, as it would need all the numbers to be '1'. d) any route which contains 0. ———— *10 min* ————	Whole class activity Drawn on BB or use enlarged copy master or OHP Ps could each have a copy of puzzle on desks. Discussion, agreement, checking, raising Ps show different routes for parts a) and b) Discussion, agreement Extra praise if Ps notice without T's help
2	**Tossing coins** Ps each have a coin (real or model) on desk. Make sure that Ps know which side is heads and which is tails. T explains table on BB and Ps copy into *Ex. Bks*. BB: **Throws** 		*1st*	*2nd*	*3rd*	*4th*	*5th*	*6th*	*7th*	*8th*	*9th*	*10th*	**Total**
---	---	---	---	---	---	---	---	---	---	---	---
Heads											
Tails											| Ps toss coins on command from T, note whether it lands heads up or tails up and tick the appropriate box in column headed '1st' in their tables. (Make sure Ps know to write only one 'tick' per column!) Hands up those who threw a 'head' ('tail'). T counts and writes total in table on BB. Continue in similar way for 10 (or 5) throws. Ps count up their individual totals for heads and tails and write in final column in table in their exercise books T can use a calculator to obtain totals for class, shows each total to Ps and writes in table on BB. How can we check whether we have added up correctly? (Ps' totals for heads and tails should sum to 10 and T's totals for class should sum to 10 times number of Ps in the class.) What do you notice? ———— *18 min* ————	Whole class activity Table drawn on BB or use enlarged copy master or OHP Ps draw table in exercise books or each has copy of copy master. T emphasises importance of care and accuracy in 'experiments' like this. Ps throw coins in unison Individual work in recording Ps raise hands in unison for either 'heads' or 'tails' BB: e.g. | Heads	Tails	Total
132	138	270 | Checking, correcting Discussion: elicit that the class data are more uniform. Why?
3	***Book 2, page 123*** Q.1 Read: *I am going to toss a coin once. How certain can I be of the result? Join up the statements on the left to the correct labels on the right.* Class reads out one statement at a time and Ps join it up to correct label in their books. Review with whole class. After discussion, class agrees that each side of coin has equal chance of occurring. ———— *24 min* ————	Individual work but class kept together. Discussion, agreement BB: H: Possible, but not certain T: Possible, but not certain H and T: Impossible (1 throw) H or T: Certain

Bk2		*Lesson Plan 123*

Activity		*Notes*
4	**Interlude** Action song _____ *26 min* _____	Whole class in unison
5	***Book 2, page 123, Q.2*** Let's do another experiment! T reminds them of previous 'experiment ' and encourages care and accuracy. You keep note of your own results in your bools and I will keep note of the class's results on the BB. How many dots are on the sides of your dice? (1, 2, 3, 4, 5, 6) Which numbers are opposite each other? (1 and 6, 2 and 5, 3 and 4) Let's practice throwing it so that it lands on your desk (and not on the floor!) Which number is facing up? Where can you find it in the table? (Ps come out to point.) Read: *Throw a dice on your desk 10 times. Keep a tally of the numbers thrown in the table. Fill in the last column to show how often you threw each number.* Ps throw dice on command from T, note the number facing up and write a tick (or a |) in the appropriate box in the tables in their books Hands up those who threw a '6' ('5', . . . '1'). T counts and writes total in class table on BB. Continue in a similar way for 10 throws. Ps count up number of ticks and write totals in boxes at end of each row in their tables. T can use a calculator to obtain totals for class, shows each total to Ps and writes in table on BB. How can we check whether we have added up correctly? (Ps' totals for own data should sum to 10 and T's totals for class data should sum to 10 times number of Ps in the class, as the dice was thrown 10 times.) Let's draw a bar chart to show the results more clearly. Ps write numbers 1 to 10 on LHS of their copies then draw and colour bar charts for their own data. T writes appropriate numbers on LHS of class bar chart on BB and completes with help of Ps. What do you notice? _____ *36 min* _____	Whole class activity Table drawn on BB or use enlarged copy master or OHP ***Ps have dice on desks.*** Familiarisation with dice T emphasises importance of care and accuracy in 'experiments' like this! Ps throw dice and raise hands in unison Individual work in recording BB: e.g. CLASS DATA Checking, correcting Ps each have copy of *Copy Master 123/5b*, T uses enlarged copy on BB Discussion: elicit that class data are more uniform. Why?
6	***Book 2, page 123*** Q.3 Read: *I am going to throw a dice once. How certain can I be of the result? Join up the statements at the sides to the correct labels in the middle.* Class reads out one statement at a time and Ps join it up to correct label in *Pbs*. Review with whole class. Demonstrate by throwing the dice if necessary . After discussion, class agrees that each side of dice has equal chance of occurring. Demonstrate if necessary. _____ *41 min* _____	Individual work, but class kept together Discussion, reasoning, agreement, checking, praising BB: I will throw a 4: Possible but not certain 2 or 5: Possible but not certain 1 and 5: Impossible (1 throw) 7: Impossible (not on dice) etc.
7	***Book 2, page 123, Q.4*** Read: *I am going to toss a coin twice. Write the possible results in the table.* T explains table. On my first throw, what could the outcome be? (Either Head or Tail) T points to relevant column in table. If I threw a 'Head' on the first throw, what could I throw on my second throw? (Head or Tail) T writes in table on BB, Ps in their books. Repeat for 'Tail'. We could also show it like this. (BB) This is called a tree diagram. _____ *45 min* _____	Whole class activity Table drawn on BB Agreement, praising BB: *1st* *2nd* Tree diagram H < H / T T < H / T

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Bk2	R: Calculation **C: Revision and practice. Probability (games with dice)** *E: Problems about probability*	*Lesson Plan* *124*

Activity		**Notes**

1	**Probable outcomes**
	
	T puts 3 white and 3, e.g. red, marbles into an opaque bag.
	
	A is going to take out 3 marbles from the bag with his eyes closed. What do you think the outcome will be? Is **A** more likely to take out
	
	• 3 marbles all the same colour, or
	
	• 3 marbles all different colours, or
	
	• 3 marbles, some white and some coloured?
	
	B, what do you think is more likely to happen? Why? Who agrees? Who thinks something else? Why? etc.
	
	Let's see what really happens! Repeat with several other Ps taking out 3 marbles. T keeps tally of outcomes on BB.
	
	Class agrees that 1st outcome is possible, though not likely, 2nd is impossible (not 3 colours in the bag), 3rd outcome is most probable.
	
	———— 8 min ————
		Whole class activity
		(or white/red cubes into a box)
		
		Discussion, reasoning, agreement
		
		BB: e.g. • 3 the same: |
		          • 3 all different: 0
		          • 3 mixed: ┼┼┼┼ ||||
		Praising only

2	***Book 2, page 124, Q.1***
	
	Read: *There are 2 white, 2 black and 2 striped marbles in a bag. The bag is tied with cord and you cannot see inside. How certain can I be that if, with my eyes shut: . . .*
	
	T reads out one statement at a time and Ps show what they think with cards on command. Show me . . . now!
	
	C, why did you choose it? Who agrees? Who thinks something else?
	
	Solution: a), b), c) Possible (but not certain)
	          d) Certain (only 4 needed to be sure of 2 the same colour)
	          e) Impossible (there are not 4 colours in the bag)
	
	———— 16 min ————
		Whole class activity
		Ps each have 3 cards on desks:
		
		| Certain | | Possible | | Impossible |
		cut out from copy master
		In unison
		
		Discussion, reasoning, agreement, checking, praising
		
		Demonstrate with a bag and 6 marbles at front of class.

3
 	
Extension
	Book 2, page 124
	
	Q.2 a) Read: *If we were to throw 2 dice at the same time, how many different results could there be?*
	          Continue writing them out, with A's number first.
	
	T explains task and encourages logical listing, referring to the first 3 already given. (If *Dice A* shows 1 facing up, what are all the possibilities for *Dice B*?)
	
	(If T thinks class do not understand, do the next few on the BB with the whole class first.) Rest done as individual work.
	
	Review at BB with whole class. T writes what Ps dictate in order on BB. How many different results are possible? (For each of the 6 numbers on *Dice A*, there are 6 possible numbers on *Dice B*, so number of results = 6 × 6 = 36)
	
	b) Read: *Which total is: i) the smallest possible
	                        ii) the largest possible?*
	
	Ps write in *Pbs*, then show answer with number cards on command. (smallest: 1 + 1 = 2; largest: 6 + 6 = 12)
	
	Discuss the chance of certain totals occuring.
	
	———— 24 min ————
		Whole class activity to start, followed by individual work when T thinks Ps understand
		
		Explanation, demonstration with 2 dice if necessary
		
		BB: (write in rows of 6)
		
		1 + 6, 1 + 5, 1 + 4, 1 + 3,
		1 + 2, 1 + 1, 2 + 6, 2 + 5,
		2 + 4, 2 + 3, 2 + 2, 2 + 1,
		3 + 6, 3 + 5, 3 + 4, 3 + 3,
		3 + 2, 3 + 1, 4 + 6, 4 + 5,
		4 + 4, 4 + 3, 4 + 2, 4 + 1,
		5 + 6, 5 + 5, 5 + 4, 5 + 3,
		5 + 2, 5 + 1, 6 + 6, 6 + 5,
		6 + 4, 6 + 3, 6 + 2, 6 + 1
		
		In unison. Agreement, checking, praising
		
		e.g. 2 (12) has 1 chance out of 36 throws

4	**Interlude** Rhyme or song *———— 26 min ————*	Whole class in unison

Bk2		*Lesson Plan 124*

Activity		**Notes**
5	**Book 2, page 124** Q.3 Read: *We have put 5 red, 5 yellow and 5 green marbles into a bag. The bag is tied with cord and you cannot see inside.* *If you take out some marbles with your eyes closed, what is the smallest number of marbles you should take out to make certain that you have at least:* *a) 1 red marble b) 1 yellow marble* *c) 2 green marbles c) 3 marbles of the same colour?* Review with whole class. Ps give answers with reasoning. Class agrees/disagrees. Pairs of Ps demonstrate each part. *Solution:* a) 11 marbles (because we could take out 10 marbles and it is possible (though not likely) that they could be the 5 red and the 5 yellow marbles, but after that only red marbles would be left in the bag) b) 11 marbles (same reasoning as in a) above) c) 12 marbles (similar reasoning as in a) but 2 more marbles need to be taken out after the 10th withdrawal) d) 7 marbles (because we could take out 6 marbles and they could be 2 red, 2 yellow and 2 green, but the 7th marble must be another of one of these colours, making 3 marbles of the same colour) ———— *36 min* ————	Individual (or paired) trial Each pair could have coloured counters in a box on desk Otherwise Ps colour marbles in picture in *Pbs* to help them Deep discussion reasoning, agreement, checking Extra praise for Ps who reason clearly and correctly and can demonstrate to class
6	**Throwing 2 dice** Look at your results for *Question 2*. How many different results did we write down? (36) If we think of, e.g. $(2 + 3)$ and $(3 + 2)$ as being the same because we are adding the same numbers together, how many different results would there be then? Ps draw brackets around (or cross out) the 2nd of each such pair and count all those left. Show me the answer with number cards . . . now! (21) Let's check. ———— *41 min* ————	Individual work, monitored, helped BB: $1 + 6$, $1 + 5$, $1 + 4$, $1 + 3$, $1 + 2$, $1 + 1$, $2 + 6$, $2 + 5$, $2 + 4$, $2 + 3$, $2 + 2$, $3 + 6$, $3 + 5$, $3 + 4$, $3 + 3$, $4 + 6$, $4 + 5$, $4 + 4$, $5 + 6$, $5 + 5$, $6 + 6$ Agreement, checking, praising
7	**Problem** Listen carefully and think about what we have done in this lesson. a) *How likely do you think this is? If I choose any 8 children in the class, at least 2 of them were born on the same day of the week.* Do you think it is certain, possible but not certain, or impossible? Show me with one of your cards . . . now! (Certain) **X**, explain your answer. Who agrees? etc. (The first 7 children could have been born on each of the 7 days of the week, but the 8th child must have been born on one of these days too.) b) *What is the smallest number of children I should choose to be certain that at least 2 of them were born on the same date in any month?* Show me with number cards . . . now! (32) **Y**, explain your answer. Who agrees? etc. (The most number of days in a month is 31, and the first 31 children could have been born on each of these dates, but the 32nd pupil must have been born on one of these dates too.) ———— *45 min* ————	Whole class activity T repeats slowly Ps use cards from *Activity 2* In unison Reasoning (with T's help), agreement, checking , praising T repeats slowly Ps use cards from *Activity 2* In unison Reasoning (with T's help), agreement, checking , praising

Bk2	R: Practice addition, subtraction, multiplication **C: Division by 2, 3, . . ., 9** E: *Brackets*	*Lesson Plan* *125*

Activity		*Notes*
1	**Logic set** Let's use our logic set. How many elements are in the set? (40) • Lay them out on your desk in matching pairs. (e.g. with/without centre point) How many pairs have you made? Write a division about it in your exercise books and check it with a multiplication. (*Heading:* Lesson number and date) Review at BB. • Make 2 equal groups, one on each side of your desk (e.g. big/small) Write a division about it in your exerise books. Check it with a multiplication. Review at BB. • Make 4 equal groups (e.g. small black/large black/small white / large white) Ps write equations as above. • Repeat for groups of 5 (circles/triangles/squares/pentagons/hexagons), (and groups of 8 and 10 if there is time) Ps write equations as above. ———— *10 min* ————	Whole class activity (or working in pairs) Grouping as instructed by T Individual work in writing equations BB: a) $40 \div 2 = 20$, $20 \times 2 = 40$ b) $40 \div 20 = 2$, $2 \times 20 = 40$ c) $40 \div 4 = 10$, $10 \times 4 = 40$ d) $40 \div 5 = 8$, $8 \times 5 = 40$ etc. Agreement, checking, praising

2	**Book 2, page 125**
	Q.1 Read: *Mrs Hedgehog and Mrs Squirrel always take the same number of strawberries home for their babies.*
	     There are 8 baby hedgehogs and 4 baby squirrels. How many strawberries will each baby get?
	     Complete the table.
	
