

UNIT 1 Place value, ordering, estimating and rounding

Year 3
Autumn term

Three daily lessons

UNIT OBJECTIVES

- Read and write whole numbers to 1000 in figures and words
- Know what each digit represents and partition three-digit numbers into a multiple of hundred, a multiple of ten and ones (HTU)
- Read and begin to write the vocabulary of estimation and approximation
- Read scales to the nearest division

Resources needed to teach this unit:

- Resource sheet 1.1
- Resource sheet 1.2
- Resource sheet 1.3
- Resource sheet 1.4
- OHT 1.4
- Diennes apparatus
- Arrow cards
- Counters
- Number cards
- Spike abacus
- Multi – link cubes
- String / ribbon
- Pegs
- Measuring ITPs
- Counting stick
- Whiteboards

LINK OBJECTIVES

Year 2

- Read and write whole numbers to at least 100
- Know what each digit in a two-digit number represents
- Use and begin to read the vocabulary of approximation
- Read a simple scale to the nearest labelled division

Year 4

- Read and write whole numbers to at least 10 000
- Partition numbers into thousands, hundreds, tens and ones
- Read and write the vocabulary of estimation
- Record estimates and readings from scales to a suitable degree of accuracy

Planning sheet Day 1		Unit 1 Places Values, Ordering and Rounding		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>Know by heart all addition and subtraction facts for each number to 20</p> <p>VOCABULARY</p> <p>RESOURCES</p> <p>Number cards 0 – 20 Hooter/Whistle etc Whiteboards Pens</p>	<p>The 'Hooter' Game</p> <p>Show a card to children in the range 0 – 20. Tell you partner 3 facts about this number. Emphasise the facts, can be anything they know about the number. E.g. if 18 – it is an even number, it is double 9, it is 17 + 1, it is half of 36 etc.</p> <p>Take feedback</p> <p>Q. Can anyone tell me a subtraction/multiplication/division fact.</p> <p>Repeat with another number</p> <p>Give each table one number. Explain they are going to pass the number around their group. They must give one fact about the number before they pass it on., They cannot repeat facts they have already heard. When the 'hooter' sounds the person holding the number must sit down.</p> <p>A new round begins.</p> <p>Facts from a previous round can be repeated.</p> <p>Continue</p> <p>Children sitting down to make a note of the most interesting fact they have heard.</p> <p>Q. What were the most interesting facts?</p>	<p>Read and write whole numbers to 1000 in figures and words</p> <p>VOCABULARY</p> <p>Hundreds</p> <p>RESOURCES</p> <p>OHT of R Sheet 1.1 Resource sheet 1.1 Resource sheet 1.2 Resource sheet 1.3 Resource sheet 1.4 Diennes Apparatus Arrow Cards Counters</p>	<p>Remind children of the Diennes apparatus – HTU</p> <p>Show an amount and ask children to use table top arrow cards to show how much is there e.g.</p> <p>Combine the arrow cards and identify the amount as 11. Repeat with other examples or ask children to show the amount using in arrow cards, identify the amount orally and in figures on w/b.</p> <p>Show an amount with the arrow cards – combined e.g.</p> <p>Q. Can you show me the amount I have here?</p> <p>Invite children up to select Diennes apparatus</p> <p>Q. How much do I have here?</p> <p>Introduce a place value chart on an OHT Resource sheet 1.1. Demonstrate the amount on the OHT by covering the 200 + 40 + 7.</p> <p>Repeat with another example e.g.</p>	<p>Each pair to have a 'Place Value Pear' game board to include HTU and TU numbers – resource sheet 1.2.</p> <p>Select 5 numbers of the game-board to play with by circling them.</p> <p>Teacher to read through cards on resource sheet 1.3</p> <p>E.g. the digit one in this number is worth one hundred</p> <p>Children can cross off the matching pear if they have it.</p> <p>Teacher could identify the value of the digit to be crossed off using the apparatus from the lesson if desired.</p> <p>e.g. The 1 in this number is worth</p>	

