

Unit 10

Five daily lessons

North West Consultants

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

<ul style="list-style-type: none">• Begin to find remainders after division• Round up or down after division• Use known facts and place value to multiply and divide• Choose appropriate number operations and calculation methods to solve money and “real life word problems with one or two steps”• Explain methods of reasoning. Check results	Pages 46-51 54-57 66-69 66-69 58-61
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Resources needed to teach this unit:

- Whiteboards
- Cubes
- Coins
- Number lines
- Paper
- Pencils
- Multiplication squares
- Resource sheet 10.1
- Resource sheet 10.2
- Resource sheet 10.3
- Resource sheet 10.4
- Resource sheet 10.5

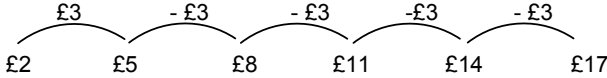

Link Objectives

Year 2

Year 4

<ul style="list-style-type: none">• Use known number facts and place value to carry out multiplication and division mentally• Choose and use appropriate operations and calculation strategies to solve one step word problems using x and +• Record method. Explain orally

<ul style="list-style-type: none">• Round up and down after division• Find remainders after division• Use relation between x and +• Use known facts to x and - +• Choose and use appropriate operations and calculation methods to solve money and “real life” word problems with one or more steps• Explain working. Check results by approximating

Planning Sheet	Day 1	Unit 10 : Money and “real life” problems	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"> Use known facts and place value to multiply and divide Begin to solve problems and find remainders after division Round up or down after division <p style="text-align: center;">Vocabulary</p> <ul style="list-style-type: none"> Divide Division Multiply Multiplication Method Repeated Subtraction Strategy Remainder Left over <p>Resources</p> <ul style="list-style-type: none"> Whiteboards Cubes Coins Resource Sheet 10.1 	<ul style="list-style-type: none"> Revise work from Unit 9 on finding a remainder using division briefly Use this to solve problems “How many mugs costing £3 each can you buy if you have £17?” <p> $3 \times 3 = \text{£}3$ $3 \times 2 = \text{£}6$ $3 \times 3 = \text{£}9$ $3 \times 4 = \text{£}12$ $3 \times 5 = \text{£}15$ </p> <p>We cannot buy another mug because we have only got £2 left so we can buy 5 mugs</p> <ul style="list-style-type: none"> We can use division or repeated subtraction to solve our problem. <p>To solve our problem</p>  <p>£2 £5 £8 £11 £14 £17</p> <p>5 mugs and £2 left.</p> <p>Can also use known facts</p> <p> $3 \times 5 = 15$ $15 + 3 = 18$ $17 + 3 = 20$ </p>	<ul style="list-style-type: none"> Use questions 5 and 6 from Resources Sheet 10.1 for discussion Question 5 <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Q. What information is important?</div> <ul style="list-style-type: none"> £5 to start spend £1.30 <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Q. What operation do we need to do?</div> <ul style="list-style-type: none"> Subtraction  <p>£1.30 £1.50 £2 £5</p> <p>£3.70 change</p> <div style="border: 1px solid black; padding: 5px;">Q. Is that the answer?</div>

Planning Sheet	Day 1	Unit 10: Money and “real life problems”	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"> Children need to see a variety of strategies then they can see that same answer is achieved. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">Q. Does it matter which strategy we use?</div> <ul style="list-style-type: none"> Using whiteboards and working in pairs children solve. “How many Concert tickets, costing £5 each how many can you buy if you have £28?” <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <ul style="list-style-type: none"> Mini plenary to discuss methods used by children </div> <ul style="list-style-type: none"> Repeated subtraction Known facts is the most efficient as 5 x is familiar <p>£28</p> <p>5 x 5 = 25 25 + 5 = 5 28 + 5 = 5 R3</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 20px;">Q. How can we work out how many 50 pences David got?</div> <p style="text-align: center;">£1 = 2 50p £2 = 4 50p £3 = 6 50p £3.50 = 7</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 20px;">Q. Did anyone do this in a different way?</div> <ul style="list-style-type: none"> He gets 7 x 50p in his change <p>Ask a volunteer to show how they solved Q.6 or demonstrate 33 x10p = £3.30 £3 = 6 x 50p</p> <p>She will have 3 ten pence coins left.</p>

