**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 10 | STRAND:Number and Algebra | **SUB-STRAND:**  Fraction 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 systems can be extended to tenths and hundredths, and make connections between fractions and decimal notation.**   * State the place value in decimals of up to two decimals places * Model, compare and represent decimals of up to two decimal places | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | * Display decimal numbers to 2 decimal places written as numbers eg 1.03 and displayed as 10x10 grids. Students recognise and match the number in decimal form to the number in picture form. * **Decimal Matching Cards:**  <DecimalModelMatchingCards.pdf> | | |
| WARM UP / DRILL | | * **IWB activity: Convert common fractions to decimals:**   <http://www.sheppardsoftware.com/mathgames/fractions/FractionsToDecimals.swf> | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | Newman’s Problem Investigation: If 58 out of 100 students in a school are boys, then write the decimal for the part of the school that consists of boys. What would the decimal be for the part of the school that is girls? | | |
| 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 |
| RESOURCES | | Decimal Matching Cards pdf, Interactive Whiteboard, base 10 supplies (flats, longs and ones), decimal cards, string for clothes line, individual decimal cards, 10 x 10 grids, Nasty game, greater than and less than symbols, calculators  **Decimal numbers on bunting:**  [http://www.sparklebox.co.uk/previews/9901-9925/sb9915-decimal-numbers-bunting.html#.VA1r\_\_mSySp](http://www.sparklebox.co.uk/previews/9901-9925/sb9915-decimal-numbers-bunting.html%23.VA1r__mSySp) | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| Introduce key vocabulary - decimal, decimal point, tenths place, hundredths place  * **Representing Tenths and Hundredths using base 10 blocks** – introduce that a flat as a whole, longs as tenths and units are hundredths. Model making decimal numbers using these materials – students work out the number and record. * **Clothes Line** – using decimal cards students place onto a decimal clothes between 0 and 1 in order. Discuss where 0.5, 0.25 and 0.75 should go first and why. * **Class number line** – on each student’s desk place a decimal number card to 2 decimal places. Work together as a class to order the numbers from smallest to biggest – discuss ways to work this out as a class. | LEARNING SEQUENCERemediationS1 or Early S2 | * Use base 10 blocks to represent decimal numbers to 2 digits eg. 1.15 is 1 flat, 1 tenth and 5 units. Record as decimals. Emphasise the importance of the zero in the tenths as a place holder. |
| LEARNING SEQUENCES2 | * Use 10x10 grids to colour decimals numbers from 0 to 1. * **Investigation:** Use base 10 materials to model decimal numbers to 2 decimal places from 0 to 1and record in correct formation. Emphasise the importance of a zero in the tenths place as a place holder. * Decimal sorting – prepare a set of decimal cards for pairs. Students sort into groups - near 0, about ½ and near 1. * Provide decimal numbers on cards – students choose two and select which is larger and explain why. Use the greater than and less than symbols to make a number sentence eg. 0.75 < 0.8. * Play the “Nasty Game” for decimal place value (adapted from Counting On Level 1 and 2)– in groups of 2-4 students. Students have a recording sheet for ones, tenths and hundredths. Each student rolls a 0-9 dice and puts the number they roll onto the chart somewhere. The winner is the student who ends up with the largest number. After playing students order the numbers from largest to smallest. * **Nasty Game Instructions:**   <http://www.curriculumsupport.education.nsw.gov.au/secondary/mathematics/assets/pdf/counting_on/co_supp/co_107.pdf>   * **Nasty Game Score Card:**   <http://www.curriculumsupport.education.nsw.gov.au/secondary/mathematics/assets/pdf/counting_on/co_supp/co_108.pdf> |
| LEARNING SEQUENCEExtensionLate S2 or Early S3 | * Generating decimal number sequences – students use the constant function on a calculator to generate decimal number sequences. Eg. by repeatedly adding 0.2 students generate the pattern 0.2, 0.4, 0.6, 0.8, 1.0, 1.2 and so on. They give the sequence a title and look for patterns. Ask students if any other sequences are familiar – eg multiples of two. Ask students to predict what a sequence with 0.3 would look like. |
| **EVALUATION & REFLECTION** |  |

* 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.