	P explains what each row of table means using the column already completed. (Middle row is top row divided by 4 (or 2 times bottom row), bottom row is top row divided by 8 (or middle row divided by 2), top row is 4 times middle row (or 8 times bottom row.)
	Review at BB with whole class. Mistakes corrected.
	
	———— *16 min* ————
		Individual work, monitored (helped)
		Drawn on BB or use enlarged copy master or OHP
		Discussion, agreement, checking, praising
		
		If problems, Ps write equations on BB. Class agrees/disagrees.
		BB: e.g.
		$80 \div 8 = 10$, $2 \times 10 = 20$
		$2 \times 7 = 14$, $8 \times 7 = 56$

3
 	
Extension
	Book 2, page 125
	Q.2 Read: *Write a division about each picture. Check with a multiplication.*
	Deal with one part at a time. Review at BB with whole class.
	BB:
	a) $7 \div 2 = 3$, b) $9 \div 4 = 2$, c) $13 \div 3 = 4$,
	   remainder 1 remainder 1 remainder 1
	    $3 \times 2 + 1 = 7$ $2 \times 4 + 1 = 9$ $4 \times 3 + 1 = 13$
	
	Ps think of a problem in context for each part.
	Class decides whether or not they match the pictures.
	
	———— *23 min* ————
		Individual work, monitored, helped
		Drawn on BB or use enlarged copy master or OHP
		Discussion, agreement, checking, praising
		
		Extra praise for creativity

4	**Interlude** Song, rhyme ———— *25 min* ————	Whole class in unison

Bk2		*Lesson Plan 125*

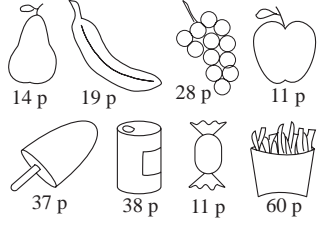| *Activity*		*Notes*
5	**Problem 1** Listen carefully, picture the story in your head and think how you would work out the answer. *If 28 apples were shared equally among 4 children, how many apples would each child get?* Write a division about it in your exercise books and check with a multiplication. Review at BB with whole class. **A**, come and tell us how you worked out the answer. Who agrees? Who did it another way? etc. BB: 28 apples ÷ 4 = 7 apples, *Check:* 7 apples × 4 = 28 apples *Answer:* Each child would get 7 apples. ――― *30 min* ―――	Individual work, monitored, helped Discussion at BB (If necessary, use enlarged copy master or demonstrate with Ps at front of class.) Reasoning, agreement, checking, praising
6	**Problem 2** Listen carefully, picture the story in your head and think how you would work out the answer. *Sam has 14 fish in his garden pond. Before he can clean the pond, he has to lift the fish out into a bucket of water.* *His little net can hold only 3 fish at a time. What is the least number of times that Sam will have to use his net to lift out the fish?* Write a division about it in your exercise books and check with a multiplication. Review at BB with whole class. **B**, come and tell us how you worked out the answer. Who agrees? Who did it another way? etc. BB: *Calculation:* 14 fish ÷ 3 fish = 4 (times), remainder 2 fish *Check:* 4 × 3 fish + 2 fish = 14 fish *Answer:* Sam will have to use his net at least 5 times. (4 times to lift out 3 fish each time and the 5th time to lift out the remaining 2 fish) ――― *35 min* ―――	Individual work, monitored, helped Ps may draw a diagram in their exercise books to help them (If necessary, put 14 'fish' in a bucket and a P draws out 3 at a time, or draw 14 'fish' on BB and P circles in groups of 3) Reasoning, agreement, checking, praising

7	***Book 2, page 125***
	Q.3 Read: *Colour the amount asked for in each picture.*
	         a) 1 half, b) 1 third, c) 4 sixths
	Count how many elements there are in the whole picture. Then think how many equal groups you are dividing them into. Then think how many of these groups you will colour.
	Review at BB with whole class. Ps come out to explain reasoning and write equation on BB. Class agrees/disagrees.
	What is 1 half of 8 boats (1 third of 12 ice-creams, 4 sixths of 18 mushrooms? (4, 4, 12)
	Read: *Draw 10 marbles. Colour 2 fifths of them red.*
	Show me with your fingers how many you coloured red . . . now! (4) What fraction have you not coloured? (3 fifths = 6)
	――― *40 min* ―――
		Individual work, monitored, (helped)
		Initial discussion, using enlarged copy master of OHP
		Reasoning, agreement, checking, praising
		BB:
		a) 1 half of 6 = 6 ÷ 2 = 3
		b) 1 third of 9 = 9 ÷ 3 = 3
		c) 1 sixth of 6 = 6 ÷ 6 = 1
		   4 sixths of 6 = 4 × 1 = 4
		d) 1 fifth of 10 = 10 ÷ 5 = 2
		   2 fifths of 10 = 2 × 2 = 4

8	**Brackets**
	T has BB already prepared. Revise order of operations.
	BB: a) 6 × 7 − 3 = b) (3 + 5) × 9 = c) 10 + 7 × 2 =
	         6 × (7 − 3) = 3 + 5 × 9 = (10 + 7) × 2 =
	         8 × (2 + 8) = 13 − 4 × 3 = (20 − 1) × 2 =
	         8 × 2 + 5 = (13 − 4) × 3 = 20 − 1 × 2 =
	――― *45 min* ―――
		Whole class activity (or individually if Ps wish)
		Ps come out to BB to write answer and explain reasoning.
		Class agrees/disagrees.
		Praising. Note effect of brackets

Bk2	R: Calculation **C: Division by 2, 3, . . ., 9** E: *Division in context. Brackets in complicated number tasks*	*Lesson Plan* *126*

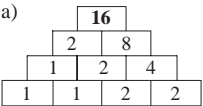| **Activity**		**Notes**
1	**Logic puzzle** Each number is the product of the 2 numbers directly below it. Let's fill in the missing numbers. Ps come out to BB to write in numbers, explaining reasoning. Class agrees/disagrees. *5 min*	**BB:** ┌─24─┐ **(Bold** numbers already given) 6 4 3 2 2 3 1 2 1	Whole class activity Drawn on BB or use enlarged copy master or OHP At a good pace Reasoning, agreement, checking, praising

2	***Book 2, page 126, Q.1***
	
	 Read: *Fill in the missing numbers and signs. (+, −. ×, ÷)*
	
	 Ps come out to BB to choose an arrow, fill in the missing number or sign and say the division. Class agrees/disagrees. T writes difficult equations on BB and class suggests how to calculate them, e.g.
	
	 a) $42 \div 14 = (28 + 14) \div 14 = 28 \div 14 + 14 \div 14 = 2 + 1 = 3$
	      $42 \div 3 = (21 + 21) \div 3 = 21 \div 3 + 21 \div 3 = 7 + 7 = 14$
	
	 b) $36 \div 18 = (18 + 18) \div 18 = 18 \div 18 + 18 \div 18 = 1 + 1 = 2$
	      $36 \div 12 = (24 + 12) \div 12 = 24 \div 12 + 12 \div 12 = 2 + 1 = 3$
	
	 12 min
			Whole class activity
			
			 Drawn on BB or use enlarged copy master or OHP
			
			 Involve several Ps
			
			 Reasoning, agreement, checking with multiplication
			
			 Ps write in their books too
			
			 Praising

3	**Problem 1** Listen carefully, picture the story in your head and work out the answer in your exercise books. (*Heading:* Lesson number and date) *George has 63 books and he wants to put an equal number of books on each of the 7 shelves in his bookcase. How many books should George put on each shelf?* Write a division about it in your exercise books and check with a multiplication. Review at BB with whole class. **A**, come and tell us how you worked out the answer. Who agrees? Who did it another way? etc. BB: 63 books ÷ 7 = 9 books, *Check:* 7 × 9 books = 63 books *Answer:* George should put 7 books on each shelf. *17 min*		Individual work, monitored, helped T repeats slowly and a P repeats in own words Ps may use × tables to help them Discussion at BB Reasoning, agreement, checking, praising
4	**Problem 2** Listen carefully, picture the story in your head and show me the answer with a number card when I say. *We are arranging flowers in bunches of 5. How many bunches can we make from 45 flowers?* Show me the answer with number cards . . . now! (9) **B**, come and tell us how you worked out the answer. Who agrees? Who did it another way? etc. BB: 45 flowers ÷ 5 flowers = 9 (times), *Check:* 9 × 5 flowers = 45 flowers *Answer:* We can make 9 bunches. *22 min*		Whole class activity T repeats slowly and a P repeats in own words In unison Discussion, reasoning, agreement, checking, praising T notes Ps still having difficulty
5	**Interlude** Ps have heads on desk and eyes closed and say the multiples of 9 from 0 to 90 and 90 to 0 in their heads. *24 min*		Class counting mentally T insists on quiet.

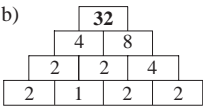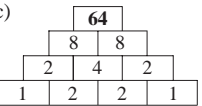| **Bk2**		*Lesson Plan 126*

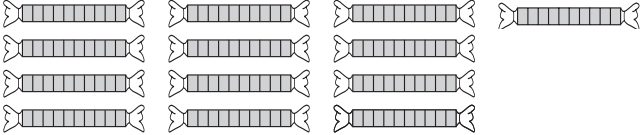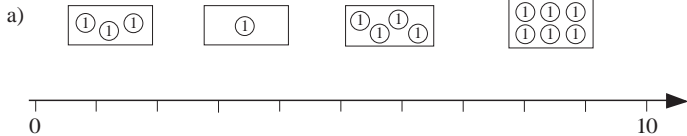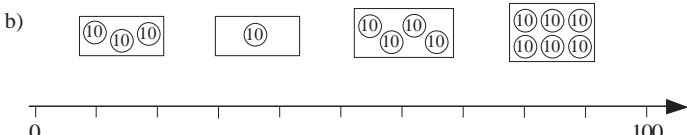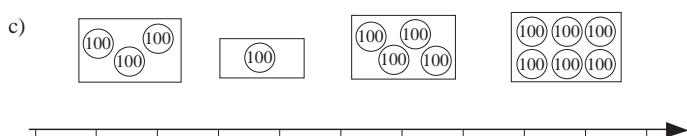| *Activity*		*Notes*
6	***Book 2, page 126*** Q.2　Read: *Pete has 48 stamps, 8 times more than the number Laura has.* 　　　*a) How many stamps does Laura have?* 　　　*b) How many stamps do they have altogether?* Do the calculations and write the answer as sentences. Review at BB with whole class. Who had both answers correct? Who made a mistake? What kind of mistake? etc. ———— *30 min* ————	Individual work, monitored Reasoning, agreement, checking, self-correcting BB: a)　$48 \div 8 = 6$ 　　Laura has 6 stamps. b)　$6 + 48 = 54$ 　　They have 54 stamps altogether
7	**Fractions** a) T calls 8 Ps to stand in a line facing the class. T whispers to 7 of them to smile and one of them to frown. What fraction of the whole group is frowning (smiling)? (1 eighth, 7 eighths) b) T calls out 9 Ps to stand in a line facing the class. T gives, e.g. a soft toy, to 3 of them to hold. What fraction of the whole group is holding a toy? (e.g. 3 ninths) Who can think of another fraction? (e.g. 1 third) (BB) What fraction of the group is not holding a toy? (6 ninths, or 2 thirds) c) T calls 10 Ps to stand in a line facing the class. T gives each of them a balloon to hold (2 of the balloons should be e.g. red) What fraction of the balloons are red? (e.g. 2 tenths) Who can think of another fraction? (e.g. 1 fifth) (BB) What fraction of the balloons are not red? (8 tenths, or 4 fifths) d) T calls 12 Ps to stand in a line facing the class (6 girls and 6 boys). What fraction of the whole group are girls? (e.g. 1 half) Who can think of another fraction? (e.g. 6 twelfths, 2 quarters) (BB) What fraction of the whole group are boys? (1 half, 6 twelfths, etc.) ———— *36 min* ————	Whole class activity to demonstrate fractions (other situations may be used instead) At a good pace! BB: a) $1 = 1$ eighth of 8 b) $3 = 3$ ninths of 9 　　 $= 1$ third of 9 c) $2 = 2$ tenths of 10 　　 $= 1$ fifth of 10 d) $6 = 6$ twelfths of 12 　　 $= 2$ quarters of 12 　　 $= 1$ half of 12 Demonstrate each fraction by dividing up the group Agreement, checking, praising
8	***Book 2, page 126*** Q.3　Read: *Practise division. Check with multiplication.* Review orally round class. Mistakes corrected. If problems, Ps write equations on BB. (Demonstrate where necessary.) e.g. $0 \div 4 = 0$, remainder 0　Check: $0 \times 4 + 0 = 0$ How many had all correct? Who made a mistake? What kind of mistake? etc. ———— *41 min* ————	Individual work, monitored, helped Can use enlarged copy master Some Ps may need × tables Discussion, agreement, checking, self-correcting Praising, encouragement only
9	**Brackets** T has BB already prepared. Revise order of operations first. BB:　　$15 - 3 \times 3 + 2 =$　　　　$(15 - 9 + 2 = 8)$ 　　　$(15 - 3) \times 3 + 2 =$　　　$(12 \times 3 + 2 = 38)$ 　　　$15 - 3 \times (3 + 2) =$　　　$(15 - 3 \times 5 = 0)$ 　　　$(15 - 3) \times (3 + 2) =$　　$(12 \times 5 = 60)$ 　　　$15 - (3 \times 3 + 2) =$　　　$(15 - 11 = 4)$ ———— *45 min* ————	Whole class activity (or individually if Ps wish) Ps come out to BB to write answer and explain reasoning. Class agrees/disagrees Praising Note the effect of the brackets

Bk2	R: Practice of operations **C: Division by 2, 3, . . ., 9** E: *Problem solving*	*Lesson Plan* *127*

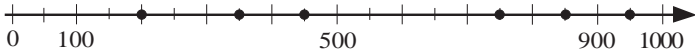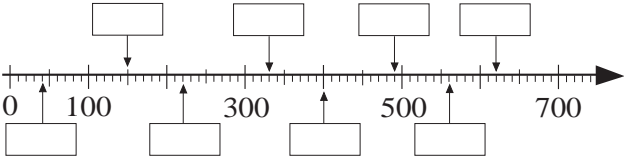| **Activity**		**Notes**

1	**Shopping**
	T has real items, with prices attached, on table at front of class, or pictures cut from magazines or copy master stuck to BB: e.g.
	
