Block 1 – Place Value

Year 2/3

#MathsEveryoneCan

2019-20
How to use the mixed-age SOL

In this document, you will find suggestions of how you may structure a progression in learning for a mixed-age class.

Firstly, we have created a yearly overview.

For each block of learning, we have grouped the small steps into themes that have similar content. Within these themes, we list the corresponding small steps from one or both year groups. Teachers can then use the single-age schemes to access the guidance on each small step listed within each theme.

The themes are organised into common content (above the line) and year specific content (below the line). Moving from left to right, the arrows on the line suggest the order to teach the themes.

Each term has 12 weeks of learning. We are aware that some terms are longer and shorter than others, so teachers may adapt the overview to fit their term dates.

The overview shows how the content has been matched up over the year to support teachers in teaching similar concepts to both year groups. Where this is not possible, it is clearly indicated on the overview with 2 separate blocks.
How to use the mixed-age SOL

Here is an example of one of the themes from the Year 1/2 mixed-age guidance.

### Subtraction

**Year 1 (Aut B2, Spr B1)**
- How many left? (1)
- How many left? (2)
- Counting back
- Subtraction - not crossing 10
- Subtraction - crossing 10 (1)
- Subtraction - crossing 10 (2)

**Year 2 (Aut B2, B3)**
- Subtract 1-digit from 2-digits
- Subtract with 2-digits (1)
- Subtract with 2-digits (2)
- Find change - money

In order to create a more coherent journey for mixed-age classes, we have re-ordered some of the single-age steps and combined some blocks of learning e.g. Money is covered within Addition and Subtraction.

The bullet points are the names of the small steps from the single-age SOL. We have referenced where the steps are from at the top of each theme e.g. Aut B2 means Autumn term, Block 2. Teachers will need to access both of the single-age SOLs from our website together with this mixed-age guidance in order to plan their learning.

### Points to consider

- Use the mixed-age schemes to see where similar skills from both year groups can be taught together. Learning can then be differentiated through the questions on the single-age small steps so both year groups are focusing on their year group content.
- When there is year group specific content, consider teaching in split inputs to classes. This will depend on support in class and may need to be done through focus groups.
- On each of the block overview pages, we have described the key learning in each block and have given suggestions as to how the themes could be approached for each year group.
- We are fully aware that every class is different and the logistics of mixed-age classes can be tricky. We hope that our mixed-age SOL can help teachers to start to draw learning together.
In this section, content from single-age blocks are matched together to show teachers where there are clear links across the year groups.

Teachers may decide to teach the lower year’s content to the whole class before moving the higher year on to their age-related expectations.

The lower year group is not expected to cover the higher year group’s content as they should focus on their own age-related expectations.

In this section, content that is discrete to one year group is outlined.

Teachers may need to consider a split input with lessons or working with children in focus groups to ensure they have full coverage of their year’s curriculum.

Guidance is given on each page to support the planning of each block.

Year 2 content
Year 3 content

The themes should be taught in order from left to right.
<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
<th>Week 8</th>
<th>Week 9</th>
<th>Week 10</th>
<th>Week 11</th>
<th>Week 12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Autumn</strong></td>
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</tr>
<tr>
<td>Number: Place Value Y2 – Numbers to 100</td>
<td>Number: Addition and Subtraction Year 2- Numbers within 100 (including money)</td>
<td>Year 3- Numbers within 1,000 (including money)</td>
<td>Number: Multiplication</td>
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<tr>
<td><strong>Spring</strong></td>
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</tr>
<tr>
<td>Number: Division</td>
<td>Statistics</td>
<td>Measurement: Length and Height</td>
<td>Geometry: Year 2: Shape, Position and Direction Year 3: Shape and Perimeter</td>
<td>Number: Year 2: Fractions &amp; Consolidation Year 3: Fractions</td>
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<tr>
<td><strong>Summer</strong></td>
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</tr>
</tbody>
</table>
Within this block, Year 2 focus on numbers to 100 whilst Year 3 focus on numbers to 1,000.

There are many opportunities for the class to focus on similar skills and understanding together before focusing separately on numbers of different sizes.

Ensure children continue to use a range of concrete and pictorial representations to support their understanding.
**Count Objects to 100**

**Notes and Guidance**

To build on skills learned in Year 1, children need to be able to count objects to 100 in words and represent these numbers in numerals.

