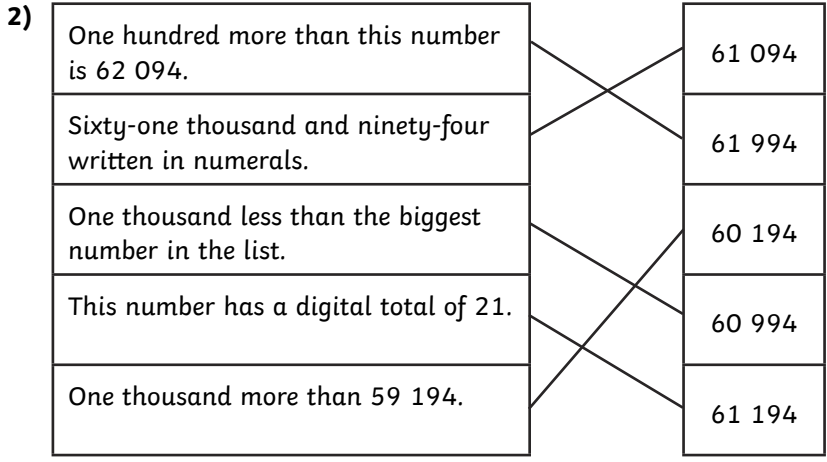




1) Each number in the list has a digit sum of 13.	The difference between the smallest and greatest number is 4887.	All the numbers in the list are odd.
The numbers are in ascending order.	All the numbers are greater than half of one hundred thousand.	Every number has a 5 in the tens of thousands column.



- 1) a) To order a set of numbers, you must start by looking at the ones. **SOMETIMES TRUE.** This would be true when ordering single digit numbers or decimal numbers.
- b) A number with a digit 3 in the thousands column has a greater value than a number with a digit 6 in the tens column. **SOMETIMES TRUE.** 3548 is greater than 1461. However, 3548 is smaller than 12 061.
- c) As a digit moves to the left, the value is greater. **ALWAYS TRUE.** The value of the digit increases by 10 each time.



2) Various answers possible.

Alina needs to understand that if there are already 9 thousands in a number, when you add another thousand, the thousand digit will change to 0 and the tens of thousands digit will increase by 1.

Billy's mistake is that adding the digits of a number does not tell you the size of a number so numbers with the same digital total can have very different values. For example, 5 and 3200.

Chesney has mistakenly confused the value of the digits with their place value. To compare 2 numbers, you look at the digits in the highest place value.

3) Various answers possible.

The children should have written three, odd numbers below 2000, each with a digital total of 20, in descending order. For example, 1973, 1955, 1937

- 1) Possible solutions include 6548, 9122 and 7104.
- 2) Possible solutions include 14 157 and 14 418; 14 076 and 14 355; 13 905 and 14 346.
- 3) Teacher to check due to variety of responses.



Comparison Cards

To use reasoning to solve problems with numbers up to 1 000 000.



Cut out these cards and use them to play the Roll and Compare game with your partner.

Set 1

58 485	4 320 187	120 663	6863
50 111	100 798	678 342	787 221
501 474	89 736	47 298	3978
296 857	5 857 322	89 736	120 663

Set 2

65 308	565 408	2 866 509	1 297 345
4765	98 712	12 397	45 889
176 399	1290	65 308	65 385
5423	1 297 345	4 934 561	345 675



1) Look at the list of numbers.

52 123

52 150

53 311

54 121

56 020

57 000

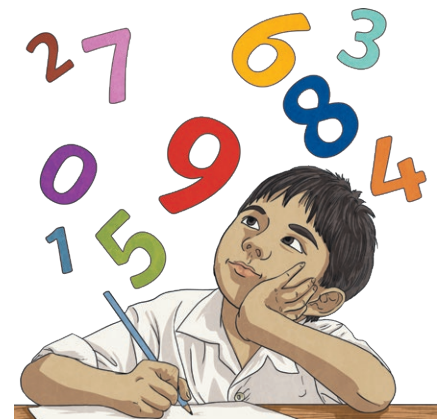
Colour in green the statements that are true. Colour in red the statements that are false.

