Unit 1
Place Value

Year 5
Autumn Term

Three Daily Lessons

Year 5

UNIT OBJECTIVES

This Unit Plan is designed to guide your teaching.
You will need to adapt it to meet the needs of your class.

- Read and write whole numbers to at least 10 000 in figures and words, and know what each digit represents.   Page 3
- **Multiply and divide any positive integer up to 10 000 by 10 or 100 and understand the effect.**   Page 7
- Use the vocabulary of comparing and ordering numbers, including symbols such as <, > and = . Give one or more numbers lying between two given numbers. Order a set of integers less than 1 million.   Page 9
- Develop calculator skills and use a calculator effectively.   Page 71

Resources needed to teach this unit:

- OHT 1.1
- OHP calculator
- Calculators
- Digit cards
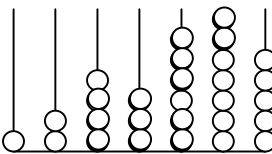- Whiteboards

Link Objectives

Year 4

- Read and write whole numbers to at least 10 000 in figures and words, and know what each digit represents.
- Read and write the vocabulary of comparing and ordering numbers. **Use symbols correctly, including less than (<), greater than (>) and equals (=).** Give one or more numbers lying between two given numbers and order a set of numbers less than 10 000.
- Multiply or divide any integer up to 1000 by 10 (whole-number answers) and understand the effect. Begin to multiply by 100.

Year 6

- **Multiply and divide decimals mentally by 10 and 100, and integers by 1000, and explain the effect.**
- **Order a mixed set of numbers with up to three decimal places.**
- Develop calculator skills and use a calculator effectively.

(Key objectives in bold)

Planning sheet	Day One	Unit 1 *Place Value*		Term: *Autumn*	Year Group: *5*
Oral and Mental		**Main Teaching**			**Plenary**
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities		Teaching Activities/ Focus Questions

Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
Read whole numbers to at least 10 000. Use the vocabulary of comparing and ordering numbers.	• Ask children to select 4 digit cards each and arrange them to make a number. Ask them to show their number if it is: even; less than 5000; greater than 7000; between 3000 and 5000 etc. Each time ask one or two children to read out their numbers. • Write 4859 on the board and ask the class to read it together. Ask children to rearrange their digits to make a number which is: greater than/ less than/ as close as possible to the number on the board. Each time, ask one or two children to read out their numbers. • Ask children to work in groups of three or four. Children each make a number with their digits, then as a group place all their numbers in ascending order. Ask children from one or two groups to read out their numbers. **Q** What strategies did you use to order the numbers? • Establish that the thousands digits are compared first, then the hundreds if the thousands are the same etc. • Ask them to make new numbers, then place them in descending order.	Read and write whole numbers in figures and in words, and know what each digit represents.	• Write 15 642 on the board and ask a child to read it. Discuss the value of each digit, establishing particularly that the one represents ten thousand, but the number is read as 'fifteen thousand'. Change the 15 to 3 and repeat. Point out that a space is left between the thousands and hundreds to make the number easier to read. Repeat with numbers such as 156 342, then 1 243 675, to establish the value of hundred thousands and millions and the way in which the numbers are read. • Show a place value chart on the board or OHT with the ones (units) column labelled, e.g. |							**ones**
---	---	---	---	---	---	---	---

								  (Alternatively draw an abacus diagram and use throughout if children are familiar with using a spike abacus e.g.)
								
								Discuss the value of the other columns, starting from the right, and label them. Draw small circles in each column, (or use counters on OHT), to represent a number. Write the number in figures on the board, point out the spacing, then ask a child to read the number.
								
								• Change the circles to make a different five, six or seven-digit number and ask children to write it in figures (e.g. on whiteboards), then read it aloud together. Repeat with other numbers.
								
								• Read out some five, six and seven-digit numbers and ask children to write them in figures. Focus on a seven-digit number and ask:
								
								  Q How could I increase this number by ten thousand?
								  Q What would the new number be?
								
								Repeat with other changes to the number, e.g. 300 thousand smaller, 2 million bigger etc, asking children to record the new number each time.
								
