

Unit 1
Place Value

Year 5
Summer term

Unit Objectives
Year 5

- Use vocabulary of estimation and approximation.
- Make and justify estimates of large numbers and estimate simple proportions.
- Round integers to the nearest 10, 100 or 1000.
- Calculate a temperature rise or fall across 0°C.
- Develop calculator skills and use a calculator effectively.

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Link Objectives

Year 4

- Begin to multiply whole numbers by 100.
- Order a set of whole numbers up to 10 000.
- Round any positive integer to the nearest 10 or 100.
- Read a variety of scales and dials to a suitable degree of accuracy.

Year 6

- Consolidate all previous work.
- Use vocabulary of estimation and approximation.
- Consolidate rounding an integer to the nearest 10, 100 or 1000.
- Develop calculator skills and use a calculator effectively.

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:

- Resource sheet 1.1
- Resource sheet 1.2
- OHP calculator
- Calculators
- Metre stick
- 1p and 10p coins
- String and scissors
- Whiteboards
- Thermometer

(Key objectives in bold)

Planning sheet	Day One (page 1 of 2)	Unit 1 <i>Place value</i>	Term: <i>Summer</i>	Year Group: 5
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
<p>Read and write any whole number; round to the nearest 10 or 100.</p>	<p>Enter 23 453 into the OHP calculator.</p> <p>Q What is this number?</p> <p>Ask the children to draw an empty number line on their whiteboard and to mark 23 000 at one end and 25 000 at the other end. Ask the children to use the number line to help them answer the question.</p> <p>Q What is 23 453 to the nearest thousand?</p> <p>Ask the children to rub out the numbers that are at each end of the number line.</p> <p>Q What numbers should we write at each end of the number line to help us round this number to the nearest 100?</p> <p>Ask the children to write in the two numbers 23 400 and 23 500.</p> <p>Repeat for different numbers and include rounding to 10.</p>	<p>Use vocabulary of estimation and approximation.</p> <p>Make and justify estimates of large numbers and estimate simple proportions.</p> <p>Develop calculator skills and use a calculator effectively.</p> <p>VOCABULARY guess estimate approximate round nearest roughly too many too few diameter</p> <p>RESOURCES Metre stick 1p and 10p coins String Scissors Whiteboards</p>	<p>Show a metre rule and a 1p coin.</p> <p>Q How many 1p coins do you think will fit along this metre rule?</p> <ul style="list-style-type: none"> Ask the children for their initial 'guesses'. <p>Show the children the 1p coin and the first 10 cm of the metre rule. Ask the children to discuss, in pairs how they would estimate the answer. Take feedback from the children.</p> <p>Q How did you use part of the metre rule to help you obtain your estimate?</p> <p>When the children have given you some of their ideas tell them that the diameter of a 1p coin is about 2 cm.</p> <p>Q About how many 1p coins will fit along a metre rule?</p> <p>Confirm that about 50 1p coins will fit. Show a 10p coin.</p> <p>Q How many 10p coins would fit along a metre rule?</p> <p>Take children's responses and then tell them that the diameter of a 10p coin is about 2.5 cm.</p> <p>Q About how many 10p coins will fit along 10 cm of the metre rule?</p> <p>Confirm that the answer is four and discuss with the children how to use this to work out the number of 10p coins that will fit along a metre rule.</p> <ul style="list-style-type: none"> Explain that the above process is called estimating. <p>Q What is the difference between an estimate and a guess?</p> <p>Confirm that an estimate is usually based on some knowledge whereas a guess can be made with no information. Give the following examples:</p> <ul style="list-style-type: none"> Slices of bread in a loaf. Hours each child has been alive. Hours each child has slept. Words there are in a book. <p>Explain to the children that you want them to estimate the number of words in a book you are holding. Ask them to discuss in pairs any information they might need to make their guess</p> <p>Take children's responses.</p>	<p>Q What strategies did you use to help you estimate?</p> <ul style="list-style-type: none"> Show the children a piece of string. <p>Q How could we find half of this piece of string?</p> <p>This easy question can then lead on to more difficult ones.</p> <p>Q How can we find $\frac{1}{4}$, $\frac{1}{8}$ of this piece of string?</p> <p>Q How can we find $\frac{1}{5}$ of this piece of string?</p> <p>By the end of the lesson the children should be able to:</p> <ul style="list-style-type: none"> Estimate and explain how you worked each estimate; Estimate a proportion. <p>(Refer to supplement of examples, section 6, page 11.)</p>

