

**Unit 12**  
**Understanding Addition and Subtraction**  
**Mental Calculation Strategies**  
**Pencil and Paper Procedures**

Three daily lessons

**Merseyside Consultants'**  
**Cluster Group**

**Year 3**  
**Summer term**

This Unit Plan is designed to guide your teaching.

You will need to adapt it to meet the needs of your class.

**Unit Objectives**

**Year 3**

- Add using pencil and paper methods
- Use known number facts and place value to add and subtract mentally
- Use informal pencil and paper methods to support, record or explain TU – TU and HTU – TU
- Explain and record method. Check results.

Pages 43,45

Pages 37,39

Pages 43,45

Pages 59

**Link Objectives**

**Year 2**

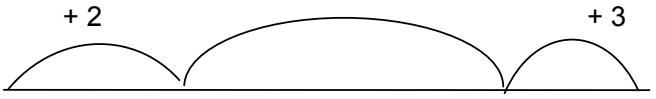
**Year 4**

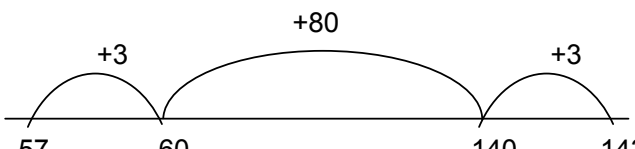
- Partition additions using tens and units then recombine
- Use known number facts and place value to add and subtract mentally
- Check with an equivalent calculation

- **Use known number facts and place value to add and subtract mentally**
- Use informal pencil and paper methods to support, record or explain TU – TU and HTU – TU
- **Develop and refine written methods for column addition and subtraction of two whole numbers less than 1000**
- Explain and record method. Check results.

**Resources needed to teach this unit:**

- ITP Place Value
- PV cards
- Whiteboards
- Resource Sheet 12.1
- Resource Sheet 12.2
- Resource Sheet 12.2
- Post-it notes
- Digit cards 0-9

Planning Sheet	Day 1	Unit 12: Addition and Subtraction	Term: Summer	Year Group: 3
<b>Oral and Mental</b>		<b>Main Teaching</b>		<b>Plenary</b>
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
		<ul style="list-style-type: none"> <li>Use known number facts and place value to add and subtract mentally</li> <li>Use informal pencil and paper methods to support, record or explain TU – TU and HTU – TU</li> <li>Explain and record method. Check results.</li> </ul> <p><b>Vocabulary:</b> tens, units, ones, add, total, altogether, take – away, subtract, calculate, record</p> <p><b>Resources:</b> Resource Sheet 12.1, whiteboards, post-it notes</p>	<ul style="list-style-type: none"> <li>Write on the board: <math>83 - 48 =</math></li> </ul> <p>Ask the children to estimate the answer by rounding to the nearest ten (<math>80 - 50 = 30</math>). In pairs, calculate and record on their whiteboards. Take feedback.</p> <p>Demonstrate complementary addition on the board:</p>  <p>48      50                                      80      83</p> <p>Use post-it notes to record +2, +30, and +3. Explain to the children this can be recorded vertically (use the post it notes to show the link from the number line to the vertical recording):</p> $  \begin{array}{r}  83 \\  -48 \\  \hline  + 2 \quad (50) \\  + 30 \quad (80) \\  + 3 \quad (83) \\  \hline  35  \end{array}  $ <p>Refer to the value of the digits and check understanding. Ask:</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">Q: How could we check this calculation?</div> <p>Choose a volunteer to check using addition. Children to work in pairs using Resource sheet 12.1 to subtract TU from TU using one two-digit number from each circle to make up each calculation. Children should be encouraged to check their results.</p>	<ul style="list-style-type: none"> <li>Write: <math>84 - \square = 28</math></li> </ul> <p>Ask the children to work in pairs and use the method practised to work out the missing number. Ask:</p> <div style="border: 1px solid black; padding: 2px;">Q: What did you start with? How can you check you are right?</div> <p>Take feedback and choose a volunteer to demonstrate on the board.</p> <div style="border: 1px solid black; padding: 5px;"> <p><b>By the end of the lesson, children should be able to:</b></p> <ul style="list-style-type: none"> <li>Use informal pencil and paper methods to support, record or explain TU – TU and HTU – TU</li> <li>Explain and record method. Check results.</li> </ul> <p>(Refer to supplement of examples, section 5, page 43,45,59.)</p> </div>