Problems should be presented in a variety of ways e.g. numerals, words and images. Variation should challenge children by providing them with missing numbers which are non-consecutive.

**Mathematical Talk**

How can you count the cars?  
Do you have a strategy?  
What is one more/one less?

Which is the largest number?  
Which number is tricky to write in words?

Which numbers sound similar?  
How are 17 and 70 different? Can you show me?

**Varied Fluency**

Count and write the number of cars in the car park.

<table>
<thead>
<tr>
<th>one</th>
<th>three</th>
<th>four</th>
<th>seven</th>
<th>eight</th>
<th>ten</th>
<th>eleven</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

There are ____ cars in the car park.

What numbers are represented below?  
Write your answer in numerals and words.

Match the numerals to the words.

17  48  38  70  

thirty-eight  seventy  forty-eight  seventeen
### Count Objects to 100

#### Reasoning and Problem Solving

<table>
<thead>
<tr>
<th>Jack says he has 61</th>
<th>Jack is incorrect. He has 16 not 61</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain your reasoning.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Here are two sets of objects.</th>
<th>The strawberries are easier to count because they are set out on ten frames.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which are easier to count? Explain your answer.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Each jar contains 10 cookies.</th>
<th>How many cookies are there altogether?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write your answer in numerals and words.</td>
<td></td>
</tr>
</tbody>
</table>

| There are 48 (forty-eight) cookies altogether. | Children may count in 10s and 1s or know that there are 4 tens which are equal to 40 and then count on 8 more. |

<table>
<thead>
<tr>
<th>What strategy did you use?</th>
<th>Did your partner use a different method?</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the best strategy to use?</td>
<td></td>
</tr>
</tbody>
</table>
**Hundreds**

**Notes and Guidance**

Children build on their understanding of tens and link this to 100. This is the first time they explore 100 explicitly. It is crucial that children understand that ten tens make 100 and a hundred ones make 100. They use a variety of concrete equipment to see this relationship. Once children understand the concept of 100, they will count objects and numbers in multiples of 100 up to 1,000.

**Mathematical Talk**

How many tens have you made? How else can we say this?

What do these digits represent?

How many ones have you made? How else can you say this?

If we continue counting in tens, what do we say after 100?

What numbers wouldn’t we say?

**Varied Fluency**

Use bundles of straws in tens, bead strings and Base 10 to explore how many tens make a hundred. Children use the equipment to count up and down in tens to make 100.

*There are 3 tens this is thirty.*

*There are _____ tens this is _____.*

*There are _____ tens in one hundred.*

There are 100 sweets in each jar.

How many sweets are there altogether? Write your answer in numerals and words.

Complete the number tracks.

<table>
<thead>
<tr>
<th>200</th>
<th>300</th>
<th>500</th>
<th>800</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>900</td>
<td>800</td>
<td>500</td>
</tr>
</tbody>
</table>
Hundreds

Reasoning and Problem Solving

True or False?

If I count in 100s from zero, all of the numbers will be even. Convince me.

True, because if you start with zero and add 100 you get an even number, and you are adding another even so the number will always be even.

Sort these statements into always, sometimes or never.

- When counting in hundreds, the ones column changes.
- When counting in hundreds, the hundreds column changes.
- To count in hundreds we use 3-digit numbers.

- Never
- Always
- Sometimes

Whitney thinks the place value grid is showing the number eight.

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>●●●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●●</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Do you agree? Explain why.

Using all of the counters, what is the smallest number you can make?

What other numbers could you make?

Whitney is incorrect because there are eight counters in the hundreds column so they represent eight hundreds. The number is 800.

The smallest number that can be made is 8.

Other possible numbers include: 80, 170, 350, etc.
Represent Numbers to 100

Notes and Guidance

Children need to be able to represent numbers to 100 using a range of concrete materials, such as bead strings, straws, Base 10 equipment etc.

Children should also be able to state how a number is made up. For example, they can express 42 as 4 tens and 2 ones or as 42 ones.

Mathematical Talk

How have the beads been grouped? How does this help you count?

Can you show me the tens/ones in the number?

Which resource do you prefer to use for larger numbers? Which is quickest? Which would take a long time?

