



# Unit 1: Place value within 1,000

## Lesson 1: Counting in 100s

→ pages 6–8

- 300 three  
600 six hundred  
1,000 one thousand (Some children may write ten hundreds. Whilst true, teachers should discuss the special name for 10 hundreds is one thousand.)
- a) 400 500  
b) 900 800  
c) 200 100 0  
d) 600 700 1,000
- a) 500 five hundred  
b) 800 eight hundred
- Children draw representation of 7 boxes each labelled with 100.
- Andy has not realised that 10 hundred is called one thousand.

### Reflect

When counting out loud, the children would say the numbers 200, 300, 400, 500, 600 and 700 twice.

## Lesson 2: Representing numbers to 1,000

→ pages 9–11

- 315
- a) 362  
b) 529  
c) 106
- a) 160 c) 265  
b) 284 d) 429
- a) 500 20 8 c) 300 50  
b) 200 60 6 d) 400 60 7
- a) Olivia can make 6 different 3-digit numbers  
872 827 782 728 287 278  
b) Olivia can make 3 different 3-digit numbers  
772 727 277

### Reflect

Ebo is not correct. He has not understood place value. The 2 digit means 200 and the 9 digit means 90. The part-whole model should be 200, 90, 7.

## Lesson 3: 100s, 10s and 1s (1)

→ pages 12–14

- a) 5 hundreds, 7 tens and 2 ones is equal to 572  
b) 6 hundreds, 4 tens and 0 ones is equal to 640
- a) 200 30 7  
b) 100 0 6
- Children should draw in more base 10 equipment as follows:  
a) 2 tens (long rectangles or vertical lines), 2 ones (small squares)  
b) 2 hundreds (large squares), 0 tens (nothing should be recorded here), 2 ones (small squares)
- a) 5  
b) 30 8  
c) 3 9 5  
d) 700 60  
e) 905
- a) Phil has not understood place value and position. The 6 digit should be in the 1s column and the 8 digit should be in the tens column.  
b) 486
- a) 267  
b) 53  
c)  $382 = 300 + 80 + 2$   
d) 57  
e) 12

### Reflect

Children select a 3-digit number e.g. 354. They represent it in different ways e.g.  $300 + 50 + 4$ ;  $100 + 254$ ;  $300 + 40 + 14$  etc.

## Lesson 4: 100s, 10s and 1s (2)

→ pages 15–17

- a) 342 c) 750  
b) 256
- Children draw counters in place value chart, correctly labelled as follows:  
a) 4 circles in H column, labelled 100; 2 circles in T column, labelled 10; 6 circles in O column, labelled 1  
b) 2 circles in H column, labelled 100; 0 circles in T column; 3 circles in O column, labelled 1
- a) 1 circle in H column, labelled 100; 4 circles in T column, labelled 10; 1 circle in O column, labelled 1  
b) 3 circles in H column, labelled 100; 5 circles in T column, labelled 10; 2 circles in O column, labelled 1



4. a) 332  
b) 242
5. Both numbers have the same value, but appear different because Ally has 11, 10s counters. She needs to change 10 of these to a 100 counter and then the number would look the same.

### Reflect

Children make a range of 3-digit, 2-digit and 1-digit numbers. All the digit sums should make 6. A range could be made: 600, 510, 42, 501, 60, 6. They know if they had found them all if they worked systematically.

## Lesson 5: The number line to 1,000 (I)

→ pages 18–20

1. Boat A 300  
Boat B 850 (Answers may vary but should be close. Accept 840–860.)
2. a) 400 700 800 900  
b) 820 830 850 860 870 880 890
3. a) 250 400 900  
b) 285 289
4. Arrows drawn either from numbers to correct position on number line or re-written in correct position.  
610 half-way between 600 and mark after 600  
650 half-way between 2nd and 3rd mark after 600  
735 three-quarters of the way between 1st and 2nd mark after 700  
750 half-way between 2nd and 3rd mark after 700  
780 on the 4th mark after 700
5. 101 is the next number after 100 but this number line does not go up in 1s. There are 10 sections between 100 and 200 so each section is worth 10 because 10 lots of 10 make 100. So the first mark will be  $100 + 10 = 110$ . Isla is not correct.
6. Many answers possible depending on what steps the line goes up in. Accept anything sensible and correct: e.g.  
Steps of 1: start 495, end 505  
Steps of 10: start 450, end 550  
Steps of 100: start 0, end 1,000

### Reflect

Top line: 650 = half-way between 6th and 7th mark

Middle line: 650 = on 5th mark

Bottom line: 650 = on 8th mark

They are not in the same place because, although the number lines are the same length, the steps they go up in are all different. Top in steps of 100; middle in steps of 10 and bottom in steps of 1.

## Lesson 6: The number line to 1,000 (2)

→ pages 21–23

1. a) 550, 570 and 599 should be circled and placed on to the number line:  
550 on the 5th mark after 500  
570 on the 7th mark after 500  
599 just before 600  
b) 379, 372 and 365 should be circled and placed on to the number line:  
379 half-way between 9th mark and 380  
372 on 6th mark after 360  
365 half-way between 2nd and 3rd mark after 360  
c) 500, 695, 550 and 450 should be circled and placed on to the number line:  
500 placed about a third along the number line  
695 placed just before 700  
550 half-way along the number line  
450 about one-sixth along the number line half-way between 400 and where 500 has been placed.
2. a) Allow any numbers  $> 700$  and  $< 800$   
b) Allow any numbers  $> 150$  and  $< 160$
3. a) A could be any number smaller than 105  
B could be any number greater than 245  
b) 104  
c) 246
4. Children complete chart. Reading down:  
True  
False  
True  
Cannot tell

### Reflect

The start and end numbers both have 0s in the tens and ones column, they are multiples of 100. Because the first number is 213, the nearest multiple of 100 would be 200. The number line has numbers greater than 300, so the end number is 400, which is the next multiple of 100 after 321.