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Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
			<p>5 concert tickets can be bought.</p> <ul style="list-style-type: none"> • Use Resource Sheet 10.1 for activity • Children could work in pairs • Cubes, coins can be used to support solving <p>Resource Sheet 10.1</p>	<ul style="list-style-type: none"> • By the end of the lesson children will be able to:- <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Use known facts of multiplication and division to help them to solve problems</p> <ul style="list-style-type: none"> • Find remainders • Begin to round up and down </div>

Planning Sheet	Day 2	Unit 10: Money and “real life problems”	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"> • Begin to find remainder after simple divisions • Solve problems with more than one step • Choose appropriate operations to solve the problems 	<ul style="list-style-type: none"> • Write on board • On 3 shelves in a bookcase there are 28 books, 37 books and 32 books. If the books are moved so that there are the same number on each shelf, how many books will be on each shelf? <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Q. What is the first thing we will have to do?</div> <ul style="list-style-type: none"> • Highlight important information, numbers of books, vocabulary etc <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Q. How will we solve what is the first type of calculation going to be? Why?</div> <ul style="list-style-type: none"> • Add together number of books $37 + 28 + 22$ $30 + 20 + 20 = 70$ $7 + 8 + 2 = \frac{17}{87}$ <div style="border: 1px solid black; padding: 5px;">Q. Now we know how many books there are altogether, what do we need to work out next?</div>	<ul style="list-style-type: none"> • Select one of the questions to encourage children to discuss their methods • Focus on Q6 and discuss how to calculate time <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Q. Is this different than calculating the other questions?</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Q. Suppose it only took 3 minutes to prepare and serve a breakfast. Would this make a difference?</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Q. Is there any preparation time that would not leave any minutes left?</div> <ul style="list-style-type: none"> • Discuss why not

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Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
		<p>Vocabulary</p> <ul style="list-style-type: none"> • Multiply • Divide • Multiple • Remainder • Left Over <p>Resources</p> <ul style="list-style-type: none"> • Cubes • Number lines • Paper • Pencils • Resource Sheet 10.2 	<ul style="list-style-type: none"> • Trial and improvement using know facts <p>10 books on each shelf = 30 20 books on each shelf = 60 30 books on each shelf = 90</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Q. How does this help us to work out how many books there on each shelf?</p> </div> <ul style="list-style-type: none"> • 90's the nearest • 3 too many – so 1 less on each shelf • 29 on each shelf <p>Resource Sheet 10.2</p>	<p>By the end of the lesson children will be able to</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <ul style="list-style-type: none"> • Use known facts to solve problems • Find remainders • Discuss their reasons </div>

Planning Sheet	Day 3	Unit 10: Money and “real life problems”	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"> Begin to find remainders after division Round up or down after division Choose appropriate operations to calculate and solve the problems Discuss their work <p>Vocabulary</p> <ul style="list-style-type: none"> Remainder Round up Round down Multiple Multiplication Division Table Known facts 	<ul style="list-style-type: none"> Work through an example of rounding down <p>“ Tickets for the cinema cost £4. I have £19. How many tickets can I buy?”</p> <ul style="list-style-type: none"> Demonstrate using known facts <p>4 x 4 = 16</p> <p>4 x 5 = 20</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;">Q. How much money do I have £19. Can I buy 4 or 5 tickets?</div> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;">Q. How much would I need to buy another ticket?</div> <ul style="list-style-type: none"> I can buy 4 tickets and I have £3 left Work through an example of rounding up <p>Only 4 children can sit a picnic table. How many tables will be needed for 31 children?</p> <ul style="list-style-type: none"> Ask children how we can solve this problem <p>Either known facts</p> <p>4 x 4 = 16 4 x 8 = 32 4 x 5 = 20 4 x 6 = 24 4 x 7 = 28</p> <ul style="list-style-type: none"> Also show how a table could help to solve this problem? 	<ul style="list-style-type: none"> Use question 3 as an example. 40 sweets. How many 6 each? <p>Table</p> <table border="1" style="margin-left: 20px;"> <tr> <td>S</td><td>6</td><td>12</td><td>18</td><td>24</td><td>30</td><td>36</td><td>42</td> </tr> <tr> <td>C</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td> </tr> </table> <ul style="list-style-type: none"> 36 not enough, 42 too many So 6 children can have 6 sweets each Discuss any other methods used by children. We are going to use question 4 for our lesson tomorrow <p>So you will need to remember how you solved the problem.</p>	S	6	12	18	24	30	36	42	C	1	2	3	4	5	6	7
S	6	12	18	24	30	36	42													
C	1	2	3	4	5	6	7													