Each number in the list has a digit sum of 13.	The difference between the smallest and greatest number is 4887.	All the numbers in the list are odd.
The numbers are in ascending order.	All the numbers are greater than half of one hundred thousand.	Every number has a 5 in the tens of thousands column.

2) Match the statement to the correct number.

One hundred more than this number is 62 094.
Sixty-one thousand and ninety-four written in numerals.
One thousand less than the biggest number in the list.
This number has a digital total of 21.
One thousand more than 59 194.

61 094
61 994
60 194
60 994
61 194





1) Are these statements always, sometimes or never true?

Explain your thinking.

a) To order a set of numbers, you must start by looking at the ones.

b) A number with a digit 3 in the thousands column has a greater value than a number with a digit 6 in the tens column.

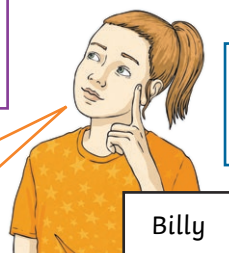
c) As a digit moves to the left, the value is greater.

2) Year 5 are discussing place value. Can you help each child by explaining their mistakes?

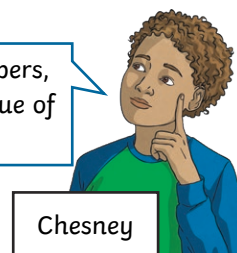


When adding 1000 to a number, I just need to change the thousands digit by adding one more to it.

If 2 numbers have the same digital total, they must be equal.



To compare 2 numbers, you look at the value of the highest digit.



Blank lines for writing answers to the child explanations.

3) Find a set of 3 numbers that meet these statements.

Blank line for writing a set of 3 numbers.

True	False
They are in descending order.	They have less than 4 digits.
They are all odd.	They are greater than 2000.
They all have a digital total of 20.	They have more thousands than ones.



- 1) Can you choose a number to go on the blank card that will make the following statements true and false?

3256		5428	1120	8652
------	--	------	------	------

True	False
All the numbers are even.	All the tens digits are odd.
All the numbers have a different digit in the thousands place.	The lowest number has a 2 in the hundreds place and a 6 in the ones place.
All the numbers have four digits.	The numbers have a digit sum of 19.

Can you find three possibilities?

--	--	--

- 2) Can you choose two numbers to go on the blank cards that will make the following statements true and false?
Can you find three different pairs of numbers?

13 842		14 274		14 508
--------	--	--------	--	--------

True	False
The numbers are in ascending order.	All the thousands digits are odd.
All the numbers have a different digit in the hundreds place.	The second number has a 2 in the hundreds place.
All the numbers have a digit sum of 18.	All the numbers are even.

- 3) a) Create your own problem like the ones above.

Make sure you have true and false statements together with five numbers, with at least one number missing.