## Lesson 7: Finding 1, 10 and 100 more or less

→ pages 24–26

1. a) 345  
b) 445
2. a) 10 more than 482 is 492  
b) 100 less than 390 is 290
3. a) 116  
b) 803  
c) 928  
d) 855  
e) 78  
f) 389  
g) 728  
h) 114



4. a) 800, 600, 710, 690, 701, 699  
b) 498
5. Children complete the maze from start by travelling:  
right, right, down, down, right, down, left
6. a) 435  
b) 148

### Reflect

Children generate a number using dice. Children swap with a partner so the chart will be checked. Explanations will vary: e.g. I know Louise's number is 452 as her chart said 100 more was 552. I took 100 away from 552 and got 452.

## Lesson 8: Comparing numbers to 1,000 (I)

→ pages 27–29

1. Mrs Dean has 361 books. Mr Lopez has 358 books.  
361 is greater than 358.  
So  $361 > 358$   
Mrs Dean has more books.
2. a)  $<$   
b)  $<$
3. a) False because (answers may vary). Answer should say that left-hand number is 300 and right-hand number is 249. 300 is the larger number.  
b) True because (answers may vary) Both numbers have the same base 10 equipment, 2 hundreds and 3 tens. Both numbers are 230 although the RHS is placed differently, its value doesn't change.
4. Children add drawings of base 10 equipment so answers will vary. Minimum needed to be added is:  
a) 2 tens and 6 ones (2 long rectangles and 6 small squares)  
b) Answers will vary. Both sides should be represented by base 10 equipment to the value of 410  
e.g. Right-hand side has 1 hundred and 4 ones added.  
Allow children to add to both sides as long as each side equals the other in value.
5. B is greater than A
6. Both numbers are the same as they both show 120 in base 10 equipment.

### Reflect

Answers may vary, but it should say that the digit in the H position is looked at first. If it is the same in both numbers, you look at the T column to compare or the O column if necessary.

## Lesson 9: Comparing numbers to 1,000 (2)

→ pages 30–32

1. a) 348 is greater than 251  
348  
b) 367 382  
367
2. a) 53, 170, 340 should be circled  
b) 290, 286, 300, 1,000 should be circled
3. a)  $<$  d)  $>$   
b)  $>$  e)  $<$   
c)  $<$  f)  $=$
4. a) Any digit less than 6  
b) Any digit greater than 5  
c) Answers will vary. Ensure right-hand number is greater e.g.  $148 < 149$   
d) Answers will vary. Ensure that left-hand number is greater e.g.  $388 > 387$   
e) Answers will vary. Both sides will be equal e.g.  $436 = 436$   
f) Answers will vary. Ensure right-hand number is greater e.g.  $941 < 951$
5. a) Cannot tell circled  
Because both Reena's and Zac's numbers have 4 hundreds but we don't know what is in the tens and ones column of Reena's. It could be greater than 418 or less.  
b) Amelia because her number only has 3 hundreds which is less than Reena's or Zac's numbers.

### Reflect

Answers will vary but will explain about comparing 100s first, then 10s and finally 1s to decide which number is greater.

## Lesson 10: Ordering numbers to 1,000

→ pages 33–35

1. 180, 225, 256
2. 74, 417, 471, 740
3. 310, 305, 285, 93  
Allow reverse order as long as child has changed the labels on the page.
4. a) 115, 118, 126  
b) 200, 207, 295, 529  
c) 86, 608, 800, 806  
d) 70, 80, 780, 870, 1,000



5. a) Allow various answers  
First box can only have 1, 2 or 3  
Second box allow any digit  
Third box allow digits 4 and above
- b) Answers will vary.  
First box may have digits 3 and above  
Second box if the first box had 3, then second box must be 4 or less. If the first box was greater than 3, allow any digit.  
Third box allow 3 or less

### Reflect

78, 718, 817, 871

Answers will vary. Children will explain that the 2 digit is smallest as it has 0 hundreds. They will then compare the 100s and that 718 has only 7 in the 100s. Children will then compare 10s and 7 tens is greater than 1 ten so 871 is the greatest.

## Lesson II: Counting in 50s

→ pages 36–38

1. a) 100  
150  
200  
400  
500
- b) Children circle 11 packs
2. a) 50, 200, 300, 350  
b) 600, 650, 700, 850, 900  
c) 250, 350, 400, 450  
d) 650, 500, 400, 350
3. a) 550  
b) 700
4. a) 450  
b) 550
5. 14 coins

### Reflect

Answers will vary. Children should say that every other number is a hundred number and the numbers in between 'end' with a fifty, e.g. four hundred, four hundred and fifty, five hundred, five hundred and fifty.

## End of unit check

→ pages 39–41

### My journal

Answers will vary.

1. Children will describe the number 415 in a variety of ways, describing its position on a number line. They may comment on its value compared to others e.g. it is less than 500.
2. Children explore using place value grid and seven counters to make numbers.  
 $500 < \text{number made} < 700$   
Numbers made must have a digit total of 7 e.g. 502, 511.  
If you had 8 counters, you could still make numbers in the range, but they could not all be in the 100s.

### Power play

Answers will vary. Teacher to check number positioning on the number line.



# Unit 2: Addition and subtraction

## Lesson 1: Adding and subtracting 100s

→ pages 42–44

- 2 5 7 (Allow 5 2 7)  
2 5 7 or 5 2 7  
700
  - 7 3 4  
7 3 4  
400
  - $500 - 400 = 100$  (Allow  $400 + 100 = 500$  or  $100 + 400 = 500$ )  
100
  - choc ices
- 500  
 $300 + 200 = 500$
  - 500  
 $400 + 500 = 900$
- $700 - 600 = 100$
  - $500 - 300 = 200$   
3
- 500
  - 300
  - 500
  - 900
  - 200
  - 700

a, c, e, f should be circled
- The 800 and 500 are in the wrong circles. 800 is the total ( $300 + 500 = 800$ ) and should be in the top circle, with 300 and 500 in the lower two circles.

