

Unit 8

Five daily lessons

North West Consultants

Year 2

Autumn term

Unit Objectives

Year 3

- Count larger collections by grouping them in 10s, then other numbers.
- Count on/back in 10s/100s starting from any two/three digit number.
- Count on or back in twos, starting from any two-digit number and recognise odd and even numbers to at least 100.
- Solve mathematical problems and puzzles.
- Explain methods and reasoning orally and in writing.

Pages 2-7

Pages 2-7

Pages 2-7

Pages 62-65

Pages 62-65

Link Objectives

Year 2

Year 4

- Count larger collections by grouping them in tens, fives or twos.
- Firstly with and then without a 100 square count on or back in tens from a two-digit number.
- Count on in twos from 0 or 1 to 40 and back again. Recognise odd and even numbers up to 40.
- Solve puzzles and problems. Recognise simple patterns.

- Make and justify estimates up to about 250.
- From any three or four-digit number count on or back in ones, tens, hundreds or thousands.
- Count on or back in twos, threes, fours, fives and tens and recognise multiples in the 2,3,4,5 and 10-tables.
- Solve problems or puzzles and recognise and explain patterns and relationships.

This Unit Plan is designed to guide your teaching.

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

Resources needed to teach this unit:

- Coins (Mega coins, magnetic coins, real coins etc.)
- Dice
- Digit Cards
- 100 square
- Number Grid ITP
- Number line
- Multilink
- Resource sheet 1
- Resource sheet 2
- Problem solving – a CPD pack Y3 lesson 1
- Mathematical Challenges for Able Pupils in KS1 and 2

Planning Sheet	Day 1	Unit 8: Counting, properties of numbers		Term: Autumn	Year Group: 3
Oral and Mental		Main Teaching			Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions	
		<p>Count larger collections by grouping them in 10's, then other numbers.</p> <p>Resources Poster Stall names Coins (Mega coins, magnetic coins, real coins etc.)</p>	<p>Whole class activity:</p> <ul style="list-style-type: none"> ▪ Talk to children about an Autumn Fayre. (They or you may have been to one recently.) You may have a poster you could display. ▪ Discuss what stalls you may have. How will people pay for their goods? How will they collect the money? What happens to the money at the end of the day? (Establish that the stall holder will end with a collection of coins which need to be counted.) ▪ Produce a bag of coins (supposedly from one of the stalls) eg. cakes stall. (Real coins including 1p, 2p, 5p and 10p or mega money, magnetic coins etc.) ▪ Ask: How can we count this money? How much is in the bag? What shall we do next? ▪ Suggestions might include collecting coins of the same denominations and putting them in 10's. ▪ Empty coins from the bag and ask volunteers to begin sorting, firstly into coins of the same denomination then into piles worth 10p. ▪ Ask: Have you got 10p in each pile? How much have you got altogether? ▪ Whole class check by counting together in tens. ▪ Can we count in 20's, 50's etc? Demonstrate this according to responses. ▪ You may wish to extend this to include coins of all denominations where appropriate for children ▪ Write the final amount on the board. Emphasise that we counted by grouping in 10's or 20's etc. <p>Follow up group activity</p> <ul style="list-style-type: none"> ▪ Children work in small groups to count money from their stall. They will need to produce a recording sheet to show their method and provide a check on their calculation. <p><u>Coins from:</u> Lower achievers: 1's 2's 5's 10's Middle achievers: 1's 2's 5's 10's 20's 50's Higher achievers: All coins and notes</p>	<p>Write all totals on board from stalls. Discuss how to find the grand total</p> <p>An overhead calculator maybe appropriate</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Children should be able to:</p> <ul style="list-style-type: none"> ▪ Group coins in 10's, 20's and 50's. ▪ Find the total when given a collection of coins. </div>	