			<p>Q. Why are there no numbers on the tens row covered?</p> <p>Cover an amount on the place value chart and children can select if they want to write the amount, show using arrow cards or make with Diennes apparatus</p> <p>Point to one digit – Q. What is this digit worth? Q. In your example of this number what represents this number?</p> <p>Show examples from written form, arrow cards and Diennes apparatus.</p> <p>Repeat with one more example.</p> <p>Independent work (ideas) PLACE –THREE (Independent activity in pairs)</p> <p>HTU cards made from RS1.4 and a place value chart each. 2 colours of counters. Turn over card, state the amount and use their counters to cover the amount on the chart. Player B does the same. Winner – first to cover 3 numbers in a row or a column</p> <p>L.A – working with 2 digit or 3 digit numbers. Turn over a card e.g.</p> <p style="text-align: center;"> 58 Or 316 </p> <p>Children to make the amount with Diennes, arrow cards and place value chart and record in words</p> <p>Extension Group Teacher support – selections of 3 digit numbers. Identify number in words. Teacher to select a digit and children to represent that digit in words, with arrow cards or on place value chart</p>	<div style="border: 1px solid black; padding: 10px;"> <p>By the end of the lesson children should be able to –</p> <ul style="list-style-type: none"> • Know what each digit in a 3 digit number represents E.g. in the number 364, say what the 6 represents <p>(Refer to the supplement of examples, section 5, page 9)</p> </div>
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Planning sheet Day 2		Unit 1 Places Values, Ordering and Rounding		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>Know what each digit in a number represents</p> <p>VOCABULARY</p> <p>Hundred</p> <p>RESOURCES</p> <p>Arrow Cards</p>	<p>Place Value Aerobics</p> <p>Show children arrow cards making the number 241</p> <p>Recap value of each digit in number. Explain that we are going to put a movement to each place value column.</p> <p>E.g. for units – touch our toes</p> <p>So for this number we would touch our toes once.</p> <p>For tens – twist our waist, so for this number we will twist</p> <p>Model Count</p> <p>10 (twist), 20 (twist), 30 (twist), 40 (twist).</p> <p>For hundreds reach up to the sky. So for this number model count</p> <p>100 (reach), 200 (reach)</p> <p>Put it all together to create whole numbers – count from the hundreds down to units</p> <p>Show another number with the arrow cards e.g. 64. Ask the children to show that number through movement. Emphasise counting as moving.</p> <p>Repeat for a range of examples.</p> <p>Show a number e.g. reach, reach, reach, twist, touch, touch. Children to tell you the number</p> <p>e.g. 3 1 2</p>	<p>Read and write whole numbers to 1000 in figures and words</p> <p>Know what each digit represents and partition</p> <p>VOCABULARY</p> <p>RESOURCES</p> <p>Resource sheet 1.4</p> <p>Spike abacus</p> <p>Cubes/Counters</p>	<p>Show the children the number 348.</p> <p>Q. What is this number? Q. What is the digit 3 worth? Etc.</p> <p>Explain that today we are going to make the numbers using multi-link cubes. Show number 342</p> <p>Q. What would we need to do to make this number?</p> <p>Identify that counting out 342 cubes would take a long time. Introduce a chart - and/or a spike abacus</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="border: 1px solid black; padding: 2px;">H</td> <td style="border: 1px solid black; padding: 2px;">T</td> <td style="border: 1px solid black; padding: 2px;">U</td> <td style="padding: 0 10px;">or</td> <td style="border: 1px solid black; padding: 2px;">H</td> <td style="border: 1px solid black; padding: 2px;">T</td> <td style="border: 1px solid black; padding: 2px;">U</td> </tr> </table> <p>Q. What do you think the H Stands for? T? U?</p> <p>Lets look at the number we started with – 342.</p> <p>Q. What should I put in the units column to represent this number? Identify 2 cubes</p> <p>Q. What should I put in the tens column to represent this number? Identify 4 cubes and count as each cube is placed – 10, and another 10 to make 20 and another 10 to make 30 and another 10 to make 40</p> <p>Q. And what should I put in the hundreds column? Model 100 and another 100 to make 200 and another 100 to make 300.</p> <p>Read from the chart 3 hundred and forty and two equals 342.</p> <p>Children to have own charts on tables. Show the number 241 and ask children to work with a partner to show this amount.</p>	H	T	U	or	H	T	U	<p>How many numbers could be found using 20 cubes?</p> <p>Take feedback</p> <p>Q. Which strategy did you use to ensure you had found all the numbers?</p> <p>Discuss –</p> <p>Model placing the most cubes in a column e.g.</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="border: 1px solid black; padding: 2px;">H</td> <td style="border: 1px solid black; padding: 2px;">T</td> <td style="border: 1px solid black; padding: 2px;">U</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">9</td> <td style="border: 1px solid black; padding: 2px;">9</td> <td style="border: 1px solid black; padding: 2px;">2</td> </tr> </table> <p>Then taking 1 from the column with the most in and placing elsewhere e.g. <u>8 9 3</u></p> <p>Children should have identified a possible 14 numbers and original 992. Explain that working systematically is important in tackling problems.</p> <p><u>Homework</u></p> <p>What if you had 24 cubes and had to use them all?</p> <p>- Ensure children have practical apparatus to support them with this problem</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>By the end of the lesson children should –</p> <p>- Know, for example that 8 9 3 is 800 + 90 + 3</p> <p>(Refer to the supplement of examples, section 5, page 9)</p> </div>	H	T	U	9	9	2
H	T	U	or	H	T	U											
H	T	U															
9	9	2															

Take feedback

Show an amount on chart e.g.

