



- 1) a) 3602
 b) 3383
 c) 25 305
 d) 26 130
 e) 54 154

- 2) a) *High Fliers and Fantastic French*
 b) *Sea Beast and The Conjurers (10 464). Number One and Fantastic French (1838). Look for children who explain their reasoning about number selection, e.g. taking the largest and smallest numbers to find the greatest difference and the two closest numbers for the smallest difference, rather than trying every combination of numbers to find the correct answer.*

1) a)

| | | | | | |
|---|---|--------------|----------------|---|---|
| | 3 | 1 | ¹ 5 | 6 | 1 |
| - | | 1 | 6 | 3 | 5 |
| | 3 | 0 | 9 | 3 | 4 |

Rana has done 5 - 1 rather than doing 1 - 5 and exchanging.
 The correct answer is 30 926.

b)

| | | | | | |
|---|---|---|---|---|---|
| | 8 | 4 | 2 | 8 | 4 |
| - | 5 | 2 | 6 | 5 | 3 |
| | 3 | 2 | 6 | 3 | 1 |

Rana has not recorded the exchange of taking 1 thousand from 4 thousands to create 10 hundreds, which would leave 3 thousands.
 The correct answer is 31 631.

- 2) *Never. In a pair of consecutive numbers, one number will be odd and the other even.*

odd - even = odd

even - odd = odd





1)

| | | | | | |
|---|---|---|---|---|---|
| | 7 | 2 | 0 | 6 | 4 |
| - | 2 | 9 | 5 | 4 | 3 |
| | 4 | 2 | 5 | 2 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| | 9 | 2 | 3 | 0 | 8 |
| - | 2 | 4 | 1 | 7 | 8 |
| | 6 | 8 | 1 | 3 | 0 |

2) *One example combination of possible answers:*

| | | |
|---------------|---------------|---------------|
| $A = 65\ 123$ | $A = 56\ 032$ | $A = 87\ 325$ |
| $B = 77\ 468$ | $B = 68\ 377$ | $B = 74\ 980$ |
| $C = 23\ 147$ | $C = 14\ 056$ | $C = 20\ 659$ |



1) Complete these subtraction calculations. You may want to use place value counters to help you.

a)

| | | | | |
|---|---|---|---|---|
| | 5 | 1 | 3 | 4 |
| - | 1 | 5 | 3 | 2 |
| | | | | |

b)

| | | | | |
|---|---|---|---|---|
| | 9 | 0 | 5 | 4 |
| - | 5 | 6 | 7 | 1 |
| | | | | |

c)

| | | | | | |
|---|---|---|---|---|---|
| | 3 | 4 | 0 | 2 | 3 |
| - | | 8 | 7 | 1 | 8 |
| | | | | | |

d) $52\,064 - 25\,934$

| | | | | | |
|--|--|--|--|--|--|
| | | | | | |
| | | | | | |
| | | | | | |

e) $86\,807 - 32\,653$

| | | | | | |
|--|--|--|--|--|--|
| | | | | | |
| | | | | | |
| | | | | | |

2) Here are the flight times, in seconds, for each flying team.



| Sea Beast | Number One | High Fliers | The Conjurers | Fantastic French |
|-----------|------------|-------------|---------------|------------------|
| 82 507 | 80 198 | 75 259 | 72 043 | 78 360 |

a) Which teams have a time difference of 3101?

b) Which two teams have the greatest time difference? How about the smallest time difference? Prove it!

- 1) Rana has been practising the column method but she has made some mistakes. Can you identify all the mistakes and explain what she has done wrong?



Complete the calculation yourself to show the correct workings.

a)

| | | | | | |
|---|---|---------------------------|----------------|---|---|
| | 3 | 2 ¹ | ¹ 5 | 6 | 1 |
| - | | 1 | 6 | 3 | 5 |
| | 3 | 0 | 9 | 3 | 4 |

| | | | | | | |
|--|--|--|--|--|--|--|
| | | | | | | |
| | | | | | | |
| | | | | | | |

b)

| | | | | | |
|---|---|---|---|---|---|
| | 8 | 4 | 2 | 8 | 4 |
| - | 5 | 2 | 6 | 5 | 3 |
| | 3 | 2 | 6 | 3 | 1 |

| | | | | | | |
|--|--|--|--|--|--|--|
| | | | | | | |
| | | | | | | |
| | | | | | | |

- 2) Is this statement always, sometimes or never true? Explain your thinking.