### Reflect

Using fact families they should find 8 answers:  
e.g.  $900 = 400 + 500$ ;  $900 - 400 = 500$ ;  $500 = 900 - 400$

## Lesson 2: Adding and subtracting a 3-digit number and 1s

→ pages 45–47

- 8  
258  
258
  - 4, 2  
4, 322  
322
- 165  
 $162 + 3 = 165$
  - 351  
 $356 - 5 = 351$

- matches eight hundred and eight
  - arrow cards
  - match base 10 equipment
  - no match
  - arrow cards
- 318
  - 0
  - 3
- 128
  - 0
  - 6
  - 633
- $153 + 6 = 159$  or  $156 + 3 = 159$   
 $549 - 0 = 549$   
 $432 + 1 = 434$   
 $847 - 5 = 846 - 4$

### Reflect

Answers may vary. Children represent  $235 - 3$  and  $235 + 3$  pictorially. This could be represented with base 10 equipment, place value grid or counters.

## Lesson 3: Adding a 3-digit number and 1s

→ pages 48–50

- 154
  - 245  
245 Children many complete number line by entering jumps ( $2 + 5$ ) used and some or all of the numbers.
- Number line shows jump of 3 then 1 ending at 351  
a) 11  
351
  - Number line shows jump of 2 then 1 ending at 531  
b) 11  
531
- 355
  - 356
  - 357
  - 465
  - 464
  - 463
  - 565
  - 565
  - 565

Answers may vary.

e.g. In all of the additions it is only the tens and ones column that change.

Other explanations are acceptable.

- $458 + 1 = 459$   
 $584 + 1 = 585$   
 $185 + 4 = 189$   
 $418 + 5 = 423$  circled  
 $154 + 8 = 162$  circled  
 $514 + 8 = 522$  circled  
 $841 + 5 = 846$   
 $158 + 4 = 162$  circled
- Possible answers:  
 $583 + 4$   $853 + 4$   $584 + 3$   $854 + 3$   $385 + 4$   $384 + 5$   
 $835 + 4$   $834 + 5$   $843 + 5$   $483 + 5$   $485 + 3$   $845 + 3$   
 $535 + 8$   $438 + 5$   $348 + 5$   $345 + 8$   $534 + 8$   $538 + 4$   
 $354 + 8$   $358 + 4$   $458 + 3$   $453 + 8$   $548 + 3$   $543 + 8$



## Reflect

Children's explanations may vary. Explanation should notice the same 'starting' number but in one case the 10s stays the same, only 1s change. In the other, both 10s and 1s change as  $5 + 8 > 10$ .

## Lesson 4: Subtracting 1s from a 3-digit number

→ pages 51–53

1. a)  $251 - 7 = 244$   
244  
b)  $424 - 6 = 418$   
418
2. a) 295 Complete number line should show jump of 5, landing at 295  
b) 4
3.  $135 - 4 = 131$  no exchange  
 $235 - 6 = 229$  exchange  
 $336 - 9 = 327$  exchange  
 $446 - 4 = 442$  no exchange  
 $291 - 0 = 291$  no exchange  
 $290 - 1 = 289$  exchange  
 $299 - 1 = 298$  no exchange  
 $299 - 9 = 290$  no exchange
4. a) 286                      c) 276                      e) 307  
b) 386                      d) 4                              f) 307
5. Dexter has said  $7 - 5$ , when it's  $35 - 7$  (we can pretend that the 200 isn't there to help mental calculation).  
You need to know that  $7 = 5 + 2$ , then  $35 - 5 = 30$ ;  
 $30 - 2 = 28$   
So,  $235 - 7 = 228$
6. Children complete the sequence:  
 $301 - 9 = 292$        $292 - 9 = 283$        $283 - 9 = 274$   
 $274 - 9 = 265$        $265 - 9 = 256$        $256 - 9 = 247$   
 $247 - 9 = 238$        $238 - 9 = 229$        $229 - 9 = 220$   
 $220 - 9 = 211$        $211 - 9 = 202$        $202 - 9 = 193$   
193

## Reflect

Answers may vary. Children should say that an exchange is needed when the 1s subtracted is greater than the 1s digit in the 3-digit number.

## Lesson 5: Adding and subtracting a 3-digit number and 10s

→ pages 54–56

1. a) 197  
197  
b)  $180 - 50 = 130$   
130  
c)  $525 \quad 417 \quad 310 \quad 201$   
 $555 \quad 447 \quad 340 \quad 231$
2. a) 30                      c) 10 more  
b) 20                      d) 893
3.  $291 \quad 385$   
 $271 \quad 345$   
 $955 \quad 523$   
 $945 \quad 583$
4.  $320 \quad 290 \quad 275 \quad 249$   
Marked on number line as follows:  
275: half-way between 2nd and 3rd mark after 250  
290: on 4th mark after 250  
249: just before 250 (do not allow if halfway between marks)  
320: on 2nd mark after 300
5. a) 40                      d) 285  
b) 684                      e) 604  
c) 20                      f) 0
6.  $213 + 0 = 213$   
 $223 + 10 = 233$   
 $233 + 20 = 253$   
 $243 + 30 = 273$   
 $213 \quad 233 \quad 253 \quad 273$

## Reflect

Answer may vary.

e.g. 10s digit will be 9 in  $432 + 60$

I know that  $3 + 6 = 9$  so  $30 + 60 = 90$  so  $432 + 60 = 492$

The 10s digit will be 30 in  $74 - 40$ . I know that  $7 - 4 = 3$ , so  $70 - 40 = 30$ , so  $472 - 40 = 432$



## Lesson 6: Adding a 3-digit number and 10s

→ pages 57–59

- 50 525  
525
- a)  $394 + 60 = 454$  c)  $564 + 50 = 614$   
b)  $480 + 12 = 492$  d)  $624 + 90 = 714$
- a) 324 d) 299  
b) 361 e) 812  
c) 609 f) 60
- Answer may vary. Isla had forgotten that 11 tens are 100 and 10, so that she should have increased her hundreds by 1 hundred too. So,  $80 + 538 = 618$ .
- a) 364 c) 364 e) 364  
b) 416 d) 416 f) 416

Answers may vary.

e.g. The top row: I used bonds of 16 to help me.

$9 + 7 = 16$ ,  $8 + 8 = 16$ ;  $7 + 9 = 16$  so

9 tens + 7 tens = 16 tens.

