

# Reasoning and Problem Solving

## Step 4: Add Two 4-Digit Numbers 3

### Teaching note:

In the Expected and Greater Depth levels, 3-digit numbers have been included to ensure that children have a secure understanding of place value and have the opportunity to address any misconceptions that may arise.

### National Curriculum Objectives:

Mathematics Year 4: (4C2) [Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate](#)

Mathematics Year 4: (4C3) [Estimate and use inverse operations to check answers to a calculation](#)

Mathematics Year 4: (4C4) [Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why](#)

### Differentiation:

Questions 1, 4 and 7 (Problem Solving)

**Developing** Use digit cards to create an addition with two exchanges. Includes adding two 4-digit numbers.

**Expected** Use digit cards to create two different additions with multiple exchanges. Includes adding two 4-digit numbers.

**Greater Depth** Use digit cards to create four different additions with multiple exchanges. Includes adding a 3-digit and 4-digit number or a 4-digit and 4-digit number. Use of zero as a place holder.

Questions 2, 5 and 8 (Reasoning)

**Developing** Find and explain mistakes in addition with two exchanges. Includes adding two 4-digit numbers using a place value chart.

**Expected** Find and explain mistakes in addition with multiple exchanges. Includes adding two 4-digit numbers using a column format. Some use of zero as a place holder.

**Greater Depth** Find and explain mistakes in addition with multiple exchanges. Includes adding two 4-digit numbers using a linear format. Use of zero as a place holder.

Questions 3, 6 and 9 (Problem Solving)

**Developing** Identify the missing values in a place value chart with two exchanges. Missing values limited to two columns only. Includes adding two 4-digit numbers.

**Expected** Identify the missing values in a place value chart with multiple exchanges. Includes adding two 4-digit numbers with some use of zero as a place holder.

**Greater Depth** Identify the missing values in a place value chart with multiple exchanges. Includes adding two 4-digit numbers with unconventional partitioning.

More [Year 4 Addition and Subtraction](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

## Add Two 4-Digit Numbers 3

## Add Two 4-Digit Numbers 3

1a. Use the digit cards to create an addition calculation using two 4-digit numbers with two exchanges.



Find one possibility.



PS

1b. Use the digit cards to create an addition calculation using two 4-digit numbers with two exchanges.



Find one possibility.



PS

2a. Find and explain the mistake.

	Th	H	T	O
			●●	●●●
	●●	●●	●●●	●●●
+			●	●●●
	●	●●●	●●●	●●●
	<b>3</b>	<b>5</b>	<b>0</b>	<b>2</b>
		1	1	



R

2b. Find and explain the mistake.

	Th	H	T	O
			●●	●●●
	●●●	●●●	●●	●●●
+		●●	●●●	
	●●●	●●●	●●●	●●●
	<b>7</b>	<b>1</b>	<b>1</b>	<b>9</b>
	1	1		



R

3a. Draw the missing counters in the ones and tens column.

	Th	H	T	O
				●
	●●●	●●	●●●	●●●
+				
	●●	●●●	●	
	<b>5</b>	<b>7</b>	<b>2</b>	<b>1</b>
		1	1	



PS

3b. Draw the missing counters in the ones and tens column.

	Th	H	T	O
	●●			
	●●●	●●		
+				
	●●	●	●●●	●●●
	<b>7</b>	<b>4</b>	<b>1</b>	<b>1</b>
		1	1	



PS

## Add Two 4-Digit Numbers 3

## Add Two 4-Digit Numbers 3

4a. Use the digit cards to create addition calculations using two 4-digit numbers with three exchanges.

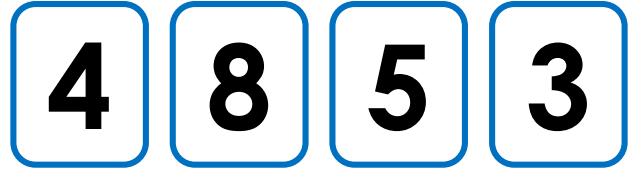


Find two possibilities.



PS

4b. Use the digit cards to create addition calculations using two 4-digit numbers with three exchanges.



Find two possibilities.



PS

5a. Find and explain the mistakes.

A.

	4	7	8	2
+	1	4	2	0
<hr/>				
	6	1	0	2
<hr/>				
	1	1		

B.

	3	2	0	8
+	2	8	9	9
<hr/>				
	6	0	0	6
<hr/>				
	1	1	1	



R

5b. Find and explain the mistakes.

A.

	7	9	3	4
+		6	7	6
<hr/>				
	8	6	0	0
<hr/>				
	1	1	1	

B.

	3	8	1	3
+	2	8	7	9
<hr/>				
	5	6	9	2
<hr/>				
	1		1	



R

6a. Draw the missing counters.