Varied Fluency

Here is part of a bead string:

Complete the sentences.
There are _____ tens and _____ ones.
The number is _____.
Represent 45 on a bead string and complete the same sentence stems.

Match the number to the correct representation.

One ten and five ones

Thirty-five

25

Represent 67 in three different ways.
Represent Numbers to 100

Reasoning and Problem Solving

Where would 36 go on each of the number lines?

0 100

0 40

30 40

How many two digit numbers can you make using the digit cards?

7 0 2

70, 20, 72, 27

What is the largest number?
Prove it by using concrete resources.

The largest number is 72

What is the smallest number?
Prove it by using concrete resources.

The smallest number is 20

Why can't the 0 be used as a tens number?

Because it would make a 1 digit number.

One of these images does not show 23
Can you explain the mistake?

A B C

C does not show 23, it shows 32
They have reversed the tens and ones.
**Tens and Ones (1)**

**Notes and Guidance**

Children should have an understanding of what each digit represents when partitioning a number.

It is important that children can partition numbers in a variety of ways, not just as tens and ones. For example, 58 is made up of 5 tens and 8 ones or 4 tens and 18 ones, or 2 tens and 38 ones, etc.

**Mathematical Talk**

Which part do we know? How can we use the whole and part to work out the missing part?

Can you use concrete resources/draw something to help you partition?

How can you rearrange the counters to help you count the lemon and strawberry cupcakes?

**Varied Fluency**

- Complete the part-whole models.

- Complete the part-whole models.

- The ten frames represent lemon and strawberry cupcakes. Draw a part-whole model to show how many cupcakes there are altogether.
Tens and Ones (1)

Reasoning and Problem Solving

Complete each part-whole model in a different way.

6 tens and 4 ones

Complete the extended part-whole model.

76

30

10

40

36
Tens and Ones (2)

Notes and Guidance

Children continue to use a part-whole model to explore how tens and ones can be partitioned and recombined to make a total. Children will see numbers partitioned in different ways. For example, 39 written as 20 + 19. This small step will focus on using the addition symbol to express numbers to 100. For example, 73 can be written as 70 + 3 = 73.

Mathematical Talk

What clues are there in the calculations? Can we look at the tens number or the ones number to help us?

What number completes the part-whole model?

What is the same/different about the calculations?

What are the key bits of information? Can you draw a diagram to help you?

Varied Fluency

Match the number sentence to the correct number.

20 + 19  10 + 4  40 + 0  80 + 1

40  14  81  39

Complete the part-whole model and write four number sentences to match.

28 + ____ = ____

____ + ____ = ____

____ = ____ + ____

____ = ____ + ____

Dora has 20 sweets and Amir has 15 sweets. Represent the total number of sweets:
• With concrete resources.
• In a part-whole model.
• As a number sentence.
Tens and Ones (2)

Reasoning and Problem Solving

Teddy thinks that,

40 + 2 = 402

Teddy has just combined the numbers to make 402 without thinking about their place value.

Explain the mistake he has made.

Can you show the correct answer using concrete resources?

Fill in the missing numbers.

1 ten + 3 ones = 13
2 tens + ___ ones = 23
3 tens + 3 ones = ____
___ tens + 3 ones = 43

What would the next number in the pattern be?

1 ten + 3 ones = 13
2 tens + 3 ones = 23
3 tens + 3 ones = 33
4 tens + 3 ones = 43

5 tens + 3 ones = 53
Place Value Charts

Notes and Guidance

Children should formally present their work in the correct place value columns to aid understanding of place value.

It is important for children to use concrete, pictorial and abstract representations in their place value chart.

Mathematical Talk

How many tens are there?

How many ones are there?

What is different about using Base 10 to using place value counters?

Can you write any other number sentences about the place value chart?

Varied Fluency

What number is represented in the place value chart?

<table>
<thead>
<tr>
<th>Tens</th>
<th>Ones</th>
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<tr>
<td></td>
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</tbody>
</table>

Complete the place value chart using Base 10 and place value counters to represent the number 56.

<table>
<thead>
<tr>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1</td>
</tr>
</tbody>
</table>

What number is represented in the place value chart?

<table>
<thead>
<tr>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>1</td>
</tr>
</tbody>
</table>

Write two different number sentences for this number.