The bottom row: I used bonds of 11 to help.  $9 + 2 = 11$ ;

$7 + 4 = 11$ ;  $5 + 6 = 11$  so 9 tens + 2 tens = 11 tens

- Top left answer. Many possibilities: 1s digit in the 3-digit number will be 5 and the 10s digit in the 3-digit number and 2-digit number will be a bond of 11 e.g.  $425 + 90 = 515$

$490 + 90 = 580$

$472 + 50 = 522$  or  $471 + 50 = 521$

Bottom right answer. Various answers possible e.g.

$462 + 90 = 552$ ;  $472 + 80 = 552$

The 10s digits must be a bond of 15 (tens)

### Reflect

When I add a 3-digit number and 10s, I know I will need to exchange 10 tens for 1 hundred if I have counted more than 9 tens in the tens column.

## Lesson 7: Subtracting 10s from a 3-digit number

→ pages 60–62

- a) 7 5  
155 155  
b) 171 171  
c)  $315 - 80 = 235$   
235
- a) 266  
b) 500 2  
552

- 185  
286 346  
240 270

- a) 280 c) 290  
b) 751 d) 761

- Top left answer: Various answers: 3-digit number must have a 5 digit in the 1s and the 10s digits must have a difference of 5 to make the calculation 655 e.g.  $785 - 30$  or  $795 - 40 = 655$

Top right answer:  $690 + 20 = 710$

Bottom left answer: Answer may vary: The 1s digit in the 3-digit number must be 0. The 10s digits in the 3-digit number must be one less than the number of 10s e.g.  $780 - 90 = 690$ ;  $730 - 40 = 690$

Bottom right answer  $835 - 90 = 745$  or  $825 - 80 = 745$  or  $815 - 70 = 745$

- 81, 72

### Reflect

Answers may vary. Children explain method e.g. using part-whole model.

Explain that  $251$  can be  $100 + 150 + 1$ ; if I have  $150 - 80 = 70$  then I'm left with 171.

## Lesson 8: Adding and subtracting a 3-digit and a 2-digit number

→ pages 63–65

- a)  $152 + 37 = 189$   
189  
b)  $152 - 41 = 111$   
111

- $33 + 342$  does not have a matching picture.

- 122 134 976  
133 145 22  
144 33 33  
166 55 987

Children then complete bottom three calculations by continuing the pattern.

- $153 + 42 = 195$   $858 - 35 = 823$   
 $153 + 42 = 195$   $858 - 35 = 823$
- $272 + 24 = 296$   $678 - 32 = 646$   
 $272 + 24 = 296$   $678 - 32 = 646$





## Reflect

Children explain reasoning why  $453 + 41 = 494$  and  $453 - 41 = 412$ .

e.g. I know that  $453 + 41$  will be 494 because  $5 + 4 = 9$  so  $50 + 40 = 90$

so  $453 + 40 = 493$ ; one more is 494.

$453 - 41 = 412$ . I know that  $50 - 40 = 10$ . So,  $453 - 40 = 413$ ; subtract one more is 412.

## Lesson 9: Adding a 3-digit and a 2-digit number

→ pages 66–68

1. a)  $168 + 23 = 191$   
191  
191  
b)  $183 + 51 = 234$   
 $183 + 51 = 234$   
234
2.  $823 + 92 = 915$
3.  $238 + 71 = 309$  exchange 10 tens  
 $318 + 72 = 390$  exchange 10 ones  
 $827 + 31 = 858$  no exchange  
 $731 + 28 = 759$  no exchange  
 $712 + 38 = 750$  exchange 10 ones  
 $73 + 182 = 255$  exchange 10 tens  
 $327 + 18 = 345$  exchange 10 ones  
 $28 + 137 = 165$  exchange 10 ones
4. a)  $258 + 47 = 305$   
b)  $188 + 13 = 201$   
c)  $303 + 17 = 320$   
d)  $50 + 672 = 722$   
e)  $525 + 76 = 601$   
f)  $500 = 39 + 461$

5. a)  $355 + 61 = 416$       b)  $354 + 62 = 416$
6.  $267 + 34$        $239 + 64$        $189 + 12$   
 $802 + 99$        $565 + 37$        $251 + 49$

Children explain how they chose their pairs. e.g. I looked at the 1s in both numbers and made sure they made 10 or more.

## Reflect

Answer may vary.

Step one: Look at the 1s in both numbers and add together. Exchange 1s into a 10 if needed.

Step two: Look at 10s in both numbers and add together. Exchange 10 tens into 100 if needed.

Step three: Add together the hundreds.

## Lesson 10: Subtracting a 2-digit number from a 3-digit number

→ pages 69–71

1. a) 318  
318  
b) 291  
291
2. a) 281      b) 390
3. a) 128      c) 184  
b) 169      d) 889
4. Variety of answers:  
e.g.  $222 - 59 = 163$   
 $222 - 95 = 127$   
 $225 - 29 = 196$   
 $225 - 92 = 133$   
 $252 - 92 = 160$   
 $252 - 29 = 223$   
 $522 - 92 = 430$   
 $522 - 29 = 493$   
 $259 - 22 = 237$   
 $295 - 22 = 273$   
 $529 - 22 = 507$   
 $592 - 22 = 570$   
 $952 - 22 = 930$   
 $925 - 22 = 903$

Check positions correctly placed on a number line.

5.  $175 - 38 = 119$
6. square = 8      triangle = 9

## Reflect

Personal individual reflection.

## End of unit check

→ pages 72–73

## My journal

Answers vary e.g. answers same, amount subtracted is the same

## Power play

- $163 + 38 = 201$   
 $163 - 38 = 125$   
76 and 326





# Unit 3: Addition and subtraction (2)

## Lesson 1: Addition and subtraction patterns

→ pages 74–76

- Children complete compact addition.
  - 258
  - $254 + 40 = 294$
  - 254 Children draw in 4 in H column  
654
- 256 Children complete compact subtraction
  - 30
- 797
- $$\begin{array}{r} 545 \\ 365 \\ 347 \\ \hline 30 \\ 300 \\ 3 \end{array}$$
  - $$\begin{array}{r} 757 \\ 775 \\ 977 \\ \hline -200 \\ -300 \\ +400 \end{array}$$
- Dexter may have to change two digits if the answer crosses a 100s boundary.  
e.g.  $322 + 90 = 412$  (100s and 10s change)

