

Reasoning and Problem Solving

Step 1: Add More Than 4-Digits

National Curriculum Objectives:

Mathematics Year 5: (5C2) [Add and subtract whole numbers with more than 4 digits, including using formal written methods \(columnar addition and subtraction\)](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Explain which statement is correct by adding two 4-digit numbers together. Includes some exchanging with no use of zero as a place holder.

Expected Explain which statement is correct by adding 4 and 5-digit numbers together. Includes some exchanging with some use of zero as a place holder.

Greater Depth Explain which statement is correct by adding two 4 and 5-digit numbers together. Includes multiple exchanges with the use of zero as a place holder.

Questions 2, 5 and 8 (Problem Solving)

Developing Calculate missing place value counters in a given calculation. Additions of two 4-digit numbers. Includes some exchanging with no use of zero as a place holder. Visual representation used.

Expected Calculate missing place value counters in a given calculation. Additions of up to three 5-digit numbers. Includes exchanging with some use of zero as a place holder. Presented in column format.

Greater Depth Calculate missing place value counters in a given calculation. Additions of up to three 4 and 5-digit numbers. Includes multiple exchanges with the use of zero as a place holder. Column format used and some examples of unconventional partitioning.

Questions 3, 6 and 9 (Reasoning)

Developing Identify and explain a mistake when adding two 4-digit numbers. Includes some exchanging with no use of zero as a place holder.

Expected Identify and explain a mistake when adding 4 and 5-digit numbers. Includes exchanging with some use of zero as a place holder. Presented in column format.

Greater Depth Identify and explain a mistake when adding up to three 4 and 5-digit numbers. Includes multiple exchanges with the use of zero as a place holder. Linear format used.

More [Year 5 and Year 6 Addition and Subtraction](#) resources.

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Add More Than 4-Digits

1a. Gary and Jay are comparing their income.

	Earnings	Bonus
Gary	£7,429	£3,846
Jay	£8,283	£1,387



I earnt more because altogether I earnt above £10,000.

I must have had a larger income because my earnings were higher than yours.



Who is correct? Explain why.



5 R

Add More Than 4-Digits

1b. Jody and Lynette are comparing their income.

	Earnings	Bonus
Jody	£6,381	£1,453
Lynette	£5,392	£2,445



I only earnt £3 less pounds than you altogether.

You must have earnt more money than me because your earnings were almost £1,000 more.



Who is correct? Explain why.



5 R

2a. Add the missing place value counters to make this addition correct.

	1,000s	100s	10s	1s
	●●●●	●●	●	●●●
+		●●●	●●●●	
	1	2	1	9
				8



5 PS

2b. Add the missing place value counters to make this addition correct.

	1,000s	100s	10s	1s
	●●●	●●●		●●●●
+		●	●●	●●
	9	6	4	1



5 PS

3a. Steph completes this sum incorrectly.

	8	4	9	1
+	3	7	2	4
	1	1	2	1
		1		

Explain the mistake she has made.



5 R

3b. Phil completes this sum incorrectly.

	2	2	9	6
+	7	3	8	7
	9	7	8	3
		2	1	

Explain the mistake he has made.



5 R

Add More Than 4-Digits

4a. Alan and Oscar are comparing their income.

	Earnings	Bonus
Alan	£28,568	£7,099
Oscar	£24,079	£9,865



Alan

I earnt more because $£28,568 + £7,099 = £35,667$.

I earnt more money because my bonus was almost £3,000 more than yours.



Oscar

Who is correct? Explain why.



5 R

Add More Than 4-Digits

4b. Susie and Emma are comparing their income.

	Earnings	Bonus
Susie	£32,056	£5,099
Emma	£30,837	£10,865



Susie

You earnt less money altogether than me because my earnings were higher.

I earnt more money because my bonus was more than double the amount of yours.



Emma

Who is correct? Explain why.



5 R

5a. Add the missing place value counters to make this addition correct.

	10,000s	1,000s	100s	10s	1s
	●●		●●●●	●●●●	●
	●●●●	●●			●●
+	●		●●●●		●●●●
	7	2	1	8	6



5 PS

5b. Add the missing place value counters to make this addition correct.

	10,000s	1,000s	100s	10s	1s
	●●●●	●●●●		●●●●	●●●●
+	●●●●	●●●●		●	
	1	0	0	4	4
				2	



5 PS

6a. Jaiden completes this sum incorrectly.