RESOURCES
OHP calculator
Whiteboards

Planning sheet	Day One (page 2 of 2)	Unit 1 <i>Place value</i>	Term: <i>Summer</i>	Year Group: 5
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
			<p>Count the number of words on the top half of any page. Tell the children this number and that there are about 200 pages in the book.</p> <p>Q How many words do you think there are in the book?</p> <p>Take children's responses and establish what a good estimate might be.</p> <p>The number of words in one half of a page x 2 x 200.</p> <p>Q How could we make a better estimate?</p> <p>Take children's responses and establish that a better estimate would be to count the number of words on a full page and then multiply this number by 200.</p> <p>Ask the children to work in pairs to estimate the following:</p> <ul style="list-style-type: none"> – The number of hours slept by ten children in the class over the last six days. – The total amount of pocket money given to the class each week. <p>For each question ask the children to make a note of any interim estimates they have made, e.g. the average number of hours slept by each child.</p>	

Planning sheet	Day Two	Unit 1 <i>Place Value</i>	Term: <i>Summer</i>	Year Group: 5
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
<p>Round a number with one or two decimal places to the nearest integer.</p> <p>RESOURCES Whiteboards</p>	<ul style="list-style-type: none"> Have three sets of numbers that are all multiples of 100. <p>Write 3.7 on the board.</p> <p>Ask the children to draw a scale on their whiteboards that includes this number.</p> <p>Q What is the interval on your scale?</p> <p>Q What whole numbers are either side of 3.7?</p> <p>Establish that the two numbers are 3 and 4.</p> <p>Q What is 3.7 rounded to the nearest whole number?</p> <p>Repeat for 24.7, 132.6 and 12.45 asking the children to draw a scale for each one with an integer either side of the number.</p>	<p>Round integers to the nearest 10, 100 or 1000.</p> <p>VOCABULARY integer</p> <p>RESOURCES Whiteboards Resource sheet 1.1</p>	<ul style="list-style-type: none"> Write 4569 on the board. Ask the children what the number would be rounded to the nearest 10, 100 and 1000. <p>Q What are the rules for rounding to the nearest 10, 100 and 1000?</p> <p>Q Can you write me a number between 5000 and 6000 that is nearer to 6000 than 5000?</p> <p>Q What would have been the largest answer you could have written?</p> <p>Q What would have been the smallest answer you could have written?</p> <ul style="list-style-type: none"> Give out Resource sheet 1.1. <p>Ask the children to look at the first table.</p> <p>Q Which of the numbers, when rounded to the nearest 100, would end 800?</p> <p>Discuss children's responses and confirm that the number would be the distance from London to New York which is 6799 miles.</p> <p>Ask the children to round each of the numbers in table 2 to the nearest 100.</p> <p>Q About how many hundreds of kilometres is it from London to Jeddah?</p> <p>Explain that the answer is about 89 hundreds and that we can quickly see this for each distance in table 2 because we have rounded to the nearest hundred kilometres.</p> <p>Ask the children to reproduce table 1 with each distance rounded to the nearest 1000.</p> <p>Write table 1 on the board and discuss the meaning of the first distance: Paris to London.</p>	<ul style="list-style-type: none"> Present the following problems: <p>A cricket team scored 247 runs in their first innings and 196 in their second innings. Approximately how many runs did the team score.</p> <p>I went to the supermarket and bought several things. The cost of each item was £3.20, £1.99, £5.80 and £2.10. Approximately how much was the bill?</p> <p>Discuss with the children their strategies for solving these problems.</p> <p>Q If I were approximating the total to find out if I had enough money, would it be better to round up or down?</p> <p>HOMEWORK – Ask the children to round the distances on Resource sheet 1.1 table 3 to the nearest 100.</p> <p>By the end of the lesson the children should be able to:</p> <ul style="list-style-type: none"> Round any two, three or four-digit number to the nearest 10, 100 or 1000. <p>(Refer to supplement of examples, section 6, page 13.)</p>