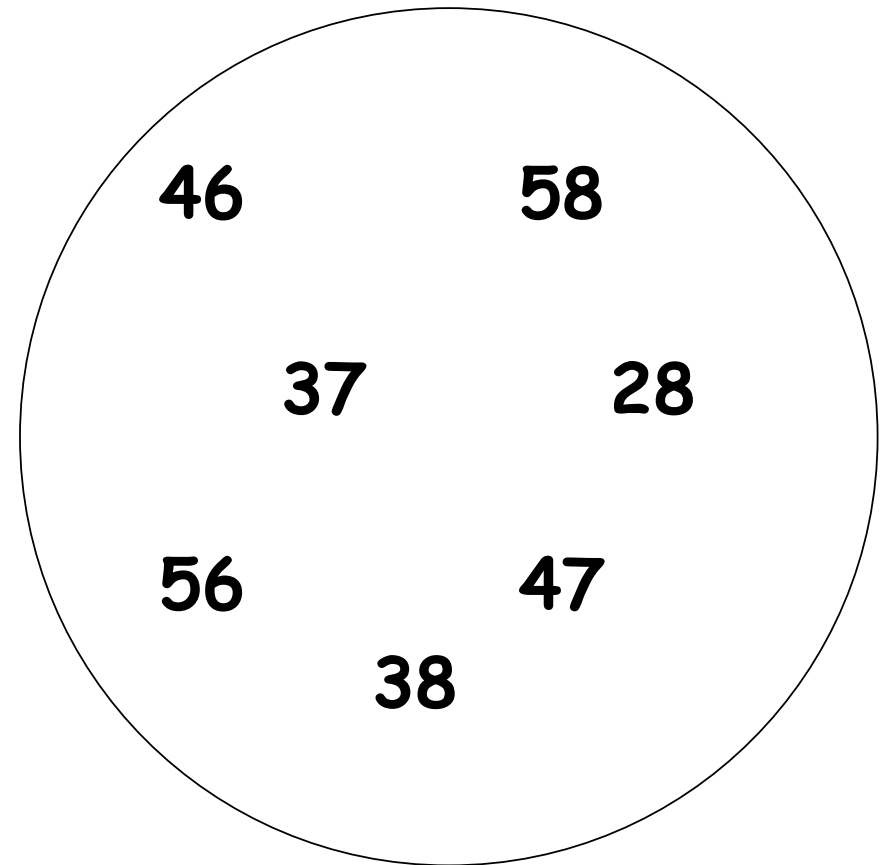
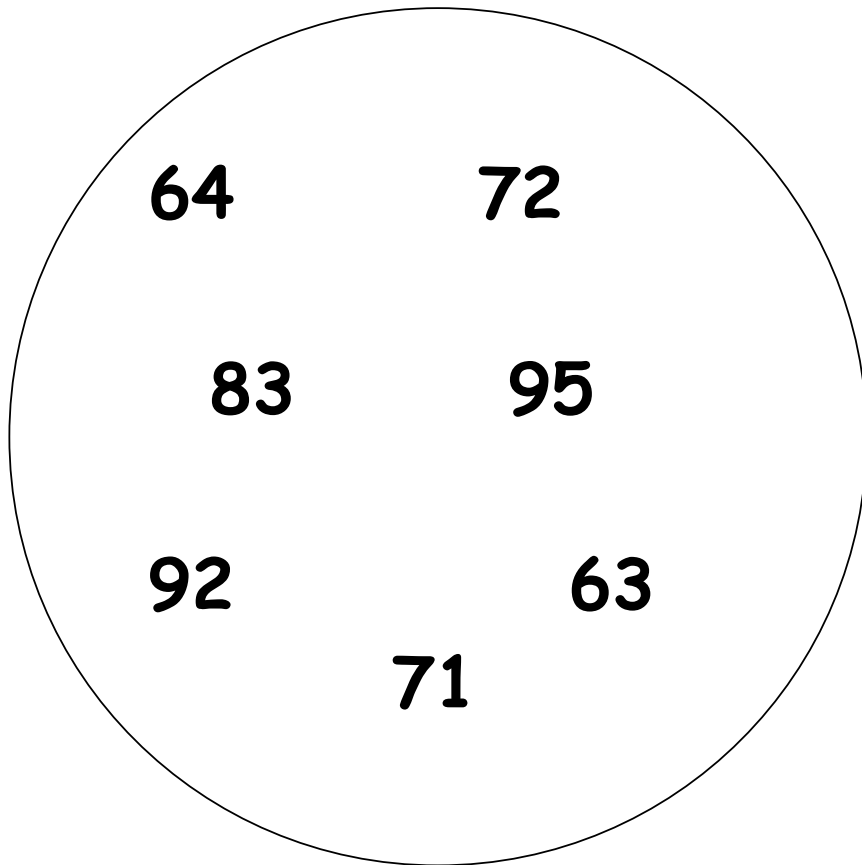
Planning Sheet	Day 2	Unit 12: Addition and Subtraction	Term: Summer	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
		<ul style="list-style-type: none"> <li>Use known number facts and place value to add and subtract mentally</li> <li>Use informal pencil and paper methods to support, record or explain TU – TU and HTU – TU</li> <li>Explain and record method. Check results.</li> </ul> <p><b>Vocabulary:</b> Hundreds, tens, units, ones, add, total, altogether, take –away, subtract, calculate, record</p> <p><b>Resources:</b> Resource Sheet 12.2, whiteboards, post-it notes</p>	<ul style="list-style-type: none"> <li>Write on the board:  <math display="block">143 - 57</math> Ask the children to estimate the answer by rounding to the nearest ten (<math>140 - 60</math>). In pairs, calculate and record on their whiteboards. Take feedback.  Demonstrate complementary addition on the board:  </li> </ul> <p>Use post-it notes to record +3, +80, and +3 (use the post it notes to show the link from the number line to the vertical recording). Ask:  <div style="border: 1px solid black; padding: 2px; width: fit-content;">Q: How can this be recorded vertically?