___ + ___ = ___
___ = ___ + ___
### Place Value Charts

#### Reasoning and Problem Solving

How many two digit numbers can you make that have the same number of tens and ones?

Show each one on a place value chart.

<table>
<thead>
<tr>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There are nine possibilities: 11, 22, 33, 44, 55, 66, 77, 88, 99

Do both place value charts show the same value?

Yes, they both have the same value of 41

40 + 1 = 41

30 + 11 = 41

Same: Both A and B show 41

Different: There are a different number of tens and ones in each place value chart.
Numbers to 1,000

Notes and Guidance

In this small step, children will primarily use Base 10 to become familiar with any number up to 1,000.

Using Base 10 will emphasise to children that hundreds are bigger than tens and tens are bigger than ones.

Children need to see numbers with zeros in different columns, and show them with concrete and pictorial representations.

Mathematical Talk

Does it matter which order you build the number in?

Can you have more than 9 of the same type of number e.g. 11 tens?

Can you create a part-whole model using or drawing Base 10 in each circle?

Varied Fluency

Write down the number represented with Base 10 in each case.

<table>
<thead>
<tr>
<th>Representation</th>
<th>Number</th>
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<tbody>
<tr>
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</tbody>
</table>

Use Base 10 to represent the numbers.

700  120  407  999

Mo is drawing numbers. Can you complete them for him?

246  390  706
Teddy has used Base 10 to represent the number 420. He has covered some of them up.

110 is the missing amount.
Possible ways:
• 1 hundred and 1 ten
• 11 tens
• 110 ones
• 10 tens and 10 ones
• 50 ones and 6 tens etc.

Work out the amount he has covered up.

How many different ways can you make the missing amount using Base 10?

Which child has made the number 315?

Dora

Mo

Dora and Mo have both made the number 315, but represented it differently.

3 hundreds, 1 ten and 5 ones is the same as 2 hundreds, 10 tens and 15 ones.
100s, 10s and 1s (1)

Notes and Guidance

Children should understand that a 3-digit number is made up of 100s, 10s and 1s.

They read numbers shown in different representations on a place value grid, and write them in numerals.

They should be able to represent different 3-digit numbers in various ways such as Base 10 or numerals.

Mathematical Talk

What is the value of the number shown on the place value chart?

Why is it important to put the values into the correct column on the place value chart?

How many more are needed to complete the place value chart?

Can you make your own numbers using Base 10? Ask a friend to tell you what number you have made.

Varied Fluency

What is the value of the number represented in the place value chart?

Write your answer in numerals and in words.

Complete this place value chart so that it shows the number 354.

Represent the number using a part-whole model.

How many different ways can you make the number 452?
Can you write each way in expanded form? (e.g. 400 + 50 + 2)

Compare your answer with a partner.
100s, 10s and 1s (1)

Reasoning and Problem Solving

Possible answers:
I disagree because there are six hundreds, four tens and seven ones so the number is 647.

I notice that 647 and 467 have the same digits but in a different order so the digits have different values.

The numbers that can be made are:
- 503
- 530
- 305
- 350
- (0)35
- (0)53

Using each digit card, which numbers can you make?

Use the place value grid to help.

Compare your answers with a partner.
100s, 10s and 1s (2)

Notes and Guidance
Children use place value counters to represent different numbers and understand how a number is made.

Their work with Base 10 should help them understand that the hundreds counter is worth more than the tens counter and the tens counter is worth more than the ones counter.

Mathematical Talk
What is the same and what is different about Base 10 and place value counters?
Why do we not call this number 300506?
What number would be shown if 1/10/100 was added?
Why is it important to put the values into the correct column on the place value grid?
What do we need to do if there is a zero in the number we are representing?

Varied Fluency
What number is shown on the place value chart?

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>1</td>
</tr>
</tbody>
</table>

If one more 10 is added, what number would be shown?

Use place value counters and a place value grid to represent the numbers:

615
208
37

Use <, > or = to make the statement correct.
100s, 10s and 1s (2)

Reasoning and Problem Solving

Using place value counters, how many different ways can you make four hundred and fifty?

Show your solutions as a calculation.

e.g. four hundreds counters and 5 tens counters. As a calculation this would be:
450 = 100 + 100 + 100 + 10 + 10 + 10

<table>
<thead>
<tr>
<th>100s</th>
<th>10s</th>
<th>1s</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

Dora
The place value chart shows 607

Jack
I think it shows 670

Who is correct? Explain your reasoning.