### Reflect

Children show how  $654 - 300$  and  $654 + 300$  is worked out. Children may discuss that only the 100s would change in both cases and use of part-whole model  $9 = 6 + 3$ ;  $6 = 3 + 3$

## Lesson 2: Adding two 3-digit numbers (I)

→ pages 77–79

- Compact addition completed to show:  
 $224 + 543 = 767$
  - $301 + 684 = 985$
  - Place value chart completed:  
 $527 + 221 = 748$
- 798
  - 972
  - 397
  - 894
  - 825
- 547
- $186 + 312 = 498$
  - $300 + 245 = 545$
  - $548 + 130 = 678$
- $436 + 231 = 667$ : triangle = 2; square = 3; star = 6
- $540 + 321 = 861$
  - $$\begin{array}{r} 862 \\ 961 \\ 871 \end{array}$$
  - $$\begin{array}{r} 871 \\ 861 \\ 882 \end{array}$$

### Reflect

Joe has said that  $400 + 100 = 600$  which is not correct. He has tried to add 143 instead of 134.  
Answer should be  $454 + 134 = 588$

## Lesson 3: Adding two 3-digit numbers (2)

→ pages 80–82

- $154 + 168 = 322$   
322  
322
  - Children complete the place-value chart and compact addition.  
 $151 + 163 = 314$
- $236 + 155 = 391$  exchange 1s  
 $237 + 173 = 410$  exchange 1s and 10s  
 $347 + 270 = 617$  exchange 10s  
 $410 + 199 = 609$  exchange 10s  
 $109 + 190 = 299$  no exchange  
 $88 + 113 = 201$  exchange 1s and 10s
  - yes:  $237 + 173$  and  $88 + 113$
- $432 + 487 = 919$     $178 + 13 = 191$     $629 + 282 = 911$
  - Answers may vary e.g.  $759 + 152 = 911$   
10s can be 0 + 0 or a bond of 10 e.g. 5 + 5:  
If 10s is a bond of 10, then H=7  
If 10s is 0 + 0 the H = 8  
1s = 2
- 10s must include 5 + 5 or 5 + 8 or 8 + 5 to ensure the total is greater than 900. For example:  
 $458 + 451$     $451 + 458$     $481 + 455$     $455 + 481$   
 $485 + 451$     $451 + 485$     $485 + 415$     $415 + 485$   
 2 more than spaces.

### Reflect

Bella is wrong as she will exchange 10 1s for a 10 because  $5 + 7 = 12$ . Answer will be 712.



## Lesson 4: Subtracting a 3-digit number from a 3-digit number (I)

→ pages 83–85

- Children complete compact subtraction and show 'crossings out' in PV chart or counters
  - $678 - 135 = 543$
  - $876 - 351 = 525$
  - $786 - 531 = 255$
- Children complete subtraction to show:  
 $599 - 377 = 222$   
222
- Children complete subtraction to show:
  - $888 - 434 = 454$        $868 - 443 = 425$   
 $688 - 340 = 348$        $688 - 34 = 654$
  - $886 - 340 = 546$        $364 = 668 - 304$
- $894 - 690 = 204$
  - Answers will vary. Teacher checks word problem is subtraction.
- Possible numbers that give an answer between 200 and 220 are 120, 121, 122
  - Various numbers give an odd answer, e.g. 101, 111, 201, 211, 221.
  - Number must have a 1 in the ones column and be a multiple of both 5 and 10. Possible numbers are: 111, 121, 211, 201, 221.

### Reflect

Children show their method for  $372 - 251$ .

## Lesson 5: Subtracting a 3-digit number from a 3-digit number (2)

→ pages 86–88

- $513 - 181 = 332$
  - $385 - 169 = 216$  Children cross off in place-value chart and complete subtraction.
- $543 - 235 = 308$      $543 - 345 = 198$      $508 - 91 = 417$
- $340 - 187 = 153$
  - $304 - 187 = 117$
  - $400 - 178 = 222$
- $575 - 439 = 136$
  - $930 - 539 = 391$
- Written as column subtraction:  $405 - 138 = 267$
- Children test ideas that Even – Even = Even (Mo's idea) and Odd – Odd = Odd (Danny's idea)  
They should conclude that Mo is correct but not Danny as Odd – Odd = Even

### Reflect

Children record subtraction that needs only one exchange with an explanation that either the 10s or 1s digit in the lower line is greater than the corresponding digit in the top line.

## Lesson 6: Estimating answers to additions and subtractions

→ pages 89–91

- Positioning numbers on a number line:
 

310	between 300 and 400, nearer 300
480	between 400 and 500, nearer 500
507	between 500 and 600, just past 500
990	between 900 and 1000, almost at 1000
99	between 0 and 100, almost at 100
- |            |              |
|------------|--------------|
| 388        | 900          |
| 688 or 721 | 97      100  |
| 600        | 298      300 |
- $300 + 200 = 500$   
500
  - $600 - 400 = 200$   
200
- |             |             |             |
|-------------|-------------|-------------|
| Approx. 200 | Approx. 500 | Approx. 800 |
| $548 - 351$ | $195 + 304$ | $901 - 99$  |
|             | $88 + 399$  | $990 - 195$ |
|             | $949 - 452$ |             |
- 200
  - 800
  - 400
 redo c)  $781 - 394 = 387$
- I agree with Jamie because  $198 + 297$  estimated is  $200 + 300 = 500$ . I expect it to be less as 198 is less than 200 and 297 is less than 300.

### Reflect

400      200      700 or 750.

Some children may see that 448 is close to 450 and will estimate to 750.

## Lesson 7: Checking strategies

→ pages 92–94

- 220  
 $220 + 215 = 435$   
553  
211      364  
 $364 + 211 = 575$
  - $553 - 364 = 189$      $553 - 364 = 189$
- 517  
310    207  
 $310 + 207 = 517$

I think the subtraction is correct because the subtraction matches the part-whole model.



3. a)  $255 - 88 = 167$   
 $88 + 167 = 255$   
 b) I agree with Olivia because the three numbers in the subtraction match the three in the addition.