	T calls Ps in pairs to front of class, one to be the shopkeeper, the other to be the customer.
	
	14 p 19 p 28 p 11 p
	
	Customer chooses an item and pays with:
	
	37 p 38 p 11 p 60 p
	
	a) only 2 p and 1 p coins, but using not more than one 1 p coin.
	   T (or P) writ**es** equation on the BB. Class agrees/disagrees.
	   (Use items costing 19 p, 15 p, 14 p, 11 p)
	
	b) only 5 p and 1 p coins, but using not more than four 1 p coins.
	   T (or P) writes equation on the BB. Class agrees/disagrees.
	   (Use items costing 19 p, 15 p, 37 p, 38 p)
	
	c) only 10 p and 1 p coins, but using not more than nine 1 p coins.
	   T (or P) writes equation on the BB. Class agrees/disagrees.
	   (Use items costing 19 p, 28 p, 37 p, 60 p)
	
	At each part, involve different pairs of Ps choosing different items.
	——— *10 min* ———
		Whole class activity (or paired work)
		
		Use copy master (enlarged and cut out)
		
		Use real or model money (either in purses or stuck to side of BB) and Ps chooose what they need
		
		Agreement, checking, praising
		
		BB: e.g
		
		a) $19\,p = 9 \times 2\,p + 1 \times 1\,p$
		   $15\,p = 7 \times 2\,p + 1 \times 1\,p$
		
		b) $19\,p = 3 \times 5\,p + 4 \times 1\,p$
		   $37\,p = 7 \times 5\,p + 2 \times 1\,p$
		
		c) $19\,p = 1 \times 10\,p + 9 \times 1\,p$
		   $60\,p = 6 \times 10\,p$
		       etc.

2	***Book 2, page 127*** Q.1 Read: *Each number is the product of the 2 numbers directly below it. Fill in the missing numbers.* Deal with one part at a time. Ps may use their × tables. Review at BB with whole class. Ps come out to fill in each pair of numbers, explaining reasoning. Class agrees/disagrees. *Solution:* a) 48 6 8 3 2 4 3 1 2 2 b) 54 6 9 2 3 3 2 1 3 1 ——— *16 min* ———	Individual work, monitored, helped Drawn on BB or use enlarged copy master or OHP Reasoning, agreement, checking, praising
3 **Extension**	***Book 2, page 127***, **Q.2** Read: *Join up the equal pairs.* T could have the pencils cut out and stuck to each side of BB. Ps come out to choose a pair, explain reasoning and write value on BB. Class agrees/disagrees. BB: $42 \div 6 + 1 = $ 1 third of $24 = 8$ 3 quarters of $12 = $ 2 thirds of 15, minus $1 = 9$ $26 \div 2 - 3 = $ 1 quarter of $40 = 10$ 1 half of $8 = 35 \div 7 - 1 = 4$ Who can think of other pencils of equal value? ——— *22 min* ———	Whole class activity Use enlarged copy master or OHP (or cut up and colour the pencils individually) Ps can join up pencils in their exercise books too Reasoning, agreement, checking, praising Orally round class, praising
4	**Interlude** Physical exercises ——— *24 min* ———	Whole class in unison

Bk2		*Lesson Plan 127*
Activity		***Notes***

5	**Problem 1** Listen carefully, picture the story in your head and think how you would work out the answer. *In Baby Jane's cot there are 12 soft toys and a third as many rattles. How many rattles are there? How many toys are in the cot altogether?* Do the calculations in your exercise books and write the answer as a sentence. Review at BB with whole class. **A**, come and tell us how you worked out the answer. Who agrees? Who did it another way? etc. BB: *Plan:* Soft toys: 12 Rattles: $12 \div 3 = 4$ Altogether: $12 + 4 = 16$ *Answer:* There are 4 rattles. There are 16 toys altogether.	Individual work, monitored, helped T repeats slowly and a P repeats in own words Ps may use × tables to help them Discussion at BB Reasoning, agreement, checking, praising Demonstrate only if needed
	——— 29 min ———	
6	***Book 2, page 127*** Q.3 Read: *Practise division. Check with multiplication.* Deal with one part at a time. Review at BB with whole class. Mistakes corrected. Write 'difficult' calculations in detail on BB: e.g. $60 \div 5 = 50 \div 5 + 10 \div 5 = 10 + 2 = 12$ $66 \div 6 = 60 \div 6 + 6 \div 6 = 10 + 1 = 11$, etc.	Individual work, monitored, helped Written on BB or use enlarged copy master or OHP Agreement, checking, self-correcting, praising
	——— 35 min ———	

7	***Book 2, page 127, Q.4***
	
	Read: *Compare the results. Write the correct sign between them.*
	
	Look carefully at the statements. Do we need to work out the LHS and RHS first? (No, because, e.g.
	
	a) LHS $= 14 \times 6 = (10 + 4) \times 6 = 10 \times 6 + 4 \times 6$ $\boxed{=}$ RHS;
	LHS $= 9 \times 14 = 9 \times (7 + 7) = 9 \times 7 + 9 \times 7$ $\boxed{=}$ RHS
	
	b) LHS $= 32 \times 3 = (30 + 2) \times 3 = 30 \times 3 + 2 \times 3$ $\boxed{>}$ RHS;
	LHS $= 17 \times 4 = (8 + 9) \times 4 = 8 \times 4 + 9 \times 4$ $\boxed{>}$ RHS.)
	
	Let's see how quickly you can do these! If you think that the LHS (RHS) is bigger, hold up your left (right) hand, if LHS = RHS, hold up both hands, when I say.
	
	T writes on BB: 16×5 $\boxed{}$ $10 \times 5 + 6 \times 5$ Show me . . . now! (=)
	
	X, tell us how you got the answer. Who agrees? etc.
	
	Let's see who is clever enough to do this one!
	
	T writes on BB: 19×5 $\boxed{}$ $20 \times 5 + 1 \times 5$. Show me . . . now! (<)
	
	Y, tell us how you got the answer. Who agrees? etc.
		Whole class activity
		
		Written on BB
		
		Ps come to BB to write in missing signs
		
		Discussion, reasoning (with T's help), agreement, checking
		
		Or as above if T thinks Ps still do not understand
		
		In unison
		
		Reasoning, agreement, checking, praising
		
		In unison
		
		Reasoning, agreement, checking. praising

	——— 41 min ———	
8	**Problem 2** Listen carefully, picture the story in your head and think how you would work out the answer. *3 boys share 28 buns equally. How many buns does each boy get?* **Z**, what do you think we should do? Who agrees? etc. BB: 3 boys: 28 buns Each boy: $28 \div 3 = 9$, remainder 1 How can they share the extra bun equally? ($1 \div 3 = 1$ third) *Answer:* Each boy gets 9 whole buns and 1 third of abun.	Whole class activity Ps repeat in own words Ps suggest what to write Discussion. Ask several Ps BB: 1 third 1 third 1 third Agreement, checking, praising
	——— 45 min ———	

Bk2	R: Practice of operations C: **Division by 2, 3, . . ., 9** E: *Problem solving*	*Lesson Plan* *128*

Activity		Notes
1	**Secret numbers** T divides class into 6 teams, calls a P from each team out to front of class and gives each a number written on a card which they hold against their chest so that the rest of the class cannot see. The rest of the Ps in each team ask questions tn turn to determine their number. The P at the front can answer only 'yes' or 'no'. T keeps a tally of number of questions asked by each team. e.g. 14: it is less than 50? (Yes) Is it is even? (Yes) Does it have 2 digits? (Yes) Is it more than 20? (No) Is it divisible by 4? (No) Is it more than 15? (No) Is it 14? (Yes) The winning team deduces their number with the least questions. *————— 10 min —————*	Whole class activity Teams should be of roughly equal ability Encourage Ps to ask logical questions and keep in mind clues already given Rest of class applauds the winning team.
2	**Comparison** T has BB already prepared: a) $35 \div 7 + 3$ ☐ $99 \div 9$ Compare the 2 sides. Which is more? How many more? b) 3 quarters of 16 ☐ $36 \div 3$ c) $0 \div 6 + 8$ ☐ 1 fifth of 20 Ps come out to calculate values on LHS and RHS and then write the relevant sign between them. Class agrees/disagrees. *————— 16 min —————*	Whole class introduction Use enlarged copy master/OHP Reasoning, agreement, checking, praising BB: a) $35 \div \overset{8}{7} + 3 \underset{3}{<} \overset{11}{99} \div 9$ b) $3 \text{ quarters of } \overset{12}{16} = \overset{12}{36} \div 3$ c) $0 \div \overset{8}{6} + 8 = \underset{4}{>} 1 \text{ fifth of } \overset{4}{20}$
3	***Book 2, page 128, Q.1*** Read: *Each number is the product of the 2 numbers directly below it. Fill in the missing numbers.* Deal with one part at a time. Ps may use their × tables. Ps come out to fill in each pair of numbers, explaining reasoning. Class agrees/disagrees. *Solution:* a) 16 / 2 8 / 1 2 4 / 1 1 2 2 b) 32 / 4 8 / 2 2 4 / 2 1 2 2 c) 64 / 8 8 / 2 4 2 / 1 2 2 1 e.g. *————— 26 min —————*	Whole class activity (or individual work if Ps wish) Drawn on BB or use enlarged copy master or OHP Discussion, agreement, checking, praising N.B. Other solutions possible
4	**Interlude** Song, rhyme, exercises *————— 28 min —————*	Whole class in unison
5	***Book 2, page 128*** Q.2 Read: *Four ladybirds are sharing 22 leaves so that they all have an equal amount. How many leaves will each ladybird get and how many will remain?* Ps write missing numbers in their books. Review at BB with whole class. Demonstrate with 4 Ps at front of class only if necessary. BB: 22 leaves $\div$ 4 = 5 leaves, remainder 2 leaves *Check:* $4 \times 5 + 2 = 22$ What do you think the ladybirds would do with the 2 leaves remaining? (Divide each one so that there are 4 halves) *Answer:* Each will ladybird get 5 and a half leaves. *————— 33 min —————*	Individual work, monitored, helped Discussion at BB Agreement, checking, praising Accept '5 leaves each and 2 leaves left over'. Elicit that: 1 quarter of 22 = 5 and a half

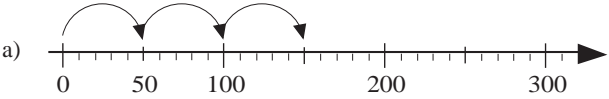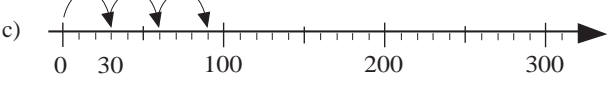| **Bk2**		*Lesson Plan 128*

Activity		**Notes**

6	***Book 2, page 128***
	
	Q.3 Read: *Practise division. Check with multiplication.*
	
	Deal with one part at a time. Review at BB with whole class. Mistakes corrected. Write 'difficult' calculations in detail on BB:
	e.g. $99 \div 9 = 90 \div 9 + 9 \div 9 = 10 + 1 = 11$
	
	BB: a) $26 \div 8 = 3$ $49 \div 8 = 6$ $72 \div 8 = 9$
	               remainder 2 remainder 1 remainder 0
	               $3 \times 8 + 2 = 26$ $6 \times 8 + 1 = 49$ $9 \times 8 = 72$
	
	      b) $39 \div 9 = 4$ $81 \div 9 = 9$ $99 \div 9 = 11$
	               remainder 3 remainder 0 remainder 0
	               $4 \times 9 + 3 = 39$ $9 \times 9 = 81$ $11 \times 9 = 99$
	
	———— *38 min* ————
			Individual work, monitored, helped
			
			Written on BB or use enlarged copy master or OHP
			
			Discussion, agreement, checking, self-correction
			
			Praising, encouragement only

7	***Book 2, page128***
	
	Q.4 Read: *In which order will the cars pass the finishing line?*
	             Write the position numbers in the boxes. The car with
	             the highest value will be 1st!
	
	Ps first calculate the value of each car and write at the side. Review with whole class. Calculations which caused problems written in detail on BB, e.g.
	
	$44 \div 2 = 20 \div 2 + 20 \div 2 + 4 \div 2 = 10 + 10 + 2 = 22$
	
	$69 \div 3 = 30 \div 3 + 30 \div 3 + 9 \div 3 = 10 + 10 + 3 = 23$
	(or $69 \div 3 = 6$ tens $\div 3 + 9$ units $\div 3 = 2$ tens $+ 3$ units $= 23$)
	
	Then Ps write the position numbers (1st, 2nd, 3rd, etc.) in the boxes on the cars. Colour the winning car red.
	
	Who can think of another way to describe the value of the red car? (e.g. $23 = 100 - 77 = 4 \times 5 + 3 = 30 \div 3 + 13$, etc.)
	
	Read: *Write the values in decreasing order.*
	
	Ps write out values in decreasing order to check their position numbers. Let's read them out together. Mistakes corrected.
	