</div> Invite a volunteer to record on the board: <math display="block">\begin{array}{r} 143 \\ - 57 \\ \hline + 3 \quad (60) \\ + 80 \quad (140) \\ + 3 \quad (143) \\ \hline 86 \end{array}</math> Refer to the value of the digits and check understanding, stress the importance of the units lining up under units and tens under tens.  Ask:  <div style="border: 1px solid black; padding: 2px; width: fit-content;">Q: How could we check this calculation?</div> Take feedback and invite volunteer to check the calculation using addition e.g. <math>86 + 57</math> or subtraction <math>143 - 86</math>.</p>	<p>Write on the board :</p> $\begin{array}{r} 783 \\ - 356 \\ \hline + 4 \quad (360) \\ + 40 \quad (400) \\ + 300 \quad (700) \\ + 80 \quad (780) \\ + 3 \quad (783) \\ \hline 427 \end{array}$ <p>Ask:  <div style="border: 1px solid black; padding: 2px; width: fit-content;">Q: Is this correct? If not, where have I gone wrong?</div> Take feedback and establish the answer should be 427, the mistake in exchange tens for a hundred when adding <math>80 = 40</math>.</p> <p>Write on the board:  <math>754 - \square = 668</math></p> <p>Ask the children to estimate first then work out the calculation on their whiteboards using a pencil and paper method. Take feedback and ask the children to explain the recording.</p>

