



Unit I: Place value – 4-digit numbers (I)

Lesson 1: Numbers to 1,000

→ pages 6–8

- four hundred and twenty-nine 429
 five hundred and seventy-one 571
 six hundred and sixty 660
 one hundred and eight 108
- a) 892 = 8 hundreds, 9 tens and 2 ones
 b) 705 = 7 hundreds, 0 tens and 5 ones
- a) Child draws one circle in O column
 b) Child draws four circles in O column
 c) Child draws three squares in H column and one extra rectangle in T column
- Answers may vary. Explanation should say: Richard is correct as he can exchange 10 tens for 1 hundred, making 5 hundreds altogether.
- Answers may vary: Children should say that counters dropped should total 111. This can be in a variety of ways, e.g. 1 hundred, 1 ten and 1 one, or 11 tens and 1 one.

Reflect

Children represent 707 in a variety of ways, e.g. using arrow cards, place value grids, pound coins and pennies.

Lesson 2: Rounding to the nearest 10

→ pages 9–11

- a) Round down to the nearest 10: 41, 102, 981, 902, 333
 Round up to the nearest 10: 15, 78, 765, 209, 457
 b) Children add two extra numbers to each box.
 Left-hand numbers have 1s digit less than 5.
 Right-hand numbers have 1s digit 5 or greater.
- a) 50 60
 60
 b) 120 130
 120
- 24.
- a) 20 e) 100
 b) 30 f) 130
 c) 50 g) 370
 d) 80
- a) 80 180 380
 b) 230 370 50
 c) 450 710 100
- 45 and 54; 46 and 53; 47 and 52; 48 and 51; 49 and 50.

Reflect

Answers may vary but should say that Hannah needs to look at the digit in the 1s column to decide whether to round the number up or down. The number in the 1s column is obscured, so Hannah cannot decide.

Lesson 3: Rounding to the nearest 100

→ pages 12–14

- a) 600
 b) 900
 c) 309 – marked just before the first mark on the number line
 300
- Children mark three 3-digit numbers correctly on the number line. Choice must be between 350 and 449 inclusive.
- 698, 652, 378 are circled.
- 490 linked with 5 hundreds (in base 10 equipment)
 449 linked with 4 hundreds counters
 550 linked with 600
 620 (in base 10 equipment) linked with 600
- a) 700 e) 1,000
 b) 400 f) 0
 c) 200 g) 400
 d) 100
- Explanations may vary but should say both children are wrong. 250 is in the middle but the rule is that if it is in the exact middle it always rounds up.

Reflect

Explanations may vary. Children may explain that the 10s digit is greater than 5 so it rounds up to 500.

They may think of the 100s before and after 462 (400 and 500). 462 is greater than 450, which is the half-way number between 400 and 500, so 462 is rounded up to 500.

Lesson 4: Counting in 1,000s

→ pages 15–17

- a) 4,000
 four thousand
 b) 7,000
 seven thousand
 c) 9,000
 nine thousand



2. a) 4,000 5,000 7,000
 b) 1,000 3,000 5,000 6,000
 c) 8,000 7,000 5,000
3. a) 8,000 eight thousand
 b) 2,000 two thousand
4. Children draw three cubes to represent 3,000 (3 thousands)
5. 1,000. Explanations may vary: Children should explain that 10 hundreds have the same value as 1 thousand.
6. Andy says 2,000, 3,000, **4,000**, 5,000, 6,000, 7,000. Bella says 6,000, 5,000, **4,000**, 3,000. They say 4,000 at the same time.

Reflect

Explanations may vary: There are 10 boxes of 1,000, containing 10,000 pencils. If 2,000 are red and 5,000 are blue this is 7,000. So using $10 - 7 = 3$ then $10,000 - 7,000 = 3,000$. The 3,000 are green.

Lesson 5: Representing 4-digit numbers

→ pages 18–20

1. 3,293 three
 two
 ninety-three
 4,066 four thousand and sixty-six
 1,308 one thousand three hundred and eight
2. a) Part-whole models completed.
 6,000 500 1
 b) 3,789
 c) Part-whole model drawn and completed with 8,000, 30, 4 (100s circle may be completed with a 0)
3. Top part-whole model completed with 6,542 and linked with bottom base 10 equipment
 Bottom part-whole model completed with 5,624 linked with top base 10 equipment
4. Odd one out is C as its value is 3,003. A and B are both 3,030.
5. No. Reena has made a 4-digit number. She should exchange 10 hundreds for 1 thousand and 10 ones for 1 ten. The number she has made is 1,262, which has 4 digits.

Reflect

Answers may vary. Teachers should check that the number chosen is drawn correctly using base 10 equipment and the same number is represented in the part-whole model.

Lesson 6: 1,000s, 100s, 10s and 1s

→ pages 21–23

1. a) 3,712
 b) 4,125
2. a) 2 thousand counters, 3 hundred counters, 5 ten counters and 6 one counters
 b) 4 thousand counters, 8 hundred counters, 4 one counters (T column should be empty)
 c) 2 thousand counters, 2 hundred counters, 5 ten counters and 6 one counters
3. a) $3,000 + 400 + 50 + 8$ (answers may vary as long as total is 3,458)
 8
 58
 b) 3,772
 3,057
 3,570
4. The others all represent 4,749 whereas c) represents 3,749.
5. 2,124 or 4,246 or 6,368. Children draw counters to represent the answers.

Reflect

Mr Harris has thought about the total number of people. Mrs Mackintosh is thinking about the 100s. 23 hundreds make 2,300.

Lesson 7: The number line to 10,000 (I)

→ pages 24–26

1. a) 6,000
 b) 4,700
 c) 3,250
2. a) 5,100, 5,200, 5,300, 5,400, 5,500, 5,600, 5,700, 5,800, 5,900
 b) 1,102, 1,104, 1,106, 1,108, 1,110, 1,112, 1,114, 1,116, 1,118
 c) 7,200, 7,400, 7,600, 7,800, 8,000, 8,200, 8,400, 8,600, 8,800
3. a) Arrow drawn to sixth mark on the line
 b) Arrow drawn to third mark on the line
 c) Arrow drawn half-way between fourth and fifth marks
4. a) Answers may vary: There are 20 intervals on the line between 1,000 and 2,000 so each interval represents a jump of 50.
 So arrow A is $1,000 + 50 + 50 = 1,100$
 b) 1,800



Reflect

Luis is not correct. Answers may vary. Half-way between 1,000 and 2,000 is 1,500. The arrow is showing a number greater than 1,500 as it is more than half-way along. 1,200 would be less than one-quarter of the way along.

