Autumn Scheme of Learning

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.

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.

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.
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

<table>
<thead>
<tr>
<th>Year 1 (Aut B2, Spr B1)</th>
<th>Year 2 (Aut B2, B3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• How many left? (1)</td>
<td>• Subtract 1-digit from 2-digits</td>
</tr>
<tr>
<td>• How many left? (2)</td>
<td>• Subtract with 2-digits (1)</td>
</tr>
<tr>
<td>• Counting back</td>
<td>• Subtract with 2-digits (2)</td>
</tr>
<tr>
<td>• Subtraction - not crossing 10</td>
<td>• Find change - money</td>
</tr>
<tr>
<td>• Subtraction - crossing 10 (1)</td>
<td></td>
</tr>
<tr>
<td>• Subtraction - crossing 10 (2)</td>
<td></td>
</tr>
</tbody>
</table>

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.

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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</tbody>
</table>
Addition and Subtraction (1)

Addition - adding more
Year 2 (Aut B2, B3)
- Add a 2-digit and 1-digit t- crossing 10
- Add two 2-digit numbers - not crossing 10
- Add two 2 digit numbers - crossing 10
- Add three 1-digit numbers
- Find the total - money
Year 3 (Aut B2, Spr B2)
- Add 3-digit and 1-digit - crossing 10
- Add 3-digit and 2-digit - crossing 100
- 2-digit and 3-digit - not crossing 10/100 (addition)
- 2-digit and 3-digit - crossing 10 or 100
- 3-digit numbers - not crossing 10 or 100
- 3-digit numbers - crossing 10 or 100
- Add money

Fact families & number bonds
Year 2 (Aut B2, Aut B3)
- Fact families - addition and subtraction bonds to 20
- Check calculations
- Bonds to 100 (tens)
- Bonds to 100 (tens and ones)
- Make the same amount - money

In this block, we have incorporated some of the money blocks in order to provide better coverage of the steps for both year groups. Other money steps will be covered in the multiplication block. Children start by making different amounts using coins and notes before adding and subtracting money throughout the block.

Year 2 focus on number bonds to 20 and 100. This will be a good opportunity for Year 3 to also recap this key learning as it will support their mental addition and subtraction throughout the rest of the block.
Addition and Subtraction (2)

Common Content

Subtraction

Year 2 (Aut B2, B3)
- Subtract 1-digit from 2-digits
- Subtract with 2-digits (1)
- Subtract with 2-digits (2)
- Find change – money
- Find the difference – money
- 2-step problems – money

Year 3 (Aut B2, Spr B2)
- Subtract 1-digit from 3-digits
- Subtract 2-digits from 3-digits – crossing 100
- 2-digits and 3-digits – not crossing 10 or 100
- 2-digits and 3-digits – crossing 10 or 100
- 3-digit and 3-digit (no exchange)
- 3-digit and 3-digit (exchange)
- Subtract money
- Give change

Subtraction is broken down into small steps focusing on different numbers of digits with or without exchange. Both year groups then apply their understanding to the context of money.

Year 2 apply their addition and subtraction skills by comparing number sentences whilst Year 3 move on to estimating and checking answers to improve their accuracy in calculating.

Year Specific

Compare number sentences
Year 2 (Aut B2, B3)
- Compare number sentences
- Compare money

Estimate and Check
Year 3 (Aut B2)
- Estimate answers
- Check answers

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**Count Money – Notes & Coins**

**Notes and Guidance**

In this step, children will build on counting by bringing pounds and pence together.

Decimal notation is not used until KS2 therefore children will write the total using ‘and’ e.g. £5 and 30 p rather than £5.30

Children will not count across £1. They will count the pounds and pence separately before putting them together.

**Mathematical Talk**

How did you work out the total amount of money?

What strategy did you use to count the money when there is pounds and pence?

Explain what to do when the pounds and pence are mixed up.

**Varied Fluency**

- How much money is there altogether?
  - There is £____ and ____p.

- Complete the part-whole model.

- What’s the same and what’s different about the parts?

- Fill in the gaps to make the statements correct.
  - £10 + £5 + 50 p = £____ and ____p
  - £20 + £2 + 10 p + 10 p + 2 p = £____ and ____p
  - £5 + £____ + 50 p + 20 p + 20 p + 1 p = £10 and ____p
Count Money – Notes & Coins

Reasoning and Problem Solving

How many ways can you complete the part-whole model by drawing money?

Example answers:

Mo has the following coins.

He thinks he has 51 p.
Explain his mistake.

Mo thinks the 5 p is a 50 p coin. He has 6 p. Alternatively, he has combined the 5 and 1 from each coin.

Here are some coins and a note.

Amir says, “There is 10 p”.
Dexter says, “There is £10”.
Are either of them correct?
Explain why.

No, Amir and Dexter have taken the digits 2, 2, 5 and 1 and added them together.
The coins are a mix of pounds and pence so need to be counted separately.
Select Money

Notes and Guidance
Children select coins to make an amount, from a set of coins given to them. They will use these practically, draw them and write the abstract amounts. They will continue to use both pounds and pence to embed previous learning. Children are continuing to work on recognising money by selecting the correct coins or notes from a wide range.

Mathematical Talk
How do you know you have made 56 p? Is your answer the same as your partner? Can you find any other ways to make this amount?

Does it matter if you say pence or pounds first?

Does this change the total?

Can you show this amount in a different way?

Varied Fluency

Circle 56 p.

Which does not show 50 p?

Draw money on the purses to match the amounts.

£21 and 32 p

£13 and 40 p
## Select Money

### Reasoning and Problem Solving

<table>
<thead>
<tr>
<th>Rosie says,</th>
<th>No, because 3 pence can only be made with copper coins.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have 43 p in silver coins.</td>
<td>Do you agree?</td>
</tr>
<tr>
<td>Explain why.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Annie and Ron both claim to have 90 p.</th>
<th>Yes, they can because: Annie = 50 p, 20 p, 20 p. Ron = 50 p, 20 p, 10 p, 10 p.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annie has 3 coins and Ron has 4 coins.</td>
<td></td>
</tr>
<tr>
<td>Could they be correct?</td>
<td></td>
</tr>
<tr>
<td>Which coins could they have?</td>
<td></td>
</tr>
</tbody>
</table>

| Use the money to fill the purses. | Example answer: |
| You can only use each coin or note once. | |
| Cross them out once you have used them. | £10 and 15 p |

| £5 and 51 p | £5 and 51 p |

<table>
<thead>
<tr>
<th>Circle the odd one out.</th>
<th>28 p = 20 p, 8 p is because if you are using coins there is not an 8 p coin. Children may give other answers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>23 p = 20 p, 2 p, 1 p</td>
<td></td>
</tr>
<tr>
<td>25 p = 20 p, 5 p</td>
<td></td>
</tr>
<tr>
<td>28 p = 20 p, 8 p</td>
<td></td>
</tr>
</tbody>
</table>

| Explain your answer. | |
Pounds and Pence

Notes and Guidance

Children need to know the value of each coin and note and understand what these values represent. They should understand that money can be represented in different ways but still have the same value. Children will need to be able to add coin values together to find the total amount.

Mathematical Talk

What is the value of the coin/note?

What does p mean?

Why do we have different values of coins and notes?

What’s the difference between £5 and 5p?

Varied Fluency

Match the amounts that are equal.

Fifteen pounds  Fifteen pence  Fifty pounds  Fifty pence

How much money does the jar contain?

The jar contains £____ and ____ p.

Use <, > or = to make the statements correct.
### Pounds and Pence

### Reasoning and Problem Solving

<table>
<thead>
<tr>
<th>Rosie has 5 silver coins in her purse.</th>
<th>Rosie has 95 pence in her purse. She has one 20p coin, one 50p coin, two 10p coins and one 5p coin.</th>
<th>Amir has 5 different coins in his wallet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>She can make 40p with three coins.</td>
<td>She can also make 75p with three coins.</td>
<td>What is the greatest amount of money he could have in his wallet? What is the least amount of money?</td>
</tr>
<tr>
<td>How much money does Rosie have in her purse?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Greatest:** £3 and 80p

**Least:** 38p
Convert Pounds and Pence

Notes and Guidance

Children convert between pounds and pence using the knowledge that £1 is 100 pence. They group 100 pennies into pounds when counting money. They apply their place value knowledge and use their number bonds to 100.

Mathematical Talk

How many pennies are there in £1?

How can this fact help us to convert between pounds and pence?

How could you convert 600p into pounds? How could you convert 620p into pounds?

Varied Fluency

What is the total of the coins shown?

Can you group any of the coins to make 100 pence?

How many whole pounds do you have? How many pence are left over? So there is £____ and ____ p.

Write the amounts in pounds and pence.

Write each amount in pounds and pence.

165p  234p  199p  112p  516p
## Convert Pounds and Pence

### Reasoning and Problem Solving

<table>
<thead>
<tr>
<th>Dexter has 202 pence.</th>
<th>Children may work systematically and look at combinations of coins that make £1 to help them.</th>
</tr>
</thead>
<tbody>
<tr>
<td>He has <strong>one</strong> pound coin.</td>
<td></td>
</tr>
<tr>
<td>Show five possible combinations of other coins he may have.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Whitney thinks that she has £10 and 3p. Is she correct?</th>
<th>Whitney is wrong, she has £12 and 1p. Whitney has not considered the value of the coins she has.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain your answer.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dora thinks there is more than £5 but less than £6. Is Dora correct?</th>
<th>Dora is incorrect. There is £6 and 30p. This is greater than £6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convince me.</td>
<td></td>
</tr>
</tbody>
</table>
Addition & Subtraction
Theme 2 – Fact families and number bonds
**Fact Families**

**Notes and Guidance**

Children apply their understanding of known addition and subtraction facts within 20 to identify all related facts. This will include an understanding of the relationship between addition and subtraction, and knowing the purpose of the equals sign, as well as the addition and subtraction signs. Showing the link between representations, such as part-whole models and bar models can support and deepen the children’s understanding.

**Mathematical Talk**

What if we took away the red flowers? What are the parts? What is the whole?

Does it change the answer if we add the blue and red flowers in a different order?

What does each circle represent on the part-whole model?

How many different number sentences are there in the fact family?

**Varied Fluency**

- Using concrete apparatus, can you talk about the relationships between the different flowers?

- One relationship shown by this part-whole model is $15 + 5 = 20$. Can you write all associated number sentences in the fact family?

- Look at the bar model below. Can you write all of the number sentences in the fact family?
### Fact Families

#### Reasoning and Problem Solving

Here is an incomplete bar model. The total is greater than 10 but less than 20.

What could the missing numbers be?

How many different combinations can you find?

<table>
<thead>
<tr>
<th></th>
<th>4</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7 and 11</td>
<td>8 and 12</td>
<td>9 and 13</td>
</tr>
<tr>
<td>10 and 14</td>
<td>11 and 15</td>
<td>12 and 16</td>
</tr>
<tr>
<td>13 and 17</td>
<td>14 and 18</td>
<td>15 and 19</td>
</tr>
</tbody>
</table>

#### Which of the representations are equivalent to the bar model?

- **12 = 9 + 3**
- **9 - 3 = 12**

There are 9 cars in a car park, 3 cars leave.