	———— *45 min* ————
			Individual work, monitored, helped
			
			Use enlarged copy master or OHP
			
			Discussion, agreement, checking, praising
			
			Involve several Ps. Encourage creativity. Praising
			
			BB:
			$23 > 22 > 12 > 11 > 7 > 4 > 3 > 0$
			
			In unison

Bk2	R: 1-digit and 2-digit numbers **C: Extending the number line: counting beyond 100** E: *Writing numbers as words*	*Lesson Plan* *129*

Activity		Notes
1	**Numbers beyond 100** T has BB already prepared. Who can count the sweets? BB: Ps come out to BB to count. (e.g. in 10s, 20's or 40s, Let's write it as an addition on the BB: $40 + 40 + 40 + 10 = 80 + 40 + 10 = 100 + 20 + 10 = 100 + 30 = \ldots$ Who knows how to write 130? Who agrees? etc. How can we write it in words? (Ps come to BB to try) BB: 130 = one hundred and thirty T calls Ps out to write other 3-digit numbers in numbers and in words: 110, 120, (111, 112, 126) e.g. BB: 110 = one hundred and ten 126 = one hundred and twenty six *———— 6 min ————*	Whole class activity Drawn on BB or use enlarged copy master or OHP or even in 1s – be patient ! Ps might want to write the addition in other ways Agreement, praising With T's help Ps write as numbers and words in their books too Praising, encouragement only
2	***Book 2, page 129, Q.1*** What can you tell me about these diagrams? (Two squares, each with 10 rows of 10 columns; 1st square shows numbers 1 to 100, 2nd square shows numbers 101 to 200; some numbers are missing.) Read: *Write these numbers in the correct places in the two tables.* T says number, Ps come out in relay to write numbers in squares. Class agrees/disagrees. Ps write numbers in *Pbs* too. Read: a) *How many 10s are in 100?* (10 rows of 10: $10 \times 10 = 100$) b) *How many 100's are in 200?* ($2 \times 100 = 200$) How many 10s are in 200? (20 rows of 10: $2 \times 10 = 20$) • T says a 3-digit number and Ps come out to point to it on number square or to where they think it is on the 100s number line. • T could model some 3-digit numbers using toy money. (e.g. 100 p = £1, 150 p = £1 and 50 p, 200 p = £2, etc.) *———— 18 min ————*	Whole class activity Use enlarged copy master or OHP Involve several Ps At a good pace Agreement, checking, praising Use copy master, enlarged and cut into strips (Ps could each have copies on desks too) (Or use real money, so that Ps become familiar with mass and colour of different coins)
3	**Counting beyond 100** • Let's count together from 93 to 104 (117 to 126; 278 to 283) etc. Who can show us where they are on the number line? • Let's count in 100s from 0 to 1000. T points to 100s on number line. (If problems, Ps could have blank strips on desks to write on the numbers.) *———— 23 min ————*	Whole class activity In chorus. At speed Use copy master from *Activity 2* Label the blank strip with relevant numbers as required.
4	**Interlude** Song or rhyme *———— 25 min ————*	Whole class in unison

Bk2		*Lesson Plan 129*

Activity		*Notes*

5	***Book 2, page 129***
	
	Q.2 Read: *Join up the amounts in the middle to the matching numbers.*
	
	Let's read all the hundreds in increasing (decreasing) order.
	
	What do you notice about the 2 columns? (They are of equal value but on LHS numbers are written in words and on RHS numbers are shown as a multiplication of 100.)
	
	Ps first calculate the total value of each shape in the middle and write it above shape. Then they join the shapes to the labels.
	
	Review at BB with whole class. Mistakes corrected.
	
	————— *30 min* —————
		Individual work, monitored, helped
		
		Use enlarged copy master or OHP
		
		BB: $4 \times 50 = 200$
		       $4 \times 100 = 400$
		       $3 \times 200 = 600$
		       $2 \times 500 = 1000$
		
		Discussion, agreement, checking, praising

6 **Extension**	**Number line** Join up each amount to the corresponding point on the number line. BB: Talk about the number line segments first. Elicit that each represents a different part of the number line (0 to 10, 0 to 100, 0 to 1000) . Ps come out to choose an amount, say and write its total value and join up to the number line. Class agrees/disagrees. Compare the 3 parts. Show that a) is an enlarged part of b) and that a) and b) are enlarged segments of the number line in c). Elicit that: c) is 10 times b) and 100 times a); b) is 10 times a) and 1 tenth of c); a) is 1 tenth of b) and 1 hundredth of c). ————— *35 min* —————	Whole class activity Use enlarged copy maser or OHP Ps might notice the connection between each part without help Discussion, agreement Reasoning, agreement, checking, praising Discussion Extra praise if Ps deduce this without help
7	***Book 2, page 129*** Q.3 Read: *Colour in the number you think is the odd one out.* *Why did you choose it?* Review orally with whole class. Deal with all cases. Class decides whether reasons are valid, e.g. a) 137 (only 3-digit number) b) 210 (only number >100) ————— *40 min* —————	Individual work, monitored Discussion, reasoning, agreement, checking Accept any other valid reason Praising
8	**Reading numbers** • T writes 3-digit numbers (e.g. 310) on BB and Ps read them out. • T says a 3-digit number and Ps come out to write on BB in digits. Point to the hundreds (tens, units) digit. Class agrees/disagrees. ————— *45 min* —————	Whole class activity (or Ps write in *Ex. Bks*) At a good pace Praising, encouragement only

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Bk2	R: Number line **C: Extending the number line. Counting beyond 100** *E: Addition with/to whole hundreds*	*Lesson Plan* *130*
Activity		**Notes**

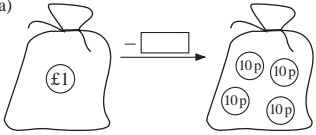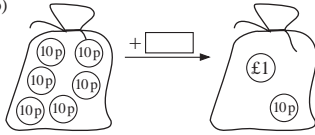|		
1	***Book 2, page 130, Q.1*** Read: *Write in the missing numbers.* Deal with one part at a time. Ps come out to fill in the numbers. Let's continue the numbers forwards (backwards). ———————— *5 min* ————————	Whole class activity Use enlarged copy master Ps write in their books too. Agreement In unison, at speed

2	**Number line 1**
	T has BB already prepared. Which numbers are shown by the dots?
	BB:
	
	☐ < 200 < ☐ ☐ < 750 < ☐
	☐ < 350 < ☐ ☐ < 850 < ☐
	☐ < 450 < ☐ ☐ < 950 < ☐
	Ps come out to point to a dot on the number line and write the relevant number below it. (350, 200, 450, 850, 750, 950) Then they point to and fill in the next nearest hundreds in the inequality and read it aloud.
	Who agrees? Who thinks something else? etc.
	• What is special about the number 1000? (smallest 4-digit number)
	• Which is the biggest (smallest) 3-digit number? (999, 100)
	———————— *12 min* ————————
		Whole class activity
		Drawn/written on BB or use enlarged copy master or OHP
		
		BB: 100 < 200 < 300
		  300 < 350 < 400
		   etc.
		Agreement, checking, praising
		Ask several Ps what they think. Praising

3	***Book 2, page 130*** Q.2 Read: *At which numbers have we written the letters?* *Write them in the boxes.* Deal with one part at a time. T tells Ps to note the beginning and end number on each number line and then to try out possible numbers by counting along the line, pointing to each tick before writing in the missing numbers. Review at BB with whole class. Mistakes corrected. Discuss the relationship between parts a), b) and c). Use the words '10 times', '100 times', '1 tenth', '1 hundredth') ———————— *18 min* ————————	Individual work, monitored, helped Use enlarged copy master/OHP Agreement, checking, praising BB: a) *a* = 3, *b* = 6, *c* = 8, *d* = 9 b) *a* = 30, *b* = 60, *c* = 80, *d* = 90 c) *a* = 300, *b* = 600, *c* = 800, *d* = 900
4	**Interlude** Exercises or action song ———————— *20 min* ————————	Whole class in unison
5	**Number line 2** BB: Let's read out the numbers marked on the number line. 'zero, forty, one hundred, one hundred and fifty, . . ., six hundred and twenty' Which numbers are missing from the large 'ticks'? Ps come out to write them on the number line. (200, 600) What does every small (medium, large) 'tick' show? (10s, 50s, 100s) ———————— *25 min* ————————	Whole class activity Drawn on BB or use enlarged copy master or OHP Ps come out to BB to write in missing numbers In unison, with T pointing to each number in turn Class agrees/disagrees Discussion, agreement Praising

Bk2		*Lesson Plan 130*

Activity		*Notes*
6	**Exercise Books**	Individual work under T's instruction but class kept together
	Let's draw a number line in 100s from 0 to 1000 in your *Ex. Bks*. (*Heading:* Lesson number and date)	
	What should we do first? How long should we make the line so that it fits in your *Ex. Bks*? (e.g. 10 cm) How far away from each other should we put the hundreds? (e.g. 1 cm) how should we label the ticks? (0 , 100, 200, . . ., 1000)	Monitored, helped Ps suggest what to do , with hints from T if necessary
	T demonstrates each step on the BB using a BB ruler (or plastic ruler and an OHP). Ps copy T, drawing and measuring using own rulers.	Encourage care and accuracy
	Step 1 Draw a horizontal line 10 cm long.	Make sure that the 'ticks' are the same distance apart
	Step 2 Draw a short vertical line (tick) at LHS of line and label '0'.	
	Step 3 Lay your ruler along the number line so that the zeros match up and mark every cm so that there are 10 marks.	Ps can extend horizontal lines if drawn too short at first
	Step 4 Draw short vertical lines (ticks) at each dot and label from 100 to 1000. Draw an arrowhead at RHS of number line.	Praising, encouragement only
	BB: 0 100 200 300 400 500 600 700 800 900 1000	
	Mark these numbers with a large dot on your number line:	Individual work, monitored
	200, 900, 100, 600, 500	T reads and also writes on BB
	Write them in increasing order. ($100 < 200 < 500 < 600 < 900$)	Ps recite in unison. Praising
	———— *30 min* ————	
7	***Book 2, page 130***	Individual work, monitored (helped with the hundreds)
	Q.3 Read: *Write additions about the pictures.*	
	Deal with one part at a time. Review at BB with whole class.	Drawn on BB or use enlarged copy master or OHP
	What do you notice about the answers? (e.g. The amounts in the middle pictures are 10 times more than the amounts on the LHS and 1 tenth of the amount on the RHS, etc).	Agreement, checking praising BB: a) $3 + 2 = 5$
Extension	• If you had 100 p, what single coin would you have? (£1)	b) $30 + 20 = 50$ c) $300 + 200 = 500$
	• If you had £10 in 1 p coins, how many coins would you have? (1000)	d) $4 + 5 = 9$ e) $40 + 50 = 90$ f) $400 + 500 = 900$
	———— *35 min* ————	
8	**Addition**	
	Let's calculate these sums. T writes on BB and class say them in unison, or T says them and Ps write on BB.	Whole class activity
	BB: $100 + 100 = 200$ $100 + 200 = 300$ $200 + 300 = 500$	T writes in answers as dictated by Ps
	$100 + 40 = 140$ $520 + 80 = 600$ $930 + 70 = 1000$	Ps copy into *Ex. Bks* too
	Ps come out to show each answer on number square or number line.	Agreement, checking, praising
	———— *40 min* ————	
9	***Book 2, page 130***	Individual work, monitored, helped
	Q.4 Read: *Join up the numbers to the number line.*	
	Review at BB with whole class. Mistakes corrected.	Drawn on BB or use enlarged copy master or OHP
	At each number T asks, 'How many is it from100 (to 200)'?	
	Who can show us where the number 105 (195) would be on the number line? Ps come out to point. Class agrees/disagrees.	Discussion, agreement, checking praising
	———— *45 min* ————	

Bk2	R: Mental calculation **C: Extending the number line. Counting beyond 100** *E: Addition and subtraction with hundreds and tens*	*Lesson Plan* *131*

Activity		*Notes*
1	**Jumping along the number line.** T has BB already prepared. BB: a) Study this number line. Think what size the jumps are. Who can come and draw more jumps of equal value? Ps come out to BB to draw jumps and write and say the number landed on. What value is each jump? (50) How many jumps did we need? (6) Repeat in similar way for b) and c). ——— *8 min* ———	Whole class activity Drawn on BB or use enlarged copy master or OHP Class points out errors With T's help Class agrees/disagrees Agreement, checking, praising
2	**Writing numbers** Write these numbes with digits in your exercise books. (*Heading*: Lesson number and date) T writes on BB and says, e.g. a) Two hundred and seventy Ps write: (270) b) Three hundred and forty (340) c) Five hundred and ten (510) d) Nine hundred and ninety (990) Review at BB with whole class. Ps show each on number square and/or number line. Let's say say them in increasing order. ——— *14 min* ———	Individual work, monitored, helped Discussion at BB Agreement, checking praising In unison (with T's help)

3
 	
Extension
	Book 2, page 131
	Q.1 Read: *Write subtractions about the pictures.*
	Deal with one part at a time. Review at BB with whole class.
	What do you notice about the answers? (e.g. The amounts in the middle pictures are 10 times more than the amounts on the LHS and 1 tenth of the amount on the RHS, etc.)
	• If you had £4, how many 1 p (10 p) would you have? (400, 40)
	• If you had 600 1 p coins, how many £s is that? (£6)
	
	——— *22 min* ———
		Individual work, monitored (helped with the hundreds)
		Drawn on BB or use enlarged copy master or OHP
		Agreement, checking, praising
		BB: a) $5 - 4 = 1$
		     b) $50 - 40 = 10$
		     c) $500 - 400 = 100$
		     d) $6 - 3 = 3$
		     e) $60 - 30 = 30$
		     f) $600 - 300 = 300$

4	**Interlude** Hands on heads on desks, counting in 100s to 1000 and back to zero. ——— *24 min* ———	Whole class counting mentally
5	**Oral work** Tell me the next nearest numbers to: 151, (347, 715, 102, etc.) Repeat for next nearest tens (hundreds). Use the number line if needed. ——— *30 min* ———	Whole class activity T chooses Ps at random BB: $150 < 151 < 152$, etc. Praising only

Bk2		*Lesson Plan 131*

Activity		*Notes*
6	***Book 2, page131*** Q.2 Read: *Join the picture to the corresponding point on the number line. Write the numbers below the line.* T tells Ps to write the values below the rectangles first of all. Review quickly with whole class. Mistakes corrected. Elicit that the ticks mark every 10 from 100 to 200. Ps join up pictures to number line and write in numbers. Review a BB with whole class. Who could tell me an addition for each picture? (e.g. $100 + 20 = 120$, $100 + 60 = 160$, etc.) —————— *35 min* ——————	Individual work, monitored, helped Drawn on BB or use enlarged copy master or OHP Discussion at BB Agreement, checking, self-correcting Class agrees/disagrees Praising
7	***Book 2, page 131, Q.3*** Read: *Fill in the missing numbers. Use the number line to help you.* Which equation do these jumps show? ($270 + \boxed{} = 340$) **A**, come and explain the 1st column to us. Who agrees? Who thinks something else? (First jump 30 to next nearest hundred, 300, then jump another 40 to 340.) Ps come out in pairs to point to numbers, draw the jumps and write numbers on number line and in equations. Class agrees/disagrees. How many would I have to jump to get from from 90 to 120? ($10 + 20 = 30$) —————— *40 min* ——————	Whole class activity Drawn on BB or use enlarged copy master or OHP Reasoning, demonstration, agreement, checking, praising BB: $270 + 30 \overset{70}{+} 40 = 340$ $340 + 60 \overset{80}{+} 20 = 420$ $420 + 80 \overset{90}{+} 10 = 510$

8
 	
Extension
	Book 2, page 131
	
	Q.4 Read: *Write these numbers using digits.*
	        a) one hundred and forty; four hundred
	        b) two hundred and ten; five hundred
	
	Review at BB with whole class. Mistakes corrected.
	