Lesson 8: The number line to 10,000 (2)

→ pages 27–29

- 7,800 positioned between 7,000 and 8,000, more than three-quarters of the way along the interval
 - 2,500 positioned on the fifth mark
 - 4,400 positioned on the second mark after 4,000
- First mark after 4,500
 - Positioned slightly more than half-way between 4,000 and 5,000
- Children write three numbers in the range 0–10,000
 - Children write three numbers in the range 1,100–1,200
 - Children write three numbers in the range 9,990–10,000
- A is close to 1,000, so allow estimates around 1,200.
 B is just under half-way so allow estimates around 1,950.
 C is just over three-quarters of the way so allow estimates around 2,600.

Reflect

Answers may vary but the left-hand number could be 3,425 or less; the right-hand number could be 6,790 or greater, with appropriate reasoning.

Lesson 9: Roman numerals to 100

→ pages 30–32

- 27
 - 72
 - 45
 - 93
- 4 o'clock
 - half past 10
- Answers left to right by Roman numerals.

XXII = 22 XLII (added) = 42 LXXIV = 74 (added)
 XXXVI = 36 LXIX = 69 LXXXIV = 84
 XCIX = 99
- 26 or XXVI
 - Amelia has more marbles. She has 37 (XXXVII) more than Emma.

- XL
 - LXVIII
 - C
 - LXXXVI
 - LXV

Reflect

Look for the Roman numerals that start with L and have numerals after the L.

LI, LXXI are circled.

End of unit check

→ pages 33–34

My journal

- Children should record the number 4,563 in words, partitioning into its parts, representing it in a variety of ways, e.g. with part-whole models or place value tables.

Power play

There are ten possible numbers:

3,111 1,311 1,131 1,113 2,211
 2,121 2,112 1,221 1,212 1,122

Three of the numbers round to 1,000 (the last three in the list).

Children can make many more numbers where digits add to 7.



Unit 2: Place value – 4-digit numbers (2)

Lesson 1: Finding 1,000 more or less

→ pages 35–37

- | | | | |
|-----------|-------|--|--|
| a) 3,767 | 4,767 | | |
| b) 5,870 | 5,880 | | |
| c) 2,950 | 3,050 | | |
| d) 10,000 | 9,900 | | |
- | | | | |
|-------|-------|-------|-------|
| 4,407 | 5,407 | 4,307 | 4,417 |
| 3,241 | 4,241 | 3,141 | 3,251 |
| 2,250 | 3,250 | 2,150 | 2,260 |
| 758 | 1,758 | 658 | 768 |
- | | |
|----------|--|
| a) 5,879 | |
| b) 4,779 | |
| c) 4,869 | |
| d) 4,880 | |
| e) 2,921 | |
| f) 752 | |
- | | |
|----------|----------|
| a) 1 | e) 6,989 |
| b) 1,000 | f) 7,950 |
| c) 100 | g) 1,000 |
| d) 4,000 | |
- 7,775

Reflect

The 1,000s digit changes

Lesson 2: Comparing 4-digit numbers (I)

→ pages 38–40

- | |
|--------------|
| a) more than |
| b) less than |
- | |
|------|
| a) > |
| b) < |
| c) < |
| d) > |
- 4,076 < 4,209.
Children can add counters to one or both grids but the left-hand side must be less than the right-hand side

Reflect

5,204 < 5,209 or 5,209 > 5,204

Explanations may vary. For example: Both numbers have the same number of 1,000s and 100s but a different number of 1s.

The top number has 5 fewer counters in the 1s.

Lesson 3: Comparing 4-digit numbers (2)

→ pages 41–43

- | | |
|----------|-------|
| a) 4,301 | 5,015 |
| b) 6,723 | 6,751 |
| c) 4,781 | 945 |
- | |
|------|
| a) < |
| b) > |
| c) < |
| d) > |
| e) = |
- | |
|---|
| a) Allow digits 0–4. |
| b) Allow any digits: left-hand side must be greater than, or equal to, the right-hand side. |
| c) If right-hand box is greater than 5, allow any digit in left-hand box.
If right-hand box is 5, then left-hand box must be 0 or 1. |
- 2,305; part-whole model ticked
- Children write any six numbers in the range 1,301–1,499.
- Teacher should check that comparisons are correct and digits are used only once.
Row 1: right-hand digit must be 1–4; left-hand digit can be any other digit 1–6.
Row 2: right-hand digit must be 3–6; left-hand digit can be any other digit 1–6.
Row 3: if left-hand digit is 6, right-hand digit must be 4 or 5; otherwise, left-hand digit should be 1–5 and right-hand digit any other digit 1–6.

Reflect

highest
same
right
different

Lesson 4: Ordering numbers to 10,000

→ pages 44–46

- | | | | |
|-------|-------|-------|-------|
| 6,541 | 6,537 | 6,536 | 6,421 |
|-------|-------|-------|-------|
- | | | | |
|----------|-------|-------|-------|
| a) 3,256 | 3,270 | 3,258 | 3,300 |
| b) 3,256 | 3,258 | 3,270 | 3,300 |
- | | | | | |
|-------------|----------|----------|----------|-------|
| a) 4,502 kg | 4,314 kg | 4,099 kg | 3,821 kg | |
| b) 8,120 m | 8,032 m | 7,909 m | 7,830 m | 812 m |
- | | | |
|------------|---------|---------|
| a) Max | | |
| b) Richard | | |
| c) 7,850 m | 7,855 m | 7,995 m |



5. a) 2; 2 or above
 b) Allow 6 or above if second missing digit is completed with 7, allow 7 or above if second missing digit is completed with 8 or 9
 Allow 7, 8 or 9
 Allow 4 or above
 c) Answers vary but must be within the range 2,711–2,899; three numbers in ascending order left to right.
6. 4,326 4,335 4,344

Reflect

Children make numbers from these possibilities:

9,865 9,856 9,685 9,658 9,586 9,568
 8,965 8,956 8,695 8,659 8,596 8,569
 6,985 6,958 6,895 6,859 6,598 6,589
 5,986 5,968 5,896 5,869 5,698 5,689

which are arranged in descending order

Lesson 5: Rounding to the nearest 1,000

→ pages 47–49

1. a) 2,000
 b) 7,000
 c) 2,800 3,000
2. Children select five numbers from the range 4,500–5,499 (inclusive)
3. a) 5,762 6,000
 b) 2,380 2,000
4. a) 3,000
 b) 3,200
 c) 5,100
5. a) 5,000
 b) 5,000
 c) 5,000
6. 8,905–8,914 inclusive – 10 possibilities

Reflect

Children should make 4-digit numbers using digits 5 2 7 0.