H	T	U
□ □	□	□ □
□ □		

Q. What is this amount in words/figures?

Ask children to count out twenty cubes.
Explain that they must use all 20. Use all twenty cubes to make your own number on the chart. Take feedback of numbers generated – Identify any examples where more than 9 cubes have been used in a column and discuss what happens

Q. Who thinks they have the highest number?
Does anyone have a higher one? Ask them to identify their number.

Q. Who thinks they have the lowest number?
Does anyone have a lower one?

Independent Activity

To use all 20 cubes – can you find all the numbers you can make? How will you know when you have them all?

LA - Either 12 cubes and 2 digit numbers or 21 cubes for all 3 digits

HA – Place numbers in sequential order

Planning sheet <i>Day 3</i>		Unit 1 <i>Places Values, Ordering and Rounding</i>		Term <i>Autumn</i>	Year group <i>3</i>
Oral and Mental		Main Teaching			Plenary
Objectives and vocabulary	Teaching Activities	Objectives and vocabulary	Teaching Activities	Teaching Activities/Focus Questions	
<p>Know by heart multiplication facts for the 2, 5 and 10 time s tables</p> <p>RESOURCES whiteboards Dry wipe pens Counting stick</p> <p>VOCABULARY lots of groups of; times product multiply multiplied by multiple of double halve share equally divide</p>	<p>Practice counting on counting stick- identify range as 0-30.</p> <p>Q. what dos each interval represent? Count up the counting stick to check.</p> <p>Ask children to draw a 3 x 3 grid on whiteboards.</p> <p>Choose 3 multiples of 2, 3 multiples of 5 and 3 numbers from 0-10.</p> <p>Record these numbers in any square on their grid.</p> <p>Identify what the children need to do to win this version of 'bingo'. 4 corners, 5 numbers, horizontal line, vertical line etc.</p> <p>Ask the children questions such as: 2 x 5?</p> <p>How many 5's are there in 25? Use the language of multiplication and division lots of, groups of; times, product multiply, multiplied by multiple of double halve share equally divide</p>	<p>Use read and begin to write vocabulary of estimation</p> <p>Read scales to the nearest division</p> <p>RESOURCES OHT 1.4 String Pegs Measuring ITP</p> <p>VOCABULARY approximate approximately</p>	<p>Introduce a piece of string/washing line/ribbon. Identify that you know this is one metre/100cm long as that is how much you had to buy. However, you only need 50cm.</p> <p>Q. How can I find 50cm?</p> <p>Emphasise that you do not have a ruler long enough to help – so we will need to approximate</p> <p>Children to estimate where half way would be. Mark the half way point.</p> <p>Children to have their own 1m/100cm piece of ribbon/string etc.</p> <p>Q. What other lengths can you find? Work with a partner to approximate peg and record the lengths they have estimated</p> <p>Take feedback as to the lengths identified and strategies used for doing this.</p> <p>Peg some of the children's estimations on main line</p> <p>Q. Can anyone identify a measurement that would be between x + y? (point to 2 measurements)</p> <p>Children to suggest a measurement that would lie between the 2 estimates and approximate where on the line it would fit.</p> <p>Repeat with a few examples – turn the line vertically in those examples</p> <p>Introduce OHT sheet 1.4</p> <p>Identify that these are all number lines of forms but when used in the context of measure we call them a scale.</p> <p>Identify the first one as a ruler</p>	<p>Use measuring cylinder ITP. Set cylinder up to 500. Fill up the cylinder to 355ml</p> <p>Hide the amount readings. Explain to the children there is too much water in the container. You only wanted it to have 300ml in.</p> <p>Approximately, how much water do you need to remove?</p> <p>Children to work with a partner – discuss and record approximations on whiteboards.</p> <p>Take feedback and model removing the agreed amount to see if correct.</p> <p>Emphasise approximate amounts</p> <p>Repeat with amounts up to 1000ml</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>By the end of the lesson children should be able to - Read a scale to the nearest marked division</p> <p>(refer to Supplement of Examples Section 5, page 77)</p> </div>	

			<p>Q. What would the unit of measure be? Q. What do you notice about the ruler?</p> <p>Q. What do you think each interval is worth?</p> <p>Q. What do the slightly longer lines on some intervals represent?</p> <p>Draw on an arrow – where is the arrow pointing?</p> <p>Discuss strategy e.g. – counting up in ones from 0. Counting on /back from tens identified, counting on/back from multiples of 5</p> <p>Repeat with another ruler example before looking at measuring jug</p> <p>Ensure children are confident with layout and context of item e.g. unit of measure and scale before identifying the measurement the arrow indicates</p> <p>NB ITPs could be used instead of OHT</p> <p>Give children a measurement e.g. 35g. They need to select which item would be appropriate to use this measurement on and mark on scale</p> <p><u>Independent Work</u></p> <p>Children to identify/mark on a range of measures on scales, measuring cylinders and rulers.</p>	
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900