Ron is correct because 8 is not equal to 5 - 3.

Ron disagrees. Who is correct? Can you prove it?

The number line, the part-whole model and 12 = 9 + 3.
Check Calculations

Notes and Guidance

It is essential that children have the opportunity to discuss and share strategies for checking addition and subtraction calculations. Checking calculations is not restricted to using the inverse. Teachers should discuss using concrete resources, number lines and estimating as part of a wide range of checking strategies.

Varied Fluency

- Use concrete objects to check and prove whether the calculations are correct.

  12 − 4 = 8
  7 + 8 = 15

- Can you use inverse operations to check 5 + 12 = 17?

  17
  12
  5

- How many possible inverse calculations are there?

- Eva writes this calculation: 18 − 5 = 13
  Which of the following could she use to check her work?

  13 + 5
  13 − 5
  18 − 13
  5 + 13

Mathematical Talk

- What resources could you use to check your calculation?

- Can you check it in more than one way?

- Why do we need to check our calculation?

- Is there another way you could represent this?
Check Calculations

Reasoning and Problem Solving

Eva did the following calculation:

\[
12 - 8 = 4
\]

She checked it by using the inverse.

She did \(12 + 8 = 20\) and said that her first calculation was wrong.

What advice would you give her?

It should have been \(8 + 4 = 12\) or \(4 + 8 = 12\)

Teddy is checking Dora's work but doesn't do an inverse calculation.

These calculations can't be right.

\[
\begin{align*}
24 + 6 &= 84 \\
25 - 23 &= 12 \\
18 - 3 &= 21
\end{align*}
\]

How might he know?

What errors have been made in each calculation?

All of the calculations involve errors:

6 has been added to the tens instead of the ones.

25 and 23 are very close in value and therefore can't result in such a large difference.

18 and 3 have been added instead of subtracted.
Bonds to 100 (Tens)

Notes and Guidance

Teachers should focus at this stage on multiples of 10 up to and within 100.

Links should be made again between single digit bonds and tens bonds.

Using a 10 frame to represent 100 would be a useful resource to make this link.

Mathematical Talk

What does the word multiple mean?

What does the blue represent? What does the yellow represent?

Why is it different to a normal 10 frame?

What patterns can you see? How does this help us to make up our own?

Varied Fluency

Match the 10 frames to the sentences below:

One hundred equals eighty plus twenty

100 = 100 + 0

40 + 60 = 100

Fill in the missing numbers. Use Base 10 to represent the numbers.

2 + 6 = 8

20 + 60 = ____

2___ + ___0 = 80

80 = ___0 + 6___

Continue the pattern

90 = 100 − 10
80 = 100 − 20

Can you make up a similar pattern starting with the numbers 60, 30 and 90?
### Bonds to 100 (Tens)

#### Reasoning and Problem Solving

<table>
<thead>
<tr>
<th>Eva thinks there are 10 different number bonds to 90 using multiples of 10. Amir thinks there are only 5. Who is correct? Can you help the person who is wrong to understand their mistake?</th>
<th>Amir because 0 + 90 is the same as 90 + 0. Eva has repeated her answers - the multiples have been written the opposite way around. Using multiples of 10, how many number bonds are there for the following numbers? 20 30 40 50. What do you notice about the amount of bonds for each number? If 80 has 5 bonds, predict how many 90 would have.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 and 30 both have 2. 40 and 50 both have 3. When the tens digit is odd it has the same number of bonds as the previous tens number. 90 would also have 5.</td>
<td>Squares are worth 10. Triangles are worth 20. Circles are worth 30. Can you complete the grid above so that all horizontal and vertical lines equal 60? Can children create another pattern on an empty grid where each line equals 60? How many possible ways are there to solve this?</td>
</tr>
</tbody>
</table>
Bonds to 100 (Tens and Ones)

Notes and Guidance

Here children build on their earlier work on number bonds to 100 with tens together with number bonds to 10 and 20.

They use their new knowledge of exchange to find number bonds to 100 with tens and ones.

Using hundred squares, Base 10, bead strings etc. will help the children develop their understanding.

Mathematical Talk

How many more do we need to make 100?

How many tens are in 100?

If I have 35, do I need 7 tens and 5 ones to make 100? Explain why.

Can you make the number using Base 10?

Can you add more Base 10 to the number to make 100?

Varied Fluency

Use a 100 square. If:

- 40 squares are shaded, how many are not shaded?
- 45 squares are shaded, how many are not shaded?
- 54 squares are shaded, how many are not shaded?

Tommy is making 100 with Base 10.

How much more does he need if he has:

- 5 tens and 3 ones
- 37

25 + ___ = 100
___ + 69 = 100

100 – 84 = ___
100 – ___ = 11
Bonds to 100 (Tens and Ones)

Reasoning and Problem Solving

Teddy has completed the missing number sentence.

46 + 64 = 100

Is Teddy correct? Explain your answer.

Teddy is incorrect. He has seen number bonds to 10 but forgotten that he would need to exchange ten ones for one ten.

46 + 64 = 110

Each row and column adds up to 100.

Complete the grid.

<p>| | | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>45</td>
<td>45</td>
<td>10</td>
</tr>
<tr>
<td>40</td>
<td>35</td>
<td>25</td>
</tr>
<tr>
<td>15</td>
<td>20</td>
<td>65</td>
</tr>
</tbody>
</table>

Complete the pattern.

15 + 85 = 100
20 + 80 = 100
25 + 75 = 100
30 + ___ = 100
___ + ___ = 100

Can you explain the pattern?

30 + 70 = 100
35 + 65 = 100

The first numbers are going up in fives and the second numbers are going down in fives. All of the number sentences are number bonds to 100.

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Make the Same Amount

Notes and Guidance

Children explore the different ways of making the same amount. As before, they will not count pence over into pounds.

Examples need to be modelled where pounds and pence are together but children need to continue to be encouraged to count the pounds and pence separately.

Mathematical Talk

Can the same amount be made using different coins?
How did you compare the amounts?
How is your way different to a partner?

Can you swap a coin/note for others and still make the same amount?

What is the smallest amount of coins you can use to make ___?
### Make the Same Amount

#### Reasoning and Problem Solving

| Make 50 p three ways using the coins below. You can use the coins more than once. | Example answers:  
|---|---|---|
| 20 p, 20 p, 10 p  
10 p, 10 p, 10 p,  
10 p, 5 p, 5 p  
1 p (50 times) | | How many ways can you make 10 p using only copper coins?  
Did you use a strategy?  
Example answers:  
2 p, 2 p, 2 p, 2 p, 2 p  
2 p, 2 p, 2 p, 1 p, 1 p |
Addition & Subtraction

Theme 3 – Add and subtract multiples
Add and Subtract 1s

Notes and Guidance

Children should start seeing the pattern when we add and subtract 1 and comment upon what happens.

This is the step before finding ten more than or ten less than, as bridging beyond a 10 should not be attempted yet.

The pattern should be highlighted also by adding 2 (by adding another one) and then adding 3

Mathematical Talk

What happens when we add 2?

What is the link between adding 1 and adding 2?

What about if we want to add 3?

How can a bead string help when we are adding 1, 2, 3 etc.?

Where will be the best place to start on each number track? Why?

Varied Fluency

Create sentences based on the picture.

Example

There are 4 children playing in a park. One more child joins them so there will be 5 children playing together.

Continue the pattern

22 = 29 − 7
22 = 28 − 6

Can you create an addition pattern by adding in ones and starting at the number 13?

Continue the number tracks below.

31 34  45 48
  67 13
Add and Subtract 1s

Reasoning and Problem Solving

**True or False?**

These four calculations have the same answer.

- $1 + 4 + 2$  
  $= 4 + 2 + 1$  
  True, because they all equal 7 and addition is commutative.

- $2 + 4 + 1$  
  $= 4 + 1 + 2$

These four calculations have the same answer.

- $7 - 3 - 2$  
  $= 2 - 3 - 7$  
  False, because subtraction isn’t commutative.

- $3 - 2 - 7$  
  $= 7 - 2 - 3$

---

Jack lives 5 km from school. Annie lives 4 km from school in the same direction.

What is the distance between Jack and Annie’s houses?

After travelling to and from school, Jack thinks that he will walk 1 km more than Annie. Is he correct? Explain your answer.

What will be the difference in distance walked after 2 school days?

- $1$ km
- No, he will walk 2 km further. $1$ km on the way to school and $1$ km on the way home.
- $4$ km
10 More and 10 Less

Notes and Guidance

Teaching needs to focus on the importance of the tens digit. Using a 100 square, explore with the children what happens to the numbers in the columns. Draw attention to the idea that the tens digit changes while the ones digit remains the same. Children will need to see how the number changes with concrete materials before moving onto more abstract ideas.

Mathematical Talk

What's the same? What's different?

Will you start with 35 or 55? Why?

When you look at a hundred square, what do you notice about the numbers that are ten more and ten less than 27?

Which direction will your finger move on a hundred square if you are finding ten more/ten less?

Varied Fluency

Continue the number tracks below.

<table>
<thead>
<tr>
<th>10</th>
<th>20</th>
<th>30</th>
</tr>
</thead>
</table>

| 35 | 45 | 55 |

Using a 100 square, circle the number that is 10 more than 27. Circle the number that is 10 less than 27. Repeat in different colours for different numbers. What do you notice?

Using concrete materials, complete the missing boxes.

<table>
<thead>
<tr>
<th>10 less</th>
<th>Number</th>
<th>10 more</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>37</td>
<td></td>
</tr>
</tbody>
</table>
10 More and 10 Less

Reasoning and Problem Solving

SALE

15 p  22 p  35 p  68 p

The cost of each piece of fruit is reduced by 10 p.

What are the new prices?

Red Apple 5 p
Green Apple 12 p
Banana 25 p
Lemon 58 p

Mo says,
I know that 10 more than 72 is 82 because I only have to look at the tens digit.

Is he correct?
Explain your reasoning.

Yes, because when you add ten you aren't adding ones.

43
They will have four full packs left which is four tens, and three crayon which represents three ones.

Class 3 gives one of their full packets of crayons away.

How many crayons do they have left?

Explain your reasoning.

Rosie is counting backwards in 10s. She says forty-nine, thirty-nine, twenty-nine and then stops. What comes next and why?

19 because you take one ten away from 29, then 9
Add and Subtract 10s

Notes and Guidance

Children should make use of place value to add and subtract 10s from a given number within 100.
The key teaching point again is the importance of the tens digit within the given numbers, and children should be encouraged to see the relationship.

For example: $64 + 20 = 84$

Mathematical Talk

What is the number sentence that will help us to find the first missing number in the number track?

What is the same/different about the next number sentence?

Why is there a blank ones box?

Which column changes?

Which column stays the same?

Varied Fluency

Continue the number track by adding 20 each time.

| 23 |

Use the place value charts and concrete materials to complete the calculations.

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

| 2 3 |
| + 4 0 |

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

| 5 6 |
| - 3 0 |

|      |      |

|      |      |
Add and Subtract 10s

Reasoning and Problem Solving

Tommy has three spare red beads.
What numbers could he make? Explain your answer.