Numbers that round to 5,000 are 5,027, 5,072, 5,207 or 5,270

Numbers that round to 2,000 are 2,057 or 2,075

Lesson 6: Solving problems using rounding

→ pages 50–52

1. 8,500
 7,800
 8,800
2. Luis = 5,000 m Emma = 5,000 m
 To the nearest 1,000 m, they have cycled the same.
3. 9,000
 9,000
 6,000
 4,000
4. Andy is correct, as 8,001 rounds to 8,000, whether rounding to the nearest 10, 100 or 1,000
5. 8,341 8,000 8,300 8,340
 6,892 7,000 6,900 6,890
 8*7* (allow digit of 5 or more in 100s and any digit in 1s)
 9,000 various various
 Allow answers
 5,450–5,459 5,000 5,500 5,450 or 5,460
 (depending on first answer)
 6,097 6,000 6,100 6,100
6. 4,112, 4,121, 4,211.
 Greatest is 4,211
 Smallest is 4,112

Reflect

Allow answers in range 1,995–2,004

Lesson 7: Counting in 25s

→ pages 53–55

1. 25 75 125 150 50
2. a) 200 250 275 325 350
 b) 1,175 1,200 1,250 1,275 1,300
3. a) 850 875 925 975
 b) 5,025 5,075 5,100 5,150
4. 250 900 325 200 975 475 1,000
 Answers vary: The last two digits will be 25, 50, 75 or 00
5. 13 Children may complete number line; teachers check it is correctly going up in jumps of 25:
 150 175 200 225 250 275 300 325
6. 13
 40

Reflect

5,000 4,075 0 100 1,000 50

When counting in 25s the T and O digits will be 00, 25, 50 or 75



Lesson 8: Negative numbers (1)

→ pages 56–58

- -3
 - $+3$
- 1
 - -4
- 5
 - 7
 - 3
- -5
- -1 -2 -3
 - -4 -3 -2
 - 0 -2 -4
 - -3 0 3
- No, she isn't correct. Children should have marked jumps of 4 backwards on number line from 8, landing on 4, 0, -4 , -8
 - -25 (assuming Luis does not say the number 30) or -20 (assuming Luis does say the number 30)

Reflect

Game

Lesson 9: Negative numbers (2)

→ pages 59–61

- -4 -2 3
 - 15
 -5
 -20
 -30
- -3
Missing numbers on thermometer
7
2
 -3
 -4
 -5
 -8
 - -20
Missing numbers on thermometer
30
10
0
 -20
 -30
 -40
- 6
 - 7
 - -20
- -2
 - 5
- Negative numbers are reversed. -1 should be next to 0
 - The whole number line has been reversed

6. A = 0 B = allow 12 or 13 C = -5 D = -117 .

7. Various answers but jumps should be equal,
e.g. -9 -6 -3 0 3 6 9
or -5 -4 -3 -2 -1 0 1

Reflect

Max is wrong. Numbers are greater on a number line from left to right. So as -1 is on the right of -4 , it must be greater not smaller.

End of unit check

→ pages 62–63

My journal

When finding 1,000 less than a number, the T and O columns will never change.

When rounding a number to the nearest 1,000 every place value column can change, for example 8,999 rounds to 9,000.



Unit 3: Addition and subtraction

Lesson 1: Adding and subtracting 1s, 10s, 100s, 1,000s

→ pages 64–66

- 4,139
 - 20 4,139
- 6,668
 - 6,686
 - 8,666
 - 6,466
 - 6,866
- 3,654
 - 4,851
 - 5,786
 - 7,568
 - 1,134
 - 521
 - 4,004
 - 5,000
- $7,999 - 1,000 = 6,999$
6,999
 - $8,749 - 500 = 8,249$
500
- $7,333 - 3,333 = 4,000$
 Explanations will vary, e.g. you can use the fact $3,333 + 4,000 = 7,333$ and the related fact family.
 $8,181 - 8,111 = 70$
- and b) Answers will vary. Numbers used once.
 $3,334 + \underline{\quad} - \underline{\quad} = 3,434$
 Cards selected have a difference of 100, with the left one greater.
 $3,934 - \underline{\quad} - \underline{\quad} = 3,434$
 Both cards have a total of 500.
 $3,434 - \underline{\quad} - \underline{\quad} + \underline{\quad} = 3,434$
 The left and middle card will total the right-hand card.
 $3,334 - \underline{\quad} + \underline{\quad} = 3,434$
 Cards have a difference of 100, with the right-hand side greater.

Reflect

$5,167 + 4,000 = 9,167$
 Answers will vary, e.g. $5,000 + 4,000 = 9,000$
 so $5,167 + 4,000 = 9,167$

Lesson 2: Adding two 4-digit numbers (I)

→ pages 67–69

- 2,846
- 6,616
 - 8,182
- 1,143
 - $3,071 + 4,816 = 7,887$

- Correctly set out $3,452 + 42 = 3,494$
 - Correctly set out $1,025 + 1,500 = 2,525$
- Children work out $4,153 + 2,345 = 6,498$
- $1,045 + 2,331 = 3,376$
 - $4,521 + 432 = 4,953$
- These are all the possible places for 8 or 1:

1,111 + 8,888	1,811 + 8,188	1,181 + 8,818
8,111 + 1,888	1,118 + 8,881	
1,188 + 8,811	1,818 + 8,181	8,118 + 1,881

There are 8 different solutions (or 16 if you allow for numbers in calculation to be given in different order, i.e. if you count $1,111 + 8,888$ and $8,888 + 1,111$ as different solutions).

Reflect

$$2,512 + 5,105 = 7,617$$

Children show how they complete calculation.

Lesson 3: Adding two 4-digit numbers (2)

→ pages 70–72

- $1,175 + 1,750 = 2,925$ (or $1,750 + 1,175 = 2,925$)
They ran 2,925 m in total.
 - $975 + 2,400 = 3,375$ (or $2,400 + 975 = 3,375$)
Bella ran 3,375 m.
 - Children complete $1,245 + 1,245 = 1,490$
2,490
They ran 2,490 m in total.
- Check correct column method used.
 - 5,186
 - 5,992
 - 6,148
 - 2,787
- How many tickets were sold altogether?
Children select any number that has 7 or less in the 100s column, 5 or more in the 10s column and 0 in the 1s column.
Check the calculation is correct.
 - Children select two numbers where the 10s column only has an exchange.
How many seats are there altogether?
Check the calculation is correct.
- 1,139
 - 1,633
- $7,095 = 1,575 + 5,520$
 - 6,095 7,095
7,075 1,095

Reflect

Teachers should check that selection obeys the rules.



