For school teachers

Lesson plan – Year 3 maths

Unit 1, Lesson 5: Adding 10, 100 and 1000 to 4-digit numbers

This lesson plan was developed by Ochre Education and maths teacher Sue Davis. It outlines her approach to teaching a Year 3 maths lesson on reading and writing 4-digit numbers.

- Watch the lesson video
- Watch a video of Sue talking about her teaching practices
- View the maths unit plan example
- Download sample lesson plan template
- View all other online lessons and supporting resources

This lesson is part of a unit on place value. Ochre Education and the Australian Education Research Organisation (AERO) have published 10 online lessons (and supporting resources) that make up this unit. This is the first lesson in the unit – you can watch the lesson video here and watch a video of Sue talking about her practice here.

This lesson plan is a supplementary resource for this work. It includes guidance on how the lesson was structured and sequenced within the unit and can be used while interacting with the Ochre resources. The plan also allows teachers to see an example of planning for one lesson within a sequence of lessons and reflect on their own teaching and effective practice. The lesson plan is annotated to explicitly show some of the decisions that are made during the planning process.

Another way to use this lesson plan is as a starting point for discussions with colleagues to build collective capacity for lesson and unit planning. Teachers can also use the lesson plan to reflect on their own planning for lessons and units and guide future planning. A blank lesson plan teachers can use and modify as a resource for their own planning can be accessed here.

All the lessons from this unit can be accessed for free on either the AERO or Ochre Education websites.

Definitions

Learning objectives

Clear and easy to understand statements about what students are expected to be able to know, do and/or understand by the end of a period of instruction (not to be confused with the instructional tasks), and at what level this learning is to take place.

Success criteria

A clear statement about the measure that will be used to prove whether, and how well, a student has met the learning objectives by the end of a period of instruction. Success criteria are observable actions that a student can perform to demonstrate their understanding of the learning objectives. It is important that these elements are observable – avoid using phrases like 'students will understand that…' as we can't observe understanding. Instead, the criteria could be 'students will write, say, make or do something that indicates understanding'.

Tasks

Activities undertaken by students as part of the learning process. Carefully designed tasks can also assist students in mastering new knowledge or skills. Scaffolds and worked examples might be used to assist students with some tasks. Teachers can monitor their students' ability to complete tasks as part of a formative assessment approach to help determine whether students have demonstrated the success criteria.

Subject Mathematics: Place value

Year level/Stage 3

Lesson background

This is the fifth lesson in the Place value unit, which is the first unit of Mathematics in Year 3. It builds upon the previous unit lessons on place value of 4-digit numbers, partitioning, and ordering and comparing numbers.

This lesson background shows how the lesson is sequenced and positioned within the unit.

Learning objectives

To understand how to add 10, 100 and 1000 to 4-digit numbers, both with and without regrouping.

Success criteria

By the end of this lesson, students will be able to:

- add 10, 100 and 1000 to 4-digit numbers, without regrouping
- partition numbers up to four digits
- add 10, 100 and 1000 to 4-digit numbers, with regrouping.

The success criteria are a series of clear statements that will be used to prove whether, and how well, a student has met the learning objectives at the end of a period of instruction.

Misconceptions

Some students may:

- think that the answer is 21053, when 100 is added to 2953
- think that all digits need to increase by 1 when 10/100/1000 is added
- change the digit 9 to 0 when 1 is added to it but forget to also increase the next place value digit; for example, they will answer 2915 + 100 as 2015.

Misconceptions are incorrect knowledges and understandings that students have prior to the lesson, or may obtain during the lesson. Outlining these during planning can help with monitoring student learning, and recognising when corrective feedback is needed.

* In this column, you will find prompting questions to guide your planning for each lesson stage.

** In this column you will find prompting questions to consider when monitoring learning at each stage of the lesson.

Lesson stage*	Tasks What are the specific classroom or instructional activities that you and your students will use in each stage?	Monitoring student learning**
Review of previous learning		
How will you ensure that students have the prerequisite skills and knowledge to progress their learning in this lesson? How will you activate prior knowledge/help students retrieve relevant learning from previous lessons?	A quick introductory quiz to review place value and comparing the value of numbers, as these are essential components to understanding the process of addition and for checking if an answer makes sense.*** 1. Overview of keywords: a. Place value b. Numeral c. Digit d. Add/Adding/Addition. 2. Opening questions and ideas:**** a. Place value revision b. Matching visual representations (base ten blocks) with numerals c. Connecting individual digits to their value based on their place in the number d. Check students' verbal responses as they read out the 4-digit numbers and address incorrect phrasing if needed.	How will you gather evidence that shows you where your students are at in their learning?

*** It is important to get a sense of what students know and are able to do already. Formative assessment allows us to gather information to help inform decision making. A quiz is one way of doing it, but formative assessment does not have to be so formal. Using a quick quiz can give information quickly. This could also be run as a quick mini whiteboard activity, with students showing their thinking.

**** This is an opportunity to assess the students' understanding of these concepts, to determine if further revision is required before progressing with the rest of the lesson. Students require mastery of these foundational skills to access the subsequent learning.