Here are Class 2's crayons.
They are given a new box of 10 each day for a week.
How many crayons do they have at the end of the week?

Discussion could be had about whether it's a full week or a school week.
Answers would be 96 or 76 respectively.

Circles represent 20
Triangles represent 10
Squares represent 50

What is the value of each row and column?

Rows (top to bottom)
- 80
- 80
- 30

Columns (left to right)
- 80
- 80
- 30
Add & Subtract Multiples of 100

Notes and Guidance

Children are introduced to adding numbers greater than 100. They will apply their prior knowledge of adding and subtracting ones and tens to adding and subtracting multiples of 100.

Using concrete manipulatives and pictorial representations throughout is important so the children can see the value of the digits.

Mathematical Talk

What is the same and what is different about 2 ones and 3 ones, 2 tens and 3 tens and 2 hundreds and 3 hundreds?

What is ___ hundreds and ___ hundreds equal to?

How many different ways can you represent 200 + 300?

Varied Fluency

Complete:

2 ones and 3 ones is equal to ___ ones.

2 tens and 3 tens is equal to ___ tens.

2 hundreds and 3 hundreds is equal to ___ hundreds.

Complete each box for 400 + 500

<table>
<thead>
<tr>
<th>Draw It</th>
<th>Write It</th>
<th>Part-Whole</th>
<th>Number Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>___ hundreds and ___ hundreds is equal to ___ hundreds</td>
<td></td>
<td>___ + ____ = ___</td>
</tr>
</tbody>
</table>

Use the bar model to complete the number sentences.

<table>
<thead>
<tr>
<th>600</th>
<th>200</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>___ + ___ = 600</td>
<td>600 = ___ - ___</td>
<td></td>
</tr>
<tr>
<td>___ + ___ = 600</td>
<td>600 = ___ - ___</td>
<td></td>
</tr>
<tr>
<td>___ - ___ = 400</td>
<td>400 = ___ - ___</td>
<td></td>
</tr>
<tr>
<td>___ - ___ = 200</td>
<td>200 = ___ - ___</td>
<td></td>
</tr>
</tbody>
</table>
## Add & Subtract Multiples of 100

### Reasoning and Problem Solving

| _____ + _____ = 800 | 0 + 800  
|                 | 100 + 700  
|                 | 200 + 600  
|                 | 300 + 500  
|                 | 400 + 400  
|                 | 500 + 300  
|                 | 600 + 200  
|                 | 700 + 100  
|                 | 800 + 0    |

Each of the missing numbers are multiples of 100

Find all the possible missing numbers.

If I know 700 − 500 = 200, what else do I know?

Show me using concrete and pictorial representations.

<table>
<thead>
<tr>
<th>Odd One Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which is the odd one out?</td>
</tr>
<tr>
<td>Explain why.</td>
</tr>
</tbody>
</table>

Children may write all the related facts and link it to a bar model. They may also show 70 − 50 or 7 − 5

Possible answers: The odd one out could be 300 + 500 = 800 because it does not have the number 200 in the calculation.

The odd one out could also be 200 + 700 = 900 because the answer is not 800
3-digit & 1-digit Numbers

Notes and Guidance

During this small step, children add and subtract ones from a 3-digit number without an exchange. They consider which digits are affected when adding ones. For example, if a child is completing $214 - 3$ and $214 + 3$ they see that they just need to focus on the ones column. Therefore all they need to do is $4 + 3$ and $4 - 3$ respectively.
The use of the column method can be used but mental arithmetic is the best strategy.

Mathematical Talk

Which column do I need to focus on?

What is the same about the subtractions? What changes each time? Write the number sentence that would come next in each list. Can you write the number sentence that would come before?

Can you use < and > to compare Jack and Tommy's team points?

Varied Fluency

Use the place value grid to complete the calculations.

$214 - 3 = \_\_\_\_\_$  $214 + 3 = \_\_\_\_\_$

Complete:

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

<table>
<thead>
<tr>
<th>356 - 5 =</th>
<th>356 - 5 =</th>
<th>356 - 5 =</th>
</tr>
</thead>
<tbody>
<tr>
<td>357 - 5 =</td>
<td>356 - 4 =</td>
<td>366 - 5 =</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>358 - 5 =</td>
<td>356 - 3 =</td>
<td>376 - 5 =</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>359 - 5 =</td>
<td>356 - 2 =</td>
<td>386 - 5 =</td>
</tr>
</tbody>
</table>

Jack has 534 team points and gets four more. Tommy has 534 team points and loses four of his. How many team points does each person have? Who has the most?
3-digit & 1-digit Numbers

Reasoning and Problem Solving

Rosie has added or subtracted ones to get this answer.

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

Possible answers
340 + 2
341 + 1
342 + 0
343 − 1
344 − 2
345 − 3
346 − 4
347 − 5
348 − 6
349 − 7
350 − 8

What could her calculation have been?
Her starting numbers are between and include 340 and 350

Did you use a strategy?

Do you see a pattern?

Which image does not represent 339 − 8?

The number line does not, because it starts at 340 not 339

Alex thinks the chart shows 456 − 4
Do you agree?

No, I disagree. Alex has subtracted 4 tens not 4 ones.
3-digit & 2-digit Numbers

Notes and Guidance

Children look at what happens to a 3-digit number when a multiple of 10 is added or subtracted. Different representations such as Base 10, arrow cards, place value charts should be used. The use of the column method is exemplified in this example, but children should explore whether or not this is needed and explain why. Mental methods should be encouraged throughout.

Varied Fluency

Use place value counters to complete the number sentences.

352 + 4 tens = ___
352 − 2 tens = ___

Mathematical Talk

How many tens can we add to 352 without exchanging?
How many tens can we subtract from 352 without exchanging?

What patterns can you see between the additions and subtractions?
Can you see links between the columns?

Can you compare the calculations without finding the answer?

Complete:

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Complete using <, > or =

773 + 1  <  773 + 10
653 + 10 <  653 − 10
647 + 10 <  657 − 10
721 + 10 <  653 + 10
# 3-digit & 2-digit Numbers

## Reasoning and Problem Solving

### Spot the Mistake

<table>
<thead>
<tr>
<th>Amir</th>
<th>Amir has subtracted 7 ones instead of 7 tens. The answer should be 519</th>
</tr>
</thead>
<tbody>
<tr>
<td>589 – 70 is equal to 582</td>
<td>When I calculated 392 subtract 20 I used my known fact that 9 – 2 = 7</td>
</tr>
</tbody>
</table>

What should the answer be?

**Write one calculation that could complete all of the statements.**

| 456 – 10 < | Possible answers include: 496 – 30, 406 + 60, 416 + 50 |
| 466 + 1 > | (Any calculation with an answer of 466) |
| 466 + 0 = | Rosie was able to use this fact because 9 tens subtract 2 tens is like doing 9 ones subtract 2 ones. We do not need to subtract any ones or hundreds so those columns will stay the same. |
Add & Subtract 100s

Notes and Guidance

Children build on their knowledge of adding 100s together e.g. 300 + 500, by adding ones and tens to solve calculations such as 234 + 500.

It is important to develop flexibility and ask the children why the column method isn’t always the most effective method. Highlight that when adding and subtracting 100s, the ones and tens columns are not affected.

Mathematical Talk

What do you notice when we add and subtract 100s from a 3-digit number?

Do I need to add or subtract £200 to solve the worded problem? Can you show this on a number line or a bar model?

Is there more than one way to complete the boxes?

Varied Fluency

Use the place value grid and Base 10 to help you calculate two hundred and thirty-four add three hundred.

<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>
</tbody>
</table>

Eva has saved £675
She saved £200 more than Tommy.
How much has Tommy saved?

Complete the boxes with a calculation that either adds or subtracts 100s.

401 + 300
961 − 200

105 + 100
393 − 200

Smallest
Greatest
Smallest
Greatest
Add & Subtract 100s

Reasoning and Problem Solving

Alex

306 + 300 = 906 − 300

She is correct because both give an answer of 606

Is she correct? Explain how you know.

Teddy starts with the number 356
He adds a multiple of 100
His new number is greater than 500 but less than 800
Complete the table.

<table>
<thead>
<tr>
<th>Numbers he couldn't have added</th>
<th>Numbers he could have added</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

He couldn't have added 100, 500 or 600 but he could have added 200, 300 or 400

Complete the scenarios so they match the bar model.

Ron has ____ altogether.
He spends _____ and has £476 pounds left.

Jack has ______
Eva has £200
They have ____ altogether.

Amir has £200 more than Rosie.
Amir has ______
Rosie has ______

Draw your own bar model where one of the parts is a multiple of 100
Write scenarios to match the bar model.

Ron has £676 altogether.
He spends £200 and has £476 pounds left.

Jack has £476
Eva has £200
They have £676 altogether.

Amir has £200 more than Rosie.
Amir has £676
Rosie has £476

Children will then draw their own bar models to match the numbers they have chosen.
Pattern Spotting

Notes and Guidance

Children consolidate adding ones, tens and hundreds to 3-digit numbers.

Drawing the previous steps together, children look for patterns between calculations to enable them to predict answers and to develop their number sense.

Ensure children reflect on the similarities and differences between calculations to highlight the patterns.

Mathematical Talk

What do you notice? Which strategy can we use to add these numbers?

Do we need to write a zero in the hundreds column when there are no hundreds left?

If I know 7 + 8 = 15, what else do I know?

Varied Fluency

What has happened to each starting number? How do you know?

Before
Three hundred and forty
After
Three hundred and seventy

Calculate:

253 + 2  253 + 20  253 + 200
253 − 2  253 − 20  253 − 200

What is the same and what is different about each calculation?

If we know 250 + 40 = 290, what else do we know?
Show your findings in part-whole models or bar models and write number sentences to match.
Pattern Spotting

Reasoning and Problem Solving

Dora uses column addition to solve $251 + 4$

<table>
<thead>
<tr>
<th></th>
<th>2</th>
<th>5</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Is this the most efficient method?

Explain what Dora could have done.

Tell Dora how she can use your strategy to solve $241 + 40$ and $241 + 400$

The best strategy is to complete $1 + 4$, which is 5 and the 2 hundreds and 5 tens stay the same.

When adding 40 it is the tens column which Dora needs to look at because 40 is 4 tens.

When adding 400, she needs to look at the hundreds column because 400 is 4 hundreds.

Investigate

Does adding and subtracting ones to a 3-digit number only affect the ones column?

Does adding and subtracting tens to a 3-digit number only affect the tens column?

No, the ones can change the ones column and any column to the left e.g. $123 + 9$ and $402 - 4$

The tens column can change itself and the hundreds column e.g. $456 + 50$ and $456 - 60$

When adding and subtracting from any column, it can only affect its own column and columns to the left.
Add 2-digits and 1-digit

Notes and Guidance

Before crossing the 10 with addition, children need to have a strong understanding of place value. The idea that ten ones are the same as one ten is essential here. They need to be able to count to 20 and need to be able to partition two-digit numbers in order to add them. They need to understand the difference between one-digit and two-digit numbers and line them up in columns. In order to progress to using the number line more efficiently, children need to be secure in their number bonds.

