**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 14 | STRAND: Number and Algebra | **SUB-STRAND:** Fractions and Decimals | **WORKING MATHEMATICALLY:** MA2-1WM; MA2-3WM |
| OUTCOMES: MA2-7NA | **Represents, models and compares commonly used fractions and decimals**  |
| **CONTENT:**  | **Recognise that the [place value](http://syllabus.bos.nsw.edu.au/glossary/mat/place-value/?ajax" \t "_blank" \o "Click for more information about 'place value') system can be extended to tenths and hundredths, and make connections between fractions and [decimal](http://syllabus.bos.nsw.edu.au/glossary/mat/decimal/?ajax" \t "_blank" \o "Click for more information about 'decimal') notation** * use a calculator to create patterns involving decimal numbers, eg 1 ÷ 10, 2 ÷ 10, 3 ÷ 10 (Communicating)
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Present students with a calculator and ask them to complete basic functions (adding, subtracting, dividing and multiplying).
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| WARM UP / DRILL | * Round the world: One student stands behind another, using the IWB file Dice High low click both the dice the student who says the correct highest decimal first wins.
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| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  |  |
| QUALITY TEACHING ELEMENTS | **INTELLECTUAL QUALITY** | **QUALITY LEARNING ENVIRONMENT** | **SIGNIFICANCE** |
| * Deep knowledge
* Deep understanding
* Problematic knowledge
* Higher-order thinking
* Metalanguage
* Substantive communication
 | * Explicit quality criteria
* Engagement
* High expectations
* Social support
* Students’ self-regulation
* Student direction
 | * Background knowledge
* Cultural knowledge
* Knowledge integration
* Inclusivity
* Connectedness
* Narrative
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| RESOURCES | Calculators  |

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| Shh it’s a secret: This is in the independent activity but will need to be modelled before the students are asked to complete independently. See the activity for full details.* **Generating decimal number sequences on a calculator:** This is in the independent activity but will need to be modelled before the students are asked to complete independently. See the activity for full details.
 | LEARNING SEQUENCERemediationS1 or Early S2 |  |
| LEARNING SEQUENCES2 | * **Shhh! It’s a secret!:** Organise the students into pairs and provide each pair with a basic calculator. The first student enters a number onto the calculator without his or her partner seeing the number. It may be advisable to begin with a two-digit number. After entering the number the student then needs to press the following keys: Press ÷ Press ÷ Press = Keep pressing = until a “0” is displayed. The first student then hands the calculator to his or her partner who tries to guess the original number and enters it into the calculator. He or she then presses = and a decimal notation will be displayed. If this decimal notation is greater than “1’, then the guessed number was greater than the secret number. If the decimal is less than “1”, then the guessed number was less than the secret number. When the secret number is guessed correctly and entered, then a “1” will be displayed.
* **Generating decimal number sequences on a calculator:** Students use the constant function on a calculator to generate decimal number sequences. For example, by repeatedly adding 0·2, students generate the sequence 0·2, 0·4, 0·6, 0·8, 1, 1·2, 1·4 and so on. They give the sequence a title, and look for patterns. Ask students if it is similar to any other sequences with which they are familiar. They note its similarity to the sequence of multiples of two. Ask students to predict what the sequence generated by repeatedly adding 0·3 will be.
* **Wishball** The wishball series of learning objects encourages thinking about place value. It also provides opportunities for mental addition and subtraction. Students try to reach a target number by adding or subtracting in fewer than 20 moves. The spinner randomly serves up a digit. Before students add or subtract they firs choose a place value to assign to the digit. So, if 2 is the digit served up, students can make it 2.0, 0.2, 0.02 or 0.002.
* <https://detwww.det.nsw.edu.au/curr_support/maths_prog/prog_support/decimals/decimal_learnobj.html>
* Investigation: Have students see what decimal patterns they can create independently using calculators. Students make note of each pattern they create.
* ASSESSMENT: The assessment is informal and will be based on observations of all lessons.
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| LEARNING SEQUENCEExtension Late S2 or Early S3 |  |
| **EVALUATION & REFLECTION** | **Student Engagement: Resources:****Achievement of Outcomes: Follow-up:** |

* All assessment tasks should be written in **red** and planning should be based around developing the skills to complete that task.
* Assessment rubrics or marking scale should be considered.