'If you find the difference between two consecutive numbers, the answer will be an even number.'



1) Can you identify the missing digits in these two calculations?

| | | | | | |
|---|----------------------|----------------------|----------------------|----------------------|---|
| | <input type="text"/> | 2 | <input type="text"/> | 6 | 4 |
| - | 2 | <input type="text"/> | 5 | 4 | 3 |
| | 4 | 2 | 5 | <input type="text"/> | 1 |

| | | | | | |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|
| | 9 | <input type="text"/> | <input type="text"/> | 0 | 8 |
| - | 2 | 4 | 1 | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | 8 | 1 | 3 | 0 |

2) I have 3 whole numbers: A, B and C.

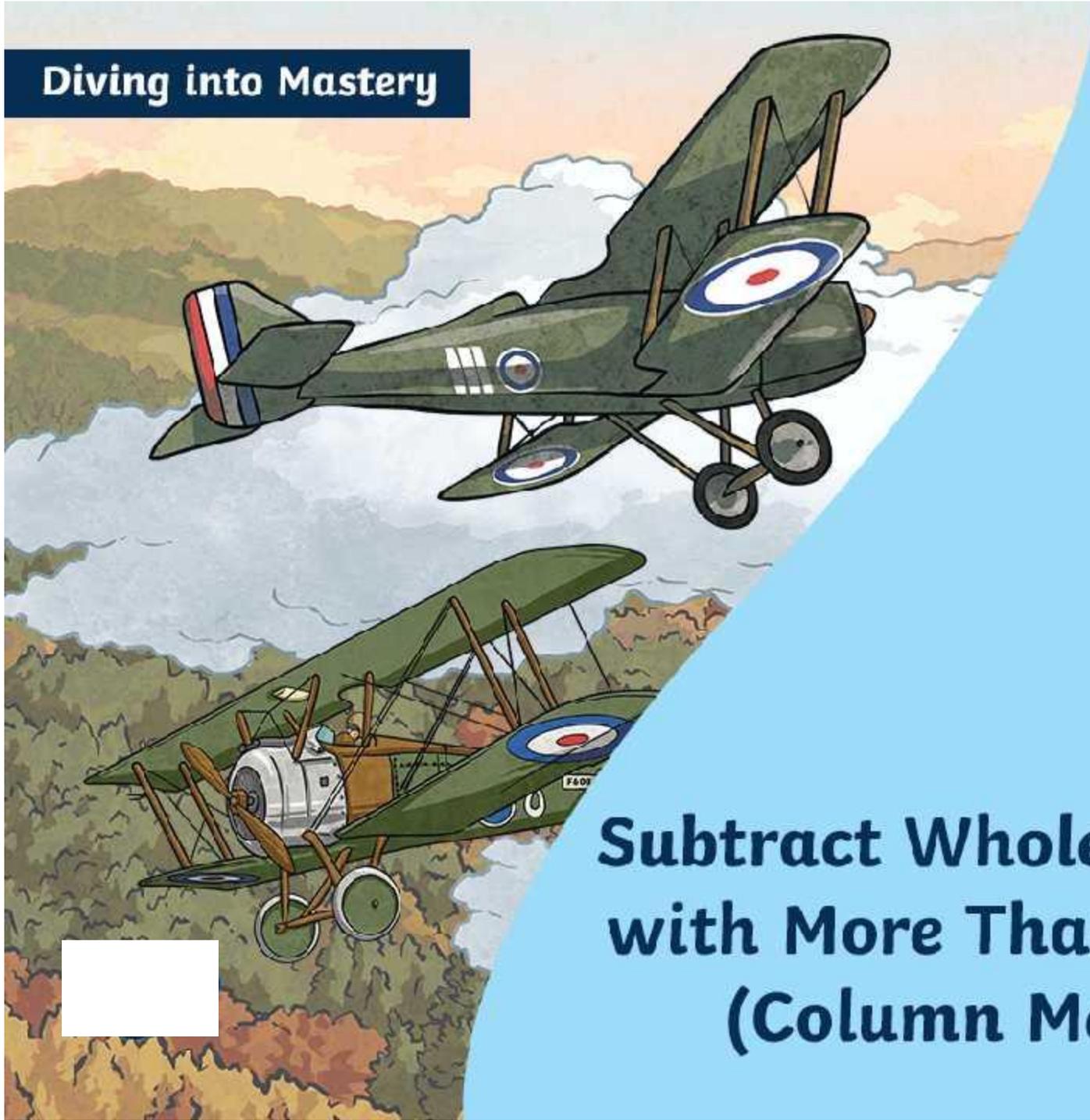
Each has 5 digits.