Mathematical Talk

Using Base 10, can you partition your numbers?

Can we exchange 10 ones for one ten?

How many ones do we have? How many tens do we have?

Can you draw the Base 10 and show the addition pictorially?

Varied Fluency

17 + 5 =

Can you put the larger number in your head and count on the smaller number? Start at 17 and count on 5

Can we use number bonds to solve the addition more efficiently?

We can partition 5 into 3 and 2 and use this to bridge the 10

Find the total of 28 and 7

- Partition both the numbers.
- Add together the ones.
- Have we got 10 ones?
- Exchange 10 ones for 1 ten.
- How many ones do we have?
- How many tens do we have?
Add 2-digits and 1-digit

Reasoning and Problem Solving

Always, Sometimes, Never

I am thinking of a two-digit number, if I add ones to it, I will only need to change the ones digit.

Sometimes, because if your ones total 10 or more you will have to exchange them which will change the tens digit.

Explain your answer.

Here are three digit cards.

Place the digit cards in the number sentence.

How many different totals can you find?

What is the smallest total?

What is the largest total?

67 + 8 = 75
68 + 7 = 75
76 + 8 = 84
78 + 6 = 84
86 + 7 = 93
87 + 6 = 93

75 is the smallest total.

93 is the largest total.
Add 2-digit Numbers (1)

Notes and Guidance

This step is an important pre-requisite before children add two-digit numbers with an exchange. Focus on the language of tens and ones and look at different methods to add the numbers including the column method. It is important that teachers always show the children to start with the ones when adding using the column method.

Mathematical Talk

Can you partition the number into tens and ones?

Can you count the ones? Can you count the tens?

Can you show your addition by drawing the Base 10 to help?

How could you represent the problem?

Varied Fluency

Find the sum of 34 and 23

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

64 + 12 = _____

4 ones + 2 ones = _____

6 tens + 1 ten = _____

_____ tens + _____ ones = _____

Mo has 41 sweets. Whitney has 55 sweets.

How many sweets do they have altogether?
Add 2-digit Numbers (1)

Reasoning and Problem Solving

Annie has 12 marbles.
Ron has 13 marbles more than Annie.
How many marbles do they have altogether?

Ron has 25 marbles.
Altogether they have 37 marbles.

What digits could go in the boxes?

\[
\square 2 + \square 5 = 87
\]

Possible answers:
1 and 7
2 and 6
3 and 5
4 and 4
5 and 3
6 and 2
7 and 1

Interesting discussion could be had around is 1 and 7 different to 7 and 1?
Etc.

Amir has been asked to complete the bar model.

Amir has found the digit totals and put the digits together to make 78

The correct answer is 69 and this could be shown by using Base 10 and a place value chart.

The whole is 78 because \(5 + 2 = 7\) and \(1 + 7 = 8\)

Explain to Amir what he has done wrong. How could you help him work out the correct total?
Add 2-digit Numbers (2)

Notes and Guidance

Children use Base 10 and partitioning to add together 2-digit numbers including a exchange. They could be encouraged to draw the Base 10 alongside recording any formal column method.

They have already seen what happens when there are more than 10 ones and should be confident in exchanging 10 ones for one 10.

Mathematical Talk

Can you represent the ones and tens using Base 10?
What is the value of the digits?
How many ones do we have altogether?
How many tens do we have altogether?
Can we exchange ten ones for one ten?
What is the sum of the numbers?
What is the total?
How many have we got altogether?

Varied Fluency

64 + 17 = ____
4 ones + 7 ones = ____
6 tens + 1 ten = ____
_____ tens + _____ ones = ____

Find the sum of 35 and 26

- Partition both the numbers.
- Add together the ones. Have we got 10 ones?
- Exchange 10 ones for 1 ten.
- How many ones do we have?
- Add together the tens. How many do we have altogether?

Class 3 has 37 pencils.
Class 4 has 43 pencils.

How many pencils do they have altogether?
# Add 2-digit Numbers (2)

## Reasoning and Problem Solving

<table>
<thead>
<tr>
<th>Can you create a calculation where there will be an exchange in the ones and your answer will have two ones and be less than 100?</th>
<th>There are lots of possible solutions. E.g. 33 + 29 = 62</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>How many different ways can you solve 19 + 11?</th>
<th>Children might add the ones and then the tens. Children should notice that 1 and 9 are a number bond to 10 which makes the calculation easier to complete mentally.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Find all the possible pairs of numbers that can complete the addition.</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 + 29</td>
<td></td>
</tr>
<tr>
<td>19 + 23</td>
<td></td>
</tr>
<tr>
<td>14 + 28</td>
<td></td>
</tr>
<tr>
<td>18 + 24</td>
<td></td>
</tr>
<tr>
<td>15 + 27</td>
<td></td>
</tr>
<tr>
<td>17 + 25</td>
<td></td>
</tr>
<tr>
<td>16 + 26</td>
<td></td>
</tr>
</tbody>
</table>

How do you know you have found all the pairs?

What is the same about all the pairs of numbers?

All the pairs of ones add up to 12
Add Three 1-digit Numbers

Notes and Guidance

Children need to use their knowledge of commutativity to find the most efficient and quick way to add the three one-digit numbers.

They look for number bonds to 10 to help them add more efficiently.

Mathematical Talk

Can we change the order of the numbers to make the calculation easier?

Why are we allowed to change the order of the numbers?

Which two numbers did you add first? Why?

What if you added a different two numbers first, would your answer be the same?

Varied Fluency

Use ten frames and counters to add the numbers 4 + 3 + 6.

Can you add the numbers in a different way to find a number bond to 10?

4 + 6 = 10

10 + 3 = 13

Find the totals of each row and column.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>3</td>
</tr>
</tbody>
</table>

Use <, > or = to compare the numbers.

5 + 4 + 6  6 + 5 + 4
7 + 3 + 8  7 + 7 + 3
9 + 2 + 5  8 + 3 + 5
8 + 4 + 2  2 + 5 + 8

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### Add Three 1-digit Numbers

#### Reasoning and Problem Solving

<table>
<thead>
<tr>
<th>Always, Sometimes, Never</th>
<th>Always, children may recognise that two odds make an even so three odds make an odd.</th>
<th>Take 3 consecutive one-digit numbers, e.g. 4, 5 and 6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>odd + odd + odd = odd</td>
<td>Use one-digit numbers to test if this is true e.g.</td>
<td>Add them together.</td>
</tr>
<tr>
<td></td>
<td>3 + 5 + 7</td>
<td>What do you notice?</td>
</tr>
<tr>
<td>Which numbers would you add together first in the following number sentences? Why would you add those first?</td>
<td>3 and 7 first – number bond to 10 8 and 2 first – number bond to 10 4 and 4 first – double a number.</td>
<td>Choose different groups of 3 consecutive one-digit numbers and see if there is a pattern.</td>
</tr>
<tr>
<td>3 + 5 + 7 =</td>
<td>No, e.g. 5 + 6 + 7</td>
<td></td>
</tr>
<tr>
<td>8 + 2 + 6 =</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 + 3 + 4 =</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If we order the groups, we can see that the totals go up by 3 each time. This is because we are adding one to each number each time so we are adding 3 extra altogether.
Find the Total

Notes and Guidance

Children will build on their knowledge of addition to add money including:
- 2-digit and 2-digit
- 2-digit and ones
- 2-digit and tens
- 3-single digits

Children will be encouraged to use different methods to add the amounts of money, such as count on, partitioning and regrouping.

Varied Fluency

Complete the table.

<table>
<thead>
<tr>
<th>Pounds</th>
<th>Pence</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>£4</td>
<td>25 p</td>
<td>£___ and ___ p</td>
</tr>
<tr>
<td>£2</td>
<td></td>
<td>£2 and 40 p</td>
</tr>
<tr>
<td></td>
<td>65 p</td>
<td>£20 and 65 pence</td>
</tr>
<tr>
<td></td>
<td>55 p</td>
<td>£15 and 20 p</td>
</tr>
</tbody>
</table>

Complete the bar models.

7 p 5 p 9 p

£6 £4 £2

Amir buys bread and eggs.

49 p 30 p

How much does he spend?

Mathematical Talk

How did you find the missing amounts? Share your strategies with a friend.
Was your method different to a friend?

What is the most efficient method? Why?

Can you write a worded question for a friend?

What was the greatest amount you found?
Find the Total

Reasoning and Problem Solving

Dexter has these coins and notes.

He makes an amount greater than £20 but less than £30

Draw the money he could have used. You can use each coin or note more than once.

How many different ways can you find?

Possible answers:

£10, £10 and £5 makes £25

£10, £5, £5, £2 makes £22

Etc.

Here is a shopping list.

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubber</td>
<td>20 p</td>
</tr>
<tr>
<td>Ruler</td>
<td>18 p</td>
</tr>
<tr>
<td>Pencil</td>
<td>32 p</td>
</tr>
<tr>
<td>Crayon</td>
<td>27 p</td>
</tr>
<tr>
<td>Pen</td>
<td>45 p</td>
</tr>
<tr>
<td>Glue</td>
<td>36 p</td>
</tr>
</tbody>
</table>

The ruler and the pencil as 18 p and 32 p makes 50 p.

Two pens as 45 p and 45 p makes 90 p.

Children to explore the totals that can be made by adding two items together.

The rubber and the pen would cost 65 p as 20 p and 45 p sum to 65 p.
Add 3-digit & 1-digit Numbers

Notes and Guidance

Children add ones to a 3-digit number, with an exchange. They discover that when adding ones it can affect the ones column and the tens column.

Children learn that we can only hold single digits in each column, anything over must be exchanged.

The use of 0 e.g. 145 - 5 is important so they know to use zero as a place holder.

Mathematical Talk

When you add ones to a number does it always, sometimes or never affect the tens column?

What is the largest digit you can have in each column? Why?

How does using the number line support partitioning the number? What number bonds help us with this method?

Varied Fluency

We can use Base 10 to solve 245 + 7

Use this method to calculate:

357 + 8
286 + 5
419 + 1

We can use a number line to calculate 346 + 7

Use this method to calculate:

564 + 8
716 + 9
327 + 5

We can partition our 1-digit number to calculate 379 + 5

Use this method to calculate:

178 + 9
826 + 7
359 + 8

©White Rose Maths
Add 3-digit & 1-digit Numbers

Reasoning and Problem Solving

Always, Sometimes, Never

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

What other digits would always give a 2 in the ones column? Prove it.

Which questions are harder to calculate?

234 + 3 =
506 + 8 =
455 + 7 =
521 + 6 =

The second and third are harder as an exchange needs to be made.

Explain your answer.
Add 3-digit & 2-digit Numbers

**Notes and Guidance**

Children add multiples of 10, to a 3-digit number with an exchange.

They recognise that when adding tens, it can change the tens and hundreds column. Encourage children to count in tens rather than use column addition.

Draw on knowledge of inverse to work out missing number problems.

**Mathematical Talk**

How many tens do we have? How many tens do we need to exchange for 100?

If we know how to count in tens, do we always need to use the column method or other methods?