Planning Sheet	Day 3	Unit 10: Money and “real life problems”	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																		
		Resources <ul style="list-style-type: none"> • Paper • Pencils • Resource Sheet 10.3 	<table border="1"> <tr> <td>T</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>C</td> <td>4</td> <td>8</td> <td>12</td> <td>16</td> <td>20</td> <td>24</td> <td>28</td> <td>32</td> </tr> </table> <ul style="list-style-type: none"> • Very clear strategy for this type of problem. • Emphasise the key points. a) Question 1 we did not have enough money so we had to round down, the remainder we would keep because it was not enough to buy another ticket b) Question 2. We needed an extra table for the three children otherwise they would not sit down so we had to round up to 8 so that they could all sit down for their picnic. • Children now work through examples of rounding up or down problems. • Can use known facts or a table to record Resource sheet 10.3	T	1	2	3	4	5	6	7	8	C	4	8	12	16	20	24	28	32	By the end of the lesson children will be able to <div style="border: 1px solid black; padding: 10px; margin-top: 20px;"> <ul style="list-style-type: none"> • Round up or down to solve a problem • Explain recording </div>
T	1	2	3	4	5	6	7	8														
C	4	8	12	16	20	24	28	32														

Planning Sheet	Day 4	Unit 10: Money and “real life problems”	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"> • Begin to find remainders after division • Round up or down after division • Choose appropriate method of recording to solve the problems • Discuss their work <p>Vocabulary</p> <ul style="list-style-type: none"> • Remainder • Round up • Round down • Multiples • Multiplication • Division • Known facts • Table • Equal 	<ul style="list-style-type: none"> • In yesterdays lesson we were solving problems and we had to work out whether we needed to round up or down to find the right answer • We are going to look at Q4 again. <p>“ How many 5 a side football teams can there be from 38 footballers?”</p> <div style="border: 1px solid black; padding: 5px;"> <p>Q. If we are going to use know facts where is a good place to start?</p> </div> <ul style="list-style-type: none"> • Depending on children’s answers, possibly <p>5 x 5 = 25 – not enough 5 x 6 = 30 – not enough 5 x 7 = 35 – not enough 5 x 8 = 40 – too many</p> <div style="border: 1px solid black; padding: 5px;"> <p>Q. So how many teams could we have? Remember there are 38 footballers</p> </div> <ul style="list-style-type: none"> • 7 teams <div style="border: 1px solid black; padding: 5px;"> <p>Q. What about if we used a table?</p> </div>	<ul style="list-style-type: none"> • During the lesson note how the children are solving and select different methods to discuss • Focus on Q3 <div style="border: 1px solid black; padding: 5px;"> <p>Q. What information are we given? What is the first thing we need to do</p> </div> <ul style="list-style-type: none"> • Work out how many toffee apples there are altogether • Ask for ideas <p>4 x 6 = 24 8 x 5 = 40 24 + 40 = 20 + 40 = 60 60 + 4 = 64</p>