Planning Sheet	Day 2	Unit 8: Counting, properties of numbers	Term: Autumn	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
		<p>Count on/back in 10s/100s, starting from any two/three digit number.</p> <p>Resources Dice Digit cards 100 square Number Grid ITP</p> <p>Vocabulary Steps Column Less than More than</p>	<p>Whole class activity</p> <p>Tell children today's lesson is about counting on and back in steps of 10 and 100.</p> <p>Firstly, start with counting in steps of 10. Show a 100 square. (You could use the number grid ITP from the NNS) Discuss and name columns and rows. Ask children to say the numbers in a column out loud.</p> <p>Ask: What do you notice about the numbers?</p> <p>Cover a column and ask children to chant the numbers in that column.</p> <p>Move on to counting in steps of 100 starting with 50, 150, 250, 350. Ask: What are the next two numbers? How do you know? What is 100 less than 430? What is 100 more than 570?</p> <p>Paired work</p> <p>Children make two or three digit numbers by throwing dice or turning over digit cards Children take turns count on 10 or 100 to make the next two numbers and record. Where appropriate support some children counting in 10s with 100 square.</p>	<p>Write a number on the board such as 432. Ask: What is 10 more? What is 10 less? What is 100 more? Count backwards in 10s to 252.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Children should be able to:</p> <ul style="list-style-type: none"> • Count on / back in 10s starting from any 2 or 3 digit number. • Count on / back in 100s starting from any number. </div>

Planning Sheet	Day 3	Unit 8: Counting, properties of numbers	Term: Autumn	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
		<p>Count on or back in twos, starting from any two-digit number and recognise odd and even numbers to at least 100.</p> <p>Resources Number line Linking cubes Digit or playing cards Whiteboards and pens</p> <p>Vocabulary Count on / back Even Odd Rule digit</p>	<p>Whole class activity</p> <p>Tell children today's lesson is about counting on and back in steps of 2 and thinking about odd and even numbers.</p> <p>Use a number line to count in 2s, starting at number 2. Record the numbers on the board up to ten. Ask: What is an even number?</p> <p>(Make sure explanations include:</p> <ul style="list-style-type: none"> • an even number always produces a whole number when it is halved. • an even number can be grouped in twos with no remainder <p>Use linking cubes or magnetic counters to demonstrate.)</p> <p>Continue counting on the number line recording the numbers to 20 on the board. Ask: What do you notice about these numbers?</p> <p>Ensure replies include that even numbers end in 0, 2, 4, 6 or 8. You may want to continue counting in twos up to 30 or 40 and check the rule. Ask: Will you say 52? 61? 70? Why / why not?</p> <p>Now, use the number line to jump in 2s starting at number 1. Record the numbers to 9. Ask: Do you know what we call these numbers? What is an odd number?</p> <p>(Make sure explanations include:</p> <ul style="list-style-type: none"> • When you try to put in twos you have an odd one left over. • When you split it in half you have one left over (or $\frac{1}{2}$) <p>Continue counting beyond 9. Ask: What do you notice?</p>	<p>Use large digit or playing cards. Hold up 6, 2 and 7. Ask: Can you make an even number close to 30 using two cards? Children record on whiteboards. Discuss answers. Ask: Can you make an odd number close to 30? Close to 70? Can you make a 3-digit even number greater than 500? An odd number less than 300? Repeat using 3, 6 and 9.</p>

			<p>Again ensure children are aware of the final digits. Continue counting and then ask: Will we say 42? 49? How do you know?</p> <p>Write some number on the board (up to 100 initially but you may want to include some 3-digit numbers). Draw two large circles labelled odd and even and invite children to choose a number and write it in the correct circle, explaining why it is odd or even.</p> <p>Paired/ Small Group work Using a set of digit (or playing) cards children turn over two cards each and score a point if they can make an even number. Children could record their numbers. Repeat, scoring for making an odd number. Extend to three digit numbers.</p>	<div data-bbox="1868 145 2152 576" style="border: 1px solid black; padding: 5px;"><p>Children should be able to:</p><ul style="list-style-type: none">• Count in twos starting from an odd or an even number.• Recognise odd and even numbers up to at least 100.</div>
--	--	--	--	---

