For school teachers

Lesson plan – Year 3 maths

Unit 1, Lesson 7: Rounding 3- and 4-digit numbers to the nearest 10 and 100

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 seventh 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, ordering and comparing number values, addition and subtraction of 10, 100 and 1000.

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

Learning objectives

To understand how to round 3- and 4-digit numbers to the nearest 10 and 100.

Success criteria

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

- identify multiples of 10
- round 3 and 4-digit numbers to the nearest 10
- identify multiples of 100
- round 3- and 4-digit numbers to the nearest 100.

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:

- they have to round to 10 before rounding to 100
- that a number cannot be a multiple of 10 if it has a 0 in the 10s place; for example, 3200
- that a number cannot be a multiple of 100 if it has a zero in the hundreds place; for example, 3000
- that multiples of 10 only go as far as the times table values they have learned; for example, 100 or 120
- think that a multiple of 100 cannot also be a multiple of 10; for example, 5200.

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 of prior knowledge about place value, including partitioning, adding and subtracting 10 and 100, and comparing number values.*** 1. Overview of keywords: a. Digit b. Numeral c. Integer d. Multiple e. Rounding.	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 provide information quickly. This could also be run as a quick mini whiteboard activity, with students showing their thinking.

Lesson stage*	**Tasks** What are the specific classroom or instructional activities that you and your students will use in each stage?	**Monitoring student learning****
(continued) 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?	2. Opening questions and ideas: a. Why do we need to know about rounding? b. What are multiples?**** c. Check the introductory quiz for responses to the partitioning questions.***** If students struggled with that, give some 4-digit numbers and have them identify the value of specific digits.	(continued) How will you gather evidence that shows you where your students are at in their learning?

**** These opening questions serve to activate prior knowledge, as well as focusing student attention on the learning objective and success criteria. By using questions, we can identify potential misconceptions, as well as engage students.

***** I am using the information that was gathered from the formative assessment to make decisions about what my next moves are, and to anticipate possible difficulties.

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') – multiples of 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. Rounding to the nearest 10 is broken into concrete steps, each of which has an I do, we do, you do cycle: a. multiples of 10 – 2 digits b. multiples of 10 up to 4 digits c. rounding up or down d. identifying possible multiples of 10 for target number e. rounding to the nearest 10.* 3. Direct teaching of multiples of 10. Show sequences of multiples of 10 using initially 2-digit numbers, before moving to 3 and 4 digits. Ask for choral responses from students as you count in sequences of 10s.**	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?

* 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 practise mastery of these points before removing scaffolds.

** I am introducing this idea with explicit instruction. However, if you know that your students have secure knowledge of this already, it can be a quick activity for knowledge retrieval, with the next steps condensed into a shorter sequence.

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') – multiples of 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. Identify multiples of 10. Show sequences of multiples of 10, for students to provide the missing numbers in the sequence 2. Use mini whiteboards for the students to provide their responses.* 3. Have students give a response for each missing number at a time, then work towards larger groups of numbers.**	How will you check for understanding and correct any errors or misconceptions before allowing students to independently practice?

* I find this to be a relatively quick way to assess the group's understanding. This is helpful for determining the timing of moving on to independent work.

** This gradual release of responsibility supports students to gain mastery of the task in a controlled manner and allows you to continually assess their understanding.

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
Independent practice ('You do') – place value chart representation		
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:** Ask all students to identify the multiples of 10 from a given set.* **Small groups:** 1. Some students may need more guided practice. Gather these students into a small group and reteach the conditions required for a number to be a multiple of ten, as well as going through more worked examples as needed. Extra practice is available on the support worksheet. 2. Students who have mastered the concept can create their own sequences of multiples of 10 from larger numbers.**	What formative assessment will you gather to provide feedback to your students?

* When working in a classroom setting, we would move to independent practice, with students working on their own. I would gather together some of the students who require more guided practice and work on one or two more examples before releasing them to independent practice.

Sometimes the temptation is to skip through these types of practice assuming the students will be comfortable with them. However, fluency is important, and a quick activity can be helpful in developing that. Check everybody – sometimes there are some surprises where some students unexpectedly have difficulty.

** Students are explicitly taught and achieve mastery of the learning before they are released to apply that knowledge to a more open-ended task. They are not expected to 'work it out' for themselves, which can take up excessive time and lead to errors, gaps and misconceptions in their understanding.