Would it be easier for us to just count up in our heads?

**Varied Fluency**

- Mo uses Base 10 to calculate 176 + 40
  
  ![Base 10 representation of 176 and 40]

- Use Mo’s method to calculate:
  
  276 + 40  266 + 40  266 + 70

- Miss Wilson has 237 marbles in a box. She adds 8 more bags of 10 marbles. How many marbles does she have now? Write the calculation for this problem.

- Complete the bar models.

  ![Bar models with numbers 185, 40, 135, and 90]
**Add 3-digit & 2-digit Numbers**

**Reasoning and Problem Solving**

<table>
<thead>
<tr>
<th>Eva and Amir are calculating 783 + 90</th>
<th>Amir’s method is a more efficient method of adding 90. Give children time to discuss each method and try them out with different numbers.</th>
<th>Which is the odd one out? Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>783 + 100 = 883</td>
<td>793, 803, 813, 823, 833, 843, 853, 863, 873</td>
<td>336 + 80</td>
</tr>
<tr>
<td>883 − 10 = 873</td>
<td></td>
<td>453 + 60</td>
</tr>
<tr>
<td>Whose method do you prefer? Explain why.</td>
<td></td>
<td>347 + 70</td>
</tr>
<tr>
<td>285 + 80 is the odd one out because in all the others the tens columns add up to 11 tens.</td>
<td>285 + 80</td>
<td></td>
</tr>
</tbody>
</table>

Sort these calculations into two groups. Justify your answer.

- 257 + 60
- 70 + 637
- 40 + 234
- 20 + 391

Possible ways to sort:
- Odds and evens
- Over and under 500
- Exchanging and not exchanging

Compare your groups with a friend. Are they the same?
2-digit & 3-digit Numbers

Notes and Guidance

Children focus on the position of numbers and place value to add and subtract 2-digit and 3-digit numbers.

They represent numbers using Base 10 and line up the place value columns.

In this step, children add numbers without an exchange.

Mathematical Talk

Where would these digits go on the place value chart? Why?

When we subtract, why do we not make both numbers? Why do we make both numbers when we add?

What is the same about the additions and subtractions? What changes?

Varied Fluency

Match the calculation to the correct representation and solve.

<table>
<thead>
<tr>
<th>H</th>
<th>T</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

26 + 461

<table>
<thead>
<tr>
<th>H</th>
<th>T</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

553 - 32

<table>
<thead>
<tr>
<th>H</th>
<th>T</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

544 + 22

<table>
<thead>
<tr>
<th>H</th>
<th>T</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Represent the calculations using Base 10 and solve them.

388 - 44

167 + 32

265 - 43

Calculate:

365 + 23

365 - 23

365 + 32

365 - 32
Eva has 169 sweets in a jar. She gives 37 sweets to Mo. Which model represents this problem?

a) [Image of a model with 132, 37, and 169]

C is correct because 37 + 132 = 169

37 is a part, 132 is a part and 169 is the whole.

b) [Image of a model with 169, 132, and 37]

c) [Image of a model with 169, 37, and 132]

d) [Image of a model with 132, 37, and 169]

Explain the mistake Jack has made.

```
    H T O
  +2 3 1
+ 6 3
```

Rosie has 77 sweets. Mo has 121 sweets. Which addition will find how many sweets they have altogether?

```
  1 2 1
+ 7 7
+ 1 2 1
```

Both are correct because addition is commutative and the numbers can be added either way round.

Jack has put 63 in the wrong place value columns.
Add 2-digit & 3-digit Numbers

Notes and Guidance

Children deepen their understanding of adding 2-digit and 3-digit numbers in this step. They start adding numbers where there is an exchange from ones to tens, they then move on to exchanging tens to hundreds before adding numbers where there are exchanges in both columns.

Highlight the links between the concrete representations and the column method to support children in understanding how the column method works.

Mathematical Talk

What happens when we have 10 ones in a column? How many tens do we exchange 10 ones for? How do we show the exchange in the column method?

What happens when we have 10 tens in a column? How many hundreds do we exchange 10 tens for? How do we show the exchange in the column method?

What do you notice about the additions in the models? How many exchanges do we need to make?

Varied Fluency

Annie uses Base 10 to calculate 317 + 46

Use Annie's method to calculate:
327 + 46  537 + 36  538 + 32  267 + 24

Dexter uses place value counters to calculate 163 + 52

Use Dexter's method to calculate:
372 + 64  537 + 82  537 + 72  248 + 70

Complete the models using column addition.
Add 2-digit & 3-digit Numbers

Reasoning and Problem Solving

Eva is incorrect because she has not exchanged ten ones for one ten or shown this in the column method.

Here is her working out:

<table>
<thead>
<tr>
<th></th>
<th>2</th>
<th>6</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>2</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>8</td>
<td>2</td>
</tr>
</tbody>
</table>

She should have added an extra ten to the tens column. The correct answer is 292.

Is she correct? Explain why.

Sort the additions into the table.

<table>
<thead>
<tr>
<th></th>
<th>No exchange</th>
<th>Exchange 10 ones</th>
<th>Exchange 10 tens</th>
</tr>
</thead>
<tbody>
<tr>
<td>375 + 18</td>
<td>456 + 72</td>
<td>912 + 79</td>
<td></td>
</tr>
<tr>
<td>910 + 79</td>
<td>456 + 27</td>
<td>342 + 35</td>
<td></td>
</tr>
</tbody>
</table>

Can you write 2 more additions in each column?

Choose one 2-digit and one 3-digit number.
Write additions that have an exchange in the ones and the tens columns.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>35</td>
<td>756</td>
<td>467</td>
</tr>
<tr>
<td>81</td>
<td>56</td>
<td>487</td>
<td>619</td>
</tr>
</tbody>
</table>

No exchange: 910 + 79 342 + 35
Exchange 10 ones 375 + 18 456 + 27 912 + 79
Exchange 10 tens 456 + 72

Choose one 2-digit and one 3-digit number.
Write additions that have an exchange in the ones and the tens columns.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>35</td>
<td>756</td>
<td>467</td>
</tr>
<tr>
<td>81</td>
<td>56</td>
<td>487</td>
<td>619</td>
</tr>
</tbody>
</table>
Add Two 3-digit Numbers (1)

Notes and Guidance
Children add two 3-digit numbers with no exchange. They should focus on the lining up of the digits and setting the additions clearly out in columns. Having exchanged between columns in recent steps, look out for children who exchange ones and tens when they don’t need to. Reinforce that we only exchange when there are 10 or more in a column.

Mathematical Talk
Where would these digits go on the place value chart? Why?

Why do we make both numbers when we add?

Can you represent ___ using the equipment?

Can you draw a picture to represent this?

Why is it important to put the digits in the correct column?

Varied Fluency

Complete the calculations.

___ + ___ = ___

Use the column method to calculate:

- Three hundred and forty-five add two hundred and thirty-six.
- Five hundred and sixteen plus three hundred and sixty-two.
- The total of two hundred and forty-seven and four hundred and two.
Add Two 3-digit Numbers (1)

Reasoning and Problem Solving

Jack is calculating 506 + 243

Here is his working out.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>+</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

Can you spot Jack’s mistake?
Work out the correct answer.

Jack hasn’t used zero as a place holder in the tens column. The correct answer should be 749

Here are three digit cards.

2 3 4

Alex and Teddy are making 3-digit numbers using each card once.

Alex’s number is 432
Teddy’s number is 234
The total is 666
Add Two 3-digit Numbers (2)

Notes and Guidance

Children add two 3-digit numbers with an exchange. They start by adding numbers where there is one exchange required before looking at questions where they need to exchange in two different columns. Children may use Base 10 or place value counters to model their understanding. Ensure that children continue to show the written method alongside the concrete so they understand when and why an exchange takes place.

Mathematical Talk

How many ones do we need to exchange for one ten?

How many tens do we need to exchange for one hundred?

Can you work out how many points Eva and Ron scored each over the two games?

Why is it so important to show the exchanged digit on the column method?

Varied Fluency

Use place value counters to calculate 455 + 436

```
<table>
<thead>
<tr>
<th>H</th>
<th>T</th>
<th>O</th>
</tr>
</thead>
</table>
| 455 | 436 | 111
| 111 |
```

Eva and Ron are playing a game. Eva scores 351 points and Ron scores 478 points. How many points do they score altogether? How many more points does Ron score than Eva?

Eva and Ron play the game again. Eva scores 281 points, Ron scores 60 less than Eva. How many points do they score altogether?

Complete the models.
**Add Two 3-digit Numbers (2)**

**Reasoning and Problem Solving**

Roll a 1 to 6 die. Fill in a box each time you roll.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

Discuss the rules with the children and what they would need to roll to get them e.g. to get an odd number only one of the ones should be odd because if both ones have an odd number, their total will be even.

Can you make the total:

- An odd number
- An even number
- A multiple of 5
- The greatest possible number
- The smallest possible number

Complete the statements to make them correct.

| 487 + 368 | 487 + 468 |
| 326 + 258 | 325 + 259 |
| 391 + 600 | 401 + ___ |

Explain why you do not have to work out the answers to compare them.

| < | = | 590 |

In the first one we start with the same number, so the one we add more to will be greater.

In the second 325 is one less than 326 and 259 is one more than 258, so the total will be the same.

In the last one 401 is 10 more than 391, so we need to add 10 less than 600.
Add Money

Notes and Guidance

Children add two amounts of money using pictorial representations to support them.

They are encouraged to add the pounds first and then add the pence. Children then exchange the pence for pounds to complete their calculations.

Mathematical Talk

Can you group any of the coins to make a pound?

Can you use estimation to support your calculation?

Why is adding 99p the same as adding £1 and taking away 1p?

Varied Fluency

Mo uses a part-whole model to add money.

£___ and ___ p + £___ and ___ p
There is £____ and 105p.
105p= £____ and ____p
Altogether there is £____ and ____p.

Use Mo's method to find the total of:

£10 and 35p and £4 and 25p   £10 and 65p and £9 and 45p

What calculation does the bar model show?
Find the total amount of money.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>£2 and 35p</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A magazine costs £1 and 75p.
How much do the book and magazine cost altogether?
Add Money

Reasoning and Problem Solving

Dora bought these muffins.

Muffins cost 35p each. How much did Dora spend?

Tommy bought three times as many muffins as Dora. How many muffins did Tommy buy? How much money did Tommy spend on muffins?

How much more money did Tommy spend than Dora?

Dora spent 105p or £1 and 5p.

Tommy bought 9 muffins. He spent 315p or £3 and 15p.

Tommy spent 210p or £2 and 10p more than Dora.

Rosie has £5. Has she got enough money to buy a car and two apples?

£3 and 35p + 85p + 85p = £5 and 5p

She does not have enough money.

Rosie could buy:

- 1 car
- 2 balloons
- 1 magazine
- 1 apple
- 1 magazine and 2 apples

What combinations of items could Rosie buy with £5?

- 85p
- 75p
Subtract 1-digit from 2-digits

Notes and Guidance

Just as with addition, children need to have a strong understanding of place value for subtraction. Children need to be able to count to 20 and need to be able to partition two-digit numbers in order to subtract from them. They need to understand the difference between one-digit and two-digit numbers and line them up in columns. In order to progress to using the number line more efficiently, children need to be secure in their number bonds.