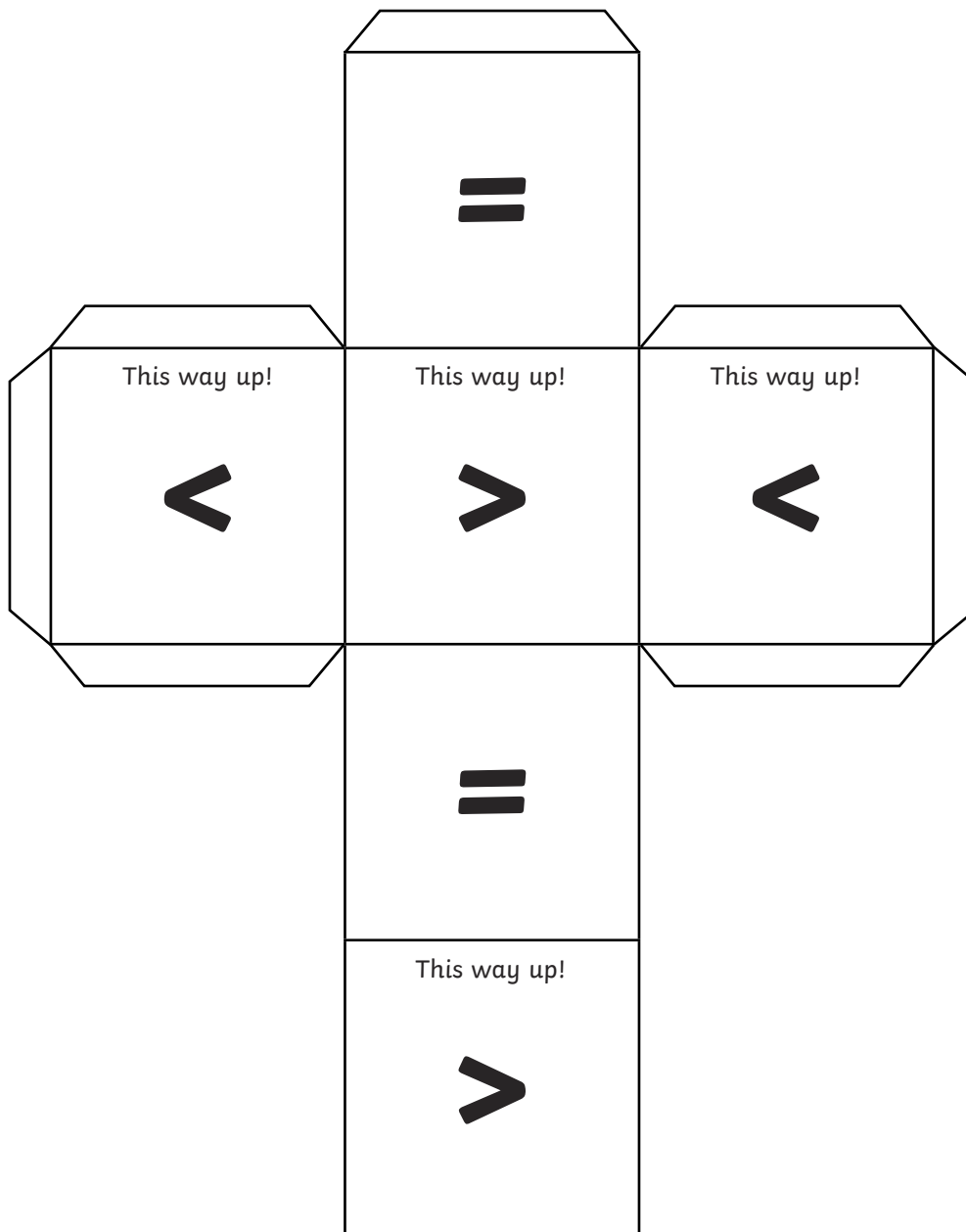
- b) Can your partner select a number to complete the set that meets all the statements you have written?

Number Comparisons Dice

To use reasoning to solve problems with numbers up to 1 000 000.



Cut out this dice net and assemble it to play the Roll and Compare game.



Number Puzzle 1

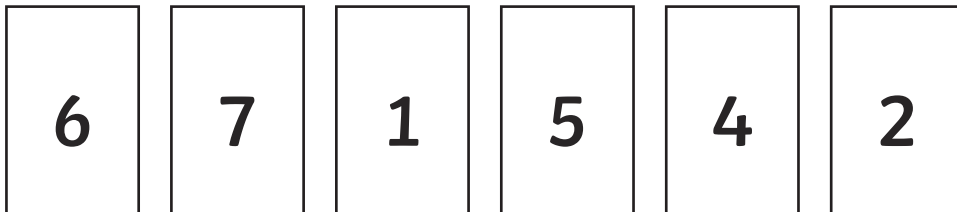
583 924 is written five hundred and eighty-three thousand, nine hundred and twenty-four in words.

What is the number that is one hundred more than this?

Number Puzzle 2

Fifty-nine thousand, six hundred and forty is _____ less than 60 000.

Number Puzzle 3



Number Puzzle 4

One thousand less than one million is 99__ _____ when written in digits.

Number Puzzle 5

$$\boxed{12\ 900} \quad > \quad \boxed{} \quad > \quad \boxed{12\ 009}$$

The missing number has a 9 in the tens place.
Its digit total is 15.

Number Puzzle 6

These numbers are written in order of size.