Lesson 4: Adding two 4-digit numbers (3)

→ pages 73–75

- $1,635 + 2,186 = 3,821$
 $2,465 + 1,662 = 4,127$
- a) $3,405 + 1,726 = 5,131$ or $1,726 + 1,283 = 3,009$ or
 $1,726 + 199 = 1,925$ or $1,283 + 199 = 1,482$ or
 $3,405 + 199 = 3,604$
b) Children select their own numbers to make additions with two exchanges.
- $5,001 = 1,218 + 3,783$. The addition is completed. Astrid is wrong as there are three exchanges.
- a) 1,446 b) 2,000
- a) $654 + 2,999 = 3,653$
mental method is $+ 3,000$ then $- 1$ because you added one more than was needed.
b) $4,999 + 2,999 = 7,998$
Rounding $5,000 + 3,000 = 8,000$. Then adjust by 2 so 7,998
- a) $1,234 + 766 = 2,000$ $4,371 + 4,629 = 9,000$
 $7,001 + 1,999 = 9,000$
b) 1,766
8,001
5,679

Reflect

Answers will vary but may include: set out my columns neatly; exchange when my digits come to more than 9; add on my exchanged digit.

Lesson 5: Subtracting two 4-digit numbers (1)

→ pages 76–78

- $4,325 - 2,114 = 2,211$
She had to deliver 2,211 letters in the afternoon.
- Top grid linked with $4,252 - 2,011 = 2,241$
Base 10 equipment linked to $4,250 - 1,140 = 3,110$
Bottom grid linked to $4,525 - 2,114 = 2,411$
- a) 4,310 $8,855 - 4,545 = 4,310$
b) 2,449 $4,999 - 2,550 = 2,449$
c) 7,033 $9,099 - 2,066 = 7,033$
- The mistake is that 411 is not in the correct columns.
- Children make two numbers and subtract their numbers from 9,999. Check answers and that layout is correct.
Comments will vary, e.g. I noticed that odd – odd = even answer
odd – even = odd answer

Reflect

Children write a story problem for $5,455 - 2,123 = 3,332$ and solve it correctly.

Lesson 6: Subtracting two 4-digit numbers (2)

→ pages 79–81

- a) $4,362 - 247 = 4,115$
b) $1,454 - 1,270 = 184$ Grid may be annotated to show exchange
c) $2,350 - 1,530 = 820$. Grid may be annotated to show exchange.
- $1,356 - 349 = 1,007$
Bella lives 1,007 miles further away.
- a) $9,375 - 8,293 = 1,082$ c) $9,375 - 8,239 = 1,136$
b) $82 = 8,375 - 8,293$ d) $7,375 - 239 = 7,136$
- a) 2,139 Base 10 equipment shows annotation
b) 1,620 Base 10 equipment shows annotation
- Methods may vary but these are the most likely:
 - 3,245 Number line shows jump back of 1 to 3,250 and jump back of 5 to 3,245
 - 5,047 Number line shows jump back of 1 from 5,051 to 5,050 and then a jump back of 3 to 5,047.
 - 5 Number line shows jump of 4 between 3,246 and 3,250 and jump of 1 between 3,250 and 3,251.
 - 9 Number line shows jump of 1 between 4,991 and 4,990 and jump of 8 between 4,990 and 4,982.

Reflect

Check subtraction involves an exchange of 1 hundred for 10 tens.

Lesson 7: Subtracting two 4-digit numbers (3)

→ pages 82–84

- PV grid has annotation.
1,917
1,917
- a) 1,069 c) 1,093
b) 2,925 d) 1,990
- a) 8,672
b) 7,672 because 8,449 is 1,000 less than 9,449, so answer will be 1,000 less: 7,672



4. $1,258 - 163$ 1 $1,258 - 163 = 1,095$
 $3,258 - 329$ 2 $3,258 - 329 = 2,929$
 $1,158 - 249$ or $1,058 - 249$ 2 $1,158 - 249 = 909$ or
 $1,058 - 249 = 809$

5. $3,412 - 1,651 = 1,661$
 The mistake was that the person didn't take the bottom number from the top number. They just took away the smaller number wherever it was.

6. $2,455 - 1,689 = 766$ $1,689 - 949 = 740$
 Richard is wrong. It is closer to the guinea pig: 740 g, compared with 766 g to the cat.

Reflect

Children explain how they know how many exchanges there need to be in subtraction questions.

Lesson 8: Subtracting two 4-digit numbers (4)

→ pages 85–87

1. $1,401 - 225 = 1,176$
 1,176
2. Place value grid completed to show exchange of: 1 hundred to 10 tens and 1 ten to 10 ones. 1 hundred, 5 tens and 7 ones are crossed off.
 $2,202 - 157 = 2,045$
3. a) $3,507 - 419 = 3,198$ linked with middle statement
 $3,008 - 1,419 = 1,599$ linked with bottom statement
 $3,023 - 419 = 2,604$ linked with top statement
 b) $3,507 - 419 = 3,088$ $3,008 - 1,419 = 1,589$
 (in either order)
4. a) $3,061 - 174 = 2,887$
 $3,061 - 174 = 2,887$
 b) 3,501 (2,000 and 1,400 and 90 and 11)
 $3,501 - 2,552 = 949$

Reflect

Children explain how to subtract when there is a 0 in the 10s column: having to exchange 1 hundred for 10 tens first, then exchange between the 10s and 1s.

Lesson 9: Equivalent difference

→ pages 88–90

1. $95 - 7 = 88$ $96 - 8 = 88$
 $97 - 9 = 88$
 $98 - 10 = 88$ (circled)
2. $298 - 139 = 159$
 $299 - 140 = 159$

3. $235 - 98$
 $236 - 99$
 $237 - 100 = 137$ (circled)
 $238 - 101 = 137$
 $239 - 102 = 137$

Jan's tower is 137 cm taller.

4. a) 1,434
 1,434
 b) Children select 1,000 – 518
 Explanations will vary but should identify that an equivalent subtraction is $999 - 517$. This can be solved without any exchange to give the answer 482.

5. Methods chosen may vary. One possible method is suggested for each.
 $2,950 - 850 = 2,100$ (mental: subtract 100s and 10s)
 $2,875 - 1,989 = 886$ (change to equivalent subtraction $2,886 - 2,000$ and subtract 1,000s)
 $3,011 - 2,997 = 14$ (mental count up)
 $8,001 - 4,567 = 3,434$ (change to equivalent subtraction $7,999 - 4,565$ and use column method)
 $6,626 - 6,618 = 8$ (mental: count up)
 $9,009 - 10 = 8,999$ (mental: count back to 9,000, then 1 more)

Reflect

Answers will vary. Children may suggest that they will work out the equivalent subtraction $999 - 954$ to get the answer 45 or they may use number bonds to 100.