The difference between A and B is 12 345 and the difference between B and C is 54 321.

What could my numbers be? Find 3 possibilities and show your workings.

| | | |
|-------------------------------------|-------------------------------------|-------------------------------------|
| A = _____ B = _____ C = _____ | A = _____ B = _____ C = _____ | A = _____ B = _____ C = _____ |
|-------------------------------------|-------------------------------------|-------------------------------------|

Diving into Mastery



Subtract Whole Numbers with More Than 4 Digits (Column Method)

Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:



Diving



Deeper



Deepest

These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.

Aim

- Add and subtract whole numbers with more than 4 digits, including using formal written methods.

Subtract Whole Numbers with More Than 4 Digits (Column Method)

Diving



Complete these subtraction calculations. You may want to use place value counters to help you.

| | | | | |
|---|---|---|---|---|
| | 9 | 6 | 3 | 4 |
| - | 3 | 5 | 6 | 5 |
| | 6 | 0 | 6 | 9 |

| | | | | | |
|---|---|---|---|---|---|
| | 2 | 8 | 5 | 3 | 2 |
| - | | 7 | 3 | 1 | 5 |
| | 2 | 1 | 2 | 1 | 7 |

| | | | | | |
|---|---|---|---|---|---|
| | 8 | 5 | 6 | 7 | 8 |
| - | 1 | 8 | 4 | 3 | 7 |
| | 6 | 7 | 2 | 4 | 1 |

$$65\,149 - 36\,547 = 28\,602$$

$$52\,697 - 32\,588 = 20\,109$$



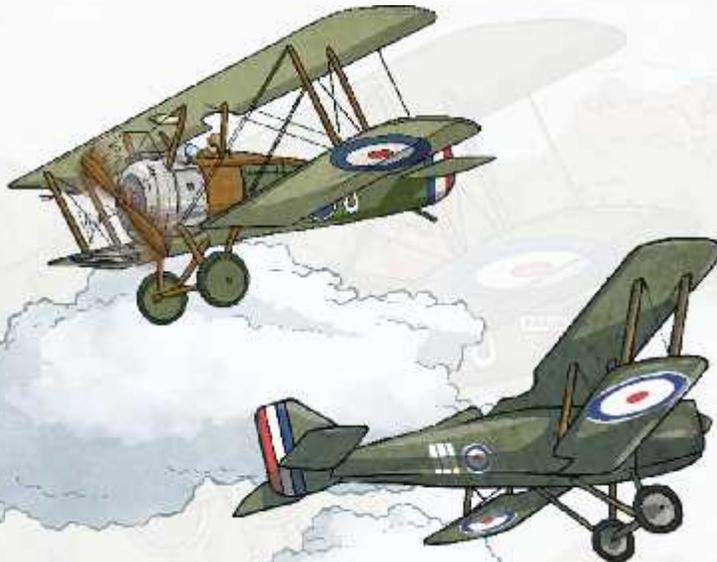
Subtract Whole Numbers with More Than 4 Digits (Column Method)

Diving



Here are five teams' flight times, given in seconds.

| Number One | Fantastic Fliers | Sea Beast | Air Warrior | Plane Sailing |
|------------|------------------|-----------|-------------|---------------|
| 61 035 | 79 541 | 82 658 | 71 982 | 75 608 |



Which two teams have a difference of exactly 10 676?