	How far is from 140 to 210? How could we calculate it? Who could come and show us on the BB? Who agrees? Who thinks something else?
	
	Repeat for 140 to 400 (210 to 500) if Ps understand.
	(BB: $140 + 60 + 200 = 400$, $210 + 90 + 200 = 500$)
	
	—————— 45 min ——————
		Individual work, monitored
		
		Agreement, self-correction
		
		Whole class discussion
		Ps suggest what to do
		BB: $140 + 60 + 10 = 210$
		or $140 + 70 = 210$, etc.
		Praising only

Bk2	R: Mental calculation **C: Extending the number line. Counting beyond 100** E: *Addition and subtraction*	*Lesson Plan* *132*

Activity		Notes
1	**Secret numbers** Which number am I thinking of? a) Its next nearest hundreds are 200 and 300. It is 10 more than the smaller of these. What is my number? Show me . . . now! (210) b) Its next nearest tens are 360 and 370. It is 2 less than the bigger of these. What is my number? Show me . . . now! (368) c) Its next nearest hundreds are 100 and 200. It is bigger than 198. What is my number? Show me . . . now! (199) ———— *6 min* ————	Whole class activity Ps have scraps of paper on desks to write the numbers in large digits and show to T on command Ps may use number squares or number lines if needed Agreement, checking, praising
2	**Odd one out** T has BB already prepared. BB: (100 + 50) (70 + 80) (60 + 90) (110 + 40) (80 + 80) Which do you think is the odd one out? **A**, what do you think? Why? Who agrees with **A?** Who thinks another one? Why? etc. (e.g. $80 + 80 = 160$, but all the others sum to 150) ———— *10 min* ————	Whole class activity Ask several Ps what they think Ps give reasoning too Agreement, checking, praising
3	***Book 2, page 132, Q.1*** Read: *Fill in the missing numbers.* What can you tell me about this number line? (100 to 400, large ticks mark the hundreds, small ticks mark the tens) Ps come out to BB to choose an addition, write number below number line and complete the addition. Ps say the whole equation, e.g. $100 + 10 = 110$, $130 + 80 = 210$, etc.) Class agrees/disagrees. T writes additions in detail on BB, e.g. $130 + 70 + 10 = 130 + 80 = 210$ ———— *18 min* ————	Whole class activity Drawn on BB or use enlarged copy master or OHP Ps may write in their books too Reasoning, agreement, checking, praising
4	**Interlude** Physical exercises (to music) ———— *20 min* ————	Whole class in unison
5	**Inequality** Let's solve this inequality. BB: $100 + 250 <$ ☐ $< 370 - 10$ What should we do first? (Calculate values of RHS and LHS) Ps come out to write in values. Class agrees/disagrees. What numbers could the rectangle be? T asks several Ps BB: ☐ : 351, 352, 353, 354, 355, 356, 357, 358, 359 ———— *25 min* ————	Whole class activity Ps suggest what to do BB: $100 + 250 = 350$ $370 - 10 = 360$ T writes what Ps dictate Show on number line if possible

6	**Ordering 3-digit numbers**
	
	T has 3-digit numbers written (or stuck) on BB:
	
	    340 260 758 521 819 695
	
	Let's put these numbers in increasing order. Pupils come out to write (arrange) one number at a time. Ps write them in your exercise books too.
	
	(Elicit that Ps should look at hundreds digit first, then tens digit, then units digit to decide which number is smallest/biggest.)
	
	———— *31 min* ————
		Whole class activity
		
		Ps read numbers in unison first
		
		BB: $260 < 340 < 521 < 695$
		     $< 758 < 819$
		
		Discussion, agreement, praising

Bk2		*Lesson Plan 132*
Activity		***Notes***
7	***Book 2, page 132*** Q.2 Read: *Colour the items we can pay for exactly with only 10 p coins.* Talk about each picture in turn. Which do you like best (least)? Where (when) would you buy them? T explains task. How many 10 p coins are equal to £1? (10) Review at BB with whole class. Model with coins if problems. ———— *38 min* ————	Whole class discussion first, then individual work, monitored, helped Use enlarged copy master/OHP Discussion, agreement, checking, praising
8	***Book 2, page 132*** Q.3 Read: *Practice addition and subtraction.* Let's see how many of these you can do in 5 minutes! Review orally round class. Mistakes corrected. (Or done orally as whole class activity, with T writing what Ps dictate on BB) ———— *45 min* ————	Individual work, monitored, helped Agreement, self-correcting Do not expect too much! Praising, encouragement only

Bk2	R: Mental calculation **C: Hundreds, tens and units (using money)** E: *Writing 3-digit numbers*	*Lesson Plan* *133*

Activity		**Notes**
1	**Money** What is our money like? What coins (notes) do we have? T discusses with class, using real coins and bank notes if possible, or toy money. Ps could have set of toy money on desks if possible. Elicit that standards units used are pounds (£) and pence (p) BB: £1 = 100 p, £1 = 10 ten pence coins $\quad\quad\quad\quad\quad\quad\quad\quad$ 10 × 10 p = 100 p = £1 $\quad\quad$ Coins: 1 p, 2 p, 5 p, 10 p, 20 p, 50 p, £1, £2 $\quad\quad$ Notes: £5, £10, £20, £50, £100 • T (or P) says an amount and Ps come out to choose correct coins. • T (or P) hold up some coins and Ps say the amount. ——— *6 min* ———	Whole class activity Involve several Ps in the discussion Ps copy into their exercise books Or paired work using using toy money
2 **Extension**	***Book 2, page 133, Q.1*** Read: *Complete the table.* T explains what each column in table means. Ps come out to fill in missing items and explain reasoning, one row at a time. Class agrees/disagrees. Ps may write in *Pbs* too. (Numbers in 4th column are: 26, 126, 226, 326, 526). Which row is missing? (426, but also 626, . . .) What would we write and draw if we made a row for 426 (626, . . .)? ——— *14 min* ———	Whole class activity Use enlarged copy master or OHP Discussion, reasoning, agreement, checking Praising Ps come out to BB to show or Ps draw/write in *Ex. Bks*
3	**Operations** T has BB already prepared. What has changed? How has it changed? BB: a) $\qquad\qquad$ b) Deal with one part at a time. Ps come out to BB to write equations, explaining reasoning. Class agrees/disagrees. Demonstrate with real or model money if there are prolems. ——— *20 min* ———	Whole class activity Drawn on BB or use enlarged copy master or OHP Discussion, reasoning, agreement, checking, praising BB: a) £1 = 100 p, $\quad\quad$ 100 p – 60 p = 40 p b) 60 p + 50 p = 110 p $\quad\quad\quad\quad$ = £1 and 10 p
4	**Interlude** Song or rhyme ——— *22 min* ———	Whole class in unison
5	**Paying amounts** In how many different ways could we pay these amounts? a) **A**, how could you pay £1? (e.g. a £1 coin) How else could we pay £1? $\quad$ BB: e.g. £1 = 2 × 50 p = 5 × 20 p = 10 × 10 p = 20 × 5 p $\quad\quad\quad\quad\quad$ = 50 × 2 p = 50 p + 20 p + 20 p + 10 p, etc. b) B, how could you pay 80 p? (e.g. 4 × 20 p) How else could we pay 80 p? $\quad$ BB: e.g. 80 p = 4 × 20 p = 8 × 10 p = 10 × 5 p + 3 × 10 p $\quad\quad\quad\quad\quad$ = 50 p + 20 p + 10 p, etc. ——— *28 min* ———	Whole class activity (or paired work) Ps suggest different ways T (or P) lists (or sticks relevant coins)on BB Class agrees/disagrees Checking, praising Elicit which way would use the least number of coins.

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Bk2

Lesson Plan 133

Activity		*Notes*

6	***Book 2, page 133***
	
	 Q.2 Read: *Show different ways we could pay these amounts.*
	          Complete the table.
	
	 T (or P) explains table using the first 2 rows already completed. (e.g. 1st column on LHS shows amount to be paid; 1st row shows one way of paying £2 and 2nd row shows a different way; a dash means that none of this amount was used.)
	
	 Review at BB with whole class. T (or Ps) write equations on BB as a check. Deal with all cases. Demonstrate if necessary with model money.
	
	 Possible solution:
		Whole class explanation followed by individual work, monitored, helped
		
		 Drawn on BB or use enlarged copy master or OHP (or coins stuck to BB)
		
		 Reasoning, agreement, checking, praising
		
		 BB: e.g.
		 $£2 = 200\,p = 20 \times 10\,p$, or
		 $£2 = 200\,p = 4 \times 50\,p$
		          etc.
		
		 $£23 = 1 \times £20 + 3 \times £1$, or
		 $£23 = £10 + 6 \times 50\,p$,
		          etc.

Possible solution table:

	10 p	50 p	£1	£10	£20
£2	20	–	–	–	–
£2	–	4	–	–	–
£2	–	–	2	–	–
£23	–	–	3	–	1
£23	–	6	–	2	–
£23	–	–	23	–	–

Activity		*Notes*
Extension	Ps can write extra ways of paying the amounts in their exercise books. Which way uses least (most) coins? —— *35 min* ——	The more solutions found, the more praise given. Whole class discussion
7	***Book 2, page 133, Q.3*** Read: *Which of these could you buy? Draw pictures and write additions.* T has sets of cut-out items with prices attached stuck to BB and purses containing coins totalling each of the 4 amounts shown in *Pbs*. T talks about each item first. When would you eat them? Which is good for you? Which is your favourite? Why? **X,** come and choose a purse. **X** counts the money in his purse, chooses the items he can buy and sticks in unlabelled box drawn on BB. How much money has **X** in his purse? (e.g. £1 20 p) T labels box. What else could **X** have bought with his money? Who agrees? Who can think of other items X could have bought? etc. Repeat with 3 other Ps choosing from the 3 remaining purses. T (or Ps) writes equations on BB as a check. Ps can choose own way and draw/write in their books too. —— *40 min* ——	Whole class activity Use items from copy master enlarged, coloured, cut out and stuck to BB (or use whole copy master and Ps draw items in boxes) At a good pace Ask several Ps what they think BB: e.g $70\,p + 20\,p = 90\,p$ $£1 + 50 = £1\ 50\,p$ $70\,p + 70\,p + 70\,p = £2\ 10\,p$ $70\,p + 50\,p = £1\ 20\,p$ Reasoning, agreement, checking, praising
8	**Number line** Which numbers does this part of the number line show? (100 to 800) BB:	Whole class activity Drawn on BB or use enlarged copy master or OHP At a good pace Reasoning, agreement, checking praising P writes result above the operation first Class can think of other operations with the same result

Clouds: $60 + 90$, $300 + 450$, $120 + 110$

Number line: 100   200   300   400   500   600   700   800
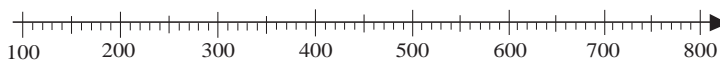
Clouds: $580 - 60$, $350 - 50$, $640 - 540$

Ps come out to choose a 'cloud' and join it to the corresponding point on the number line, saying the whole equation. Class agrees/ disagrees.

—— *45 min* ——

Bk2	R: Mental calculation **C: Hundreds, tens and units** E: *Writing 3-digit numbers*	*Lesson Plan* *134*

Activity		Notes

1 | **Revision of mass**

T has a pair of scales and one or two items to weigh. (Try to choose objects weighing between 600 g and 800 g, previously weighed by T)

What does this tool measure? (mass or weight) What standard units does it use? (g, kg) How many g are in one kg? (1000) (BB)

Ps come out to choose an item, weigh on scales, read the value and write on BB. Which item is heaviest (lightest)?

Notes:
Whole class activity
At a good pace
Discussion, agreement
P comes out to read the scale
BB: 1 kg = 1000 g (10 hundred)
Discussion, agreement, praising

___ *5 min* ___

2 | **Function machine**

T has BB already prepared. Who can tell us what the machine is doing? (Ask several Ps what they think.)

BB:
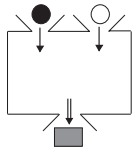
●	5	16	28	70	58	62
○	2 hundreds	3 hundreds	1 hundred	4 hundreds		
▭	205				658	362

Ps explain what is happening using the column already completed. (e.g. the rectangle is the sum of the black and white circles.)

Let's complete the table. Ps come out to choose a column and fill in the missing numbers or words. Class agrees/disagrees.

Who can write the rule in a mathematical way? Who can write it another way? etc. Let's check with values from the table.

Notes:
Whole class activity
Drawn on BB or use enlarged copy master or OHP (or real box with relevant shape cards)
At a good pace

Reasoning, agreement, checking, praising
BB: *Rule:* ● + ○ = ▭
▭ − ○ = ●
▭ − ● = ○

___ *12 min* ___

3 | *Book 2, page 134*

Q.1 Read: *Complete the table.*

T (or P) explains meaning of table. Do first row with the whole class first, writing a 'dash' in the hundreds column to show that there are no hundreds. Ps fill in the other rows in their books.

Review at BB with whole class. Mistakes corrected.