Planning Sheet	Day 4	Unit 8, Counting, properties of numbers	Term: Autumn	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"> Solve mathematical problems and puzzles. Explain methods and reasoning orally. <p>Resources Problem solving – a CPD pack (Year 3 Lesson 1) or Mathematical Challenges for Able Pupils in KS1 and 2 (Page 33) Resource sheet 1</p> <p>Vocabulary Odd, even, multiple, total, altogether, list, rule</p>	<p>Whole class activity</p> <ul style="list-style-type: none"> Explain that we are working on problem solving and are going to think about how to record our working. Ask the children to list the first six multiples in the 5 times-table on their whiteboards. Say: Circle the largest even number and the smallest even number. Ask the children to list the first ten multiples in the 3 times-table. Say: Circle all even multiples greater than 20 in both lists. Children share their responses with a partner. Repeat for all odd multiples below 20. Ask: Which odd multiple below 20 is a two-digit number? (15) What can you tell me about this number? Establish that it is odd, a multiple of 3 and 5, below 20 and a two-digit number! These are the rules that 15 fits. <ul style="list-style-type: none"> Show the 'Fireworks' poster / problem (OHT could be used). Set the context. Ask children to explain the problem to a partner in their own words. Ask: What do you know? How many different fireworks does she have? How many stars does Emma want? Children should discuss how they might begin with a partner. Ask: Did she set off 10 fireworks? Why not? How many stars would that be? <p>Paired work</p> <ul style="list-style-type: none"> Ask children to work in pairs to solve the problem. Remind them of the lists they made on their whiteboards earlier. Could lists help? After a short time draw the children together and invite pairs to share their working and explanations. Try to use a pair that has worked systematically, listing possibilities. Ask: 	<ul style="list-style-type: none"> Choose a pair to present their solution. They should show their lists and explain their findings. Encourage children to ask questions. Ask: Did you find all the possibilities? How do you know? Collect children's own questions to discuss and add some of your own. If Emma lit five 3-star and two 4-star fireworks how many stars would there be? What if it was Emma's 21st birthday? <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Children should be able to:</p> <ul style="list-style-type: none"> Work systematically. Use lists to find all possibilities. Explain their solutions. </div>

			<p>Have you found all possibilities? How do you know? Demonstrate working systematically, listing all possibilities, with the class.</p> <ul style="list-style-type: none">• Children work with their partner to solve the second part of the problem. Remind them to work systematically and to use lists to help them find all possibilities.• Extend the problem for able children. They could write their own questions for a different pair to solve. You could introduce a firework with 5 stars.	
--	--	--	---	--

Planning Sheet	Day 5	Unit 8: Counting, properties of numbers	Term: Autumn	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"> Solve mathematical problems or puzzles. Explain methods and reasoning orally and in writing. <p>Resources Mathematical Challenges for able pupils in Key Stages 1 and 2 (ref. DfEE 0083/2000; NNS publications or Resource sheet 2</p> <p>Vocabulary Multiple, List Systematic strategy</p>	<p>Whole class</p> <ul style="list-style-type: none"> Show children the poster Spaceship (or OHT) and set the scene for them. Ask children to explain the problem to their partner in their own words. Can children find two important pieces of information? (two of each, two answers) Ask: How many legs does 1 tripod have? 2 tripods? 3 tripods? Remind children of yesterday's problem. Can they work systematically? Would it help to make lists? <p>Paired work</p> <ul style="list-style-type: none"> Children work in pairs to solve the problem. Whilst the children are working write some extension questions in speech bubbles on the board. "What if there were 37 legs?" "Quadripods decided to go too! If there were at least three of each and 72 legs altogether, who went?" Invite children to add questions for their classmates to solve. When the children have been working for five minutes stop the class and invite children to explain their strategies. Ask: Did you make a list? Are you working systematically? Will you know whether or not you have found all possibilities? This should help children who have not begun in a systematic way. <p>Support Some children may need to model the creatures with modelling clay and lolly sticks (one of each creature!!). This should support their thinking. Others may need to record by drawing.</p> <ul style="list-style-type: none"> Encourage some children to explain their solution (and strategy) in writing supported by lists and sketches. They can share this. 	<ul style="list-style-type: none"> Invite pairs to briefly share solutions. Have they found all possibilities? Work with the class to model a solution to the original problem. Invite children to write lists. 2,4,6,8,10,12,14,16,18,20,--- 3,6,9,12,15,18,21,24,27,30--- Ask: How many bipods could there be? (Establish 2 as a starting number.) If there were two bipods how many legs? How many left for tripods? Could 19 legs belong to tripods? Is 19 a multiple of 3? What if there were three bipods, how many legs? How many left for tripods? Is it a multiple of 3? Continue working through, asking questions to include all children. Ask: Could we have begun with two tripods? <div style="border: 1px solid black; padding: 5px;"> <p>By the end of the lesson children should be able to:</p> <ul style="list-style-type: none"> Solve a mathematical problem by making a list. Explain their strategy orally and begin to explain in writing. </div>

--	--	--	--	--