Sea Beast and Air Warrior

Which two teams have a difference of exactly 21 623?

Number One and Sea Beast

Subtract Whole Numbers with More Than 4 Digits (Column Method)

Deeper



Jamila has been practising column subtraction but she has made some mistakes.

Can you identify all the mistakes and explain her errors?

Then carry out the calculations yourself to find the correct totals.



| | | | | | |
|---|---|---|---|---|---|
| | 4 | 7 | 8 | 3 | 2 |
| - | | 6 | 4 | 0 | 8 |
| | 4 | 1 | 4 | 3 | 6 |

| | | | | | |
|---|---|---|---|---|---|
| | 8 | 7 | 7 | 6 | 1 |
| - | 2 | 6 | 0 | 5 | 3 |
| | 6 | 1 | 7 | 1 | 8 |

Subtract Whole Numbers with More Than 4 Digits (Column Method)

Deeper



Jamila has done $8 - 2$ rather than $2 - 8$ and exchanging.

| | | | | | |
|---|---|---|---|---|---|
| | 4 | 7 | 8 | 3 | 2 |
| - | | 6 | 4 | 0 | 8 |
| | 4 | 1 | 4 | 3 | 6 |

The correct total is 41 424.

Jamila has not recorded the exchange of taking 1 ten from 6 tens to create 11 ones, which leaves 5 tens.

| | | | | | |
|---|---|---|---|---|---|
| | 8 | 7 | 7 | 6 | 1 |
| - | 2 | 6 | 0 | 5 | 3 |
| | 6 | 1 | 7 | 1 | 8 |

The correct total is 61 708.





Is this statement always, sometimes or never true? Explain your thinking.



This is never true.

An odd number subtract another odd number will always give an even number.

For example, $12\ 561 - 8\ 537 = 4\ 024$.

The difference between two odd numbers is odd.





Can you identify the missing digits in these two calculations?

| | | | | | |
|---|---|---|---|---|---|
| | 5 | 5 | 0 | 3 | 9 |
| - | | 5 | 6 | 5 | 2 |
| | 4 | 9 | 3 | 8 | 7 |

| | | | | | |
|---|---|---|---|---|---|
| | 8 | 4 | 3 | 0 | 6 |
| - | 3 | 5 | 7 | 0 | 4 |
| | 4 | 8 | 6 | 0 | 2 |

Subtract Whole Numbers with More Than 4 Digits (Column Method)

Deepest



I have 3 whole numbers: A, B and C.

Each has 5 digits.

The difference between A and B is 18 304
and the difference between B and C is 35 782.

What could my numbers be? Find three different possibilities and show the working for each.

One example of possible answers:

$$A = 75\ 123$$

$$B = 56\ 819$$

$$C = 92\ 601$$

$$A = 66\ 032$$

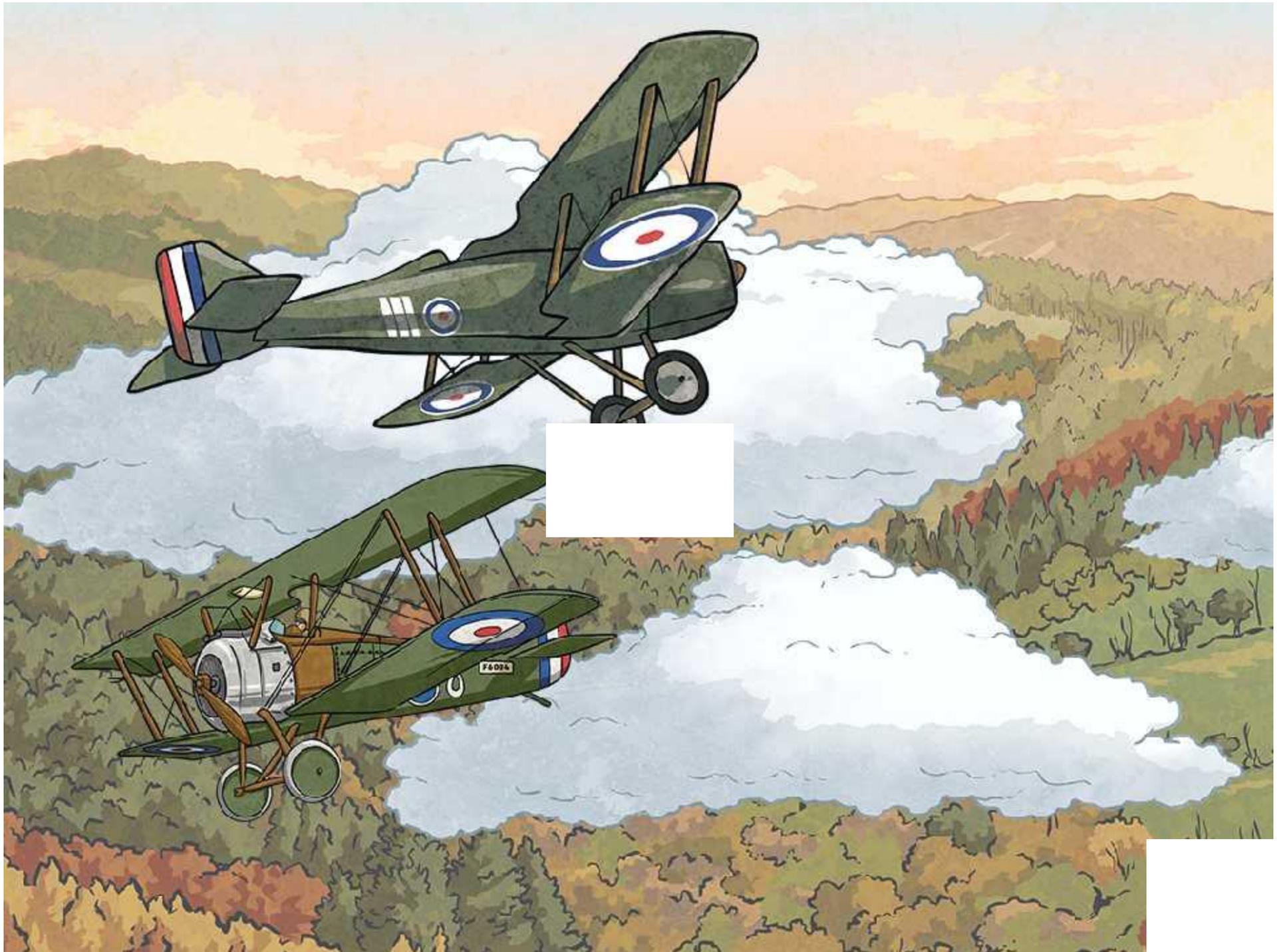
$$B = 47\ 728$$

$$C = 11\ 946$$

$$A = 97\ 325$$

$$B = 79\ 021$$

$$C = 43\ 239$$



- 1) Complete these subtraction calculations. You may want to use place value counters to help you.



a)

| | | | | |
|---|---|---|---|---|
| | 5 | 1 | 3 | 4 |
| - | 1 | 5 | 3 | 2 |
| | | | | |

b)

| | | | | |
|---|---|---|---|---|
| | 9 | 0 | 5 | 4 |
| - | 5 | 6 | 7 | 1 |
| | | | | |

c)

| | | | | | |
|---|---|---|---|---|---|
| | 3 | 4 | 0 | 2 | 3 |
| - | | 8 | 7 | 1 | 8 |
| | | | | | |

- d) $52\,064 - 25\,934$
e) $86\,807 - 32\,653$

- 2) Here are the flight times, in seconds, for each flying team.



| Sea Beast | Number One | High Fliers | The Conjurers | Fantastic French |
|-----------|------------|-------------|---------------|------------------|
| 82 507 | 80 198 | 75 259 | 72 043 | 78 360 |

- a) Which teams have a time difference of 3101?
b) Which two teams have the greatest time difference? How about the smallest time difference? Prove it!