4.      755              540              601  
      300 455       200 340       599 2  
 $755 - 300 = 455$      $200 = 540 - 340$      $601 - 599 = 2$   
 $755 - 455 = 300$      $340 = 540 - 200$      $599 = 601 - 2$   
 $300 + 455 = 755$      $340 + 200 = 540$      $599 + 2 = 601$   
 $755 = 455 + 300$      $200 + 340 = 540$      $601 = 2 + 599$

5. 201  
 201  
 201

6. a) I know that if  $291 - 100 = 191$  then  $291 - 191 = 100$  but  $291 - 192$  is subtracting one more so the answer is 99.  
 b) I know that  $291 = 100 + 191$  and that  $99 + 192 = 291$  is the same total; one has been taken from 100 to make 99 and added to 191 to make 192.

### Reflect

Estimation gives you a rough answer while fact families gives you the exact answer.

## Lesson 8: Problem solving – addition and subtraction (I)

→ pages 95–97

1. a) 335 Complete compact addition  $125 + 210 = 335$   
      335  
 b) 231 94       $231 + 94 = 325$   
      94  
 2. Bottom left-hand drawing is circled  
 263  
 3. Top bar = 266  
 Bottom bars = 128 and 138  
 138  
 4. Top bar = 201  
 Bottom bars = 99 and 102  
 5. Top bar = 500  
 Bottom bars: 125;  $125 + 55 = 180$ ; 195  
 Bracket linking 125 and 180 may show total of 305

### Reflect

Children write a question to match  $99 + ? = 201$

## Lesson 9: Problem solving – addition and subtraction (2)

→ pages 98–100

1.  $314 - 282 = 32$   
 32  
 2. a) Reena 205  
 Daniel 175              30  
 30  
 b) Bar model: Top Bar 380  
 Bottom bars: 205 and 175  
 380  
 3. Eiffel Tower              bar with 324  
 Blackpool Tower      Bar 158      Difference space 166  
 158  
 4. a) Girls              Bar = 161  
 Boys              Bar = 158      Difference space = 3  
 b) School A      Bar = 158  
 Bar 161 Linked together to show total = 319  
 School B      Bar = 173  
 Bar = 118 Linked together to show total = 291  
 School A Bar showing 319 (total from above)  
 School B Bar showing 291 (total from above)  
 Difference between two bars = 28  
 5. Bottom: Ebo's number split into two parts.  
 Left-hand side = Zac's number  
 Right-hand side = difference  
 Difference space labelled 699  
 Ebo's and Zac's bars linked together at the end  
 showing they total 801  
 $801 = 699 + \text{Zac's number} + \text{Zac's number}$   
 Ebo's amount is  $\frac{1}{2} \times 102 + 699 = 750$   
 Zac's amount =  $\frac{1}{2} \times 102 = 51$

### Reflect

I would draw one bar when I was adding or subtracting, and two when I was comparing two amounts or calculations.

## End of unit check

→ pages 101–102

### My journal

Children order calculations according to their perception of difficulty.

### Power play

Children construct pairs of 3-digit numbers, which they sum correctly. They use strategy to order their digits so as to get numbers that can be close together on the number line.



# Unit 4: Multiplication and division (I)

## Lesson 1: Multiplication – equal grouping

→ pages 103–105

1. A, B
2. 3 4  
 $4 + 4 + 4 = 12$   
 $3 \times 4 = 12$   
 12
3. 4 5  
 $5 + 5 + 5 + 5 = 20$   
 $4 \times 5 = 20$   
 20
4.  $3 \times 10$  with  $10 + 10 + 10$   
 $5 + 5 + 5 + 5 + 5 + 5$  with  $6 \times 5$   
 $2 \times 4$  with  $4 + 4$   
 $3 + 3 + 3 + 3$  with  $4 \times 3$
5.  $5 + 5$   
 $10 + 10$
6. Children circle according to question, can be done in a variety of ways as long as circles contain equal totals.

### Reflect

Children comment about seeing 2 lots of 10 or 10 lots of 2. Possibly they say they can see both, noting that they both equal 20. Some may say linked division facts e.g.  $20 \div 2 = 10$ ;  $20 \div 10 = 2$ .

## Lesson 2: Multiplying by 3

→ pages 106–108

1. a) Number line completed to show 8 jumps of 3.  
 Numbers 18, 21, 24 added to number line.  
 $3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 24$   
 $8 \times 3 = 24$   
 24
- b)  $11 \times 3 = 33$   
 33
2.  $6 \times 3 = 18$   
 18
3. a)  $3 \times 12 = 36$   
 36
- b)  $3 \times 10 = 30$   
 30
4.  $11 \times 3 = 33$   
 33

5.  $12 \times 3 = 36$ ;  $15 \times 3$  is another  $3 \times 3$  greater  
 I know that  $3 \times 3 = 9$  and  $12 \times 3 = 36$   
 $9 + 36 = 45$  so  $15 \times 3 = 45$
6. Danny is correct because  $1 \times 3 = 3$ ;  $3 \times 3 = 9$ ;  $5 \times 3 = 15$ ;  
 $11 \times 3 = 33$ . They are all odd.

### Reflect

Children write a word problem for  $9 \times 3 = 27$

## Lesson 3: Dividing by 3

→ pages 109–111

1. a) 18  
 3  
 $18 \div 3 = 6$   
 6
- b) Number line shows 8 jumps of 3, starting at 24 and jumping back to 0.  
 24  
 $24 \div 3 = 8$   
 8
- c)  $9 \div 3 = 3$   
 3
2. a) 9 Children may circle groups of 3 vertically on array.
- b) 5 Children may circle groups of 3 horizontally on array.
3. Children may draw lines from cubes to bags to show sharing.  
 a) 4  
 b) You cannot share 13 between 3 bags as one bag would have 5. To share equally, you would need another 2.
4. Number line starts at 36, then jump forward 3 (39) and another 3 (42). This is another  $2 \times 3$ .  $14 \times 3 = 42$  so,  $42 \div 3 = 14$
5. 6

### Reflect

Children explain  $15 \div 3 = 5$  e.g. by drawing array, using a multiplication fact; drawing a picture.