Lesson 10: Estimating answers to additions and subtractions

→ pages 91–93

1. a) 4,000 5,000
 $4,000 + 5,000 = 9,000$
 Lexi's score is roughly 9,000 points.
 b) $4,000 - 3,000 = 1,000$ Max has roughly 1,000 points now.
 c) Lexi $3,987 + 5,123 = 9,110$
 Max $3,987 - 3,104 = 883$
 The estimates are close to the exact answers.
2. $2,101 - 998$ linked with $2,100 - 1,000$
 $2,891 - 1,100$ linked with $2,900 - 1,000$
 $1,975 + 2,010$ linked with $2,000 + 2,000$
 $1,998 + 2,101$ linked with $2,000 + 2,000$
 $2,925 - 975 =$ linked with $2,900 - 1,000$
 $2,998 - 1,998$ linked with $3,000 - 2,000$
3. a) $6,152 + 3,025 = 9,177$ $6,452 - 2,005 = 4,447$
 Estimates may vary
 $6,000 + 3,000 = 9,000$ $6,500 - 2,000 = 4,500$
 b) Explanations will vary but children should mention rounding the numbers.



4. $6,491 - 2,725 = 3,766$
 $6,000 - 3,000 = 3,000$
 $6,500 - 2,700 = 3,800$
 $6,490 - 2,730 = 3,760$

Children may comment that rounding to 10 gives you the closest answer although rounding to 1,000 is easier to do.

Reflect

Explanations will vary, for example children may round to the nearest 1,000 ($2,000 - 1,000 = 1,000$) or to the nearest 100 ($1,900 - 1,000 = 900$).

Lesson 11: Checking strategies

→ pages 94–96

1. a) $2,341 + 1,151 = 3,492$ (wrong)
 $451 + 550 = 1,001$ (correct)
 $2,189 + 6,789 = 8,978$ (wrong)
 b) $3,412 - 1,151 = 2,261$
 $9,876 - 6,789 = 3,087$
2. 2,894
 $1,899 \quad 995$
 $1,899 + 995 = 2,894$
 Holly is correct because $2,894 - 1,899 = 995$
3. a) 4,560 c) 4,560
 b) 6,550 d) 6,550 5,555
4. Dexter has rounded to the nearest 1,000 but this has made both numbers significantly smaller so his estimate is too small. It would be better to round to the nearest 100. This would give $4,500 + 3,500 = 8,000$.
5. Estimate: $2,600 + 2,600 = 5,200$
 Exact answer: $2,599 + 2,599 = 5,198$

Reflect

Estimation: $600 + 1,600 = 2,200$
 Inverse operation $2,098 - 1,599 = 499$
 Both checks show that the answer 2,098 is incorrect. It should be 2,198.

Lesson 12: Problem solving – addition and subtraction (I)

→ pages 97–99

1. a) 5,600 $2,500 + 3,100 = 5,600$
 They poured 5,600 ml of water altogether.
 b) 5,000
 $2,500 \quad 2,500 \quad 5,000 - 2,500 = 2,500$
 Ambika has 2,500 ml of water left now.

2. a) $5,000 - 3,900 = 1,100$
 She has 1,100 m left to cycle.
 b) Box may have column addition and bar model to show $1,250 + 2,800 = 4,050$
 He travels 4,050 m altogether.
3. a) Bar models drawn to show :
 Top bracket: 7,750
 Bar split into two: 3,750 and 4,000
 b) Top bracket: 4,000
 Bar split into two: 3,750 and 250
4. 2,500 2,000 1,500 500

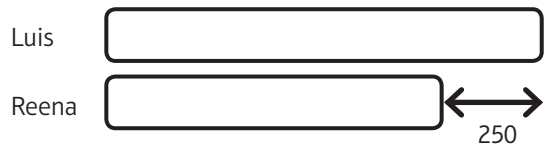
Reflect

Children complete bar model and write a story problem for $1,050 + 950 = 2,000$ or $2,000 - 950 = 1,050$.

Lesson 13: Problem solving – addition and subtraction (2)

→ pages 100–102

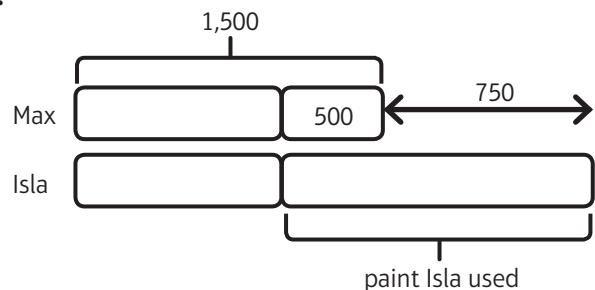
1. a) $1,020 - 820 = 200$
 Ebo has 200 more stickers.
 b) Lower bar drawn to show 1,020 with arrow to the end.
 $1,500 - 1,020 = 480$
 Ebo has 480 fewer stickers than Reena.
- c)



Column addition: $1,500 + 250 = 1,750$
 Luis has 1,750 stickers in total.

2. B suits this problem as it involves comparing two amounts, not combining them.
 $576 - 425 = 151$

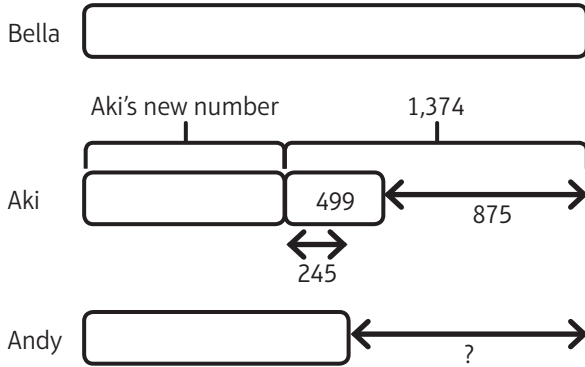
3.



$500 + 750 = 1,250$ Isla used 1,250 ml of paint.



4. Bar models may vary.



$$499 + 875 = 1,374$$

$$1,374 - 245 = 1,129$$

The difference between Bella's number and Andy's number is 1,129.

Reflect

Explanations will vary. Children may say that they draw a comparison bar model when the problem involves comparing amounts. They draw a single bar model when finding a part or the whole of an amount.