Dora is correct because there are six counters in the hundreds column, none in the tens column and seven in the ones column.

If it was 670 there would be seven counters in the tens column and none in the ones column.

Eva
The number in the place value grid is the greatest number you can make with 8 counters.

Eva is incorrect because you could make 800 which is greater than 611. She thinks you need to have at least one counter in each column.

<table>
<thead>
<tr>
<th>100s</th>
<th>10s</th>
<th>1s</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ ♦ ♦</td>
<td></td>
<td></td>
</tr>
<tr>
<td>♦ ♦ ♦</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Do you agree? Explain your answer.
Number Line to 1,000

Notes and Guidance

Children estimate, work out and write numbers on a number line.

Number lines should be shown with or without start and end numbers, and with numbers already placed on it.

Children may still need Base 10 and/or place values to work with as they develop their understanding of the number line.

Mathematical Talk

What is the value of each interval on the number line?
Which side of the number line did you start from? Why?
When estimating where a number should be placed, what facts can help you?
Can you draw a number line where 600 is the starting number, and 650 is half way along?
What do you know about the number that A is representing? A is more/less than ________
What value can A definitely not be? How do you know?

Varied Fluency

Draw an arrow to show the number 800

Draw an arrow to show the number 560

Which letter is closest to 250?

Estimate the value of A.
Number Line to 1,000

Reasoning and Problem Solving

Estimate where seven hundred and twenty-five will go on each of the number lines.

725 is in different places because each line has different numbers at the start and end so the position of 725 changes.

All three of the number lines have different scales and therefore the difference between 725 and the starting and finishing number is different on all three number lines.

Explain why it is not in the same place on each number line.

If the arrow is pointing to 780, what could the start and end numbers be?

Find three different ways and explain your reasoning.

Example answers:

Start 0 and end 1,000 because 500 would be in the middle and 780 would be further along than 500

Start 730 and end 790

Start 700 and end 800

etc.
1, 10, 100 More or Less

Notes and Guidance

Building on children’s learning in Year 2 where they explored finding one more/less, children now move onto finding 10 and 100 more or less than a given number.

Show children that they can represent their answer in a variety of different ways. For example, as numerals or words, or with concrete manipulatives.

Mathematical Talk

What is 10 more than/less than _____?

What is 100 more than/less than _____?

Which column changes? Can more than one column change?

What happens when I subtract 10 from 209? Why is this more difficult?

Varied Fluency

Put the correct number in each box.

10 less

100 less

10 more

100 more

Show ten more and ten less than the following numbers using Base 10 and place value counters.

550

724

302

Complete the table.

<table>
<thead>
<tr>
<th>100 less</th>
<th>Number</th>
<th>100 more</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

100

1
1, 10, 100 More or Less

Reasoning and Problem Solving

10 more than my number is the same as 100 less than 320

What is my number?

Explain how you know.

Write your own similar problem to describe the original number.

I think of a number, add ten, subtract one hundred and then add one.

My answer is 256

What number did I start with?

Explain how you know.

What can you do to check?

The number described is 210 because 100 less than 320 is 220, which means 220 is 10 more than the original number.

A counter is missing on the place value chart.

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
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<td></td>
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</tbody>
</table>

Possible answers: 401 311 302

The start number was 345 because one less than 256 is 255, one hundred more than 255 is 355 and ten less than 355 is 345.

To check I can follow the steps back to get 256.

What number could it have been?
Block 1 - Place Value

Theme 4 – Compare groups and numbers
Compare Objects

Notes and Guidance

Comparing objects is introduced once children have a secure understanding of numbers in a place value chart.

Children are expected to compare a variety of objects using the vocabulary ‘more than’, ‘less than’ and ‘equal to’ and the symbols <, >, =

Mathematical Talk

How can you arrange the objects to make them easy to compare?

Do groups of ten help you count? Why?

Do groups of ten help you compare? Why?

Varied Fluency

A packet of sweets contain 10 sweets.

Rosie’s sweets

Amir’s sweets

Who has the most sweets?

Use cubes to show that:
• Eleven is less than fifteen
• 19 is greater than 9
• 2 tens is equal to 20

Use <, > or = to complete.