2.001, 2.01, 2.____, 2.1, 2.101, 2.11, 2.111

True or False?

To use reasoning to solve problems with numbers up to 1 000 000.



Highlight the statements for each puzzle according to whether they are true or false.

Colour in these boxes to show which colour is for the true statements and which is for the false ones:

True

False

Puzzle 1

1. The number that is one hundred more is five hundred and eighty-four thousand and twenty-four.
2. The number that is 100 more is 584 24 written in digits.
3. The only digit that changed in the number was the hundreds digit.
4. Both the hundreds digit and the tens digit changed.

Puzzle 2

1. It is four hundred and sixty less than 60 000.
2. It is 360 less than 60 000.
3. It is 1460 less than 60 000.
4. All the digits in the original number need to change for it to become 60 000.

Puzzle 3

1. The highest even number with a 2 in the thousands place that you can make with the cards is 2756.
2. The lowest odd number with a seven in the hundreds place is 1725.
3. The difference between the highest and lowest 5-digit numbers you can make is 64, 086.
4. The highest number you can make with all the cards has a 5 in the ten thousands place.

Puzzle 4

1. The answer is 998 999.
2. The answer has a 0 in the tens place.
3. The answer has a 1 in the ones place.
4. The answer is 999 000.

Puzzle 5

1. There are 4 different possibilities for numbers that could go in the box.
2. 12 291 could go in the box.
3. Twelve thousand, six hundred and ninety could go in the box.
4. 12 555 could go in the box.

Puzzle 6

1. The numbers are written in descending order.
2. The numbers are written in order from smallest to biggest.
3. 2.09 could complete the blank space.
4. 2.15 could complete the blank space.

True or False? Answers

Highlight the statements for each puzzle according to whether they are true or false.

Colour in these boxes to show which colour is for the true statements and which is for the false ones:

True

False

Puzzle 1

1. The number that is one hundred more is five hundred and eighty-four thousand and twenty-four. **(True)**
2. The number that is 100 more is 584 24 written in digits. **(False)**
3. The only digit that changed in the number was the hundreds digit. **(False)**
4. Both the hundreds digit and the tens digit changed. **(False)**

Puzzle 2

1. It is four hundred and sixty less than 60 000. **(False)**
2. It is 360 less than 60 000. **(True)**
3. It is 1460 less than 60 000. **(False)**
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Puzzle 3

1. The highest even number with a 2 in the thousands place that you can make with the cards is 2756. **(False)**
2. The lowest odd number with a seven in the hundreds place is 1725. **(True)**
3. The difference between the highest and lowest 5-digit numbers you can make is 64, 086. **(True)**
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3. 2.09 could complete the blank space. **(True)**
4. 2.15 could complete the blank space. **(False)**

True or False Tips

To use reasoning to solve problems with numbers up to 1 000 000.



Highlight the statements for each puzzle according to whether they are true or false.

Colour in these boxes to show which colour is for the true statements and which is for the false ones:

True

False

Puzzle 1

583 924 is written five hundred and eighty-three thousand, nine hundred and twenty-four in words. What is the number that is one hundred more than this?

Tip: When you add 100 to 583 924, you will focus on the hundreds digit. Take care when you bridge 1000 - you will need to alter the thousands number as well.

1. The number that is one hundred more is five hundred and eighty-four thousand and twenty-four.
2. The number that is 100 more is 584 24 written in digits.
3. The only digit that changed in the number was the hundreds digit.
4. Both the hundreds digit and the tens digit changed.

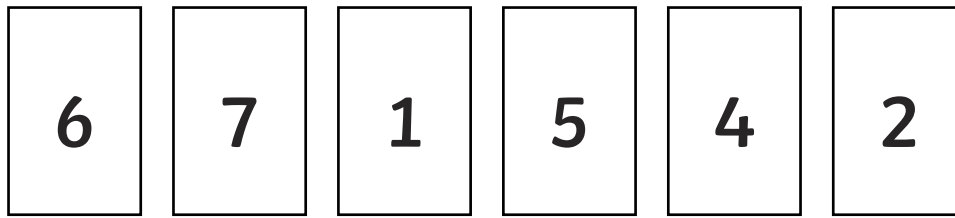
Puzzle 2

Fifty-nine thousand, six hundred and forty is _____ less than 60 000

Tip: Write fifty-nine thousand, six hundred and forty in digits. This might help you work out how much less than 60 000 it is. Remember to count on in tens to the next hundreds number, then in hundreds to the next thousands number. See how many hundreds and tens you added altogether.