## Lesson 4: 3 times-table

→ pages 112–114

1. a)  $5 \times 3 = 15$   
b)  $10 \times 3 = 30$   
c)  $4 \times 3 = 12$
2. a)  $0 \times 3 = 0$       c) 21  
b)  $9 \times 3 = 27$       d) 8
3.  $7 \times 3 = 21$        $3 \times 3 < 21$   
 $3 \times 0 < 21$        $3 \times 7 = 21$   
 $8 \times 3 > 21$       Any number greater than 7  
 $12 \times 3 > 21$        $4 \times 3 < 21$   
Any number less than 7
4. a) 12  
b) 6  
c) 7  
d) 0  
e) 12  
f) 3  
g) 3
5. a) >      g) <  
b) >      h) >  
c) <      i) <  
d) =      j) >  
e) >  
f) <
6. Pattern coloured in shows diagonal pattern

## Lesson 5: Multiplying by 4

→ pages 115–117

1. a) Number line completed to show 5 jumps of 4, ending on 20  
 $5 \times 4 = 20$   
20  
b)  $9 \times 4 = 36$   
36
2. 0      4      20      32      44      48
3.  $6 \times 4 = 24$
4. a)  $7 \times 4 = 28$   
28  
b)  $4 \times 5 = 20$   
20  
c)  $28 + 20 = 48$  (Allow  $20 + 28$ )  
48
5. a) 21      42      84  
b) 50      100      200  
c) 27      54      108
6. Children may do in various ways.  
 $7 \times 4 = 28$        $5 \times 4 = 20$        $20 + 28 = 48$   
or  $7 + 5 = 12$        $12 \times 4 = 48$   
or 12, 24, 48

### Reflect

Children may say about knowing their 4 times-table or counting in 4s or  $\times 4$  is double then double again.

## Lesson 6: Dividing by 4

→ pages 118–120

1. a)  $24 \div 4 = 6$   
6  
b) Apples ringed into 4s  
Number line shows 4 jumps of 4  
 $16 \div 4 = 4$   
4
2.  $20 \div 4 = 5$   
5
3. 8 Array circled in 8 vertical groups of 4.
4.  $28 \div 4 = 7$   
7
5.  $20 \div 4 = 5$   
5
6. Jamilla is not correct as  $24 \div 4 = 6$  and  $24 \div 3 = 8$ .  
The bigger the number you divide by, the smaller the answer if the starting number is the same.
7. 64 halved = 32      halved = 16

### Reflect

Children explain why  $\div 4$  is the same as  $\div 2$  twice. Could be shown by cutting up an array or using a drawing e.g. pizza halved then halved again produces 4 pieces.

## Lesson 7: 4 times-table

→ pages 121–123

1. a)  $6 \times 4 = 24$   
b)  $12 \times 4 = 48$   
c)  $2 \times 4 = 8$
2. a) 20      e) 7  
b) 4      f) 11  
c) 36      g) 0  
d) 12      h) 4
3. a) All numbers except 11 are circled.  
b) All the numbers that are answers in 4 times-table are even; 11 is the only odd number.
4. a) 9      e) 5  
b) 7      f) 8  
c) 10      g) 12  
d) 2      h) 44
5. a) >      e) <  
b) =      f) =  
c) <      g) <  
d) =      h) =



6. Left-hand Target      outer ring: 16   28  
                                  inner ring: 1   6  
      Right-hand Target      outer ring: 18   15  
                                  inner ring: 10   8

### Reflect

12, 24, 36, 48, etc are in both tables. They are groups of 12 (multiples of 12).

## Lesson 8: Multiplying by 8

→ pages 124–126

- a) Number line jumps in 8s, 3 jumps of 8  
 $3 \times 8 = 24$   
 24  
 b)  $6 \times 8 = 48$   
 48
- $5 \times 8 = 40$   
 40
- $7 \times 8 = 56$   
 56
- $4 \times 8 = 32$   
 32
- a) 56  
 b) 32
- a) 160                      b) 296

### Reflect

Children could do  $6 \times 4 = 24$  add  $6 \times 4 = 24$ .  
 $6 \times 4 = 24$  doubled is the same as  $6 \times 8 = 24$

## Lesson 9: Dividing by 8

→ pages 127–129

- a)  $24 \div 8 = 3$   
 3  
 b)  $32 \div 8 = 4$   
 4
- $8 \div 8 = 1$   
 1 ball
- $48 \div 8 = 6$   
 6
- a) 4   2  
 b) 10   5
- $4 \times 8 = 32$   
 32
- Answers may vary  
 $4 \times 6 = 24$   
 $24 \div 8 = 3$

### Reflect

Children describe putting 16 into 2 groups of 8.  
 So,  $16 \div 8 = 2$

## Lesson 10: 8 times-table

→ pages 130–132

- a)  $2 \times 8 = 16$   
 b)  $7 \times 8 = 56$   
 c)  $4 \times 8 = 32$
- a) 48                      e) 80  
 b) 0                      f) 8  
 c) 96                      g) 1  
 d) 40                      h) 7
- a) 32, 40, 56  
 b) 80 64 56 40  
 c) 48 56 64 72  
 d) 32 24 16 8
- a) 5                      e) 9  
 b) 3                      f) 80  
 c) 4                      g) 8  
 d) 12                      h) 0
- a) >                      e) =  
 b) <                      f) <  
 c) =                      g) =  
 d) <                      h) <
- 8   3  
 24

### Reflect

First column: any calculations in the form

$0 \times 4 = 0$ ,  $5 \times 0 = 0$ ,  $0 = 6 \times 0$ ,  $0 = 0 \times 7$ ,

and so on, using numbers 0 to 12.

Second column: any multiplications of numbers 1 to 12 with answers 32, 33, 35, 36;

for example,  $3 \times 11 = 33$ ,  $7 \times 5 = 35$ .

Some children may also correctly write

$2 \times 17 = 34$ ,  $2 \times 19 = 38$ ,  $3 \times 13 = 39$ .

Third column: further answers are

$1 \times 40$ ,  $4 \times 10$ ,  $5 \times 8$

and other calculations in these fact families.

Fourth column: any multiplication fact using numbers 6 to 12 that have an answer greater than 70, e.g.

$6 \times 12 = 72$ ,  $7 \times 11 = 77$ ,  $8 \times 10 = 80$ .