Elicit that a 'dash' meaning there are no tens or units is shown in the number by zero, e.g. 304 = 3 hundreds + 0 tens + 4 units, 350 = 3 hundreds + 5 tens + 0 units

Read: *Write the total at the bottom of each column.*

Do each column together, drawing coins and writing numbers in digits or in words, T on the BB and Ps in *Pbs*.

T points to one of the numbers (digits or words) and class reads it together. (T points to relevant coins as they are read.)

BB:

	Hundreds	Tens	Units	Number in digits	Number in words
	—	⑩ ⑩	①	21	twenty-one
	⑩⑩ ⑩⑩	—	① ① ① ①	304	three hundred and four
	⑩⑩	⑩	① ① ①	113	one hundred and thirteen
	⑩⑩ ⑩	⑩⑩ ⑩⑩	—	350	three hundred and fifty
Total	⑩⑩⑩ ⑩⑩ ⑩⑩⑩	⑩⑩ ⑩⑩ ⑩⑩ ⑩⑩	① ① ① ① ① ① ① ①	788	seven hundred and eighty eight

Notes:
Whole class introduction followed by individual work, monitored, helped

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

Discussion, agreement, checking, self-correcting, praising

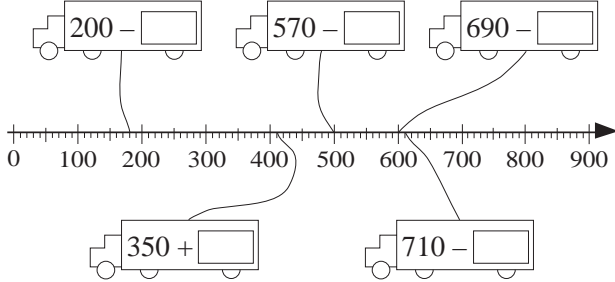Whole class activity, with Ps dictating what to write/draw

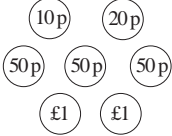In unison. At a good pace
With T's help. Praising

[Preparation for vertical addition and place value.

T can write numbers again as below and Ps can point to the hundreds (tens, units) digits]

BB: 2 1
3 0 4
1 1 3
3 5 0
7 8 8

___ *20 min* ___

Bk2

Lesson Plan 134

Activity		*Notes*
4	**Interlude** Action song	Whole class in unison
	22 min	

5   ***Book 2, page 134***

Q.2   Read: *Colour as many 100s, 10s and 1s as the number at the bottom shows.*

T explains task. Do part a) with the whole class first.

a) Let's all read the number at the bottom of the column: 'three hundred and twenty five'.

A, come and point to the hundreds column. How many hundreds should we colour in? (3) Who agrees? **A** colours in 3 of the hundreds on BB and Ps colour in their books

B, come and point to the tens column. How many tens should we colour in? (2) Who agrees? **B** colours in 2 of the tens on the BB and Ps colour in their books.

C, come and point to the units column. How many units should we colour in? (5) Who agrees? **C** colours in 5 of the units on the BB and Ps colour in their books.

Parts b) to d) done as individual work. Deal with one part at a time. Review at BB with whole class. Mistakes corrected.

Lets read out the numbers in increasing (decreasing) order.

(Elicit that Ps should look at the hundreds first, then the tens, then the units to decide which number is bigger/smaller.)

Notes: Whole class introduction. Drawn on BB or use enlarged copy master or OHP. In unison, T pointing to relevant column. Agreement, praising (×3). Individual work, monitored, helped. Self-correction. In unison, at a good pace. BB: 186 < 207 < 325 < 940

32 min

6   ***Book 2, page 134***

Q.3   Read: *Find the rule. Complete the table. Write the rule in different ways.*

T (or P) explains what each row of table means using the columns already completed. (Top row + middle row = bottom row; bottom row – middle row = top row, etc.)

Ps complete table in books. Review at BB with whole class. Mistakes corrected. Which number is biggest (smallest)?

BB:

☆	106	245	200	180	250	150	400	356
☽	1 ten	2 hundreds	1 ten	2 hundreds	2 hundreds	5 hundreds	11 tens	5 tens
☼	116	445	210	380	450	650	510	406

Who can write the rule in a mathematical way? Who agrees? Who can write it another way? etc. Check with values from table.

Notes: Individual work, monitored, helped. Table drawn on BB or use enlarged copy master or OHP. Reasoning, agreement, checking, praising.

Rule: ☼ = ☆ + ☽
☽ = ☼ – ☆
☆ = ☼ – ☽

Check: 245 + 200 = 445

40 min

7   **Oral work**

Revise standard units of measure: length, money, capacity.

• How many cm are in 4 m 26 cm (3 m 17 cm)? (426 cm, 317 cm)
• How many pence are in £1 40 p (£1 45 p)? (140 p, 145 p)
• How many centilitres are in 2 litres 81 cl (4 litres 40 cl)? (281 cl, 440 cl)

Extension

How many g are there in 1 kg? (1000 g = 10 hundred g)

• How many kg in 2000 g (5000 g)? (2 kg, 5 kg)

Notes: Whole class activity. BB: 1 m = 100 cm; £1 = 100 p; 1 litre = 100 cl. At speed round class. T reverses questions too, e.g. How many m in 500 cm? (5). BB: 1 kg = 1000 g
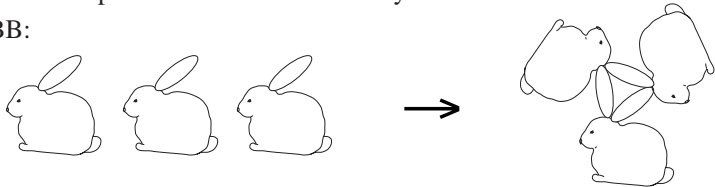
45 min

Bk2	R: Mental calculation **C:** **Hundreds, tens and units** E: *Writing 3-digit numbers*	*Lesson Plan* *135*

Activity		*Notes*
1	**Chain calculation** Listen carefully, do each calculation in your heads and show me the final answer when I say. (Ps nod heads after step to show they have done it.) Ps can write the final answer (in large digits) on sheets of scrap paper. Ps can have '100s' number line on desks to help them. T: '120 + 10' ⁽¹³⁰⁾ . . . '– 20' ⁽¹¹⁰⁾ . . . '+ 100' ⁽²¹⁰⁾ . . . '+ 30' Write the answer on your sheet and show me . . . now! (240) **A**, explain to us how you got your answer. Who agrees? Who thinks something else? Repeat using other numbers and operations. _____ *5 min* _____	Whole class activity T waits until majority of Ps have nodded their heads before continuing to next step In unison Reasoning, agreement, checking, praising Ps can say the number and operations too.
2	**Number line** Let's fill in the missing numbers according to their position on the number line. BB: [200 – □] [570 – □] [690 – □] number line 0 100 200 300 400 500 600 700 800 900 [350 + □] [710 – □] **B**, come and choose a truck. Which number is it joined up to on the number line? (e.g. 180) What do you think the missing number is? (20) Why do you think that? (Because 200 – 20 = 180) Who agrees? Who thinks something else? etc. Repeat with other Ps until all missing numbers are filled in. _____ *12 min* _____	Whole class activity Drawn on BB or use enlarged copy master or OHP Ps recite hundreds at speed with T pointing to each Discussion about medium and small 'ticks' (50s, 10s) Ps come to BB to write numbers and explain reasoning Class agrees/disagrees and applauds good work Write equations on BB if there are problems
3	***Book 2, page 135*** Q. 1 Read: *Write the total amount below each column.* T leads Ps through part a) first: How many 100s are there? (5) Write 5 in the box below the hundreds. (T writes on BB) How many 10s are there? (2) Write '2' in the box below the tens. (T writes on BB) How many 1s are there? (3) Write '3' in the box below the 1s (units). (T writes on BB) What 3-digit number have we written? (523) Ps do parts b) to d) in their books. Review at BB with whole class. Ps read their numbers and explain their reasoning. Mistakes corrected. Discuss importance of writing '0' when no tens (units). *Solution:* a) 523, b) 245, c) 402, 540) _____ *17 min* _____	Whole class introduction Drawn on BB or use enlarged copy master or OHP Class dictates what to write, T writes on BB, Ps in *Pbs* In unison Reasoning, agreement, checking, praising

Bk2			*Lesson Plan 135*

Activity			*Notes*
4	**Paying amounts**		Whole class activity
	T has one 10 p, one 20 p, three 50 p and two £1 coins stuck to BB.		
	We have these coins in our purse. Which of these amounts could we pay exactly (i.e. with no changed needed)? How could we do it?		BB: ⑽p ⑳p 50p 50p 50p £1 £1
	BB: 60 p YES 50 p + 10 p = 60 p		
	90 p NO		Or T has a purse containing real coins and Ps choose coins from it.
	£1 30 p YES e.g. £1 + 20 p + 10 p		
	£2 30 p YES e.g. £1 + £1 + 20 p + 10 p = £2 30 p		
	£4 NO, because total amount of all the coins is		
	£1 + £1 + 50 p + 50 p + 50 p + 20 p + 10 p = £3 80		
	£3 80 p < £4		
	T points to each and class shouts 'Yes' or 'No'. Ps come out to confirm whether answers are correct by choosing the relevant coins. Who can think of another way we could pay it? Who agrees? etc.		Agreement, reasoning, checking, praising
Extension	• How could we pay 90 p if we were allowed to receive change?		e.g. pay £1, and get 10 p change
	• How much more money would we need to pay £4? (20 p)		£3 80 p + 20 p = £3 + £1 = £4
	⎯⎯ *25 min* ⎯⎯		
5	**Interlude**		
	Song, rhyme, exercises		Whole class in unison
	⎯⎯ *27 min* ⎯⎯		
6	***Book 2, page 135***		
	Q.2 Read: *Join up the equal amounts.*		Individual work, monitored, helped
	Ps read numbers in relay round class first. Ps join up in their books too.		Use enlarged copy master/OHP
	Review at BB with whole class. Mistakes corrected.		Agreement, checking, praising
	⎯⎯ *32 min* ⎯⎯		
7	***Book 2, page 135***		Whole class discussion
	Q.3 Read: *Join up the equal amounts.*		Draw on BB or use enlarged copy master or OHP
	What is this creature? (octopus) Where do you find it? (in the sea) How many legs does it have? (8) (relate to octagon)		In unison
	Let's all say the numbers on the octopus's legs, starting at 100 and reading clockwise (anti-clockwise). (BB)		BB: clockwise ↻
	Ps write values beside rectangles and join up to octopus in their books.		anticlockwise ↺
	Review at BB with whole class. Deal with all mistakes.		Discussion, checking, agreement, praising
	If problems, write equation on BB or show on number line (square).		
	⎯⎯ *38 min* ⎯⎯		
8	***Book 2, page 135***		Individual work, monitored, helped
	Q.4 Read: *Complete the table. The rule is: the square minus the triangle equals the circle.*		Drawn on BB or use enlarged copy master or OHP
	What do you notice about the table? (Values shown are quantities of measure: money, mass, capacity) Revise standard units used.		Reasoning, agreement, checking, praising
	Ps come out to show which are which. Ps complete table in *Pbs*.		Whole class discussion
	Review at BB with whole class. Mistakes corrected.		*Rule:* △ = □ − ○
	Who can write the rule in another way? Who agrees? Is there another way? Check with values from the table.		□ = △ + ○
	⎯⎯ *45 min* ⎯⎯		

Bk2	R: Calculation practice **C: Hundreds, tens and units** E: *Multiplication and division beyond 100*	*Lesson Plan* *136*

Activity		*Notes*

1	**Secret money**
	
	I have an amount of money in this purse (T holds up). How much is in the purse? I will give you a clue to work it out. Write the amount on a sheet of paper and show me it when I say.
	
	• In the purse there are: one £10 note, two £1 coins and three 10 p coins. Show me the amount ... now! (£12 30 p)
	
	   A, explain to us how you worked it out. Let's check. **A** takes out the £10 note and coins and sticks them on the BB as a check.
	
	• I had this note and these coins (£12 30 p) in my purse and I bought some things in a shop. I now have only one of these left. What amount could I have paid to the shop assistant?
	
	   B, what do you think? Who agrees? Who thinks something else? etc.
	   Elicit that:
	
	   If £10 note remains, amount paid was £2 + 30 p = £2 30 p
	   If £1 coin remains, amount paid was £10 + £1 + 30 p = £11 30 p
	   If 10 p coin remains, amount paid was £10 + £2 + 20 p = £12 20 p
		Whole class activity
		
		T has purse already prepared with model (or real) £10 note and coins
		
		Class show answer in unison
		
		Reasoning, agreement, checking, praising
		
		Ps dictate solutions
		
		Reasoning, agreement, checking, praising
		
		Ask several Ps what they think
		
		Demonstrate each case in logical order on BB
		
		Praising

	6 min	

2	***Book 2, page 136***
	
	Q.1 Read: *Bob has only £5 notes in his wallet. He is thinking of buying one of these.*
	
	       Buying which item would give him:
	
	       a) most change back,
	       b) least change back?
	
	    Talk about each picture first. T writes names above each (or can use letters A, B, C, D, E) to make it easier for Ps to specify in their books.
	
	    For each item, think about how many £5 notes you would give the shop assistant and how much change you would receive.
	
	    Deal with one part at a time. Review at BB with whole class. Ask several Ps what they think.
	
	                             BB:
	
		Ball	*Bag*	*Badminton set*	*Slippers*	*Car*

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£5 – £4 = £1	£10 – £7 20 p = £2 80 p	£20 – £15 90 p = £4 10 p **a) Most change**	£10 – £6 10 p = £3 90 p	£10 – £9 30 p = 70 p **b) Least change**		Individual or paired work, monitored, helped Ps could have toy money on desks to help them Discussion about how to solve the problem T gives hints if necessary Reasoning, agreement, checking, praising Demonstrate with notes and coins with whole class if necessary.
	12 min	

3	**Problems**
	
	Listen carefully, picture the story in your head and think how you would work out the answer.
	
	a) *How much do 3 pens cost if one pen costs 40 p?*
	
	   C, how you would you work out the answer? Who agrees? Who would do it another way? etc.
	
