**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 13 | STRAND: Number and Algebra | **SUB-STRAND:** Fractions and Decimals 2 | **WORKING MATHEMATICALLY:**  MA3-1WM MA3-2WM MA3-3WM |
| OUTCOMES: MA3-7NA | | **Compares, orders and calculates with fractions, decimals and percentages.** | | |
| **CONTENT:** | | **Add and subtract decimals, with and without digital technologies, and use estimation and rounding to check the reasonableness of answers (ACMNA128)**   * Add and subtract decimals with the same number of decimal places, with and without the use of digital technologies. * Add and subtract decimals with a different number of decimal places, with and without the use of digital technologies. * Relate decimals to fractions to aid mental strategies (Communicating) * Round a number of up to three decimal places to the nearest whole number. * Use estimation and rounding to check the reasonableness of answers when adding and subtracting decimals. * Describe situations where the estimation of calculations with decimals may be useful, eg to check the total cost of multiple items when shopping (Communicating, Problem solving). * Solve word problems involving the addition and subtraction of decimals, with and without the use of digital technologies, including those involving money. * Use selected words to describe each step of the solution process (Communicating, Problem Solving) * Interprets a calculator display in the context of the problem, eg: 2.6 means $2.60 (Communicating) | | |
| **ASSESSMENT FOR LEARNING**  **(PRE-ASSESSMENT)** | | * Make 1   Students are given 1 point.  Give students a decimal number (starting with one decimal place) between 1 and 2.  Students need to estimate what number they need to subtract to it to equal 1 exactly.  eg: students are given the number 1.7, what do they need to take away from it to make 1.  1.7 - \_\_\_ = 1.  Get student to check using a calculator.  If students are correct they stay on 1. If they are incorrect they take away the difference from their score.  The game continues till one player reaches “0”  This game can be extended by using numbers with two or three decimal places and increasing the final answer to 5 or 10. | | |
| **WARM UP/ DRILL** | | * Guess my decimal:   Give students a number between 1 – 5 and ask students to name two numbers with one, two or three decimal places that can be subtracted from the first number to equal “0”. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | How many ways can you solve this problem? \_.\_ \_ - \_.\_ \_ = 7 | | |
| 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 | | Whiteboards, calculators, paper, pencils.  Mathletics workbooks – fractions and Decimals  Studyladder  <http://www.mathsisfun.com/decimals.html>  <https://www.youtube.com/watch?v=0GL87_AEVUg>  <http://www.themathpage.com/arith/decimals.htm>  <http://www.bbc.co.uk/bitesize/ks2/maths/number/decimals/read/1/> | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| What is a Decimal? <https://www.youtube.com/watch?v=0GL87_AEVUg>  <http://www.bbc.co.uk/bitesize/ks2/maths/number/decimals/read/1/>  <http://www.mathsisfun.com/decimals.html>   * **Teach and Review:**   **Mathletics workbook pgs 35-36**   * Model how to subtract decimals numbers, making sure the columns and decimals line up. * Explain that this is exactly the same as with whole numbers BUT the decimal point has to stay in the same place. * Demonstrate trading with decimals across the decimal point. * **Define and reinforce metalanguage used in this unit:** Students should be able to communicate using the following language: decimal, decimal point, digit, place value, decimal place, tenth, hundredth, thousandth | LEARNING SEQUENCERemediationS2 | * Review what a decimal number looks like. * How does it relate to fractions and percentages? * What does it look like on a 100 square? * Mathletics Assessment task Series G pg 49-50 * <http://illuminations.nctm.org/ActivityDetail.aspx?ID=80> * Create fractions, decimals and percentages and compare. |
| LEARNING SEQUENCES3 | * **Card Subtraction:**   In pairs, students are given a pack of playing cards with all tens and higher removed. The aces count as 1 and the jokers count as 0. Student A turns over up to 5 cards and makes decimal number with up to three decimal places. Student B turns over up to 5 cards and makes a decimal number of up to three decimal places. Student A subtracts the larger number from the smaller number and then student B uses a calculator to check the answer is correct. The students continue, alternating roles.   * **Subtracting to three:**   Write the following problem on the board:  “Choose three decimal numbers that, when subtracted from each other equal three. At least one of the numbers must have a different number of decimal places eg: 7.6 - 0.04 - 4.20 = 3  Record as many different solutions as you can find.  How many different solutions can you find?   * Decimals Worksheet pg. 199 Targeting Maths Yr 6 * **Interactive resources:**   Studyladder  http://www.mathsisfun.com/decimals.html  <http://www.bbc.co.uk/bitesize/ks2/maths/number/decimals/read/1/>   * Students should be encouraged to talk about what they are doing, how they are working out the problems and what they need to work on to consolidate their own learning * Assessment task: Mathletics Booklet pg 56-57 (can be done at the end of the 2 week block) |
| LEARNING SEQUENCEExtensionS4 | * **What Number am I?**   Mathletics Workbook pg 44   * Problem solving – students work through a number of word problems involving Decimal numbers. |
| **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.