Lesson stage	Tasks What are the specific classroom or instructional activities that you and your students will use in each stage?	Monitoring student learning
Explicit teaching of new learning ('I do') – adding 10		
How will you communicate the learning objectives to students? How will you break down your content into sequential steps to avoid overloading your students' working memory? How will you model the learning to support student understanding?	**Whole class:** 1. Read the learning objectives and success criteria to students. Reference back to them as they are encountered throughout the lesson.* 2. Addition of 10, 100 and 1000 is broken into concrete steps, each of which has an 'I do, we do, you do' cycle:** a. adding 10 b. adding 100 c. adding 1000 d. partitioning e. adding 10 with regrouping f. adding 100 with regrouping g. adding 1000 with regrouping. 3. Model the process of adding 10 to a 4-digit number, using place value charts and manipulatives, such as base ten blocks, to scaffold the initial instruction.***	How will you help students retrieve information learned in previous lessons, units? How will you check for understanding and correct any errors or misconceptions before moving onto guided practice?

* Focusing students' attention on the learning objectives makes learning more efficient and is an essential part of explicit instruction.

** I made a deliberate choice to separate out these components, gradually building students' mastery of each before moving to more complex representations and removing scaffolds. It is important that students have the opportunity to practise mastery of these points before removing scaffolds. Each element also builds on the previous steps in a logical sequence, allowing for repeated practice.

*** Here, I am introducing new ideas with explicit instruction, with supports and scaffolds that will be reduced and removed as the lesson progresses.

Lesson stage	Tasks What are the specific classroom or instructional activities that you and your students will use in each stage?	Monitoring student learning
Guided practice ('We do') – adding 10		
What worked examples will you provide students? What scaffolds and instructional supports will you introduce, and how will students use these? How will students work together to progress their skills and understanding?	**Whole class:** 1. Display a worked example for students to refer to.* 2. The first 'we do' example of adding 10 to a 4-digit number can be checked at each step.** 3. Using base ten materials for students to work through the examples will provide an opportunity to observe their understanding*** of the process of adding 10, before removing that support.	How will you check for understanding and correct any errors or misconceptions before allowing students to independently practice?

* Worked examples serve as supports for students at this stage of the cycle, then they can be removed as students gain mastery and work independently.

** This formative assessment enables you to identify errors or misconceptions promptly.

*** Observations as formative assessment can determine the timing for releasing students to independent work.

Lesson stage	Tasks What are the specific classroom or instructional activities that you and your students will use in each stage?	Monitoring student learning
Guided practice ('We do') – adding 10		
(continued) What worked examples will you provide students? What scaffolds and instructional supports will you introduce, and how will students use these? How will students work together to progress their skills and understanding?	4. Move to using numerals only, but within a place value chart to ensure accuracy.**** 5. Check students' answers.***** 6. Encourage students to complete the independent practice questions that follow in the 'you do' phase. Indicate that there will be opportunities for more difficult examples in the later tasks of the worksheet.	(continued) How will you check for understanding and correct any errors or misconceptions before allowing students to independently practice?

**** Students retain knowledge and skills when practice is deliberate and purposeful. Provide prompts and scaffolds as required, to support student mastery of the step.

Multiple examples will allow for 'beginner's luck' and ensure the students are following the correct process

***** This is an important hinge point in the lesson and I want to collect information about what they have learnt, by using formative assessment.

At this point we are still learning as an entire class. I would use a mini whiteboard for this information as the task itself is easy to represent on the boards and I can quickly scan the room for information. I am checking for misconceptions across the room, and would choose some boards with different answers if they were available to discuss how they are different and what might have happened in each case.

Lesson stage	Tasks What are the specific classroom or instructional activities that you and your students will use in each stage?	Monitoring student learning
Independent practice ('You do') – adding 10		
How will students display that they have mastered the skills and content? How will you work with students to provide support and to gain insight into their learning?	**Independent:** Encourage all students to work on the independent practice questions, as it helps to produce fluency. 'Practice makes permanent'. **Small group:** 1. Some students may need more guided practice. Gather these students into a smal group and work through more examples using base ten blocks, and potentially 2- or 3-digit numbers, before they have the opportunity to work independently.* 2. Extension work – Students can work on examples where more than one ten is added, or find missing numbers from the written equations, such as '3456 + ? = 3496'.	What formative assessment will you gather to provide feedback to your students?

* This is an opportunity to re-teach this step, to ensure students have mastered it before moving on.

Lesson stage	Tasks What are the specific classroom or instructional activities that you and your students will use in each stage?	Monitoring student learning
Explicit teaching of new learning ('I do') – adding 100		
How will you communicate the learning objectives to students? How will you break down your content into sequential steps to avoid overloading your students working memory? How will you model the learning to support student understanding?	**Whole class:** 1. Review the learning objective and success criteria. 2. The supports and steps are the same as the previous step of adding 10.* 3. Incorporate formative assessment of areas of difficulty or common errors from the previous stage into your explanation/demonstration.** 4. Highlight that the hundreds digits can be added as single digits, as long as it is understood that they represent that number of hundreds; for example, in 3245 + 100, demonstrate adding 2+1 hundreds.*** 5. Draw attention to the hundreds place and its relationship to the tens.****	

* This repetition is so that working memory is free for processing the new information, as well as providing additional practice of the previous steps.