- 1) Complete these subtraction calculations. You may want to use place value counters to help you.



a)

| | | | | |
|---|---|---|---|---|
| | 5 | 1 | 3 | 4 |
| - | 1 | 5 | 3 | 2 |
| | | | | |

b)

| | | | | |
|---|---|---|---|---|
| | 9 | 0 | 5 | 4 |
| - | 5 | 6 | 7 | 1 |
| | | | | |

c)

| | | | | | |
|---|---|---|---|---|---|
| | 3 | 4 | 0 | 2 | 3 |
| - | | 8 | 7 | 1 | 8 |
| | | | | | |

- d) $52\,064 - 25\,934$
e) $86\,807 - 32\,653$

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|-----------|------------|-------------|---------------|------------------|
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b) Which two teams have the greatest time difference? How about the smallest time difference? Prove it!

- 1) Rana has been practising the column method but she has made some mistakes. Can you identify all the mistakes and explain what she has done wrong?



Complete the calculation yourself to show the correct workings.

a)

| | | | | | |
|---|---|--------------|----------------|---|---|
| | 3 | 1 | ¹ 5 | 6 | 1 |
| - | | 1 | 6 | 3 | 5 |
| | 3 | 0 | 9 | 3 | 4 |

b)

| | | | | | |
|---|---|---|---|---|---|
| | 8 | 4 | 2 | 8 | 4 |
| - | 5 | 2 | 6 | 5 | 3 |
| | 3 | 2 | 6 | 3 | 1 |

- 2) Is this statement always, sometimes or never true? Explain your thinking.

'If you find the difference between two consecutive numbers, the answer will be an even number.'

- 1) Rana has been practising the column method but she has made some mistakes. Can you identify all the mistakes and explain what she has done wrong?



Complete the calculation yourself to show the correct workings.

a)

| | | | | | |
|---|---|--------------|----------------|---|---|
| | 3 | 1 | ¹ 5 | 6 | 1 |
| - | | 1 | 6 | 3 | 5 |
| | 3 | 0 | 9 | 3 | 4 |

b)

| | | | | | |
|---|---|---|---|---|---|
| | 8 | 4 | 2 | 8 | 4 |
| - | 5 | 2 | 6 | 5 | 3 |
| | 3 | 2 | 6 | 3 | 1 |

- 2) Is this statement always, sometimes or never true? Explain your thinking.

'If you find the difference between two consecutive numbers, the answer will be an even number.'

- 1) Can you identify the missing digits in these two calculations?



| | | | | | |
|---|----------------------|----------------------|----------------------|----------------------|---|
| | <input type="text"/> | 2 | <input type="text"/> | 6 | 4 |
| - | 2 | <input type="text"/> | 5 | 4 | 3 |
| | 4 | 2 | 5 | <input type="text"/> | 1 |

| | | | | | |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|
| | 9 | <input type="text"/> | <input type="text"/> | 0 | 8 |
| - | 2 | 4 | 1 | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | 8 | 1 | 3 | 0 |

- 2) I have 3 whole numbers: A, B and C.

Each has 5 digits.

The difference between A and B is 12 345 and the difference between B and C is 54 321.

What could my numbers be? Find 3 possibilities and show your workings.

| | | |
|-----------|-----------|-----------|
| A = _____ | A = _____ | A = _____ |
| B = _____ | B = _____ | B = _____ |
| C = _____ | C = _____ | C = _____ |

- 1) Can you identify the missing digits in these two calculations?



| | | | | | |
|---|----------------------|----------------------|----------------------|----------------------|---|
| | <input type="text"/> | 2 | <input type="text"/> | 6 | 4 |
| - | 2 | <input type="text"/> | 5 | 4 | 3 |
| | 4 | 2 | 5 | <input type="text"/> | 1 |

| | | | | | |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|
| | 9 | <input type="text"/> | <input type="text"/> | 0 | 8 |
| - | 2 | 4 | 1 | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | 8 | 1 | 3 | 0 |

- 2) I have 3 whole numbers: A, B and C.

Each has 5 digits.

The difference between A and B is 12 345 and the difference between B and C is 54 321.

What could my numbers be? Find 3 possibilities and show your workings.

| | | |
|-----------|-----------|-----------|
| A = _____ | A = _____ | A = _____ |
| B = _____ | B = _____ | B = _____ |
| C = _____ | C = _____ | C = _____ |