Lesson 14: Problem solving – addition and subtraction (3)

→ pages 103–105

- $2,250 + 500 = 1,750$
 $1,750 + 1,250 = 3,000$
The total distance was 3,000 m.
 - Bar model has parts 2,500 and 4,750 and 750
 $2,500 + 4,750 = 7,250$ and
 $8,000 - 7,250 = 750$
Alternatively $8,000 - 2,500 = 5,500$ and $5,500 - 4,750 = 750$
 - Children explain the order in which they did the calculations. Likely answer is: first they added 2,500 + 4,750. Then they subtracted this sum from 8,000. The swimming was the remaining distance that was not running or cycling.
- Either $325 + 450 = 775$ and $1,200 - 775 = 425$ or $1,200 - 450 = 750$ and $750 - 325 = 425$
The height of the middle section of the tower is 425 cm.
- Bar model drawn to show $650 + 1,100 = 1,750$
- Bar models drawn to support working:
 - Amy has more money now. The difference is £25.
 - Evelyn has £1,800. Noah has £1,000.

Reflect

Teacher checks three-part bar model totalling 2,050, e.g. 1,000, 1,000 and 50

Lesson 15: Problem solving – addition and subtraction (4)

→ pages 106–108

- Write in parts of 1,228, 1,517 and 483 into both diagrams
 - $1,228 + 1,517 = 2,745$
 $2,745 + 483 = 3,228$
 $5,000 - 3,228 = 1,772$
Class 2 collected 1,772 bottles.
 $483 < 1,228 < 1,517 < 1,772$
Class 2 collected the most bottles.
- Box over arrow = 1,700
 $3,985 - 1,700 = 2,285$ Rover bar = 2,285
 $3,985 + 2,285 = 6,270$
There are 6,270 fans in total.
- $1,502 + 3,116 = 4,618$ so the dog weighs 4,618 g.
 $4,618 - 4,586 = 32$ so the hamster weighs 32 g.
The hamster weighs 32 g.
- Answers will vary
e.g. A school is comparing house points earned by the houses this year. The total points earned is 4,000. Class 1 earned 950 fewer points than Class 3. Class 3 earned 1,900 points. How many did Class 2 earn?

Reflect

Children explain how they use bar models to solve problems.

End of unit check

→ pages 109–111

My journal

- Children estimate $2,000 + 6,500 = 8,500$ or $1,900 + 6,700 = 8,600$, and $2,000 = 9,000 - 7,000$.
Would expect that the second one has a missing number greater than 6,800.
 $8,634 - 1,889 = 6,745$ so $1,849 + 6,745 = 8,634$
 $9,000 - 2,026 = 6,974$ (which is greater than 6,800) so
 $2,026 = 9,000 - 6,974$
- $8,699 - 4,875 = 3,824$. The difference between Aki's and Lee's score is 3,824.
The difference between Aki's score and Jamilla's score is 3,823.
So Aki is wrong. His score is 1 closer to Jamilla's score than it is to Lee's score.

Power puzzle

Puzzle A

Cloud = 1,750 Star = 1,250

Puzzle B

Heart = 1,050 Star = 150 Cloud = 1,800 Triangle = 600



Unit 4: Measures – perimeter

Lesson 1: Kilometres

→ pages 112–114

- 1,000 1,000 1,000 3,000
Barwich is 3,000 metres away.
 - Bars completed
1,000 1,000 1,000 1,000
1,000 1,000 6,000
Littleton is 6,000 metres away.
 - Top bar completed with 1 km (9 times)
Newville is 9 kilometres away.
- 5,000 c) 3,500
 - $1\frac{1}{2}$ d) $1\frac{1}{4}$
- 11,000 c) 8
 - 4,500 d) $10\frac{1}{2}$
- The flowers will cost £9,500.
- Children draw route from A to B and correctly complete number of kilometres.
- 500 d) 250
 - 750 e) 200
 - 400 f) 100

Reflect

$3\frac{1}{2}$ km. Children explain their working and knowledge, to include $1,000\text{ m} = 1\text{ km}$ so $2,000\text{ m} = 2\text{ km}$ $500\text{ m} = \frac{1}{2}\text{ km}$

Lesson 2: Perimeter of a rectangle (I)

→ pages 115–117

- $13 + 13 + 6 + 6 = 38$. Addition in any order.
- A = 18
 - B = 30
 - C = 18
 - D = 28
- Left-hand drawing and right-hand drawing are ticked.
- width = 10 m length = 15 m
 - 50 (m)
- Jack has run further.
Jack runs $3 \times 50\text{ m} = 150\text{ m}$
Sam runs $50\text{ m} + 50\text{ m} + 23\text{ m} + 23\text{ m} = 146\text{ m}$
- 5 6 7 8 10
20 24 28 32 40
 - Answers may vary. Children should notice that the perimeter is equal to four times the side length.

Reflect

Answers may vary. Children may say they would add the lengths of the sides, and there are two each of length 6 m and 5 m so they would work out $6 + 5 + 6 + 5 = 22\text{ m}$.

Lesson 3: Perimeter of a rectangle (2)

→ pages 118–120

- Bar model may be completed in different ways.
Children may split the remaining section in half and label each part 2 m. Alternatively, they may simply label the remaining part as 4 m.
 $4 \div 2 = 2$
The length of the noticeboard is 2 m.
- Perimeter = 40 sticks
Length = 12 sticks
Width = 8 sticks
- Top left linked with 6 m
Top right linked with 5 m
Bottom left linked with 3 m
Bottom right linked with 9 m
- 1 cm 7 cm
2 cm 6 cm
3 cm 5 cm
4 cm 4 cm
 - It is a square because its length and width are the same.
- 280 cm
 - 420 cm
The diagram should show a rectangle with a length of 140 cm and a width of 70 cm.

Reflect

Children find the length is 5 cm and explain their reasoning, e.g.

$$12 - 1 - 1 = 10 \quad 10 \div 2 = 5$$

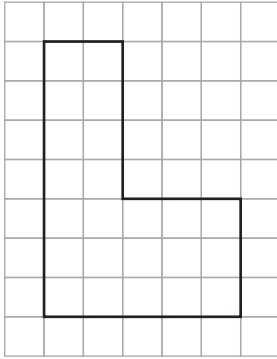
Lesson 4: Perimeter of rectilinear shapes (I)

→ pages 121–123

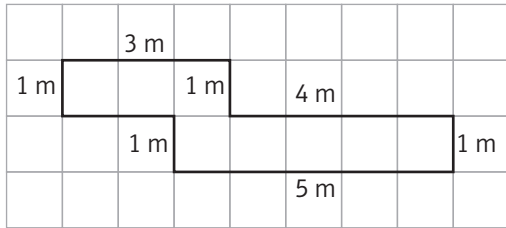
- Clockwise from the top.
 - 2, 1, 2, 1, 4, 2
 - The perimeter of the flower bed is 12 m.m
- 14 c) 20
 - 14 d) 26



3. a) 24
b)



4. 18 cm



5. a) Children draw a factory with side lengths labelled and correct perimeter calculated. All angles should be right angles (no sloping roofs).