** Forming this understanding will allow you to determine the pace as you move through the subsequent content, depending on the needs of your students. It is worth noting though, that just because students easily understood adding 10, that doesn't mean it will translate to higher numbers.

*** Activating students' prior knowledge and how it links to current instruction is a key component of explicit instruction.

**** This is another example of retrieval learning and making connections to prior learning.

Lesson stage	Tasks What are the specific classroom or instructional activities that you and your students will use in each stage?	Monitoring student learning
Guided practice ('We do') – adding 100		
What worked examples will you provide students? What scaffolds and instructional supports will you introduce, and how will students use these? How will students work together to progress their skills and understanding?	**Whole class:** 1. Display a worked example for students to refer to. 2. The first 'we do' example can be checked at each step. 3. Use base ten materials, before removing that support.* 4. Use multiple examples.	* Effective formative assessment here will inform your progress through the steps of the lesson, ensuring that students have understood before adding each level of difficulty.
Independent practice ('You do') – adding 100		
How will students display that they have mastered the skills and content? How will you work with students to provide support and to gain insight into their learning?	**Independent:** Encourage all students to work on the independent practice questions, as it helps to produce fluency. 'Practice makes permanent'. **Small group:** 1. Some students may need more guided practice. Gather these students into a small group and work through more examples using base ten blocks before they have the opportunity to work independently. 2. Extension work – Students can work on examples where more than one hundred is added, or find missing numbers from the written equations, such as '3456 + ? = 3956'.	** Formative assessment from the previous steps will continue to inform the pace and level of detail of your instruction. Aim for mastery over simply covering the content. The repetition of the instructional steps from the earlier part of the lesson reduces cognitive load for the students and allows for focus on the learning objective.
Adding 1000		
	The same process is followed as for adding 10 and 100.**	

Lesson stage	Tasks What are the specific classroom or instructional activities that you and your students will use in each stage?	Monitoring student learning
Guided practice ('We do') – partitioning		
What worked examples will you provide students? What scaffolds and instructional supports will you introduce, and how will students use these? How will students work together to progress their skills and understanding?	**Whole class:** 1. Use the introductory quiz questions on partitioning to assess how much time you need to give to this step.* 2. You may not need an 'I do' or 'you do' step if students have demonstrated mastery of this part of the lesson. **Small group:** If needed, set questions for independent work for some students, as you work with any students who require further guided practice to achieve understanding.	

* Partitioning was the subject of a previous lesson in this unit, so this should be a quick revision of the process to activate prior knowledge.
If, based on the formative assessment, this requires further revision for your students, it will be necessary to spend the time on doing it well, to avoid lack of understanding in the next sections.

Lesson stage	Instructional activities What are the specific classroom or instructional activities that you and your students will use in each stage?	Monitoring student learning
Adding 10, 100 and 1000 with regrouping		
	Whole class: 1. This follows a similar format to the initial steps of adding without regrouping.* 2. Continue to use of base ten blocks to model the process of regrouping tens into hundreds, and so on. 3. Use worked examples with the digit 9 in the focus unit place, but ensure that the next digit is 8 or lower, to restrict the regrouping to one column at a time initially. 4. Scaffolds and supports are gradually removed as students move towards mastery of the process. **Small group:** 1. Continue to give additional guided practice to students who require it; manipulatives such as base ten blocks may be useful here, as well as worked examples being available for reference. 2. The final slide, with multiple regrouping steps, provides an opportunity for extension. Students can work through additional problems where the digit 9 occurs in more than one place value.**	

* Adding without regrouping was repeated for each place value, to allow for repeated exposures to the simpler process. Once that is understood, the additional level of difficulty of regrouping is introduced and taught explicitly at each step.

** Students who achieve early mastery should be challenged in their learning. The formative assessment identifies these students, so that they can be provided with enrichment opportunities.

Lesson stage	Instructional activities What are the specific classroom or instructional activities that you and your students will use in each stage?	Monitoring student learning
Lesson summary		
How will you show students how far they have come in the lesson? How will you review their learning? How will you help students reflect on, or summarise the most important parts of their learning?	1. Review the success criteria from the lesson, pointing to specific skills demonstrated by the students.* 2. Use the exit quiz to get a sense of what students know and are able to do as a result of the lesson.**	What evidence will you gather from your students to understand what you may need to review next lesson?

* Reviewing the success criteria is important – what did we do in the lesson and what do we know and do as a consequence of our time together?

Learning retention is increased when this awareness of learning is brought to the front of the students' minds.

** This is a final attempt to gain information about what the students can do as a result of the lesson (formative assessment). Exit quizzes can be performed in a number of ways: as a paper-based task or as a mini whiteboard task. The quiz has two purposes – it lets students test their understanding of the concepts and it allows me to deepen my understanding of what they have understood from the lesson.

This information also informs future planning.