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') – rounding to the nearest 10		
	Whole class: 1. Refer back to the learning intention and success criteria. 2. Rounding to the nearest 10 is broken into concrete steps, each of which has an 'I do, we do, you do' cycle: a. rounding up or down b. identifying possible multiples of 10 for the target number c. rounding to the nearest 10. 3. Direct teaching of which numbers round up and which round down, using a number line as a visual support. 4. Have students give verbal responses of 'up' or 'down', or indicate with a physical action such as pointing, when given a number to round.*	

* These are simple ways of assessing students' responses, so that you can monitor understanding, particularly for numbers which may be more difficult (for example, those with 5 ones).

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') – rounding to the nearest 10		
	Whole class: 1. The main scaffold used in this lesson is the use of number lines to clarify which numbers round up and which round down. a. Show a number line with a range of 10; for example, 40–50. b. Have students identify which numbers round up and which round down. c. Check their responses (choral responses counting or written on mini whiteboards). d. Provide a number to be rounded. e. Identify the multiple of 10 before and after the number and point out how to identify the options; in other word, the 10s digit is the first option, one more 10 is the second option. f. Include numbers with 0 and 5 in the ones place (this is usually more challenging for students to round). 2. Gradually increase the size of the numbers used and ask students to work out the possible multiples of 10 themselves. 3. Begin to remove the scaffolds, so that you are working together on rounding 4-digit numbers without number lines.*	

* Breaking the task down into even smaller steps ensures that students are presented with 'bite-sized chunks' that they can successfully learn.

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') – rounding to the nearest 10		
	Independent: Encourage all student to work on their independent practice, as it helps to produce fluency. **Small groups:** 1. Some students may need more guided practice. Gather these students into a small group and work through more examples before giving them the opportunity to work independently. They can use a worked example as a reference. 2. Students requiring further challenge can be given worksheet 7, where they are given a multiple of ten and have to identify the numbers that would round to that number.	

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') – multiples of 100		
	Whole class: 1. Refer back to the learning objective and success criteria. 2. Rounding to the nearest 100 is broken into concrete steps, each of which has an 'I do, we do, you do' cycle: a. multiples of 100 b. rounding up or down c. identifying possible multiples of 100 for the target number d. rounding to the nearest 100. 3. Direct teaching of multiples of 100. Show sequences of multiples of one hundred. Seek choral responses from students as you count in sequences of hundreds. 4. Refer to regrouping (covered in previous partitioning lesson) as a way of naming 4-digit numbers as hundreds.*	

* Activating prior knowledge is a key component of explicit instruction. It forms connections between concepts and skills, increasing knowledge retention and the ability to use the information flexibly.

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') – multiples of 100		
	1. Give students a set of 3- and 4-digit numbers from which to identify the multiples of 100, which they can show on mini whiteboards, or by indicating by raising their hand when you point to a multiple. 2. Once you are confident students understand, release them to independent practice.*	
Independent practice ('You do') – multiples of 100		
	1. Ask all students to identify the multiples of 100 from a given set. 2. Extension work – students can make multiples of 100 from a given set of single digits, which includes at least 2 zeroes.	

* This may be a short sequence if the students demonstrate understanding of multiples of 100, or an extended sequence with multiple worked examples if it is a less familiar concept for them. This is where the formative assessment is so valuable, as it enables you to target teaching time where it is needed most, and not waste time if students already know the content, or skip an important step in the learning process.

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') – rounding to the nearest 100		
	Whole class: 1. Refer back to the learning intention and success criteria 2. Direct teaching of the range of numbers which round up and which round down, using a number line as a visual support. 3. Have students give verbal responses of 'up' or 'down' when given a number to round. 4. Address the misconception that they should round to the nearest 10 first, then the nearest 100. Demonstrate how that can change the final answer.*	
Guided practice ('You do') – rounding the nearest 100		
	Whole class: 1. Repeat the same steps as used for rounding to 10. 2. Work in ranges of numbers which round up or down, rather than listing each individual number. 3. Gradually remove the scaffolds, so that you are working together on rounding 4-digit numbers without number lines.	

* Being aware of this common misconception means you can address it before students have the chance to develop an incorrect process for working out the rounding. Being clear about the reason it is not correct also deepens their understanding.

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') – rounding to the nearest 10		
	Independent: Encourage all student to work on their independent practice, as it helps to produce fluency. **Small groups:** 1. Some students may need more guided practice. Gather these students into a small group and work through further examples before giving them the opportunity to work independently. 2. Extension work – students requiring further challenge can be given the extension worksheet. This worksheet gives multiples a number would round to, and asks students to work out the possible options for the starter number.	

Lesson stage	Tasks 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..