**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 7 | STRAND: Number and Algebra | **SUB-STRAND:** Fractions and Decimals | **WORKING MATHEMATICALLY:**  MA3-1WM, MA3-2WM & MA3-3WM |
| OUTCOMES: MA3-7NA | | **Compares, orders and calculates with fractions, decimals and percentages.** | | |
| **CONTENT:** | | **Compare fractions with related denominators and locate and represent them on a number line**   * Find equivalent fractions be re-dividing the whole, using diagrams and number lines, eg. * Record equivalent fractions using diagrams and numerals. * Develop mental strategies for generating equivalent fractions such as multiplying or dividing the numerator and the denominator by the same number. | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | * Drawa diagram to show how ¾ is equivalent to 12/16. | | |
| WARM UP / DRILL | | * Play an interactive multiplication game as a class on the board.   <http://www.ideal-resources.com.au/gallery/images/iRMwipeout2_eval.swf> | | |
| 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 |
| RESOURCES | |  | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| * Begin the lesson by discussing with the class what they understand an equivalent fraction to be. Record the answers to review again later. * Watch the YouTube video to help the students make more sense of equivalence <http://www.youtube.com/watch?v=wL4hICyMLKU>   The best way to think about equivalent fractions is that they are fractions that have the **same overall value**. Equivalent fractions represent the same part of **a whole**.  For example, if we cut a pie exactly down the middle, into two equally sized pieces, one piece is the same as one half of the pie.  And if another pie (the same size) is cut into 4 equal pieces, then two pieces of that pie represent the same amount of pie that 1/2 did. So we can say that 1/2 is equivalent (or equal) to 2/4.   * Introduce the formula for equivalent   fractions  [http://www.helpwithfractions.com/wp-content/themes/website/data/php/timthumb.php?src=wp-content/uploads/2012/06/equivalent-rule.png&q=90&w=135](http://www.helpwithfractions.com/wp-content/uploads/2012/06/equivalent-rule.png) | LEARNING SEQUENCELate Stage 2 Early Stage 3 | * Equivalent Fractions interactive game (matching fractions)   <http://www.sheppardsoftware.com/mathgames/fractions/memory_equivalent1.htm>  <http://www.abcya.com/equivalent_fractions_bingo.htm>   * <http://www.helpingwithmath.com/resources/games/fraction_game4/equivalent01.html> * Print out equivalent fraction dominoes   <http://www.helpingwithmath.com/printables/others/4nf1Fraction-Dominoes03.htm>  <http://www.helpingwithmath.com/resources/games/fraction_game3/matching.html> |
| LEARNING SEQUENCES3 | * Give students a list of fractions to use the equivalent formula with and have them check if the rule works. If they are not equal, then they are not equivalent. * Complete the quiz at the bottom of the page   <http://www.mathsisfun.com/equivalent_fractions.html>  <http://www.bbc.co.uk/bitesize/ks2/maths/number/equivalent_fractions/play/>  <http://mrnussbaum.com/fractiondolphins/>  <http://www.aaamath.com/fra42ax2.htm>   * <http://www.sheppardsoftware.com/mathgames/fractions/equivalent_fractions_shoot.htm> * Print out equivalent fraction dominoes   <http://www.helpingwithmath.com/printables/others/4nf1Fraction-Dominoes02.htm>   * Play an equivalent fraction game in pairs where 2 dice are rolled to make the fraction and the students have 2 minutes (or whatever time is chosen) to write as many equivalent fractions for the fraction as possible. Person with the most equivalents wins. * INVESTIGATION - students given a pack of cards and wok in pairs. Each pair turns over 2 cards and makes it into a proper fraction. The task is then to find as many equivalent fractions for that fraction as they can (the number is infinite). * ASSESSMENT – observation of the Investigation. Take anecdotal notes. |

* 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.

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| * Practice examples of the formula, eg      * To be able to convert one fraction to another fraction you need to change the numerator and the denominator. **The rule is – whatever you do to the Numerator, you MUST do to the Denominator. It is always MULTIPLYING or dividing (never adding)** * Watch the you tube video to help explain this rule <http://www.youtube.com/watch?v=Bfl4ukVLyoc>  Put some examples on the board and as a class work out the equivalent fraction. Then use the formula to check that they are equivalent | LEARNING SEQUENCES4 | * ASSESSMENT - <http://www.math-aids.com/cgi/pdf_viewer_3.cgi?script_name=equivalent_fractions.pl&difficult=2&shuffle=1&language=0&memo=&answer=1&x=125&y=23> * Game 1 – Levels 4 and 5   <http://www.sheppardsoftware.com/mathgames/fractions/equivalent_fractions_shoot.htm>   * <https://www.mangahigh.com/en/maths_games/number/fractions_percentages_and_ratio/equivalent_fractions_> * Complete worksheets 3, 4 and 5   <http://www.dr-mikes-math-games-for-kids.com/simplifying-fractions-worksheets.html> |
| **EVALUATION & REFLECTION** | **Student Engagement: Resources:**  **Achievement of Outcomes: Follow-up:** |

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