90

9

800

80

8

700

70

7

600

60

6

500

50

5

400

40

4

300

30

3

200

20

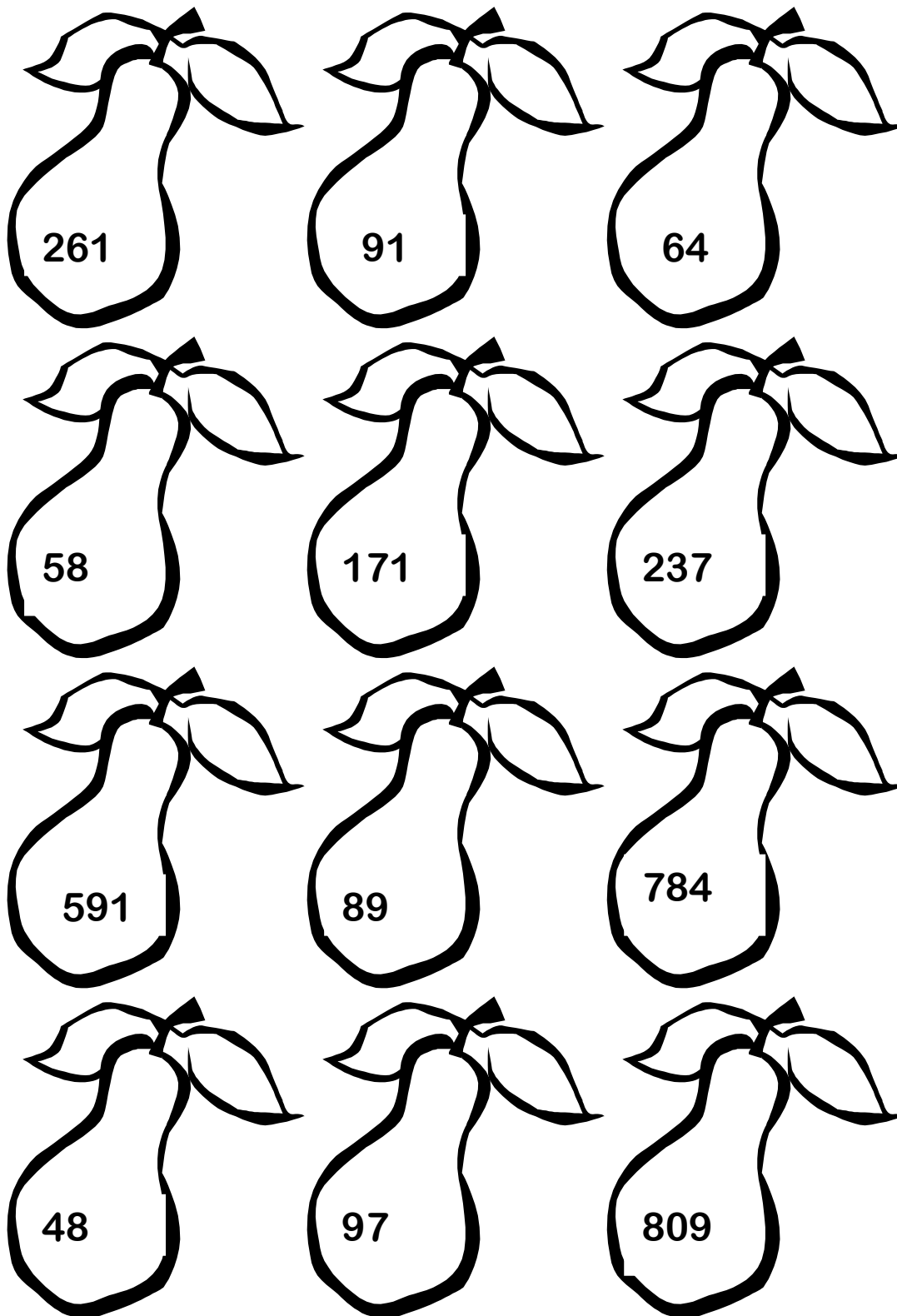
2

100

10

1

Place Value Pears



Place Value Pears

In this number the digit two is worth two hundred.	In this number the digit nine is worth ninety.	In this number the digit four is worth four units.
In this number the digit five is worth fifty.	In this number the digit seven is worth seventy.	In this number the digit three is worth three tens.
In this number the digit five is worth five hundreds.	In this number the digit nine is worth nine.	In this number the digit seven is worth seven hundred.
In this number the digit four is worth forty.	In this number the digit seven is worth seven units.	In this number the digit eight is worth eight hundred.

Place Three	832
419	756
826	283
567	941
328	675
194	109

UNIT 1 YEAR 3 (AUTUMN TERM)

OHT 1.4