Mathematical Talk

Are we counting backwards or forwards on the number line?

Have we got enough ones to subtract?

Can we exchange a ten for ten ones?

How can we show the takeaway? Can we cross out the cubes?

varied fluency

22 - 7 =

\[
\begin{array}{cccccccc}
\text{Tens} & \text{Ones} \\
15 & 16 & 17 & 18 & 19 & 20 & 21 & 22 \\
\end{array}
\]

Can you put the larger number in your head and count back the smaller number? Start at 22 and count back 7?

Can we use number bonds to subtract more efficiently?

We can partition 7 into 5 and 2 and use this to bridge the 10.

Subtract 8 from 24

\[
\begin{array}{c}
\text{Tens} \quad \text{Ones} \\
1 \quad 4 \\
\hline
\text{8} \\
\hline
\text{1} \quad \text{6} \\
\end{array}
\]

Do we have enough ones to take 8 ones away?

Exchange one ten for ten ones.

Take away 8 ones.

Can you write this using the column method?
Subtract 1-digit from 2-digits

Reasoning and Problem Solving

Jack and Eva are solving the subtraction 23 – 9

Here are their methods:

Jack: I put 9 in my head and counted on to 23

Eva: I put 23 in my head and counted back 9

Who’s method is the most efficient?

Can you explain why?

Can you think of another method to solve the subtraction.

Eva’s method is most efficient because there are less steps to take. The numbers are quite far apart so Jack’s method of finding the difference takes a long time and has more room for error.

Mo is counting back to solve 35 – 7

He counts

35, 34, 33, 32, 31, 30, 29

Is Mo correct?

Explain your answer.

Match the number sentences to the number bonds that make the method more efficient.

| 42 – 5 | 42 – 2 – 3 |
| 42 – 7 | 43 – 3 – 3 |
| 43 – 8 | 43 – 3 – 5 |
| 43 – 6 | 42 – 2 – 5 |

Mo is not correct as he has included 35 when counting back.

This is a common mistake and can be modelled on a number line.
Subtract with 2-digits (1)

Notes and Guidance

This step is an important step before children start to look at subtraction where they cross a tens boundary. Children need to use concrete materials but also draw images of the Base 10 so they can independently solve problems. Some children might think that they need to ‘build’ both numbers in the calculation, unpicking this misconception through modelling and discussion will help develop their understanding.

Varied Fluency

78 minus 34 = _____

8 ones – 4 ones = _____

7 tens – 3 tens = _____

We have _____ tens and _____ ones.

34 – 13 = _____

\[
\begin{array}{c@{}c@{}c}
n & o \\
3 & 4 & \underline{-} \\
3 & 0 & \underline{-} \\
1 & 0 & \underline{-} \\
1 & 0 & \underline{-} \\
2 & 0 & 1 \\
\end{array}
\]

- Partition the number 34.
- Partition 13 and subtract the ones and the tens.
- Place the partitioned number back together.

Mathematical Talk

Do we need to make both numbers in the subtraction before we take away?

Which number do we need to make? The larger number or the smaller?

What are the numbers worth? Tens or ones?

What happens if we have nothing left in a column? Which number do we write?
Annie has 33 stickers.

Dexter has 54 stickers.

How many more stickers does Dexter have?

What method did you use to solve the problem?

Here the children are working out the difference.

Children might use subtraction to solve the problem or they might count on to find the difference.

Dexter has 21 more stickers than Annie.

Find the missing numbers.

\[
\begin{array}{c}
6 \\
- 2 \\
\hline
4 \quad 2
\end{array}
\]

Is this the only possible solution? Explain your answer.

Make the numbers using Base 10 to help you find your answer.

9 and 7
8 and 6
7 and 5
6 and 4
5 and 3
4 and 2
3 and 1
2 and 0
Subtract with 2-digits (2)

Notes and Guidance

Children use their knowledge that one ten is the same as ten ones to exchange when crossing a ten in subtraction.

Continue to use concrete manipulatives (such as Base 10) and pictorial representations (such as number lines and part-whole models) to develop the children's understanding.

The skill of flexible partitioning is useful here when the children are calculating with exchanges.

Mathematical Talk

Have we got enough ones to take away?
Can we exchange one ten for ten ones?
How many have we got left?
What is the difference between the numbers?
Do we always need to subtract the ones first? Why do we always subtract the ones first?
Which method is the most efficient to find the difference, subtraction or counting on?

Varied Fluency

Use the number line to subtract 12 from 51

Can you subtract the ones first and then the tens?
Can you partition the ones to count back to the next ten and then subtract the tens?

\[ 42 - 15 = \]

<table>
<thead>
<tr>
<th>42</th>
<th>We can't subtract the ones. Can we partition differently?</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>-10</td>
<td>-5</td>
</tr>
</tbody>
</table>

Now we can subtract the ones and then subtract the tens:

\[ 42 - 15 = 27 \]

Take 16 away from 34

\[ \begin{array}{c}
2 \\
14 \\
\end{array} \]

\[ \begin{array}{c}
-1 \\
6 \\
\_ \\
1 \\
8 \\
\end{array} \]
Subtract with 2-digits (2)

Reasoning and Problem Solving

Eva and Whitney are working out some subtractions.

Whitney's answer is 18
Eva's answer is 9
Eva's question could be 15 – 6 or 24 – 15

Whitney's answer is double Eva's answer.
What could Eva's subtraction be?

Find the greatest whole number that can complete each number sentence below.

45 – 17 > 14 + ___

26 + 15 < 60 – ___

Explain your answer.
Find Change

Notes and Guidance

Children build on their subtraction skills by finding change from a given amount. They need to identify amounts from the coins given, write the calculations and choose efficient methods.

In this step, children will be introduced to converting £1 to 100 p to be able to subtract from £1. This links to their number bond knowledge to 100.

Mathematical Talk

How much does Dora have? How do you know? Can you write a calculation to work out how much she will have left?

Why is it important to use the £ or p symbol?

What strategy did you use to find the change? Did you use concrete objects to help?

Varied Fluency

Dora has these coins.

She spends 53 p. What money will she have left? What coins could it be?

Write the calculation and find the amount of change.

Ron spends 65 p in the shop. He pays with a £1 coin. How much change will he receive?
Find Change

### Reasoning and Problem Solving

<table>
<thead>
<tr>
<th>I have 20 p.</th>
<th>Example answers: Chocolate bar or a sweet and banana.</th>
</tr>
</thead>
<tbody>
<tr>
<td>My change is more than 5 p but less than 10 p.</td>
<td></td>
</tr>
<tr>
<td>What could I have bought?</td>
<td></td>
</tr>
<tr>
<td>Sweet: 7 p</td>
<td>Apples: 18 p</td>
</tr>
<tr>
<td>Chocolate: 12 p</td>
<td>Banana: 4 p</td>
</tr>
</tbody>
</table>

I paid for my shopping with one coin.

Here is my change.

What could I have paid with and how much would the item have been?

Could have paid with a 20 p coin and it would have cost 3 p.

Could have paid with a 50 p coin and it would have cost 33 p.

Could have paid with a £1 coin and it would have cost 83 p.

Could have paid with a £2 coin and it would have cost £1 and 83 p.
Find the Difference

Notes and Guidance

Children expand their knowledge of addition and subtraction strategies by specifically finding the difference between two amounts.

In this step, children should see both counting on and counting back being modelled to them. They need to discuss which is the most efficient for different questions.

Mathematical Talk

Which costs more? How do you know? How can you work out how much more?

What’s the difference?

How much less?/How many fewer?

What method did you use to work this out?

Varied Fluency

Work out the difference between the cost of a bag of sweets and a bar of chocolate.

25 p

45 p

Find the difference between the amounts of money Amir and Mo have.

Amir

Mo

Find the difference between £2 and 15 p. How much more money does Rosie have than Alex?
Find the Difference

Reasoning and Problem Solving

Whitney

I have 57 p.

Mo

I have 2 silver coins and 1 bronze coin.

Example answers:
Mo could have more by:
• 50 p, 20 p, 1 p
• 50 p, 20 p, 2 p

Mo could have the same by:
• 50 p, 5 p, 2 p

Mo could have less by:
• 5 p, 5 p, 1 p
• 20 p, 10 p, 2 p

What could Mo have?

Work out the difference between the amounts.

How many different answers can you find?

Jack has 2 p.

Eva has 10 p.

Both of them have a 2 p coin.

What other coins could Eva have?

4 × 2 p
3 × 2 p and 2 × 1 p
2 × 2 p and 4 × 1 p
1 × 2 p and 6 × 1 p
8 × 1 p
5 p and 2 p and 1 p
5 p and 3 × 1 p
Two-step Problems

Notes and Guidance

Children draw together all of the skills they have used in this block and consolidate their previous addition and subtraction learning.
Children may need some scaffolding to see the different steps.
Bar modelling is really useful to see the parts and wholes, and supports children in choosing the correct calculation.

Varied Fluency

Rosie has £33 in her money bank, and gets £40 more.
Fill in the bar model and write a calculation to show her total.

\[
\begin{array}{c}
\_
\
\_ & £40
\end{array}
\]
\[
\_
\]
\[
\_
\]
\[
\_
\]

\[\_
\] + \[\_\] = \[\_\]

She then buys a top for £25. Complete the bar model and write a calculation to show what she has left.

\[
\begin{array}{c}
\_
\
\_ & £25
\end{array}
\]
\[
\_
\]
\[
\_
\]
\[
\_
\]

\[\_
\] - \[\_\] = \[\_\]

Amir has these coins.

He spends 54 p. How much does he have left?

A scarf is £12 and a bag is £25
Whitney buys one of each and pays with a £50 note.
How much change will she receive?

Mathematical Talk

Where does the £33 go in the bar model?
How can you find the total?

Here is a one step problem. Can you think of a second step?

Can you write your own two step word problem?

Did you use a concrete or pictorial representation to help you?
Two-step Problems

Reasoning and Problem Solving

**Ghost Train: 90 p**

Annie finds a 20 p coin.

She puts it with her other three 20p coins.

Does Annie have enough to ride the ghost train?

No, because she only has 80 p.

She would need 10 p more.

90 p > 80 p

Alex has 90 pence. She bought a rubber for 30 pence and wants to buy a pencil.

90 p - 30 p = 60 p

70 p > 60 p

She does not have enough money to buy the pencil.

Pencil: 70 p

The shopkeeper will not sell her the pencil.

Explain why.
**Subtract 1-digit from 3-digits**

**Notes and Guidance**

Children subtract a 1-digit number from a 3-digit number using an exchange.

Children need to be secure in the fact that 321 is 3 hundreds, 2 tens and 1 one but that it is also 3 hundreds, 1 ten and 11 ones.

If children are not secure with regrouping, it is important to revisit this before subtracting.

**Mathematical Talk**

How many ones do we exchange for one ten?

Why do all these subtractions require an exchange? When do we not need to exchange?

Which method do you prefer? Can you calculate the subtractions mentally?