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## Compare Objects

### Reasoning and Problem Solving

Rosie and Amir are comparing numbers they have made.

<table>
<thead>
<tr>
<th>Rosie's number</th>
<th>Amir's number</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Rosie's number" /></td>
<td><img src="image2" alt="Amir's number" /></td>
</tr>
</tbody>
</table>

Rosie is incorrect because Amir has 4 tens which makes 40 and Rosie has 3 tens and 6 ones which makes 36, therefore Amir has more.

My number is greater because I have more objects.

Is Rosie correct?

Explain your answer.

Add more Base 10 to make the number shapes and the Base 10 equal.

![Add more Base 10](image3)

Children should add 3 tens and 4 ones to make 54 on both sides.

If the symbol changed to < the smallest amount they could add is 3 tens and 5 ones.

How much did you add in total to make them equal?

What is the smallest amount you could add if the symbol changed to <?
Compare Numbers

Notes and Guidance

Children compare numbers using the language greater than, less than, more than, fewer, most, least and equal to.

They are able to use the symbols <, > and = to write number sentences.

Children should have access to concrete resources to help them justify their answers.

Mathematical Talk

Can you prove your answers using concrete resources?

Can you prove your answers by drawing a diagram?

Is there more than one answer?

Do you need to work the number sentences out to decide which is greater?

Varied Fluency

Complete the statements using more than, less than or equal to.

42 is _______________ 46
81 is _______________ 60 + 4
30 + 8 is _______________ thirty-eight

Complete the number sentences.

4 tens and 9 ones > _______________
_______________ < 70 + 5
_______________ = eight tens

Put <, > or = in each circle to make the statements correct.

28  30
90  70 + 28
30 + 23  40 + 13
20 + 14  24
### Compare Numbers

#### Reasoning and Problem Solving

<table>
<thead>
<tr>
<th><strong>How many different numbers can go in the box?</strong></th>
<th><strong>There are six different numbers:</strong> 14, 15, 16, 17, 18, 19</th>
<th><strong>Eva says,</strong> When comparing numbers, the number with the highest number of ones is always the bigger number.</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 &lt; [ ] &lt; 20</td>
<td></td>
<td>Disagree, for example 19 is smaller than 21</td>
</tr>
</tbody>
</table>

### True or False?

<table>
<thead>
<tr>
<th><strong>One ten and twelve ones is bigger than 2 tens.</strong></th>
<th><strong>True</strong> One ten and twelve ones = 22 Two tens = 20</th>
<th><strong>Do you agree?</strong> Give some examples to support your answer.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain how you know.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Children use objects to represent numbers to 1,000. When given two numbers represented by objects, they use comparative language and symbols to determine which is greatest/smallest. Children can make the numbers using concrete manipulatives and draw them pictorially. Use stem sentences to ensure the correct vocabulary is being used e.g. _____ is greater than _____.

**Mathematical Talk**

How do you know which number is greater? Do you start counting hundreds, tens or ones first? Why?

What strategy did you use to compare the two numbers? Is this the same or different to your partner?

Are the Base 10 and place value counters showing the same amount? How do you know?

Is there only one answer?

**Varied Fluency**

Represent and compare the numbers using place value counters.

<table>
<thead>
<tr>
<th>100s</th>
<th>10s</th>
<th>1s</th>
</tr>
</thead>
<tbody>
<tr>
<td>452</td>
<td></td>
<td></td>
</tr>
<tr>
<td>542</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

_____ is greater than _____.

Use <, > or = to make the statements correct.

Draw objects to make the statement true.
**Compare Objects**

### Reasoning and Problem Solving

**Which image is the odd one out?**

The part-whole model is the odd one out because it shows 643 whereas all the other images show 543.

Children could show 543 in a part-whole model correctly, in Base 10 a different way or with place value counters in a different way.

**True or False?**

The image is not correct because the number 244 is represented on both sides of the inequality symbol.

An equal sign should have been used.

The number on the left must be made larger or the number on the right must be made smaller, to make this true.

**Explain why. How else can you represent the number?**
Compare Numbers

Notes and Guidance

Children compare numbers presented as numerals rather than objects. They need to be encouraged to use previous learning to choose an efficient method to compare the numbers. For example, children may choose to place the numbers on a number line, make them using concrete manipulatives or draw them in a place value chart to compare.