	6	3	2	1	8
		4	2	8	9
+	3	4	7	0	3
	1	0	2	1	1
	1	0	2	1	1
	1	1	1	2	

Explain the mistake he has made.



5 R

6b. Tilly completes this sum incorrectly.

	2	0	3	8	3
+	9	5	3	4	7
	1	1	5	8	3
			2	1	

Explain the mistake she has made.



5 R

Add More Than 4-Digits

7a. Sandy and Gabby are comparing their income.

	Earnings	Bonus
Sandy	£75,308	£3,297
Gabby	£68,488	£9,869



Sandy

In total, I earned £1,298 more than you.

Although my bonus was high, you still earned £248 more than me altogether.



Gabby

Who is correct? Explain why.



5 R

Add More Than 4-Digits

7b. Mike and Danny are comparing their income.

	Earnings	Bonus
Mike	£68,394	£3,707
Danny	£52,980	£12,383



Mike

Even though your bonus was almost four times as much as mine, I earned £6,738 more than you.

My total income equals £72,101.



Danny

Who is correct? Explain why.



5 R

8a. Add the missing place value counters to make this addition correct.

	10,000s	1,000s	100s	10s	1s
	9	2	5	7	4
+		1	5	7	4
	2	0	1	5	7
	2	0	1	5	7



5 PS

8b. Add the missing place value counters to make this addition correct.

	10,000s	1,000s	100s	10s	1s
	9	2	5	7	4
+		1	5	7	4
	2	0	1	5	7
	2	0	1	5	7



5 PS

9a. Steve completes this sum incorrectly.

$$63,218 + 4,289 + 34,703 = 102,110$$

Explain the mistake he has made



5 R

9b. Giselle completes this sum incorrectly.

$$20,383 + 95,347 = 115,830$$

Explain the mistake she has made



5 R

Reasoning and Problem Solving Add More Than 4-Digits

Developing

1a. Gary is correct because his total income was £11,275 which is greater than £10,000. Jay's income was £9,670.

2a. Various answers, for example:

	1,000s	100s	10s	1s	
	●●●●	●●●●●	●	●●●●	
+	●●	●●●●	●●●●	●●●	
	1	2	1	9	8

3a. Steph's answer should be 12,215. She has forgotten to exchange the ten hundreds into the thousands column.

Expected

4a. Alan is correct because £28,568 + £7,099 = £35,667 which is greater than Oscar's total of £33,944.

5a. Various answers, for example:

	10,000s	1,000s	100s	10s	1s
	●●	●●●●	●●●	●●●	●
+	●●●	●●	●	●●●●	●●
	7	2	1	8	6

6a. Jaiden's answer should be 102,210. He has forgotten to add the one hundred that he has exchanged from the tens column.

Greater Depth

7a. Gabby is correct because her total was £78,357. Sandy's income was £78,605 which is £248 higher than Gabby's.

8a. Various answers, for example:

	10,000s	1,000s	100s	10s	1s	
	●●●●	●●	●●●	●●●	●●	
+	●	●●●●	●●●	●●●	●●	
	2	0	1	5	7	4

9a. Steve's answer should be 102,210. He has added the digits in the hundreds column up incorrectly.

Reasoning and Problem Solving Add More Than 4-Digits

Developing

1b. Jody is correct because her total income was £7,834 which is £3 less than Lynette's income of £7,837.

2b. Various answers, for example:

	1,000s	100s	10s	1s
	●●●	●●●	●	●●●●
+	●●●●	●●	●●	●●●●
	9	6	4	1

3b. Phil's answer should be 9,683. In the hundreds column, he has exchanged twenty tens (200) instead of ten tens (100).

Expected

4b. Emma is correct because £30,837 + £10,865 = £41,702 which is greater than Susie's total of £37,155.

5b. Various answers, for example:

	10,000s	1,000s	100s	10s	1s	
	●●	●●●	●●	●●●	●●	
+	●●●	●●●	●●	●		
	1	0	0	4	4	2

6b. Tilly's answer should be 115,730. In the hundreds column, she has exchanged twenty tens (200) instead of ten tens (100).

Greater Depth

7b. Mike is correct because £65,363 + £6738 = £72,101 which is Mike's total income. Danny's income was £65,363.

8b. Various answers, for example:

	10,000s	1,000s	100s	10s	1s	
	●●	●●●	●	●●	●●●●	
+	●●	●●●	●●	●	●●●	
	1	7	3	5	5	6

9b. Giselle's answer should be 115,730. In the hundreds column, she has exchanged twenty tens (200) instead of ten tens (100).