**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 5 | STRAND: Number and Algebra | **SUB-STRAND:** **Fractions and Decimals 1** | **WORKING MATHEMATICALLY:** **MA3-1WM, MA3-2WM, MA3-3WM** |
| OUTCOMES: | **MA3-7NA- Compares, orders and calculates with fractions, decimals and percentages.** |
| **CONTENT:**  | **Compare, order and represent decimals*** compare and order decimal numbers of up to three decimal places, eg 0.5, 0.125, 0.25
* interpret zero digit(s) at the end of a decimal, eg 0.170 has the same value as 0.17
* place decimal numbers of up to three decimal places on a number line between 0 and 1
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Play the place value card game with tenths, hundredths and thousandths. In pairs students pick up a playing card and place it in their place value chart. Once each student has got three cards they read the number they have e.g. 0.374, and compare it to their partner to see whose was higher.
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| WARM UP / DRILL | 1. One player deals the cards evenly between the players. Players place their cards in a stack facedown in front of them.2. Each player turns over three cards (use the number of cards appropriate for the age and ability of your class).3. Players turn over the first card, leave the second card face down (it is the decimal) and turn over the third card.4. Players add/subtract/ round/compare their decimals with their partner’s.5. The player with the greater number wins all the cards from that round and places them in a separate stack. 6. Play continues until all the cards have been used.7. The player with the most cards at the end of the round wins. |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | The price of a t-shirt was 25.45$.John paid with 50$ How much change did John get?A kg of bananas costs 2.40$.A kg of apples costs 3.55$. What s the price of 1 kg of bananas and 1 kg apples altogether?I earn 5.50$ per hour. I work 8 hours per day. How much will I earn after 5 days? |
| 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 | Dice, Cards  |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| * **Less than - more than**

Ask students to fill the boxes with some of the digits 0, 1, 2, ...8, 9 to make the following true. The digits do not have to be the same and can be reused.**Task 1****Task 2**These are open-ended tasks with many correct answers. Encourage students to describe the range of answers in general terms. For example, in the first case, if the digit in the ones place (in the number on the left) is 0, 1 or 2, then the digits in the next two places (tenths and hundredths) can be anything (because it is always true that 0.XX < 3.X, and 1.XX < 3.X, and 2.XX < 3.X). However, if the digit in the ones place (in the number on the left) is 3, then the digits in the tenths place need to be considered carefully; the tenths digit on the left needs to be smaller than the tenths digit on the right.It is important to review the students' answers carefully, as those students using incorrect strategies such as *longer-is-larger* or *shorter-is-larger*, need to know that they have something to learn.* **Comparing numbers in Decimal Form**

  To compare two numbers in decimal notation, start at the left and compare corresponding digits moving from left to right. If two digits differ, the number with the larger digit is the larger of the two numbers. To ease the comparison, extra zeros can be written to the right of the last decimal place.**Example 1**Which of the two numbers is larger: 2.109 or 2.1There is a tie in the ones place; a tie in the tenths; a tie in the hundreths; however 9 > 0. Thus, 2.109 > 2.1**Example 2**Which of the two numbers is larger: 2.04 or 2.039There is a tie in the ones place; a tie in the tenths; however, 4 > 3. 2.04 > 2.039 | LEARNING SEQUENCERemediationS2 or Early S3 | * Two Decimal Places Game
* The teacher makes a die writing a decimal (between 0 and 1) to two places on each face. Students use a 10 × 10 grid as a score sheet. Students take turns to throw the die and colour the appropriate section on their grid. The winner is the first player to colour their 10 × 10 grid completely. Variation: Students can make their own dice
* Biggest or Smallest

The teacher places cards with the digits 0 to 9 into a bag. In pairs, students randomly select two cards from the bag. Students use the digits to make a decimal number less than 1 eg if 5 and 2 are selected the students record 0.25. Students use the two digits to make a new decimal ie 0.52.Possible questions include: which decimal is larger? how do you know? how can you show this?* The number cards are replaced and the activity repeated.
* Students record the decimal numbers on a number line.
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| LEARNING SEQUENCES3 | * Students place decimal cards onto a blank number line, flip the number line over at the end to see how close the students were.
* Card Dash: Throw cards with decimals on it into the air students have to place all the cards in order on a number line. First team to complete their number line win.
* 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>  |
| LEARNING SEQUENCEExtension Early S4 | * Equivalence

<http://www.ictgames.com/equivalence.html>* Card Dash

Have loads of cards made up of FDP with equivalences e.g. 0.5, 1/2, 50/100/, 50%, half a shaded circle etc. You then get all the children into teams (4 - house colours) and literally throw all the cards in the air (works well in the hall). The children then work together to try and match together equivalents. The other children time the event, and generate excitement. This activity can be used as an exciting launch into FDP, and it really motivated the children....noisy, but fun. The children like to compete for the fastest time. |
| **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.