Reflect

Not correct. Perimeter = 22

Amy has put a number in each corner where there is no length to measure, and she has not noticed that square 9 includes two 1 cm lengths of the perimeter instead of just one.

Lesson 5: Perimeter of rectilinear shapes (2)

→ pages 124–126

1. a) 3
b) 10
2. 6 cm and 2 cm (or 2 cm and 6 cm)
8
2
7
5
30
3. Left-hand shape Right-hand shape
9 $14\frac{1}{2}$
9 $14\frac{1}{2}$
perimeter = 42 cm perimeter = 58 cm
4. a) The length is $5\text{ cm} + 4\text{ cm} + 9\text{ cm} = 18\text{ cm}$.
The width is 12 m.
The other missing measurement is 7 cm.
b) $12 + 18 + 12 + 9 + 7 + 4 + 7 + 5 = 74$
The perimeter is 74 m.

5. Teacher checks both shapes have a perimeter of 8 units. They will be 3 connected blocks, grouped as either a rectangle or an L (or reverse L), or a square of 2 blocks by 2 blocks

End of unit check

→ pages 127–128

My journal

Using only using horizontal and vertical lines, children draw two shapes each with a perimeter of 18 units.

Power play

Keeping to rectilinear shapes (all right angles), you can make shapes for these perimeters: 10, 8, 6, 4.

Impossible perimeters are: 11, 9, 7, 5, 3, 2, 1, 0.

You can only make a new shape each time you have taken away an even number of sticks. This is because, in a closed rectilinear shape, whatever distance you travel in each dimension (horizontal or vertical), you need to travel the same distance back again: so the total lengths in the horizontal direction will be an even number, and likewise in the vertical direction. Secondly, to make the smallest rectilinear shape (a unit square), you need 4 sticks, so 4 is the minimum.



Unit 5: Multiplication and division (I)

Lesson 1: Multiplying by multiples of 10 and 100

→ pages 129–131

- a) $7 \times 5 = 35$
There are 35 boxes of pencils.

b) $35 \times 10 = 350$ (or $7 \times 50 = 350$)
There are 350 pencils in total.
- a) $6 \times 2 = 12$
There are 12 jars of sweets.

b) $12 \times 100 = 1,200$ (or $6 \times 200 = 1,200$)
There are 1,200 sweets in total.
- $30 + 30 + 30 + 30 + 30 + 30 + 30 = 210$
 7×3 ones = 21 ones = 21; 7×3 tens = 21 tens = 210
 $7 \times 3 = 21$; $21 \times 10 = 210$
- a) $8 \times 200 = 1,600$

b) $8 \times 20 = 160$
- | | |
|--------|--------|
| a) 28 | c) 18 |
| 280 | 180 |
| 2,800 | 1,800 |
| b) 240 | d) 450 |
| 2,400 | 720 |
| 24 | 2,400 |
- 300
Explanations may vary, e.g. I worked out how many 8s there were altogether by finding $200 + 50 + 30 + 20 = 300$.

Reflect

Children use $7 \times 4 = 28$ to explain a linked multiplication, e.g. $700 \times 4 = 7$ hundreds $\times 4 = 28$ hundreds = 2,800

Lesson 2 Dividing multiples of 10 and 100

→ pages 132–134

- a) 2

b) 20

c) 200
- a) $250 \div 50 = 5$

b) $2,800 \div 700 = 4$
- $400 \div 5$ linked with 80 $1,600 \div 2$ linked with 800
 $480 \div 6$ linked with 80 $4,000 \div 5$ linked with 800
 $40 \div 5$ linked with 8 $720 \div 9$ linked with 80
 $32 \div 4$ linked with 8 $800 \div 10$ linked with 80
 32 tens $\div 4$ linked with 80

- | | |
|------|-------|
| a) 6 | c) 11 |
| 60 | 110 |
| 600 | 1,100 |
| b) 6 | d) 70 |
| 60 | 160 |
| 600 | 20 |
| | 400 |

- | | | | | | | |
|----|-----|-------|----|-------|-----------------|-----|
| 6 | 60 | 600 | 20 | 300 | $12\frac{1}{2}$ | 30 |
| 24 | 240 | 2,400 | 80 | 1,200 | 50 | 120 |

$\times 8$ then $\div 2$ is the same as $\times 4$

Reflect

$1,200 \div 4 = 300$

Methods will vary, e.g. $12 \div 4 = 3$ so
 12 hundreds $\div 4 = 3$ hundreds = 300

Lesson 3: Multiplying by 0 and 1

→ pages 135–137

- Lines are drawn to match the picture with the following multiplication

a) $4 \times 0 = 0$

b) $2 \times 3 = 6$

c) $1 \times 4 = 4$

d) $5 \times 1 = 5$

e) $2 \times 0 = 0$
- a) $4 \times 1 = 4$ 4

b) $4 \times 3 = 12$ 12

c) $4 \times 0 = 0$ 0
- Circled calculations: a) c) e) f) h)
They all have 0 as one part of the multiplication.
- | | |
|------|-------|
| a) 0 | c) 15 |
| b) 9 | d) 0 |
- 0

Reflect

With $\times 0$, any number can be put in the first box but the answer will always be 0.

With $\times 1$, whatever goes into the first box is also the answer. When you multiply a number by 1, the number doesn't change.

Unit 4: Dividing by 1

→ pages 138–140

- a) $6 \div 1 = 6$

b) $6 \div 6 = 1$



2. Amelia has confused division with subtraction ($4 - 4 = 0$). However, $4 \div 4 = 1$ because 4 things shared among 4 people means one each.

3. Circled calculations:

$8 \div 8$ $5 \div 5$ $16 \div 16$ $7 \div 7$ $150 \div 150$

4. a) 3 4 5
10 14 20

When you divide a number by 1 the number stays the same.

b) All answers 1

When you divide a number by itself, the answer is always 1.

5. a) 11 d) 1 g) 0
b) 1 e) 12 h) 8
c) 1 f) 70

6. The square is greater than the pentagon. Explanations will vary, e.g. Both numbers have been divided by 1, which leaves them unchanged. This means that square > pentagon.

Reflect

In each calculation both numbers are the same.