	Th	H	T	O
+				
<hr/>				
	7	6	2	5



PS

6b. Draw the missing counters.

	Th	H	T	O
+				
<hr/>				
	9	4	9	1



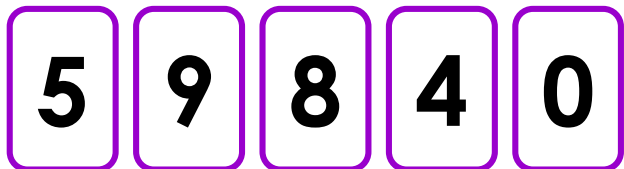
PS

## Add Two 4-Digit Numbers 3

## Add Two 4-Digit Numbers 3

7a. Use the digit cards to create addition calculations that use a 3-digit and 4-digit number, or two 4-digit numbers.

3 exchanges must be included and one number must use zero as a place holder.



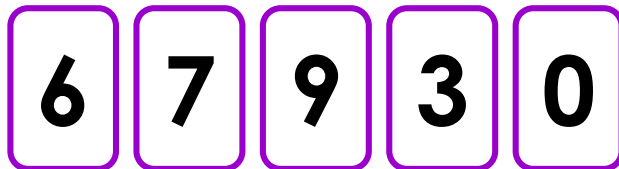
Find four possibilities.



PS

7b. Use the digit cards to create addition calculations that use a 3-digit and 4-digit number, or two 4-digit numbers.

3 exchanges must be included and one number must use zero as a place holder.



Find four possibilities.



PS

8a. Find and explain the mistakes.

A.  $7,953 + 1,287 = 9,230$

B.  $5,607 + 2,594 = 7,201$

C.  $3,892 + 1,358 = 5150$



R

8b. Find and explain the mistakes.

A.  $4,659 + 2,472 = 6,131$

B.  $3,952 + 1,979 = 5,831$

C.  $6,208 + 1,896 = 8094$



R

9a. Draw the missing counters.

	Th	H	T	O
+				
	9	9	6	8



PS

9b. Draw the missing counters.

	Th	H	T	O
+				
	9	9	6	6



PS

## Reasoning and Problem Solving Add Two 4-Digit Numbers 3

### Developing

- 1a. Various answers, for example:  
 $3,256 + 2,365 = 5,621$ ;  $3,652 + 2,563 = 6,215$
- 2a. The answer should be 3,602. The exchanged 100 has not been added to the total.
- 3a. 4 ones and 8 tens need to be added.

### Expected

- 4a. Various answers, for example:  
 $5,639 + 3,695 = 9,334$ ;  $3,965 + 3,695 = 7,660$
- 5a. A. The answer should be 6,202. The exchanged 100 has not been added to the total.  
B. The answer should be 6,107. The ones column has been added incorrectly and the exchanged 100 has not been added to the total.
- 6a. 1 thousand, 6 tens and 6 ones need to be added.

### Greater Depth

- 7a. Various answers, for example:  
 $4,985 + 4,059 = 9,044$ ;  $5,049 + 958 = 6,007$ ;  
 $4,095 + 4,905 = 9,000$ ;  $5,094 + 908 = 6,002$
- 8a. A. The answer should be 9,240. The exchanged 10 has not been added to the total.  
B. The answer should be 8,201. The exchanged 1,000 has not been added to the total.  
C. The answer should be 5,250. The exchanged 100 has not been added to the total.
- 9a. 1 thousand, 1 hundred, 7 tens and 4 ones need to be added.

## Reasoning and Problem Solving Add Two 4-Digit Numbers 3

### Developing

- 1b. Various answers, for example:  
 $2,179 + 1,297 = 3,476$ ;  $2,971 + 1,792 = 4,763$
- 2b. The answer should be 7,219. The exchanged 100 has not been added to the total.
- 3b. 5 ones and 6 tens need to be added.

### Expected

- 4b. Various answers, for example:  
 $4,853 + 3,458 = 8,311$ ;  $4,358 + 4,853 = 9,211$
- 5b. A. The answer should be 8,610. The exchanged 10 has not been added to the total.  
B. The answer should be 6,692. The exchanged 1,000 has not been added to the total.
- 6b. 2 thousands, 6 hundreds, 2 tens and 5 ones need to be added.

### Greater Depth

- 7b. Various answers, for example:  
 $3,796 + 3,607 = 7,403$ ;  $7,069 + 963 = 8,032$ ;  
 $3,796 + 3,706 = 7,502$ ;  $9,706 + 397 = 10,103$
- 8b. A. The answer should be 7,131. The exchanged 1,000 has not been added to the total.  
B. The answer should be 5,931. The exchanged 100 has not been added to the total.  
C. The answer should be 8,104. The exchanged 10 has not been added to the tens column which has also made the hundreds column incorrect.
- 9b. 1 thousand, 3 hundreds, 4 tens and 2 ones need to be added.