Unit 3: Addition and subtraction

Lesson 1: Adding whole numbers with more than 4 digits (1)

➜ pages 58–60

1. a) 77,467

b)
$$\begin{array}{r} 3\ 6\ 4\ 5\ 8 \\ +\ \ 2\ 9\ 2\ 0 \\ \hline 3\ 9\ 3\ 7\ 8 \\ \hline \end{array}$$

c) 42,824 e) 81,509
d) 77,796 f) 16,245

2. a) Kate has not lined up 4,362 correctly.

b)
$$\begin{array}{r} 5\ 3\ 1\ 7\ 5 \\ +\ \ 4\ 3\ 6\ 2 \\ \hline 5\ 7\ 5\ 3\ 7 \\ \hline \end{array}$$

3. a)
$$\begin{array}{r} 1\ 7\ 2\ 7\ 0 \\ +\ 2\ 4\ 1\ 9\ 5 \\ \hline 4\ 1\ 4\ 6\ 5 \\ \hline \end{array}$$

b)
$$\begin{array}{r} 4\ 5\ 9\ 0\ 7 \\ +\ 3\ 3\ 2\ 8\ 4 \\ \hline 7\ 9\ 1\ 9\ 1 \\ \hline \end{array}$$

4. a) 35,510 + 26,138 = 61,648
b) 73,825 + 4,395 = 78,220
c) 20,327 + 18,872 = 39,199

5.
$$\begin{array}{r} 2\ 6\ 5\ 0\ 0 \\ +\ \ 2\ 3\ 0\ 0 \\ \hline 2\ 8\ 8\ 0\ 0 \\ \hline \end{array}$$

6. a) 400,005
b) 400,050
c) 405,000
d) 45,000

Reflect

Explanations will vary. Children should talk through correct placing of digits and exchanging when adding.

Lesson 2: Adding whole numbers with more than 4 digits (2)

➜ pages 61–63

1. a) 43,753
b) 44,527 c) 80,903

2. a) 127,420 + 337,293 = 464,713
b) 37,915 + 8,759 = 46,674
c) 11,759 + 817 = 12,576
d) 519,000 + 294,000 = 813,000

3. a)
$$\begin{array}{r} 1\ 9\ 2\ 5 \\ +\ 2\ 1\ 5\ 0 \\ +\ 2\ 4\ 7\ 5 \\ \hline 6\ 5\ 5\ 0 \\ \hline \end{array}$$

Yes, they reached the target as their total is 6,550 metres.

b) The digits in the ones position are 5, 5 and 0 which add up to make 10, which will be carried as 1 ten into the tens position. This means there will be no ones in the answer and it will be a multiple of 10.

4. a) Max has not lined up 6,293 correctly. The 6 should be in the thousands place value position.

b)
$$\begin{array}{r} 2\ 6\ 3\ 4\ 8 \\ +\ \ 6\ 2\ 9\ 3 \\ \hline 3\ 2\ 6\ 4\ 1 \\ \hline \end{array}$$

5. a)
$$\begin{array}{r} 2\ 5\ 7\ 8\ 4 \\ +\ 3\ 6\ 2\ 3\ 1 \\ \hline 6\ 2\ 0\ 1\ 5 \\ \hline \end{array}$$

b)
$$\begin{array}{r} 6\ 5\ 6\ 4\ 2\ 6 \\ +\ 3\ 1\ 3\ 6\ 2\ 4 \\ \hline 9\ 7\ 0\ 0\ 5\ 0 \\ \hline \end{array}$$

6. Answers may vary; for example:

a)
$$\begin{array}{r} 7\ 4\ 6\ 3\ 9 \\ +\ 2\ 5\ 0\ 1\ 8 \\ \hline 9\ 9\ 6\ 5\ 7 \\ \hline \end{array}$$

b)
$$\begin{array}{r} 7\ 5\ 6\ 9\ 8 \\ +\ 1\ 4\ 3\ 0\ 2 \\ \hline 9\ 0\ 0\ 0\ 0 \\ \hline \end{array}$$

Reflect

Children should write a 5 digit + 5 digit calculation with two exchanges. For example:

a)
$$\begin{array}{r} 4\ 2\ 3\ 1\ 7 \\ +\ 1\ 5\ 8\ 2\ 3 \\ \hline 5\ 8\ 1\ 4\ 0 \\ \hline \end{array}$$

Lesson 3: Subtracting whole numbers with more than 4 digits (I)

➜ pages 64–66

1. a) 24,592 – 3,470 = 21,122
b) 51,340 – 30,720 = 20,620
c) 4,365 – 2,423 = 1,942
d) 76,185 – 5,224 = 70,961
e) 15,712 – 6,000 = 9,712

2. a) 48,200

	$^{6}\not{7}$	$^{1}3$	2	0	0
–	2	5	0	0	0
	4	8	2	0	0

b) 11,541

	4	8	$^{8}\not{9}$	$^{1}2$	3
–	3	7	3	8	2
	1	1	5	4	1

3. a) 127,365 – 102,724 = 24,641
The house next door costs £24,641 less.
b) 18,495 – 7,620 = 10,875
The motorbike is £10,875 cheaper than the car.