			<p>Children to use Resource Sheet 12.2 to select HTU – TU calculations on squared paper, in pairs. Each pair to select a different calculation to work out for their partner to check using addition.</p>	<p>Ask:</p> <div style="border: 1px solid black; padding: 5px;"> <p>Q: How did you know which calculation to do?</p> </div> <p><b>Homework:</b> Children are to make up subtraction calculations HTU – TU and work out using a pencil and paper method They should explain their working out to a parent or carer.</p> <div style="border: 1px solid black; padding: 5px;"> <p><b>By the end of the lesson, children should be able to:</b></p> <p><b>should be able to:</b></p> <ul style="list-style-type: none"> <li>• Use informal pencil and paper methods to support, record or explain TU – TU and HTU – TU</li> <li>• Explain and record method. Check results.</li> </ul> <p>(Refer to supplement of examples, section 5, page 43,45,59.)</p> </div>
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Planning Sheet	Day 3	Unit 12: Addition and Subtraction	Term: Summer	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
		<ul style="list-style-type: none"> <li>▪ Use known number facts and place value to add and subtract mentally</li> <li>▪ Use informal pencil and paper methods to support, record or explain TU – TU and HTU – TU</li> <li>▪ Explain and record method. Check results.</li> </ul> <p><b>Vocabulary:</b> Hundreds, tens, units, ones, add, total, altogether, take –away, subtract, calculate, record</p> <p><b>Resources:</b> Resource Sheet 12.3, whiteboards, post-it notes, digit cards 0-9</p>	<ul style="list-style-type: none"> <li>▪ Remind children of yesterday’s homework activity and take feedback from a couple of children, getting them to explain and demonstrate their working out at the board.</li> <li>▪ Write on the board: <math>354 - \square = 192</math></li> </ul> <p>Ask: Q: How would you work out this subtraction calculation?</p> <p>Take feedback and establish the use of the related fact: <math>354 - 192 = \square</math></p> <p>Ask the children to estimate first rounding to the nearest ten ( <math>350 - 200 = 150</math>), then workout the calculation on their whiteboards using a pencil and paper method. Take feedback and choose a volunteer to explain their working, referring to the value of the digits:</p> $  \begin{array}{r}  354 \\  -192 \\  \hline  + 8 \quad (200) \\  + 150 \quad (350) \\  + 4 \quad (354) \\  \hline  162  \end{array}  $ <p>Write on the board : <math>\square - 238 = 324</math></p> <p>Ask: Q: How would you work out this subtraction calculation?</p>	<p>Select a couple of the calculations and invite volunteers to work through on the board. Give answers to the rest.</p> <p>Write: <math>\square \square \square</math> - <math>\square \square \square</math> -----           1 9 9</p> <p>Ask: Q: What possible digits could go in the empty spaces to make the answer to the subtraction calculation 199? Is there more than one solution?</p> <p>Take feedback. Use digit cards to fill in the spaces. Invite a volunteer to explain how they got the solution.</p> <p>Ask: Q: What did you start with? What did you know?</p> <p>Use an empty number line to demonstrate +9, +90, +100 with different starting numbers</p>

			<p>Take feedback and establish the use of the inverse: <math>238 + 324 = \square</math></p> <p>Get the children, in pairs to work out the missing box calculations from Resource Sheet 12.3. Encourage them to estimate first and after each calculation to check with the inverse.</p>	<p>suggested by the children. Use the digit cards to express different solutions to the calculation.</p> <div style="border: 1px solid black; padding: 10px;"><p><b>By the end of the lesson, children should be able to:</b></p><p><b>should be able to:</b></p><ul style="list-style-type: none"><li>• Use informal pencil and paper methods to support, record or explain TU – TU and HTU – TU</li><li>• Explain and record method. Check results.</li></ul><p>(Refer to supplement of examples, section 5, page 43,45,59.)</p></div>
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# Resource Sheet 12.1



## Resource Sheet 12.2

**345**

**87**

**668**

**126**

**518**

**174**

**476**

**185**

**671**

**217**

**754**

**248**

**826**

**167**

## ResourceSheet12.3

$$532 - 246 = \square$$

$$\square - 367 = 124$$

$$645 - \square = 408$$

$$451 - 236 = \square$$

$$\square - 184 = 328$$

$$\square - 427 = 236$$

$$538 - \square = 360$$