**Varied Fluency**

- Teddy uses Base 10 to calculate $321 - 4$

  ![Diagram showing Base 10 blocks]

  Use this method to calculate:

  $322 - 4$  $322 - 7$  $435 - 7$

- Dora uses the part-whole model and number line to solve $132 - 4$

  ![Diagram showing part-whole model and number line]

  Use this method to calculate:

  $132 - 8$  $123 - 8$  $123 - 5$

- Red team have 672 points.
  Blue team have 7 fewer points than red team.
  How many points do blue team have?
### Subtract 1-digit from 3-digits

#### Reasoning and Problem Solving

<table>
<thead>
<tr>
<th>Ron and Jack use Base 10 to solve $225 - 8$</th>
<th>Both methods can get the answer of 217 but I would choose Jack’s because he has already exchanged one of his tens for ten ones.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ron’s method:</td>
<td></td>
</tr>
<tr>
<td>![Ron's Base 10 representation]</td>
<td></td>
</tr>
<tr>
<td>Jack’s method:</td>
<td></td>
</tr>
<tr>
<td>![Jack's Base 10 representation]</td>
<td></td>
</tr>
</tbody>
</table>

**Whitney has 125 stickers.**
She gives less than 10 stickers to Eva. She has an odd number of stickers left. How many stickers might Whitney have given away?

What do you notice is the same about your answers?
If Whitney had an even number of stickers left, how many might she have given away?

| Whitney might have given Eva 2, 4, 6 or 8 stickers. |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| All the answers are even.                   |                                                                                                               |
| If Whitney had an even number of stickers left she might have given 1, 3, 5, 7 or 9 away. |                                                                                                               |

**Explain how you would solve these calculations:**

\[
\begin{align*}
564 - \_ & = 558 \\
\_ & - 8 = 725 \\
352 & = 361 - \_ \\
\end{align*}
\]

**Children explain their methods, they may count on or back, use a number line, part-whole model or Base 10**
Subtract 2-digits from 3-digits

Notes and Guidance

Children subtract multiples of 10 from a 3-digit number, with an exchange. The examples show different ways this concept could be taught using number lines and part-whole models.

The column method could be used, however, it is not the most efficient method.

Counting backwards in tens or using 100 to help will support mental strategies.

Mathematical Talk

How many tens do we exchange one hundred for?

How can we partition 70 to subtract it from 240 more efficiently? Show this on the number line.

Can you model Amir’s method using a number line?

Varied Fluency

Rosie uses Base 10 to subtract 70 from 321

321 – 70 = 251

Use Rosie’s method to calculate:

321 – 80
421 – 6 tens
451 – 60

Count back in tens to solve 240 – 70

Amir calculates 425 – 90 by subtracting 100 and then adding 10

425 – 100 = 325
325 + 10 = 335

Use Amir’s method to solve:

386 – 90
574 – 90
212 – 90

©White Rose Maths
Subtract 2-digits from 3-digits

Reasoning and Problem Solving

Complete the missing digits.

13□ - 50 = 85
334 - □0 = 294
545 = 6□5 - 70

How many different methods could you use to solve 837 – 90?

Share your methods with a partner.

Possible methods:
837 – 100 = 737
737 + 10 = 747
90 = 37 and 53 (could show in part-whole model)
837 – 37 = 800
800 – 53 = 747
837 – 30 = 807
807 – 60 = 747

Expanded or formal written methods.

Whitney thinks the rule for the function machine is subtract 60
Is she correct? Explain why.

<table>
<thead>
<tr>
<th>Input</th>
<th>Rule</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>567</td>
<td>?</td>
<td>497</td>
</tr>
</tbody>
</table>

She is wrong because 567 subtract 60 is 507

The rule is subtract 70
2-digit & 3-digit Numbers

Notes and Guidance

Children focus on the position of numbers and place value to add and subtract 2-digit and 3-digit numbers.

They represent numbers using Base 10 and line up the place value columns.

In this step, children add numbers without an exchange.

Mathematical Talk

Where would these digits go on the place value chart? Why?

When we subtract, why do we not make both numbers? Why do we make both numbers when we add?

What is the same about the additions and subtractions? What changes?

Varied Fluency

- Match the calculation to the correct representation and solve.

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 + 461</td>
<td></td>
</tr>
<tr>
<td>553 − 32</td>
<td></td>
</tr>
<tr>
<td>544 + 22</td>
<td></td>
</tr>
</tbody>
</table>

- Represent the calculations using Base 10 and solve them.

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Base 10 Representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>388 − 44</td>
<td></td>
</tr>
<tr>
<td>167 + 32</td>
<td></td>
</tr>
<tr>
<td>265 − 43</td>
<td></td>
</tr>
</tbody>
</table>

- Calculate:

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>365 + 23</td>
<td>388</td>
</tr>
<tr>
<td>365 − 23</td>
<td>342</td>
</tr>
<tr>
<td>365 + 32</td>
<td>397</td>
</tr>
<tr>
<td>365 − 32</td>
<td>333</td>
</tr>
</tbody>
</table>
2-digit & 3-digit Numbers

Reasoning and Problem Solving

Eva has 169 sweets in a jar. She gives 37 sweets to Mo. Which model represents this problem?

a) 

<table>
<thead>
<tr>
<th></th>
<th>132</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>169</td>
</tr>
</tbody>
</table>

b) 

132

169

37

c) 

<table>
<thead>
<tr>
<th></th>
<th>169</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>132</td>
</tr>
</tbody>
</table>

d) 

132

37

169

C is correct because 37 + 132 = 169

37 is a part, 132 is a part and 169 is the whole.

Explain the mistake Jack has made.

<table>
<thead>
<tr>
<th></th>
<th>H</th>
<th>T</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

+ 6 3

Jack has put 63 in the wrong place value columns.

Rosie has 77 sweets. Mo has 121 sweets. Which addition will find how many sweets they have altogether?

<table>
<thead>
<tr>
<th></th>
<th>1 2 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 7</td>
<td></td>
</tr>
</tbody>
</table>

+ 7 7 + 1 2 1

Both are correct because addition is commutative and the numbers can be added either way round.

Explain your answer.
Subtract 2-digits from 3-digits

Notes and Guidance

Children focus on the position of numbers and place value to subtract 2-digits from 3-digits using the column method. Children start by exchanging one ten for ten ones. Next they exchange one hundred for ten tens before subtracting numbers where there are exchanges in both columns. Encourage children to use Base 10 and place value counters so they can physically exchange and see the link between the concrete and the written column method.

Mathematical Talk

How does the concrete representation match the written column method?

How do you know that you need to exchange?

What do you notice about the subtractions to find the missing numbers? How many exchanges are there?

Varied Fluency

Teddy uses Base 10 to subtract 28 from 255

Use Teddy’s method to calculate:
365 – 48
492 – 38
722 – 16

Alex uses place value counters to calculate 434 – 72

Use Alex’s method to calculate:
248 – 67
247 – 67
354 – 92

Calculate the missing number in each model.

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## Subtract 2-digits from 3-digits

### Reasoning and Problem Solving

<table>
<thead>
<tr>
<th>Rosie thinks $352 - 89 = 337$</th>
<th>Rosie is incorrect because she has subtracted the digits in a different order instead of exchanging. The answer should be 263</th>
</tr>
</thead>
</table>
| $$\begin{array}{ccc}
H & T & O \\
3 & 5 & 2 \\
- & 8 & 9 \\
3 & 3 & 7
\end{array}$$ |

Is she correct? Explain why.

<table>
<thead>
<tr>
<th>Alex, Teddy and Dora are trying to work out $300 - 57$</th>
<th>Who has the most efficient way of working it out? Explain how you know.</th>
</tr>
</thead>
</table>

- **Alex**: I know that take away means difference, so I can do 299 take away 56 and get the right answer.

- **Teddy**: I can count on from 57 to 100, and then count on to 300.

- **Dora**: I can use the column method to work it out and exchange when I need to.

Accept different answers as long as they are justified. Children might even suggest subtracting 60 and then adding 3.

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

- $234 - 47 \bigcirc 234 - 57$
- $472 - 84 \bigcirc 473 - 84$
- $406 - 89 \bigcirc 416 - 99$
Subtract 3-digits from 3-digits (1)

Notes and Guidance

It is important for the children to understand that there are different methods of subtraction. They need to explore efficient strategies for subtraction, including:
- counting on (number lines)
- near subtraction
- number bonds

They then move on to setting out formal column subtraction supported by practical equipment.

Mathematical Talk

Which strategy would you use and why?

How could you check your answer is correct?

Does it matter which number is at the top of the subtraction?

Varied Fluency

We can count on using a number line to find the missing value on the bar model. E.g.

\[
\begin{array}{c}
607 \\
203 \\
\hline
404 \\
\end{array}
\]

Use this method to find the missing values.

\[
\begin{array}{c}
390 \\
273 \\
\hline
? \\
\end{array}
\]

\[
\begin{array}{c}
294 \\
? \\
\hline
134 \\
\end{array}
\]

There are 146 girls and boys in a swimming club. 115 of them are girls. How many are boys?

Mo uses Base 10 to subtract 142 from 373

\[
\begin{array}{c|c|c|}
H & T & O \\
\hline
\text{\ding{53}} & \text{\ding{53}} & \text{\ding{53}} \\
\hline
3 & 7 & 3 \\
\hline
1 & 4 & 2 \\
\end{array}
\]

Use Mo's method to calculate:

\[
\begin{align*}
565 - 154 &= 411 \\
565 - 145 &= 420 \\
565 - 165 &= 390
\end{align*}
\]
Subtract 3-digits from 3-digits (1)

Reasoning and Problem Solving

Start with the number 888
Roll a 1-6 die three times, to make a 3-digit number.
Subtract the number from 888
What number have you got now?

What’s the smallest possible difference?

What’s the largest possible difference?

What if all the digits have to be different?

Will you ever find a difference that is a multiple of 10? Why?

Do you have more odd or even differences?

The smallest difference is 222 from rolling 111
The largest difference is 777 from rolling 666

Children will never have a multiple of 10 because you can’t roll an 8 to subtract 8 ones.

Children may investigate what is subtracted in the ones column to make odd and even numbers.

Use the digit cards to complete the calculation.

Possible answers include:

987 − 647 = 340
879 − 473 = 406

The digits in the shaded boxes are odd.

Is there more than one answer?
### Subtract 3-digits from 3-digits (2)

#### Notes and Guidance

Children explore column subtraction using concrete manipulatives. It is important to show the column method alongside so that children make the connection to the abstract method and so understand what is happening. Children progress from an exchange in one column, to an exchange in two columns. Reinforce the importance of recording any exchanges clearly in the written method.

#### Mathematical Talk

Which method would you use for this calculation and why?

What happens when you can't subtract 9 ones from 7 ones? What do we need to do?

How would you teach somebody else to use column subtraction with exchange?

Why do we exchange? When do we exchange?

### Varied Fluency

Complete the calculations using place value counters.

<table>
<thead>
<tr>
<th></th>
<th>H</th>
<th>T</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>372 − 145</td>
<td>300</td>
<td>70</td>
<td>2</td>
</tr>
<tr>
<td>629 − 483</td>
<td>600</td>
<td>20</td>
<td>9</td>
</tr>
</tbody>
</table>

Complete the column subtractions showing any exchanges.