4. a)

	2	$^{5}\not{6}$	$^{1}1$	8	2
–		4	7	3	2
	2	1	4	5	0

b)

	4	9	9	$^{7}\not{8}$	$^{1}3$
–	1	4	6	2	7
	3	5	3	5	6

5. The first chest contains 18,455 coins.
The second chest contains 14,255 coins.
The third chest contains 9,135 coins.

Reflect

Children should explain subtraction including exchanging 1 ten thousand for 10 thousands.

Lesson 4: Subtracting whole numbers with more than 4 digits (2)

➜ pages 67–69

1. a) 2,417
b) 23,640
c) 1,647
d) 4,749

2. a) 6,347
b) 38,963
c) 83,652
d) 651,123

3. 19,572

4. a)

	$^{*6}\not{*7}$	$^{14}\not{5}$	$^{1}0$	6	
–	*4	8	3	2	
	*2	6	7	4	

(* where these digits can vary.)

b)

	3	$^{8}\not{9}$	$^{11}\not{2}$	$^{1}1$	7
–	1	1	8	3	7
	2	7	3	8	0

5. a) 2,700 – 1,375 = 1,325
b) 27,000 – 18,904 = 8,096

6. 349,500 – 186,956 = 162,544
162,544 – 73,290 = 89,254
89,254 boys attend the concert.

Reflect

Children should show a 5 digit – 5 digit calculation with two exchanges. For example:
52,971 – 44,753 = 8,218

Lesson 5: Using rounding to estimate and check answers

➜ pages 70–72

1. a) 300
200
300 + 200 = 500
500
b) 7,000
2,000
7,000 – 2,000 = 5,000
5,000
c) 300
7,200
300 + 7,200 = 7,500
7,500

2. a) 12,000
7,600
12,000 + 7,600 = 19,600
b) Bella has not lined up 7,620 correctly using her place value knowledge.
c) 19,625

3. a) 3,200 (3,400 – 200)
b) 220,000 (170,000 + 50,000)

4. Max made his estimate by rounding to the nearest thousand.
Jamie made his estimate by rounding to the nearest hundred.

5. a) £20,000 + £4,000 = £24,000
£24,000 – £4,000 = £20,000
b) £19,995 + £3,941 = £23,936
£23,936 – £4,081 = £19,855

Reflect

Answers will vary. Children should explain that estimating helps to check whether an answer seems sensible.

Lesson 6: Mental addition and subtraction (I)

➜ pages 73–75

1. a) 40 + 30 = 70
5 + 2 = 77
45 + 32 = 70 + 7 = 77
b) 84 c) 379

2. a) 57 c) 87
57 87
570 870
5,700 87,000
b) 288 d) 840
288 840
1,288 84,000
2,817 8,400

3. 38 + 2 = 40 40 + 50 = 90
The missing number is 52.

4. a) 24 d) 67
b) 56 e) 58
c) 606 f) 33

5. a) 330 f) 1,200
b) 260 g) 34
c) 4,700 h) 340
d) 560 i) 54
e) 450 j) 18

6. Methods will vary. Children should have recorded steps in their working.
a) 64 + 83 = 127 c) 64 + 830 = 894
b) 260 + 197 = 457 d) 125 + 575 = 700

7. a) 1,230 c) 420
b) 278

Reflect

Children's methods will vary. Children should have recognised that the numbers in calculation b) are ten times larger than the numbers in calculation a).
a) 40 + 30 = 70, 5 + 2 = 7
So, 70 + 7 = 77
b) 450 + 380 = 770, using answer to a).
c) 360 + 198 = 360 + 200 – 2 = 560 – 2 = 558

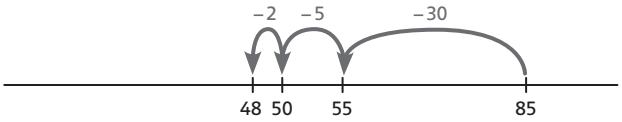
Lesson 7: Mental addition and subtraction (2)

➜ pages 76–78

1. a) 78 – 20 = 58 70 – 20 = 50
58 – 5 = 53 8 – 5 = 3
So, 78 – 25 = 53 So, 78 – 25 = 53
b) 670 – 200 = 470 600 – 200 = 400
470 – 20 = 450 70 – 20 = 50
So, 670 – 220 = 450 So, 670 – 220 = 450

2. a) 43 d) 22
430 220
4,300 2,200
b) 37 e) 250
c) 300 f) 3,200

3. a) 85 – 30 = 55
55 – 5 = 50
50 – 2 = 48
So, 85 – 37 = 48
b) Children should draw jumps on the number line:



4. a) 27 c) 16
27 53
b) 122 d) 82
118 78

5. a) 4 d) 13
b) 8 e) 10
c) 8 f) 16
g) The difference between 8,002 and 7,997 is 5.