1. It is four hundred and sixty less than 60 000.
2. It is 360 less than 60 000.
3. It is 1460 less than 60 000.
4. All the digits in the original number need to change for it to become 60 000.

Puzzle 3



Tip: Remember, even numbers end in 2, 4, 6, 8, or 0. Odd numbers end in 1, 3, 5, 7 or 9. You could use a place value grid to identify the value of the digits.

1. The highest even number with a 2 in the thousands place that you can make is 2756.
2. The lowest odd number with a 7 in the hundreds place is 1725.
3. The difference between the highest and lowest 5 digit numbers you can make is 64, 086.
4. The highest number you can make with all the cards has a 5 in the ten thousands place.

Puzzle 4

One thousand less than one million is 99__ ____ when written in digits.

Tip: It might help you to write one million in digits. Remember, you are finding one thousand less so you will first of all focus on the thousands digit. Because this is a zero, you will also need to exchange from the ten thousands and the hundred thousands.

1. The answer is 998 999.
2. The answer has a 0 in the tens place.
3. The answer has a 1 in the ones place.
4. The answer is 999 000.

Puzzle 5

$$\boxed{12\ 900} \quad > \quad \boxed{} \quad > \quad \boxed{12\ 009}$$

The missing number has a 9 in the tens place. Its digit total is 15.

Tip: Remember, $>$ means greater than and $<$ means less than.

The wider part of the symbol opens up towards the bigger number.

1. There are 4 different possibilities for numbers that could go in the box.
2. 12 291 could go in the box.
3. Twelve thousand six hundred and ninety could go in the box.
4. 12 555 could go in the box.

Puzzle 6

These numbers are written in order of size.

2.001, 2.01, 2.____, 2.1, 2.101, 2.11, 2.111

Tip: Descending order means from highest to lowest. Remember, thousandths (0.001) are smaller than hundredths (0.01), and hundredths are smaller than tenths (0.1). The missing number should be higher than one hundredth but lower than one tenth.

1. The numbers are written in descending order.
2. The numbers are written in order from smallest to biggest.
3. 2.09 could complete the blank space.
4. 2.15 could complete the blank space.

1) Look at the list of numbers.

52 123
52 150
53 311
54 121
56 020
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Colour in green the statements that are true. Colour in red the statements that are false.

Each number in the list has a digit sum of 13.	The difference between the smallest and greatest number is 4887.	All the numbers in the list are odd.
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One hundred more than this number is 62 094.	61 094
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1) Are these statements always, sometimes or never true? Explain your thinking.



- a) To order a set of numbers, you must start by looking at the ones.
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2) Year 5 are discussing place value. Can you help each child by explaining their mistakes?



When adding 1000 to a number, I just need to change the thousands digit by adding one more to it.

Alina



If 2 numbers have the same digital total, they must be equal.

Billy



To compare 2 numbers, you look at the value of the highest digit.

Chesney

3) Find a set of 3 numbers that meet these statements.

True	False
They are in descending order.	They have less than 4 digits.
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They all have a digital total of 20.	They have more thousands than ones.

1) Are these statements always, sometimes or never true? Explain your thinking.



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All the numbers have four digits.	The numbers have a digit sum of 19.

Can you find three possibilities?

- 2) Can you choose two numbers to go on the blank cards that will make the following statements true and false? Can you find three different pairs of numbers?

13 842		14 274		14 508
--------	--	--------	--	--------

True	False
The numbers are in ascending order.	All the thousands digits are odd.
All the numbers have a different digit in the hundreds place.	The second number has a 2 in the hundreds place.
All the numbers have a digit sum of 18.	All the numbers are even.

- 3) a) Create your own problem like the ones above.
Make sure you have true and false statements together with five numbers, with at least one number missing.
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