<table>
<thead>
<tr>
<th></th>
<th>H</th>
<th>T</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 8 3</td>
<td>2 3 4</td>
<td>5 0 7</td>
<td></td>
</tr>
<tr>
<td>− 2 3 4</td>
<td>− 1 9 5</td>
<td>− 4 5 1</td>
<td></td>
</tr>
</tbody>
</table>
Subtract 3-digits from 3-digits (2)

Reasoning and Problem Solving

Work out the missing digits.

<table>
<thead>
<tr>
<th>H</th>
<th>T</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>?</td>
<td>3</td>
</tr>
<tr>
<td>−</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

533 − 218 = 315

504 − 258 = 246

Eva is working out 406 − 289

Here is her working out:

Step 1

\[
\begin{array}{c}
\text{406} \\
- \text{289} \\
\hline
\text{117}
\end{array}
\]

Step 2

\[
\begin{array}{c}
\text{406} \\
- \text{289} \\
\hline
\text{117}
\end{array}
\]

Eva has exchanged from the hundred column to the ones so there are 106 ones in the ones column. She should have exchanged 1 hundred for 10 tens and then 1 ten for 10 ones.

406 − 289 = 117

Explain her mistake.

What should the answer be?

<table>
<thead>
<tr>
<th>H</th>
<th>T</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>?</td>
<td>0</td>
<td>?</td>
</tr>
<tr>
<td>−</td>
<td>2</td>
<td>?</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>
Subtract Money

Notes and Guidance

Children use different methods to subtract money. They will see examples where they can physically remove the coins, and examples where they will need to use their knowledge of converting money to exchange £1 for 100 pence. Children also use number lines to count on or back to calculate the difference between two amounts.

Varied Fluency

Alex has £3 and 50p. She gives £2 and 10p to her sister. How much money does she have left?

£3 − £2 = £____  50p − 10p = ____ p

Alex has £____ and ____ p remaining.

Tommy has £1 and 72p. Rosie has £2. How much more money does Rosie have than Tommy?

Rosie has ____ p more than Tommy.

A T-shirt costs £7 and 20p. In a sale, the T-shirt costs £5 and 40p. How much has the cost of the T-shirt been reduced by?

Mathematical Talk

Can we make 50p in a different way to make it easier to subtract 10p physically? Which number should I place on the number line first? Could I count backwards on the number line? Does this change the difference? Do we need to exchange any pounds for pence?
Subtract Money

Reasoning and Problem Solving

Jack has £2 and 90p.
Teddy has three times as much money as Jack.

How much more money does Teddy have than Jack?

Rosie has twice as much money as Teddy.

How much more money does Rosie have than Jack?

Jack: £2 & 90p
Teddy: £8 & 70p
Rosie: £17 & 40p

Teddy has £5 and 80p more than Jack.
Rosie has £14 and 50p more than Jack.

Use coins to support children in calculating.

Three children are calculating £4 and 20p subtract £1 and 50p.

£4 − £1 = £2
20p − 50p = 30p
£1 + 30p = £1 and 30p

The difference is £2 and 70p.

£4 and 20p − £2 = £2 and 20p
£2 and 20p + 50p = £2 and 70p

Who is correct? Who is incorrect? Which method do you prefer?

Annie's second step of calculation is incorrect. Teddy and Eva both got the correct answer using different methods. Children may choose which method they prefer or discuss pros and cons of each.
Give Change

Notes and Guidance

Children use a number line and a part-whole model to subtract to find change.
Teachers use coins to practically model giving change.
Encourage role-play to give children a context of giving and receiving change.

Mathematical Talk

What do we mean by ‘change’ in the context of money?

Which method do you find most effective?

How does the part-whole model help to solve the problem?

Varied Fluency

Mo buys a chocolate bar for 37p. He pays with a 50p coin. How much change will he receive?

Mo will receive ____ p change.

Use a number line to solve the problems.
• Ron has £1. He buys a lollipop for 55p. How much change will he receive?
• Whitney has £5. She spends £3 and 60p. How much change will she receive?

Tommy buys a comic for £3 and 25p. He pays with a £5 note. How much change will he receive?
Use the part-whole model to help you.

Use a part-whole model to solve the problem.
• Eva buys a train for £6 and 55p. She pays with a £10 note. How much change will she receive?
Give Change

Reasoning and Problem Solving

Dora spends £7 and 76p on a birthday cake.

She pays with a £10 note. How much change does she get?

The shopkeeper gives her six coins for her change. What coins could they be?

She receives £2 and 24p change.

There are various answers for which coins it could be, e.g. £1, £1, 10p, 10p, 2p, 2p.

Amir has £4. He buys a pencil for £1 and 20p and a book for £1 and 45p.

Which bar model represents the question? Explain how you know.

The first bar model is correct as the whole is £4 and we are calculating a part as Amir has spent money. Amir receives £1 and 35p change.

Use the correct bar model to help you calculate how much change Amir receives.
Compare Number Sentences

Notes and Guidance

Children should be encouraged to examine number sentences to find missing values using structure rather than calculation. Using numbers within 20 to explore mathematical relationships will give the children confidence and allow them to spot patterns because they are working within the context of familiar numbers. Children should compare similar calculations using greater than, less than and equal to symbols.

Mathematical Talk

What other numbers make the same total?

Do we need to calculate the answer to work out the missing symbol?

Do you notice a pattern? What would come next?

Varied Fluency

How can we use the following representation to prove that $5 + 3 = 4 + 4$?

Fill in the circles with either $<, >$ or $=$

$6 + 4 \quad \bigcirc \quad 6 + 5$

$6 + 4 \quad \bigcirc \quad 3 + 6$

$11 - 4 \quad \bigcirc \quad 12 - 5$

$11 - 4 \quad \bigcirc \quad 12 - 4$

Complete the missing numbers.

$5 + 3 = 6 + ____$

$5 + 3 = ____ + 6 = 7 + ____$

$$ + 3 = ____ + 4 = 5 + 5$
Compare Number Sentences

Reasoning and Problem Solving

Rosie thinks she knows the missing number without calculating the answer.

17 is two more than 15, so the missing number must be two more than 7.

The missing number must be 9.

Can you explain how this could be possible?

Both missing numbers are less than 10.

\[ 7 + \square < 7 + \square \]

How many different possible answers can you find?

Lots of different combinations, the left number has to be smaller than the right.

Possible answers:
1 and 2
1 and 3
1 and 4
1 and 5
1 and 6
1 and 7
1 and 8
1 and 9
2 and 3
Etc.
Compare Money

Notes and Guidance

Children compare two different values in either pounds or pence. Children will see examples with both pounds and pence, but they will only focus on one of these - the other must be the same e.g. £3 and 10 p > £2 and 10 p where 10 p is the constant. Children recap comparing vocabulary such as greater/less than and use the inequality symbols.

Mathematical Talk

What do you notice about the amounts you have compared?

What's the same? What's different?

How do you know who has the most, when they both have 64?

Can you add a value that will go in between the greatest and the least?

Varied Fluency

Circle the box with the greatest amount.

Who has the most? Who has the least? How do you know?

I have £64

I have 64 p

Use <, > or = to compare the amounts.
Annie has three coins in her hand. Jack says,

**I have more than you because I have a 50 pence coin.**

Is he correct?

Explain why.

It depends on the coins Annie has.
Children explore and show e.g.
20 p, 20 p, 20 p > 50 p
5 p, 2 p, 2 p < 50 p

**True or False?**

5 copper coins can be worth more than 1 silver coin.

Four 5 pence coins are worth more than two 10 pence coins.

Do you agree? Explain why.

Only true when 5 p is the silver coin.
Children should explore different true and false answers.

No, they are equal to each other. They both make 20 p.
Theme 7 – Estimate and check
**Estimate Answers**

**Notes and Guidance**

Children check how reasonable their answers are. While rounding is not formally introduced until Year 4, it is helpful that children can refer to ‘near numbers’ to see whether an estimate is sensible.

Discuss why estimations are important. Consider real life situations where children or adults need to estimate. Encourage children to estimate calculations before working out precisely to help to check working.

**Mathematical Talk**

What would you estimate this to be?

Why did you choose this number?

Why is/isn’t this a sensible estimation to an answer?

How does estimating answers help us in real life?

**Varied Fluency**

Estimate the position of arrows A and B on the number line. Use your estimations to estimate the difference between A and B.

Match each number to its ‘near number’.

<table>
<thead>
<tr>
<th>497</th>
<th>304</th>
<th>52</th>
<th>27</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>500</td>
<td>50</td>
<td>300</td>
</tr>
</tbody>
</table>

Use the near numbers to estimate the answers to the calculations:

- \(497 + 304\)
- \(304 - 27\)
- \(27 + 52 + 304\)
- \(27 + 304\)
- \(497 - 52\)
- \(304 - 52 - 27\)
- \(52 + 497\)
- \(497 - 304\)
- \(304 + 52 - 27\)
Estimate Answers

Reasoning and Problem Solving

Tommy

I estimate 143 – 95 will be 50 because I will subtract 100 from 150.

Is this a good estimate? Why?

Are there any other ways he could have estimated?

Yes, because he found two numbers close to the original numbers.

He could have rounded to the nearest 10 and calculated.

140 – 100 (= 40)

Use the number cards to make different calculations with an estimated answer of 70.

Possible answers:

121 – 48 (120 – 50)

41 + 33 (40 + 30)

398 – 328 (400 – 330)
Check Answers

Notes and Guidance

Children explore ways of checking to see if an answer is reasonable.

Checking using inverse is to be encouraged so that children are using a different method and not just potentially repeating an error, for example, if they add in a different order.

Mathematical Talk

How can you tell if your answer is sensible?

Does knowing if a number is close to a multiple of 100 help when adding and subtracting 3-digit numbers?

How does it help?

Does it help to check your answer if you spot which numbers are near to multiples of 10?

How does counting in 10s, 50s and 100s help?

Varied Fluency

Use a subtraction to check the answer to the addition.

134 + 45 = 179

Alex has baked 145 cakes for a bun sale. She sells 78 cakes. How many does she have left?

Show your answer using a bar model and check your answer using an addition.

Write all the calculations you could make using these cards.

660 120 540 + − =
Check Answers

Reasoning and Problem Solving

Mo

If I add two numbers together, I can check my answer by using a subtraction of the same numbers after e.g. to check $23 + 14$, I can do $14 - 23$.

Do you agree? Explain why.

No, because you cannot have "part subtract part".

You need to find the whole and this needs to be at the start of the subtraction then you subtract a part to check the remaining part.

I completed an addition and then used the inverse to check my calculation.

When I checked my calculation, the answer was 250.

One of the other numbers was 355.

What could the calculation be?

$$\_\_ + \_\_ = \_\_$$

$$\_\_ - \_\_ = 250$$

Possible answers:

$$355 - 105 = 250$$

$$605 - 355 = 250$$

So the calculation could have been:

$$250 + 105 = 355$$

$$250 + 355 = 605$$