Mathematical Talk

What strategy did you use to compare the numbers?

What materials would be useful to help you compare the numbers?

How do you know which number is the smallest /greatest? Which column do you start comparing from? Why?

Can you find more than one way to complete the statements?

Varied Fluency

Circle the greatest number in each pair.

- Nine hundred and two
- 500 and 63
- 7 hundreds and 6 ones

Use <, > or = to make the statements correct.

- 399 ______ 501
- 800 ______ 80 tens

Complete the statements.

- 600 + 70 + 4 ______ 600 + _____ + 4
- Two hundred and five ______
Compare Numbers

Reasoning and Problem Solving

Amir has 3 jars of sweets.

Jar A contains 235 sweets.

Jar C contains 175 sweets.

Jar B could contain any number of sweets between 176 and 234 inclusive.

Discussion point: Could B contain 175 or 235 sweets? Why?

I am thinking of a number.

It is between 300 and 500

The digits add up to 14

The difference between the greatest digit and the smallest digit is 2

What could my number be?

Is there only one option?

Explain each step of your working.

446 or 464

The only possibilities to go in the hundreds column are 3 and 4
If it was 3, the other two digits would have to total 11 and none of these pairs give the correct difference between the greatest and smallest digit, so the number has to have 4 in the hundreds column.
Block 1 - Place Value

Theme 5 – Order numbers
Order Objects and Numbers

Notes and Guidance

Children order numbers and objects from smallest to greatest or greatest to smallest. They should be encouraged to use concrete or pictorial representations to prove or check their answers. Children use the vocabulary ‘smallest’ and ‘greatest’ and may also use the < or > symbols to show the order of their numbers.

Mathematical Talk

How does the number line help you order the numbers?

How does Base 10 prove that your order is correct?

How did you know which of the diagrams represented the smallest/greatest number?

Did you look at the tens or ones?

Varied Fluency

Circle the numbers 48, 43 and 50 on the number line.

Put the numbers 48, 43 and 50 in order starting with the smallest.

Use Base 10 to make the numbers sixty, sixteen and twenty-six. Write the numbers in order starting with the greatest number.

The diagrams represent different numbers.

Circle the greatest number.
Circle the smallest number.
Complete the number sentence ____ > _____
Order Objects and Numbers

Reasoning and Problem Solving

Order the numbers below. Which would be the fourth number?

33  53  37
29  34  43

Explain how you ordered them.

If I ordered them from smallest to largest: 29, 33, 34, 37, 43, 53 then 37 would be the fourth number.

Alternatively, if I order the numbers from largest to smallest: 53, 43, 37, 34, 33, 29 then 34 would be the fourth number.

Mo has written a list of 2-digit numbers.

14, 23, 32, 41

The digits of each number add up to five. None of the digits are zero.

Can you find all the numbers Mo could have written?

Write the numbers in order from smallest to largest.

What strategy did you use?
Order Numbers

Notes and Guidance
Children explore ordering a set of numbers from smallest to greatest and greatest to smallest. They need to be able to explain their reasoning throughout. They could still use Base 10 or other concrete materials to help them to make decisions about ordering.

At this point, children are introduced to the words ascending and descending.

Mathematical Talk

How do you know you have created the greatest/smallest number?

What number is being represented by the place value counters/Base 10?

What does the word ascending/descending mean?

Can you find more than one way to order your numbers?

Varied Fluency

Here are three digit cards.

What is the greatest number you can make?
What is the smallest number you can make?

Use the symbols <, > or = to make the statement correct.

Here is a list of numbers.

312, 321, 123, 132, 213, 231

Place the numbers in ascending order.
Now place them in descending order.
What do you notice?
Order Numbers

Reasoning and Problem Solving

Whitney has six different numbers.

She put them in ascending order then accidentally spilt some ink onto her page. Two of her numbers are now covered in ink.

214, 243, 256, 289

What could the hidden numbers be? Explain how you know.

The first number could be anything between 215 and 242

The second hidden number could be anywhere between 257 and 288

True or False?

When ordering numbers you only need to look at the place value column with the highest value.

False. For example, if you are ordering numbers in the hundreds you should start by looking at the hundreds column, but sometimes two numbers will have the same number of hundreds and so you will also need to look at other columns.