								Ask children to write any seven-digit number. Ask them to raise their hands if their number contains: fifty thousand; nine thousand; eight hundred thousand, forty; six; three million etc.
									• Secretly put a seven-digit number on an OHT or whiteboard.
									
									• Children identify the number by asking questions about the digits, to which the teacher replies and gives their value, e.g.
									Child – Does it have an 8?
									Teacher – Yes, its value is 80.
									
									• Children record according to the replies, then raise their hands when they think they can say the number. Reveal the secret number when it is correctly identified.
									
									• Repeat with a child taking the teacher's role, or with children working in pairs.
									
									By the end of the lesson, children should be able to:
									• **Read and write whole numbers with seven or fewer digits;**
									• **Understand what each digit in seven-digit numbers represents**
									
									(Refer to supplement of examples, section 6, page 3.)

VOCABULARY digit greater/less than between ascending descending RESOURCES: Digit cards		VOCABULARY digit place value ten thousand hundred thousand million RESOURCES Whiteboards or similar		

Planning sheet	Day Two	Unit 1 *Place Value*		Term: *Autumn*	Year Group: *5*
Oral and Mental		**Main Teaching**			**Plenary**
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities		Teaching Activities/Focus Questions
Read whole numbers and know what each digit represents. Develop calculator skills and use a calculator effectively.	• Use an OHP calculator • Key in 32 658. Ask the class to read out the number together. Point out that the calculator does not leave a space between the thousands and the hundreds. **Q** What would I subtract to make the number 32 458? Demonstrate keying – 200 = on the calculator. **Q** How could I change this to 36 458? Demonstrate keying + 4000 = on the calculator. **Q** If I press + 40 =, what will the new number be? Demonstrate as before. • Repeat with a six- and then a seven-digit number. • Ask children to key in a number such as 673 540 on their calculators. Ask them to change their number to given numbers in which one digit has changed, e.g. 643 540, then 643 570 etc. • Each time ask a child to explain how the change was made.	Use the language of comparing and ordering numbers including the symbols <, >, ≤, ≥ and =. Give one or more numbers lying between two others. Develop calculator skills and use a calculator effectively.	• Ask children to make the largest possible six-digit number on their calculators without pressing any key more than once. **Q** Which number should everyone have made? (987 654) **Q** Why? • Repeat with different criteria such as: the smallest possible number, the largest/smallest odd number etc. Check that children are using the calculator correctly as they do these. If necessary clarify how to key in numbers. • Write on the board or OHT: 25 630 > ☐ > 24 800. Revise the meaning of the symbols, then ask children to make a number on their calculators which could go in the box. Ask a few children to read their numbers and discuss whether they are correct. Repeat with a few more outer numbers and include < symbols. • Write 52 063 ≥ ☐. Explain that the new symbol means greater than or equal to and ask children to suggest numbers that could be placed in the box. (If 52 063 is not suggested, then point out that it is one of the possible numbers and explain why.) • Repeat using the ≤ symbol. • Write 73 832 ≤ ☐ ≤ 73 833 and ask children to show numbers on their calculators which could go in the box. **Q** How many possible numbers are there? Discuss responses. Repeat with a few more outer numbers and include ≥ symbols. • In pairs, children make up and complete statements similar to those done with the class, recording them in their books. Allow about 10 minutes. • Ask children to make a number with between four and seven digits on their calculators. Ask about five children to write their numbers on the board or OHT. Ask the class to write the numbers in ascending order in their books, then discuss strategies used. Repeat with five different numbers for the class to record in descending order.		• Clarify any misconceptions that became evident during the paired activity. • Show OHT 1.1 of a blank hundred grid. Write the number 1 in the top left hand corner. **Q** What number would be in the bottom right hand corner? • Erase 1 and write 101 in the top left hand square. **Q** What number would be in the bottom right hand corner? The bottom left hand corner? The top right hand corner? How do you know? Collect children's responses and discuss their strategies. • Repeat with 2001 in the top left hand corner. Pick a square at random. **Q** What is this number? Ask children to discuss their strategies in pairs and then to feedback.
VOCABULARY key display digit RESOURCES: OHP calculator Calculators		VOCABULARY less than or equal to greater than or equal to RESOURCES Calculators OHT 1.1			