6. a) 261
b) 747
c) 7
d) 388
e) 245

Reflect

Methods may vary but children should have recognised that 792 and 801 are close to each other so may choose to use a counting on method. For example:
792 + 8 = 800
800 + 1 = 801
So, 801 – 792 = 9

Lesson 8: Using inverse operations

➜ pages 79–81

1. a) 1,440 + 1,264 = 2,704
Ticked: The answer is correct.
b) 15,995 – 14,600 = 1,395
Ticked: The answer is incorrect.
c)

	1	8	4	6	8
+	1	8	4	8	2
	3	6	9	5	0

Ticked: The answer is incorrect.

2. a) Order of calculations may vary:
2,600 + 3,500 = 6,100
3,500 + 2,600 = 6,100
6,100 – 2,600 = 3,500
6,100 – 3,500 = 2,600
b) 26,000 + 35,000 = 61,000

3. a) 1,120 needs to be written into the correct place value positions.
Correct answer = 35,846
b) Exchange needs to be completed.
Correct answer = 128

4. a) 10,000 – 7,500 = 2,500 or 10,000 – 3,500 = 6,500
b) Richard has forgotten 500 + 500 = 1,000 so the answer is 11,000.

5. 14,264 – 764 = 13,500 or 14,264 – 13,500 = 764

Reflect

Answers will vary; for example, children may suggest that if they just do the calculation again they might repeat the same mistake.

Lesson 9: Problem solving – addition and subtraction (1)

➜ pages 82–84

1. a) 3,240
b) 127,500 kg
c) £3,371

2. 34,055

3. 1,308 + 750 = 2,058 2,058 + 1,308 = 3,366
The café sells 3,366 cups of coffee in total.

4. 3,456 + 2,922 = 6,378 8,000 – 6,378 = 1,622

5. 126,000 + 12,600 + 1,260 + 126 = 139,986

6. Week = 12,440
Weekend = 14,660 14,660 – 12,440 = 2,220
2,220 more eggs were sold at the weekend than during the week.

Reflect

Children should write their own problem involving adding two numbers and then subtracting a third number.

Lesson 10: Problem solving – addition and subtraction (2)

➜ pages 85–87

1. 160,500 + 85,000 – 7,900 = 237,600
There are 237,600 litres of water in the pool now.

2. a) Tex made more toys than Karl in September and in October, so he must have made more toys than Karl in total.
b) Karl: 12,675 + 9,580 = 22,255
Tex: 13,188 + 10,680 = 23,868
23,868 – 22,255 = 1,613
Alternatively, some children may work out:
13,188 – 12,675 = 513 10,680 – 9,580 – 1,100
513 + 1,100 = 1,613
Tex made 1,613 more toys in total.

3. 12,840 + 7,319 = 20,159 30,000 – 20,159 = 9,841
The missing number is 9,841.

4. First barrel: 1,280
Second barrel: 1,280 + 480 = 1,760
Third barrel: 1,280 – 276 = 1,004
Total: 1,280 + 1,760 + 1,044 = 4,044
(Alternatively, some children may work out:
3 × 1,280 + 480 – 276)
There are 4,044 apples in total.

5. a) 100,385 – 75,560 = 24,825
100,385 + 24,825 = 125,210
125,210 is at A.
b) 125,210 + 24,825 + 24,825 + 24,825 + 24,825 = 224,510
224,510 is the first number above 200,000 that Kate will reach.

Reflect

Explanations will vary. Children should explain their methods for each calculation. For example:
182,000 – 79,000 = 103,000 500 – 320 = 180
So, 182,500 – 79,320 = 103,180
75,000 + 28,000 = 103,000
111 + 396 = 111 + 400 – 4 = 507
So 75,111 + 28,396 = 103,507
So, the second calculation has the bigger answer.

End of unit check

➜ pages 88–89

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1. Children should make up a story problem using the bar model provided.
39,480 + 39,480 = 78,960
100,000 – 78,960 = 21,040
So, ? = 21,040

Power puzzle

1. a)

13,197	5,966	**837**	**20,000**
3,457	11,102	15,441	**30,000**
23,346	32,932	3,722	**60,000**
40,000	**50,000**	**20,000**	

b) Answers will vary; children should complete the table provided, and then make their own table for a partner to solve.