Planning Sheet	Day 4	Unit 10: Money and “real life problems”	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																		
		Resources <ul style="list-style-type: none"> • Paper • Pencils • Resource Sheet 10.4 	<table border="1"> <tr> <td>T</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>PL</td> <td>5</td> <td>10</td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> <td>35</td> <td>40</td> </tr> </table> <ul style="list-style-type: none"> • We get the same answer 8 teams need 40 players so too many <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Q. If we had a 100 footballers how could we work out how many teams? </div> <p>5 x 10 = 50 5 x 20 = 100</p> <p>So 20 teams.</p> <ul style="list-style-type: none"> • We do not need to use a table for this question • We are now going to solve some more problems and you can choose how to solve either by known facts, a table, cubes. Whatever you choose to help you to solve. 	T	1	2	3	4	5	6	7	8	PL	5	10	15	20	25	30	35	40	<div style="border: 1px solid black; padding: 5px; margin-bottom: 20px;"> Q. Is this the answer to the problem? There are 64 toffee apples </div> <ul style="list-style-type: none"> • Children’s thoughts • Now need to divide 64 by 6 to find out how many stands will be full <p>6 x 10 = 60</p> <ul style="list-style-type: none"> • 10 full stands and 4 apples left over <p>Important to note FULL stands</p> <p>By the end of the lesson children will be able to</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <ul style="list-style-type: none"> • Find remainder • Round up or down after division </div>
T	1	2	3	4	5	6	7	8														
PL	5	10	15	20	25	30	35	40														

Planning Sheet	Day 5	Unit 10: Money and “real life problems”	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"> Choose and use appropriate number operations and appropriate ways of calculating to solve problems Explain methods and reasoning Recognise simple patterns and relationships Use multiplications, divisions and remainders to solve <p>Vocabulary</p> <ul style="list-style-type: none"> Multiplication Division Remainder Multiple List Jottings 	<ul style="list-style-type: none"> We are looking at ‘Mystery Numbers’ <p>Our numbers have to be divided exactly by 3, but when divided by 2, 4 or 5 there is a remainder of 1</p> <ul style="list-style-type: none"> Start by asking children for numbers that can be divided exactly by 2. Write these on the board in a list. Now record numbers that can be divided by 5, then 3, then 4. 4 lists altogether. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">Q. A number when divided by 2, has a remainder of 1?</div> <p>This could be 5</p> $5 + 2 = 2 \text{ R}1$ <ul style="list-style-type: none"> Our puzzle today is that we are searching for 1 number that is less than 30 which when it is divided by 3 there is no remainder. When it is divided by 2, 4 or 5 there is a remainder of 1. What could it be? 	<ul style="list-style-type: none"> Return to lists and discuss with children how these have been used. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">Q. Which number can be divided by 2, 4 and 5.</div> <ul style="list-style-type: none"> 20, so this can be crossed off <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">Q. Are there any other multiples that are common in 2, 4 and 5 x tables</div> <p>4, 8, 10, 12, 16, 24, 28. 30.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">Q. So can any of these be our mystery number? Why not?</div>

Planning Sheet	Day 5	Unit 10: Money and “real life problems”	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
		<p>Resources</p> <ul style="list-style-type: none"> • Whiteboards • Pencil/paper • Cubes • Number lines • Multiplication Square • Resource Sheet 10.5 	<ul style="list-style-type: none"> • Children work in pairs, using lists created to help them solve. • Use resource sheet 10.4 to help. This could be enlarged and used at the front of the class. <p>Children work in pairs – if desired stop part way and have mini plenary to keep children on right lines.</p> <ul style="list-style-type: none"> • Problem 2 is for more able if needed • Longer plenary to discuss process of solving 	<ul style="list-style-type: none"> • All can be divided equally, so no remainder <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Q. Are any in the 2,4 and 5 multiples of 3 as well?</p> </div> <ul style="list-style-type: none"> • 6, 18, in 2s • 15 in 5's <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Q. Look at the 3s are there any it can't be.</p> </div> <p>6,12,15,18,24,30 as they all appear in other lists.</p> <p>Look at the multiples that are left and investigate if any follow the + R1 rule</p>

Planning Sheet	Day 5	Unit 10: Money and “real life problems”	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
				<p>3, 9 no 21 yes $21 + 3 = 7$ $21 + 2 = 10$ R1 $21 + 4 = 5$ R1 $21 + 5 = 4$ R1</p> <ul style="list-style-type: none"> • 21 is our mystery number. <p>By the end of the lesson children should be able to</p> <div style="border: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> • Explain methods and reasoning • Use multiplication, division and remainders to solve a problem. </div>