	   Plan: 1 pen: 40 p 3 pens: 3 × 40 p
	
	   Calculation: 3 × 40 p = 40 p + 40 p + 40 p = 120 p = £1 20 p
	
	   Answer: 3 pens cost £1 20 p.
		Whole class activity
		
		Ps suggest what to do
		
		Agreement, checking
		
		T writes on BB and Ps write in their books
		
		Praising

Bk2		*Lesson Plan 136*
Activity		***Notes***

	b) *How many pens can be bought for £2 40 p?* **D**, how you would you work out the answer? Who agrees? Who would do it another way? etc. *Plan:* Total cost: £2 40 p = 240 p Each pen: 40 p *Calculation:* ☐ × 40 p = 240 p, 240 p ÷ 40 p = 6 or 40 p + 40 p + 40 p + 40 p + 40 p + 40 p = 240 p, so 6 × 40 p = 240 p *Answer:* 6 pens can be bought for £2 40 p. ———— *19 min* ————	Whole class activity Ps suggest what to do Reasoning, agreement, checking T writes on BB and Ps copy in their exercise books Or from a), 3 pens: £1 20 p 6 pens: 2 × £1 20 p = £2 40 Praising
4	**Interlude** Song, rhyme, exercises ———— *21 min* ————	Whole class in unison

5	***Book 2, page 136***
	Q.2 Read: *Write the additions and subtractions in a shorter way.*
	      Write the answers too.
	
	Do parts a) and b) with whole class first to show Ps what to do.
	
	Then Ps do parts c) to g) in their books. Review at BB with whole class. Mistakes corrected.
	Solutions:
	a) 80 + 80 + 80 = 3 × 80 = 240
	b) $\underbrace{25 + 25 + 25 + 25}_{100} + \underbrace{25 + 25 + 25}_{75}$ = 100 + 75 = 175
	c) 70 + 70 = 2 × 70 = 140
	d) 100 + 100 + 100 + 100 = 4 × 100 = 400
	e) 250 + 250 = 2 × 250 = 500
	f) 120 − 30 − 30 − 30 = 120 − 3× 30 = 120 − 90 = 30
	g) 150 − 50 − 50 − 50 = 150 − 3 × 50 = 150 − 150 = 0
	———— *29 min* ————
		Whole class activity to start
		
		Then individual work, monitored, helped
		
		Discussion at BB
		
		Agreement, checking, praising
		
		Or
		
		b) 7 × 25 = 7 × (20 + 5)
		      = 7 × 20 + 7 × 5
		      = 140 + 35
		      = 175
		
		e) 2 × 250 = 2 × (200 + 50)
		      = 2 × 200 + 2 × 50
		      = 400 + 100
		      = 500

6	**Operations** T writes these numbers on the BB: 240 2 10 5 48 120. How can we make 24 from any two of these numbers? What operation should we use? (division) T writes on BB and Ps in exercise books. ———— *33 min* ————	Whole class activity Ps suggest what to write BB: 240 ÷ 10 = 24, 120 ÷ 5 = 24, 48 ÷ 2 = 24 Discussion, agreement, praising
7	***Book 2, page 136*** Q.3 Read: *Write in the missing numbers.* Deal with one part at a time. Review on BB with whole class. Mistakes corrected. (Ps may use number lines if necessary.) (Or done as mental practice. Ps showing final answer with n/cards.) ———— *40 min* ————	Individual work, monitored, helped Written on BB or use enlarged copy master or OHP Aagreement, checking, praising

8	***Book 2, page 136***
	Q.4 Read: *How many 40 cl jars can be filled from a 3 litre 20 cl*
	      tub of honey?
	
	Ps write plan, do calculation in *Pbs* and write answer in relevant box. Review at BB with whole class (or Ps can show with number cards).
	———— *45min* ————
		Individual work, monitored
		Reasoning, agreement, praising
		BB: 1 tub: 3 litre 20 cl = 320 cl
		    1 jar: 40 cl
		
		320 cl ÷ 40 cl = 8 (jars)

Bk2	R: Calculation practice **C: Revision and practice. Puzzles and challenges** E: *Relationary topics. Transposition. Rotation*	*Lesson Plan* *137*

Activity		*Notes*

1	**Opposites**
	• Tell me the opposite of what I say and think of an example for each. e.g.
	
	    T: Ps: Examples: e.g.
	    even number odd number (4, 5)
	    addition subtraction $(14 + 2 = 16, \; 18 - 7 \; = \; 11)$
	    multiplication division $(5 \times 4 = 20 , \; 20 \div 4 \; = \; 5)$
	    divisible by 3 not divisible by 3 (12, 35)
	    true statement false statement $(6 > 5 , \; 8 < 4)$
	    1-digit number more than 1 digit number (7; 26, 141, etc.)
	
	• How many even numbers are there? unlimited number or > 0)
	• How many 1-digit numbers are there? (10)
	• How many 2-digit numbers are there? (90)
	                           — *8 min* —
		Whole class activity
		
		T chooses Ps ar random, first P_1 to give opposite name and then P_2 and P_3 to give examples
		
		Class agrees/disagrees
		
		Ps could think of opposites too
		
		T could introduce the word infinite (BB) here.
		
		Discussion, agreement, checking on number line/square. Praising

2	**Revision of Mass**
	How can we work out what
	these fruits weigh?
	BB:
	
	A, what do we know from the picture? (1 plum = 20 g) Who can tell us what to do next? **B**, come and explain what you think. Who agrees? etc.
	Solution: e.g.
	LH balance:
	6 plums = 2 lemons, so 3 plums = 1 lemon. $3 \times 20 \text{ g} \; = \; 60 \text{ g}$
	1 lemon weighs 60 g
	
	Middle balance:
	3 lemons = 1 apple + 1 plum, $3 \times 60 \text{ g} = 1 \text{ apple} + 20 \text{ g}$
	                           so 1 apple $= \; 180 \text{ g} - 20 \text{ g} \; = \; 160 \text{ g}$
	1 apple weighs 160 g
	
	RH balance:
	1 apple + 2 plums = 1 pear, $160 \text{ g} + 2 \times 20 \text{ g} \; = \; 160 \text{ g} + 40 \text{ g} = 200 \text{ g}$
	1 pear weighs 200 g
	                           — *15 min* —
		Whole class activity
		
		Drawn on BB or use enlarged copy master or OHP
		
		(or use real balance and a selection of real or plastic fruit pre-weighed so T knows what to expect)
		
		Give Ps time to think
		
		Ps suggest what to do first and where to go next.
		
		Ps come to BB to explain and write equations.
		
		Class agrees/disagrees
		
		Discussion, agreement, checking, praising

3	***Book 2, page 137***
	Q.1 Read: *Which of the numbers 2, 5 or 10 does each shape*
	             represent? The same shape means the same number.
	             The arrows point to the multiplication which has
	             twice the value.
	
	    Let Ps try to solve it individually
	    (or in pairs) first.
	    Ps come out to BB to
	    explain reasoning.
	    Class agrees/disagrees.
	
	                          — *23 min* —
		Individual trial, monitored, helped
		Drawn on BB or use enlarged copy master or OHP
		Discussion at BB
		Reasoning, agreement, checking, praising
		Check: $2 \times 10 = 20$
		             $2 \times 20 = 40$
		What would the arrows show if they pointed the other way? (half)

Bk2		*Lesson Plan 137*

Activity		*Notes*
4	**Interlude** Song, rhyme, exercises ———— *25 min* ————	Whole class in unison
5	***Book 2, page 137*** Q.2 Read: *Practise multiplication.* Let's see how many of these you can do in 3 minutes! Try to do it without looking at your multiplication table! Of course you may look at it if you are stuck. Review orally round class. Mistakes corrected. Who had them all correct? Who made a mistake? What kind of mistake? Who did the same? etc. Write problem equations on BB. (e.g. $35 \times 2 = 30 \times 2 + 5 \times 2 = 60 + 10 = 70$) ———— *30 min* ————	Individual work, monitored Keep to time limit T notes Ps who need to use × tables Agreement, checking, self-correcting, praising
6	***Book 2, page 137*** Q.3 Read: *Practise division.* Let's see how many of these you can do in 3 minutes! Try to do it without looking at your multiplication table! Of course you may look at it if you are stuck. Review orally round class. Mistakes corrected. Who had them all correct? Who made a mistake? What kind of mistake? Who did the same? etc. Demonstrate with Ps at front of class if necessary. ———— *36 min* ————	Individual work, monitored Keep to time limit. T notes Ps who need to use × tables Agreement, checking, self-correcting, praising
7	***Book 2, page 137*** Q.4 Read: *List the numbers which make the statements true.* Deal with one part at a time. Review at BB with whole class. For each part, Ps read out inequality and come to write their numbers on BB, explaining reasoning and showing on class number line or square. Class agrees/disagrees. Ps choose numbers from those listed to check that inequalities are true. ———— *40 min* ————	Individual work, monitored, helped Reasoning, agreement, checking, praising BB: a) ▨ : 6, 7, 8, 9 b) ◯ : 7, 6, 5, 4, 3, 2, 1, (0) c) △ : 1, (0)
8	**Rotation** T sticks 3 pictures of a rabbit with only one ear on BB. BB: Let's place these 3 one-eared rabbits so that each rabbit has two ears! Ps try on desks without help first. If a P discovers the solution he/she sits up with arms folded. If nobody has solved it after 2 minutes, T gives hint to try rotation. P who has solved it explains to whole class at BB, otherwise T explains. ———— *45 min* ————	Individual trial first, monitored but not helped Use copy master, enlarged, coloured and cut out. Ps can have set on desks too Praise Ps who have solved it but give others more time Demonstration, agreement Ps could take sets home to try out on friends/parents.

Bk2	R: Mental calculation **C: Revision and practice. Puzzles and challenges** E: *Roman numbers. Combinatorics*	*Lesson Plan* *138*

Activity		Notes
1	**Crossword with numbers** T talks abour normal crosswords which have numbers to show where each clue starts. T explains about clues going across the row (horizontal) and going down a column (vertical). This is a crossword puzzle about numbers, so each clue is shown by a letter. CLUES (BB) Across (horizontal) a) The number of sides in a hexagon. b) The biggest 1-digit number. c) A 2-digit number which has its units digit 3 times its tens digit. Down (vertical) a) Odd number, less than 70, more than 60 and divisible by 3 b) the biggest 2-digit number. Ps come out to choose a clue and write in the answer, explaining reasoning. Let's check that all the clues are satisfied.	Whole class activity T could have a crossword to show. Drawn on BB or use enlarged copy master or OHP Class reads each clue in unison Class agrees/disagrees Checking horizontally and vertically
Extension	• What other clues could we have given for each number? • Ps could make up own crosswords and clues for neighbours to solve.	Ps have copies of blank crossword on desks
	6 min	
2	**Making 2-digit numbers** T wtites on BB: 3, 4, 5 a) Write down in your *Ex. Bks* all the 2-digit numbers which can be made from these digits. (*Heading*: Lesson number and date) You may repeat a digit. Try to do it logically. **A**, how many did you write? Who had the same? Who had more? What is the most we could make? (For each digit you choose as the tens, you can make three 2-digit numbers, i.e. $3 \times 3 = 9$) BB: 33, 34, 35, 43, 44, 45, 53, 54, 55 (9 numbers) b) Underline those numbers which are divisible by 3. (33, 45, 54) **B**, what did you underline? Who agrees? Who thinks another? etc. Show calculations on BB: $45 = 30 + 15$, $54 = 30 + 24$	Individual work, monitored, helped Discussion, reasoning agreement Agreement, checking, praising Discussion, agreement, checking, praising. BB: e.g. $45 \div 3 = 30 \div 3 + 15 \div 3$ $= 10 + 5 = 15$
	13 min	
3	***Book 2, page 138, Q.1*** Read: *In a bag there are 10 white and 8 black marbles.* *What is the smallest number of marbles you must take out of the bag (with your eyes closed) to make certain that you have taken out at least:* *a) 1 white marble b) 1 black marble* *c) 5 white marbles d) 5 black marbles* *e) 1 white and 1 black marble?* T (or P) puts 10 white and 8 black marbles into an opaque bag. Deal with one part at a time. For each part, Ps agree on the least number required and the reasoning behind it. A P takes out agreed number of marbles with eyes closed as a check. *Solution:* a) 9, c) 13 (as first 8 marbles could all be black) b) 11, d) 15 (as first 10 marbles could all be white) e) 11 (as for b) and d))	Whole class activity Ask several Ps what they think and why. Class agrees on a number. Check by demonstration Encourage Ps to visualise what the outcomes might be T helps if necessary Repeat if there is time with other colours or numbers
	18 min	

Bk2		*Lesson Plan 138*
Activity		*Notes*

4	**Interlude** Song, rhyme, exercises *20 min*	Whole class in unison
5	***Book 2, page 138*** Q.2 Read: *Colour the equal amounts in the same colour.* Tell Ps to write result above each multiplication first, then to write in the answers. Review at BB with whole class. Mistakes corrected. Who notices a quicker way to do it? Elicit that, e.g. $5 \times 2 + 2 \times 2 = 7 \times 2 = 3 \times 2 + 4 \times 2 = 14$ $6 \times 2 + 6 \times 5 = 6 \times 7 = 6 \times 6 + 6 \times 1 = 42$ *25 min*	Individual work, monitored (helped) Written on BB or use enlarged copy master Discussion, agreement, checking, self-correcting Extra praise if Ps notice this without help. Otherwise T explains it.