Lesson 5: Multiplying and dividing by 6

→ pages 141-143

- a) $3 \times 6 = 18$
18
b) $7 \times 6 = 42$
42
- $48 \div 6 = 8$
8
- $24 \div 6 = 4$
£4
- a) $6 \times 90 = 540$
540
b) $1,800 \div 6 = 300$
300
c) $90 + 300 = 390$
390

5. Methods may vary. One possible method is:

$6 \times 12 = 72$ $72 \times 2 = 144$

$144 + 6 + 6 = 156$

The perimeter of the new shape is 156 cm.

Reflect

Children write and solve a story problem using \times or \div by 6.

Lesson 6: 6 times-table

→ pages 144-146

- a) $3 \times 6 = 18$
b) $5 \times 6 = 30$
- a) 18 f) 0 k) 7
b) 6 g) 4 l) 11
c) 36 h) 54 m) 0
d) 72 i) 1 n) 6
e) 60 j) 4 o) 60
- a) 24 30 36 48
b) 54 48 42 30 24
c) 180 240 300 360
- The following numbers are circled: 60 6 120
(children may also circle 0 because $0 \times 6 = 0$)
- 78
- a) > d) <
b) < e) =
c) < f) >
- a) 24 b) 5,400
240 420
2,400 300
240 200
- a) You can double 8×3 to work out 8×6
b) You can add another 8 to 8×5 to work out 8×6

Reflect

- 0 6 12 18
24 30 36 42
48 54 60 66
72

Lesson 7: Multiplying and dividing by 9

→ pages 147-149

- a) $5 \times 9 = 45$
b) $7 \times 9 = 63$
- Children circle 2 groups of 9
- $72 \div 9 = 8$
- a) $4 \times 9 = 36$
b) $12 \times 9 = 108$
Explanations will vary, e.g. There are 12 sides to the perimeter so $12 \times 9 = 108$ cm
- 209
- 4



Reflect

Children write a problem to match $£45 \div 9 = £5$.

Lesson 8: 9 times-table

→ pages 150–152

- $4 \times 9 = 36$
 - $9 \times 4 = 36$
- 72
- 36 45 63 72 81 99 108
- Children add two more columns of 6 to the array.
54
- | | |
|--------|-------|
| a) 63 | g) 3 |
| b) 0 | h) 1 |
| c) 81 | i) 6 |
| d) 45 | j) 4 |
| e) 108 | k) 99 |
| f) 9 | l) 90 |
- | | |
|---------------|----------|
| a) 27 | b) 6,300 |
| 270 | 540 |
| 2,700 | 540 |
| 270 | 40 |
| 270 (27 tens) | 1,000 |
- Answers will vary, e.g.
 $5 \times 9 > 4 \times 9$
 $0 \div 9 < 36 \div 9$
 $8 \times 9 = 72$

Reflect

Calculations will all be in the 9 times-table, from $1 \times 9 = 9$ up to $12 \times 9 = 108$.

Lesson 9: Multiplying and dividing by 7

→ pages 153–155

- $4 \times 7 = 28$
28
 - $2 \times 7 = 14$
14
 - Seven packets are circled.
- 14 21 35 42 49 56 63 70
- 4 weeks = 28 days
 9 weeks = 63 days
 70 weeks = 490 days
 11 weeks = 77 days
- $7 \times 8 = 56$
56
 - 11 rows
2

- First $3 \times 7 = 21$
 Then $35 - 21 = 14$
 Finally $14 \div 7 = 2$
 2

Reflect

Explanations will vary, e.g. I would draw a 5 by 7 array.

Lesson 10: 7 times-table

→ pages 156–158

- $4 \times = 28$
 - $3 \times 7 = 21$
- 21 28 35 42 49 56 63 77
- 40
16
 $40 + 16 = 56$
56
 - You can add another 7 on to 56
- | | |
|-------|-------|
| a) 28 | h) 8 |
| b) 14 | i) 11 |
| c) 35 | j) 1 |
| d) 70 | k) 4 |
| e) 0 | l) 9 |
| f) 77 | m) 21 |
| g) 6 | n) 84 |
- From top working clockwise:
 Outer: 210 2,100 420 5,600
 Inner: 5 50 500 90 100
- $5 \times 10 \times 4 \times 2 = 400$

Reflect

Explanations will vary, e.g. To work out 7 times a number, you can work out 5 times the number and 2 times the number and add the two answers together.

Lesson 11: 11 and 12 times-tables

→ pages 159–161

- $6 \times 12 = 72$
 - $11 \times 1 = 11$
- $10 \times 12 = 120$
120
- | | | | | | |
|--------|-----|----|----|-----|-----|
| a) 44 | 55 | 66 | 88 | 99 | 110 |
| b) 24 | 48 | 72 | 96 | 108 | |
| c) 120 | 108 | 96 | 84 | 72 | |
| d) 121 | 110 | 99 | 88 | 77 | |



4. Left wheel (clockwise):
Outer: 55 77 99 121 132
Inner: 8 0 1 10
- Right wheel (clockwise):
Outer: 108 36 60 144 132 0
Inner: 1 7 2

5. a) 72
720
7,200
- b) 80
200
12
11
- c) 30
66
9

Large	Med	Small
1	0	12
0	7	1
0	6	3
0	5	5
0	4	7
0	3	9
0	2	11
0	1	13
0	0	15

Reflect

Children complete tables grid.

Numbers across top: 7 3 2 5 10 11 9 6
8 1 12 4

Numbers down left: 10 11 1 4 5 6 2 12
7 3 9 8

End of unit check

→ pages 162–164

My journal

1. There are 27 possible combinations:

Large	Med	Small
5	0	0
4	1	1
4	0	3
3	3	0
3	2	2
3	1	4
3	0	6
2	4	1
2	3	3

Large	Med	Small
2	2	5
2	1	7
2	0	9
1	6	0
1	5	2
1	4	4
1	3	6
1	2	8
1	1	10

2. Children may sort the problems in different ways, e.g.

Problems that involve multiplication: A, D

Problems that involve division: B, C.

A: $6 \times 7 = 42$

7 books cost £42.

B: $48 \div 6 = 8$

Each child receives 8 sweets.

C: $90 \div 9 = 10$

I can buy 10 board games.

D: $2 \times 9 \times 9 = 162$

9 bags weigh 162 kg.

Power puzzle

1. Children note how long it took them. Teacher to check answers.

2. Order of numbers along top of grid: 2, 7, 9, 4, 8, 1, 11, 6, 5, 10, 12, 3

Order of numbers down left side of grid: 4, 10, 2, 1, 8, 6, 12, 3, 7, 11, 9, 5

Teacher to supervise checking of answers in grids designed by children.