Planning sheet	Day Three	Unit 1 *Place Value*	Term: *Autumn*	Year Group: *5*

Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/Focus Questions**

Oral and Mental Objectives and Vocabulary	Oral and Mental Teaching Activities	Main Teaching Objectives and Vocabulary	Main Teaching Activities	Plenary
Add/subtract any pair of two-digit numbers mentally. Develop calculator skills.	• Use an OHP calculator. Key in any two-digit number (e.g. 76) and write a target number on the board (e.g. 120). **Q** What do I need to add to my number to reach the target? • Demonstrate adding the suggested number to your number on the OHP calculator. Stress the required key sequence. • Demonstrate clearing the display when the correct number has been found. • Repeat with a three-digit number (e.g. 127) and a new target number (e.g. 184). Extend the calculation needed across the next 100s boundary with a new pair of numbers (e.g. 158 to 216). • Check that the children are using the calculators correctly as they work.	Multiply and divide any positive whole number up to 10 000 by 10 or 100 and understand the effect. Develop calculator skills and use a calculator effectively.	• Using the OHP calculator, press 10 x 7 = and ask children to look at the display. Now press the = key repeatedly as children watch the display. **Q** What was happening to the digits? **Q** What has the calculator been doing? **Q** How do you know? Establish that it multiplied by 10 repeatedly because the digits moved one place to the left each time, the empty column being filled with zero. Repeat with 100 x 7 and discuss to revise the effect as before. • Enter 7 000 000 ÷ 10 on the OHP calculator then repeatedly press =, asking children to watch the display as before. Stop when the display shows 7 and repeat the questions. • Establish that the calculator divided by 10 repeatedly because the digits moved one place to the right each time. Continue to press = as children watch the display. Discuss that the digits continue to move to the left of the decimal point. Repeat with 7 000 000 ÷ 100 = =. **Q** What will happen if we enter 10 x 2 = =? And 100 x 2 = = =? Ask the children to test their predictions on their calculators. **Q** What will happen if we enter 2 x 10 = = ? and 2 x 100 = = =? Ask the children to test their predictions. Discuss their reasoning. • Explain that the calculator was performing a constant function, i.e. a quick way to repeat the same operation, (N.B. on most simple calculators the multiplication constant operates on the first number entered, so 10 x 7 = = results in 70, 700 etc. 7 x 10 = = results in 70, 490 etc. The division constant acts on the second number entered). In pairs, challenge the children to predict the answers to 10 x 5 = = = and 5 x 10 = = = and then to test their predictions. Collect their responses and discuss their strategies. Ask children to explore multiplying and dividing different numbers by 10 and 100 on their calculators, including two and three-digit starting numbers. Ask them to record their results to show patterns and write the numbers alongside. (The pattern shown on page 7 in the supplement of examples would be appropriate here.) **Q** What could you do to 6 000 to get an answer of 60? **Q** What could you do to 6 to get an answer of 0.06? Repeat for other pairs.	• Ask questions for children to answer mentally using whiteboards e.g. what is: 45x100; 1300÷10; 600x100; 500÷100; 526x10; 8200÷100? Discuss any examples which cause difficulties. • Repeat with questions in context, such as: **Q** There are 10 eggs in a box. How many boxes are needed to pack 60 eggs? **Q** 100 egg boxes fill a large packing carton. How many eggs are there in a carton? **Q** The bank has 760 £10 notes. How much money is that? **Q** £350 is shared between 10 people. How much do they each receive? **Q** What if £15 is shared between 10 people? • Ask children to check the last question on their calculators. Discuss that the display shows 1.5 but the answer is £1.50 and not £1 and 5 pence. • Explain that the calculator does not display final zeros after the decimal point. **By the end of the lesson, children should be able to:** • **Multiply and divide numbers by 10 and 100 and understand the effect;** • **Use a calculator to multiply and divide and interpret the display** (Refer to supplement of examples, section 6, pages 7 and 71.)
VOCABULARY key display clear RESOURCES OHP calculator Calculators		VOCABULARY digit (decimal) place key display constant RESOURCES OHP calculator Calculators		