6	**Roman numerals**
	Revise meaning of I, V, X, IX (X − I), VI (V + I) , etc.
	T has BB already prepared:
	a) V = IX + III Change the position of only 1 stick to make the equation true.
	  P comes out to BB to rewrite equation, explaining reasoning.
	b) XX = I + I Change the position of 2 sticks to make the equation true.
	  P comes out to BB to rewrite equation, explaining reasoning.
	 30 min
		Whole class activity
		Ps explain meanings to class
		
		BB: a) VI = IX − III
		
		Agreement, checking, praising
		
		BB: b) X = I + IX
		
		Agreement, checking, praising

7	***Book 2, page 138*** Q.3 Read: *Do the calculations in the correct order.* Revise order of calculation first. (brackets, × or ÷ , + or −) Ps write result of each operation above the sign and then fill in the answer. Review orally round class, with Ps explaining in which order they did the calculations. Mistakes corrected. Write any problem calculations on the BB, e.g $72 \div 8 + 7 \times 9 - 27 = 9 + 63 - 27 = 72 - 27 = 45$ *35 min*	Individual work, monitored (helped) Whole discussion on order T takes note of Ps who still need to refer to × table Reasoning, agreement, checking, praising
8	***Book 2, page 138*** Q.4 Read: *One side of the paper strip is white and the other side is black. Continue colouring the parts of the paper strips which should be black.* Ps could each have 3 paper strips to colour and fold if needed. Review with whole class. T (P) demonstrates with large strip. *40 min*	Individual (or paired) work, monitored (helped) Discussion, agreement, checking, praising *Solution:* (Or use copy master)
9	**Problem** Listen carefully, picture the story in your mind; solve it in your exercise bks. *There are 70 cl of water in a 1 litre bottle. How much water will be in the bottle if we pour another 50 cl into it?* T asks several Ps what they think before doing calculation on BB. BB: 70 cl + 50 cl = 120 cl = 1 litre 20 cl BUT bottle holds only 1 litre! *Answer:* 1 litre of water will be in the bottle and 20 cl will spill over! *45 min*	Individual trial first, monitored but not helped Discussion, reasoning, agreement, checking Demonstrate if necessary Extra praise for Ps who deduced correct answer by themselves

| **Bk2** | R: Mental calculation
C: Revision and practice. Puzzles and challenges
E: *Combinatorics. Problem solving* | *Lesson Plan* *139* |

Activity		Notes
1	**Making 2-digit numbers** Let's list all the 2-digit numbers which have 4 as the tens digit and which have a units digit that is not more than the tens digit. T writes Ps' responses in logical order on BB. BB: 44, 43, 42, 41, 40 Repeat with 6 as the tens digit. (BB: 66, 65, 64, 63, 62, 61, 60) ———— *5 min* ————	Whole class activity (Or Ps could write numbers in their exercise books if they wish) At a good pace Class agrees/disagrees Praising
2	**Rules** Let's find possible numbers for *a*, *b* and *c* so that the equations are true. BB: *Rule: $a + 3 = b \times 3 = c - 3$* | *a*	**0**	**3**	6	9	12	15	18	21	24	27	30	33	36
b	**1**	2	3	4	5	6	7	8	9	10	11	12	13
c	**6**	9	12	15	18	21	24	27	30	33	36	39	42 | T (or P) explains rule using first column. Ps come out one at a time to fill in the other columns, explaining reasoning. Class agrees/disagrees. Who could write the rule in another way? Who agrees? Who thinks something else? (There are several possibilities.) Let's check with values from the table. ———— *13 min* ————	Whole class activity Table drawn on BB or use enlarged copy master or OHP Reasoning, agreement, checking, praising (**Bold** numbers given already, Ps fill in rest) Encourage logical solution, but accept any order *Rule*: $a = 3 \times b - 3$ $b = (a + 3) \div 3$ $c = a + 6$, etc. *Check:* e.g. $9 = 3 + 6$

3	*Book 2, page 139*
	Q.1 Read: *Colour the odd one out. Write the reason for your choice.*
	Ps write values above ellipses first. Review at BB with whole class. Ps write divisions on BB. Mistakes corrected.
	Deal with all choices. Class decides whether reasoning is valid.
	Solution: '1 sixth of 6' is the odd one out because it has a value of '1' whereas all the others have a value of '4', or
	it is the only one where the amount is divided by itself.
	———— *18 min* ————
		Individual work, monitored, helped
		Discussion, agreement, checking, praising
		BB: $12 \div 3 = 4$
		       $8 \div 2 = 4$
		      $16 \div 4 = 4$
		       $6 \div 6 = 1$

4	**Interlude** Action song ———— *20 min* ————	Whole class in unison
5	*Book 2, page 139* Q.2 Read: *Fill in the missing numbers.* Let's see how many of these you can do in 3 minutes! You may use your multiplication tables if you need to, but try to do as many as you can without them. Review orally round the class. Mistakes corrected. Who had all correct? Who made a mistake? Try to learn by heart the facts you did not know. ———— *25 min* ————	Individual work, monitored T notes Ps who need to refer to their tables Agreement, checking, self-correcting, praising Encouragement only

Bk2		*Lesson Plan 139*

Activity		*Notes*
6	***Book 2, page 139*** Q.3 Read: *Fill in the missing numbers.* Let's see how many of these you can do in 3 minutes! You may use your multiplication tables if you need to, but try to do as many as you can without them. Review orally round the class. Mistakes corrected. Who had all correct? Who made a mistake? Try to learn by heart the facts you did not know. —— *30 min* ——	Individual work, monitored T notes Ps who need to refer to their tables Agreement, checking, self-correcting, praising Encouragement only
7 **Extension**	**Logic puzzle** Study this puzzle. What do you think the rule could be? (The number in the middle is the product of the 4 numbers around it. The same shape means the same number.) BB: Where should we start? (e.g. at product 32, because '4' is given and the other 3 numbers are the same.) **A**, come and write in the missing numbers and explain why you think so. ($4 \times 2 \times 2 \times 2 = 32$, so the square = 2) Who agrees? **A**, write '2' in all the squares. (Or could start at 16, as all 4 numbers are the same.) Where should we go next? (e.g. product 48 as 3 numbers are now known) **B**, come and write in the missing number and explain why you think so. ($4 \times 2 \times 2 \times 3 = 48$, so the triangle = 3) **B**, write '3' in all the triangles. Continue in this way until puzzle is completed. Check solution. Ps could make up own puzzles for neighbours to solve. —— *35 min* ——	Whole class activity Drawn on BB or use enlarged copy master or OHP Let Ps suggest where to start and how to continue. *Solution:* □ = 2 △ = 3 ○ = 5 Reasoning, agreement, checking, praising (Or Ps could have copy of puzzle on desks and work individually if they wish) Use blank copy master

8	***Book 2, page 139***
	
	Q.4 Read: *Write the value, in acorns, of each squirrel's store of*
	           food if: *2 chestnuts = 6 walnuts,*
	                    1 chestnut + 1 walnut = 12 acorns.
	
	Review at BB with whole class. Hands up those of you who think the squirrel in part a) has more food ? Who thinks the squirrel in part b) has more food? (Both the same: 48 acorns)
	
	C, come and explain to us how you worked it out. Who agrees? Who did it another way? Who made a mistake? etc.
	
	Solution: a) $5 \bigcirc + 3 = 5 \times 9 + 3 = 45 + 3 = 48$
	
	         b) $16 = 16 \times 3 = 10 \times 3 + 6 \times 3 = 30 + 18 = 48$
	
	—— *41 min* ——
		Individual trial, monitored, helped
		Discussion at BB using enlarged copy master or OHP
		
		Reasoning, agreement, checking, praising
		BB:
		$2 \bigcirc = 6$, so $1 \bigcirc = 3$
		$1 \bigcirc + 1 = 4 = 12$,
		so $1 = 3$, and
		$1 \bigcirc = 9$

9	**Problem** Listen carefully and show me the answer with number cards when I say. *A patient has to take 11 pills, one each hour. How many hours will there be between the first and last pill taken?* Show me . . . now! (10) Discuss/demonstrate why it is not 11. —— *45 min* ——	Whole class activity P repeats in own words Cards shown in unison Agreement, praising

Bk2	R: Mental calculation **C: Revision and practice. Puzzles and challenges** E: *Brackets*	*Lesson Plan* *140*

Activity		Notes
1	**Oral practice** Describe these numbers in different ways (72, 17) e.g. 72: $60 + 12$, 8×9, $100 - 28$, $7 \times 10 + 2$, etc. 17: 2nd last 2-digit odd number, 3 less than 20, $100 - 83$, $34 \div 2$, etc. Repeat for other numbers if there is time. Ps may choose the numbers. ——— *5 min* ———	Whole class activity At speed round class Involve all Ps Class points out errors Praise creativity
2	**Secret shapes or numbers** A P comes to front of class, thinks of a number or shape and the rest of the class has to deduce what it is by asking questions. P at front can answer only 'Yes' or 'No'. (e.g. Is it a number? (Yes) Does it have 2 digits? (Yes) Is it even? (No) Is it less than 20? (Yes) Is it more than 15? (Yes) Is it 17? (No) It is 19! ——— *10 min* ———	Whole class activity Involve majority of Ps Encourage Ps to ask logical questions and to keep in mind the clues already given. Praise creative questioning
3 **Extension**	***Book 2, page 140*** Q.1 Read: *We have put some of these shapes one on top of the other to give the shape on the right.* *Colour the shapes we have used in the correct colour.* Remind Ps that B = blue, Y = yellow, R = red. Review at BB with whole class. Check by demonstration. (Use pre-coloured shapes to lay one on top of the other.) What are the names of these shapes? Ps come to BB to point to a shape and to name and describe it (e.g. rectangle is a quadrilateral which has opposite sides the same length and has square (right-angled) corners; square is a rectangle which has all 4 sides the same length, triangle has 3 sides, etc.) (parallelogram is a quadrilateral with opposite sides parallel, rhombus is a parallelogram with all 4 sides of equal length) ——— *15 min* ———	Individual work, monitored (helped) Use copy master, enlarged, coloured appropriately and shapes cut out and stuck to BB Discussion, agreement, checking, praising To see what Ps remember about shapes With help of T if needed Discussion, agreement, praising Revise meaning of parallel // (all points on lines are the same distance apart)
4	**Number cards** I will ask some questions and you must show me the answer with number cards when I say. Write the calculations and answers in your exercise books first. (*Heading*: Lesson number and date) What is: a) the difference between 48 and a half of 48? Show me . . . now! $(48 - 48 \div 2 = 48 - 24 = 24)$ b) the sum of 35 and a fifth of 35? $(35 + 35 \div 5 = 35 + 7 = 42)$ c) the sum of 65 and a half of 54? $(65 + 54 \div 2 = 65 + 27 = 92)$ d) the difference between 1 sixth of 36 and 1 sixth of 24? $(36 \div 6 - 24 \div 6 = 6 - 4 = 2)$ ——— *20 min* ———	Individual work but class kept together T repeats each part slowly Give Ps time to think/write In unison Ps who answer correctly come to BB to explain reasoning Agreement, self-correction Praising Ps could ask the questions too!
5	**Interlude** Song, rhyme, exercises ——— *22 min* ———	Whole class in unison

Bk2		*Lesson Plan 140*

Activity		**Notes**

5	**Book 2, page 140**
	
	Q.2 Read: *The length of a room is 4 m 30 cm and the width is 2 m 70 cm. What is the difference between them?*
	
	Review at BB with whole class. Mistakes corrected.
	
	Plan: Length of room: 4 m 30 = 430 cm
	            Width of room: 2 m 70 = 270 cm
	
	Calculation: $(430 - 270 = 160)$ cm = 1 m 60 cm
	
	———— *26 min* ————
		Individual trial, monitored, helped
		
		Discussion, checking, praising
		
		If problems, show calculation in more detail on BB:
		
		   $430 - 200 - 30 - 40$
		   $= 230 - 30 - 40$
		   $= 200 - 40 = 160$

6	**Book 2, page 140, Q.3**
	
	Read: *On a farm, each hen lays 1 egg per day. Complete the table.*
	
	Ps come out one after another to complete bottom row of table, explaining reasoning. Class agrees/disagrees. Ps complete table in their books too.
	
	Let's write a rule about the table. What should we do first?
	
	Let H = number of hens, D = number of days, E = number of eggs.
	
	X, come and write the rule. Who agrees? Who thinks something else? Who can write it another way? Let's check with values from the table.
	
	———— *32 min* ————
		Whole class activity
		
		Table drawn on BB or use enlarged copy master or OHP
		
		Discussion, agreement, checking, praising
		
		Rule: $E = H \times D$
		        $H = E \div D$
		        $D = E \div H$

7	**Book 2, page 140**
	
	Q.4 Read: *Do the calculations in the correct order.*
	
	     What do you notice about the equations? (All have the same numbers in the same order.)
	
	     Do you think that the results will all be the same? (No, because the brackets are not the same).
	
	     Revise order of calculation. Deal with one part at a time. Review at BB with the whole class. Mistakes corrected.
	
	     BB: a) $12 + 24 \div 6 - 4 = 12 + 4 - 4 = 12$
	                $12 + 24 \div (6 - 4) = 12 + 24 \div 2 = 12 + 12 = 24$
	                $12 + (24 \div 6 - 4) = 12 + (4 - 4) = 12$
	
	        b) $(12 + 24) \div 6 - 4 = 36 \div 6 - 4 = 6 - 4 = 2$
	                $12 + (24 \div 6 - 4) = 12 + (4 - 4) = 12$
	
	     What do you notice about the last equation in part b)? (Exactly the same as the last equation in part a).) How could we make it different from all the others? Change to:
	
	           $(12 + 24 \div 6) - 4 = (12 + 4) - 4 = 16 - 4 = 12$
	
	———— *40 min* ————
		Initial discussion and revision with whole class.
		
		Written on BB or use enlarged copy master or OHP
		
		Individual work, monitored, helped
		
		(Or whole class activity: T could write 6 identical equations on BB without brackets and Ps could add brackets to make each equation different.)
		
		Agreement, checking, praising

8	**Book 2, page 140, Q.5**
	
	Read: *In a card game, the cards have pictures of apples, pears, cherries and bananas. The rules are:*
	
	     3 pears = 1 apple, 6 cherries = 1 pear, 2 bananas = 1 cherry
	
	     How many bananas are equal to an apple?
	
	How could we solve it? **Y**, what do you think? Who agrees? Who thinks something else? Ps dictate what T should write on BB.
	
	Solution: 1 apple = 3 pears, 3 pears = (3×6) cherries = 18 cherries,
	              18 cherries = $(18 \div 2)$ bananas = 9 bananas
	              So 1 apple = 9 bananas
	
	———— *45 min* ————
		Whole class activity
		
		Ps suggest how to solve it
		
		T gives hints if necessary
		
		Rules drawn/written on BB
		
		Reasoning, agreement, checking
		
		Extra praise if Ps solve it without help