Planning sheet	Day Three	Unit 1 <i>Place Value</i>		Term: <i>Summer</i>	Year Group: 5
Oral and Mental		Main Teaching			Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions	
<p>Order positive and negative whole numbers.</p> <p>Develop calculator skills and use a calculator effectively.</p> <p>VOCABULARY positive negative integer minus</p> <p>RESOURCES Calculators OHP calculator</p>	<ul style="list-style-type: none"> Ask the children for a number below 50. Write about ten of these on the board. Write a minus sign next to five of the numbers. Tell the children that they have to write the ten numbers in order, from the highest to the lowest. <p>Q What is the correct order?</p> <p>Highlight any two numbers and ask:</p> <p>Q What numbers could be between some of the numbers?</p> <ul style="list-style-type: none"> Set up the OHP calculator to start at 12 and count back in 3s using the constant function. <p>Let the children see the sequence 12, 9, 6 and then invite them to explain the sequence, and say which number will be on the display after three more presses.</p> <ul style="list-style-type: none"> Repeat with other sequences in steps as well as multiples. Ask the children to set up their calculators to count back in 4s from 10. <p>Q Will the number -4 be in this sequence? Explain your reasons?</p> <ul style="list-style-type: none"> The children can make up sequences to test each other with. 	<p>Calculate a temperature rise or fall across 0°C.</p> <p>VOCABULARY positive negative integer minus</p> <p>RESOURCES Thermometer Resource sheet 1.2</p>	<ul style="list-style-type: none"> Discuss the homework and go through any difficulties. Show the children a diagram of a thermometer. Invite children to mark in some temperatures, e.g. 10°, 15°. Discuss what is meant by numbers $< 0^{\circ}$. <p>Q What is happening to the temperature if the mercury/alcohol is rising?</p> <p>Q If the temperature was 6° and then rises by 8°, what is the new temperature?</p> <p>Invite children to explain how they worked it out. Use the thermometer as a number line to demonstrate. Give some further examples for practice – not crossing zero yet.</p> <p>Q If the temperature was -3°, how many degrees would it need to rise to reach 0°?</p> <ul style="list-style-type: none"> Discuss the difference between these temperatures: -4°, 5°. Discuss how to work it out. Ensure the children know that the difference is expressed as a positive number. <p>Work through further examples, sometimes with both numbers being negative.</p>	<ul style="list-style-type: none"> Look at Resource sheet 1.2 and discuss what it shows. <p>Ask various questions about the change in temperatures from midnight to midday and on to the next midnight and compare temperatures between the two cities.</p> <p>By the end of the lesson the children should be able to:</p> <ul style="list-style-type: none"> Use negative numbers in the context of temperature; Recognise negative numbers on a calculator; Use the constant function to generate sequences of negative numbers. <p>(Refer to supplement of examples, section 6, page 15)</p>	

Distances from London in miles

Paris	451
Jeddah	5904
New York	6799
Sydney	16 675
Madras	9981

Distances from London in kilometres

Paris	677
Jeddah	8856
New York	10 199
Sydney	25 013
Madras	14 971

Shortest distances from Earth's orbit in miles

Orbit of Mercury	58 009 650
Orbit of Venus	25 761 400
Orbit of Mars	48 732 700
Orbit of Jupiter	390 879 500

Temperature (degrees Celsius)

Birmingham

	Midnight	Midday
Monday	8°	19°
Tuesday	10°	19°
Wednesday	9°	20°
Thursday	7°	16°
Friday	12°	20°
Saturday	15°	24°
Sunday	11°	19°

St Petersburg

Midnight	Midday
−6°	8°
−8°	6°
−9°	7°
−4°	10°
−7°	8°
−6°	7°
−5°	6°