In the first column, whatever numbers you choose, multiplying by 0 always gives an answer of 0.



## Lesson 11: Problem solving – multiplication and division (1)

→ pages 133–135

- 20  
5 4 20  
20
  - 56  
8 8 8 8 8 8  
 $7 \times 8 = 56$   
56
- 4 4 4 4  
 $16 \div 4 = 4$   
4
- Children draw 2 more bars with 8  
 $24 \div 8 = 3$   
3
- Bar model with 5 horizontal bars each with £3  
 $5 \times 3 = 15$   
15
- 12

### Reflect

Children write a multiplication word problem with an answer of 24.

## Lesson 12: Problem solving – multiplication and division (2)

→ pages 136–138

- $4 \times 3 = 12$        $5 \times 2 = 10$   
12      10
  - $12 + 10 = 22$   
22
- $4 \times 2 = 8$   
 $6 \times 5 = 30$   
 $8 + 30 = 38$   
38
- $2 \times 8 = 16$   
 $6 \times 4 = 24$   
 $24 > 16$   
Jamie
  - $24 - 16 = 8$   
8
- $7 \times 3 = 21$   
21
  - $40 \div 8 = 5$   
5
- 15

### Reflect

Example answers include:

How much do 3 cakes cost? ( $3 \times 8 = 24$ , so £24)

What is the cost of 4 sandwiches? ( $4 \times 4 = 16$ , so £16)

What do 2 coffees and 2 muffins cost?

( $2 \times 2 + 2 \times 3 = 4 + 6 = 10$ , or  $(2 + 3) \times 2 = 5 \times 2 = 10$ , so £10)

## Lesson 13: Understanding divisibility (1)

→ pages 139–141

- Children draw 2 complete squares then separate 3 lines either in a line or as 3 sides of an incomplete square.
  - 2
  - 3
  - 3 2
- Answers in table going across  
12 2 2  
13 2 3  
14 2 4  
15 3 0  
16 3 1  
23 4 3  
  - The greatest number is 4 because if you had five, that would be another pentagon.
- 23

### Reflect

The greatest number is 4 because if you had five, that would be another group of 5.

## Lesson 14: Understanding divisibility (2)

→ pages 142–144

- 6 1  
6 1
- 4 1  
4 1
- 9 5 1 4
- 7 1
  - 5 0
  - 3 3
  - 3 0
  - 2 3
- $13 \div 3$ ,  $19 \div 4$ ,  $28 \div 10$  all circled
  - 13 3 4 1  
19 4 4 3  
28 10 2 8





6. a) Any answers as long as the number is one more than a multiple of 4.  
e.g.  $4 + 1 = 5$ ;  $8 + 1 = 9$   
b) The largest remainder is one less than the number you divide by. So when you divide by 5, the largest remainder is 4.

7. 24

### Reflect

Children comment there will be no remainders as they are all numbers in the 3 times-table (multiples of 3). Numbers that give remainders of 1 will be numbers that are 1 more than multiples of 3 (numbers in the 3 times-table).

## Lesson 15: Related facts – multiplication and division

→ pages 145–147

1.  $3 \times 6 = 18$        $18 \div 3 = 6$   
 $6 \times 3 = 18$        $18 \div 6 = 3$
2. a)  $2 \times 5 = 10$   
 $5 \times 2 = 10$   
 $10 \div 5 = 2$   
 $10 \div 2 = 5$   
b)  $3 \times 10 = 30$   
 $10 \times 3 = 30$   
 $30 \div 3 = 10$   
 $30 \div 10 = 3$
3.  $5 \times 7 = 35$   
 $7 \times 5 = 35$   
 $35 = 5 \times 7$   
 $35 = 7 \times 5$   
 $35 \div 7 = 5$   
 $35 \div 5 = 7$   
 $5 = 35 \div 7$   
 $7 = 35 \div 5$
4.  $6 \times 10 = 60$  – total number of leaflets  
 $60 \div 10 = 6$  – number of packs  
 $60 \div 6 = 10$  – number of leaflets in each pack  
 $10 \times 6 = 60$  – total number of leaflets
5. circle = 16  
square = 4  
triangle = 11
6. a)  $160 \div 8 = 20$   
b)  $39 \times 5 = 195$

### Reflect

$$\begin{aligned} 4 \times 5 &= 20 \\ 5 \times 4 &= 20 \\ 20 &= 4 \times 5 \\ 20 &= 5 \times 4 \\ 20 \div 4 &= 5 \\ 20 \div 5 &= 4 \\ 4 &= 20 \div 5 \\ 5 &= 20 \div 4 \end{aligned}$$

## End of unit check

→ pages 148–150

### My journal

- a) 30, 40, 50...
- b) 24, 48, 72...
- c) 40
- d) 60
- e) 120

### Power play

- a) Wheel top left (clockwise from 7): 21, 6, 15, 18, 30, 36, 3, 0, 12, 9  
Wheel top right (clockwise from 4): 16, 24, 36, 48, 0, 4, 32, 12, 20, 44  
Wheel bottom left (clockwise from 7): 35, 2, 40, 12, 25, 9, 15, 6, 55  
Wheel bottom right,  $\times 8$  in centre (clockwise from 64): 8, 1, 2, 3, 4, 0, 10, 11, 7, 5
- b) Wheel top left, multiplications (clockwise from 18): complete, complete, 60, 20, 32, 8, 8, 18, 80, 48  
Wheel top right, multiplications (clockwise from 5): 20, 4, 11, 8, 7, 21, 12, 18, 4, 8  
Wheel bottom left, multiplications (clockwise from 10):  
 $2 \times 5$  or  $1 \times 10$   
 $5 \times 4$  or  $2 \times 10$   
 $2 \times 4$  or  $1 \times 8$   
 $3 \times 8$  or  $12 \times 2$  or  $6 \times 4$   
 $6 \times 8$  or  $12 \times 4$  or  $16 \times 3$  or  $24 \times 2$   
 $8 \times 4$  or  $16 \times 2$   
 $9 \times 3$   
 $3 \times 3$   
 $10 \times 3$  or  $6 \times 5$  or  $15 \times 2$   
 $10 \times 4$  or  $5 \times 8$  or  $20 \times 2$