**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 19 | 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:**  | **Find a simple fraction of a quantity where the result is a whole number, with/out the use of digital technologies(ACMNA127)**\* calculate unit fractions of collections, with and without the use of digital technologies\* describe the connection between finding a unit fraction of a collection and the operation of division (Communicating, Problem Solving) \* solve word problems involving a fraction of a collection/quantity  |
| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * If I were given ½ of a packet of 12 lollies, how many would I be given?
* If I were given ¼ of a packet of 12 lollies, how many would I be given?
* If I were given 1/3 of a packet of 12 lollies, how many would I be given?
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| WARM UP / DRILL | * Count by halves from 0
* Count by quarters from 0
* Count by halves from 7
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| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | If one fifth of all children in school had green shoes, how many children owned green shoes if there were 320 children at the school? How many children did not own green shoes? |
| 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 | <http://www.mathsisfun.com/definitions/unit-fraction.html><http://www.topmarks.co.uk/Flash.aspx?f=EggFractions><http://www.bbc.co.uk/skillswise/game/ma17frac-game-unit-fractions-method>Page 21 – Mathletics Workbook<http://www.snappymaths.com/counting/fractions/resources/unitfractionsofsets1.pdf> |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| Use the ‘Assessment for Learning’ questions and write the algorithms on the IWB that represent the problems. E.g. ½ x 12 = 6, ¼ x 12 = 3. Ask groups of three to discuss and explain the mathematical link to division in regards to the denominator. Discuss link and get groups of three to practise with other questions on whiteboard (inc. worded prob) Note: Only do with numerator as a 1 (unit fractions)* <http://www.mathsisfun.com/definitions/unit-fraction.html> Use this website to explain what a unit fraction is.
* <http://www.topmarks.co.uk/Flash.aspx?f=EggFractions> Use the section ‘fractions of an amount to practise the skill as a whole class. Discuss what may change when the numerator changes.
* Students should be explicitly taught the following language: whole, equal parts, half, quarter, eighth, third, sixth,**twelfth**, fifth, tenth, hundredth,**thousandth**,**one-thousandth**, fraction, numerator, denominator, mixed numeral, whole number, number line, **proper fraction**,**improper fraction**, decimal, decimal point, digit, place value, decimal places.
 | LEARNING SEQUENCERemediationS2 or Early S3 | * <http://www.topmarks.co.uk/Flash.aspx?f=EggFractions> Use this website as a group to explain the sharing aspect of division with unit fractions
* Given children a range of questions and use the site <http://www.bbc.co.uk/skillswise/game/ma17frac-game-unit-fractions-method> to answer the first few questions. Explain the method used and children complete question sheet.
* (Page 21 – Mathletics Workbook – top half)
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| LEARNING SEQUENCES3 | * In pairs children complete the sheet and use a calculator to test their answers.
* (Page 21 – Mathletics Workbook - full)
* <http://www.snappymaths.com/counting/fractions/resources/unitfractionsofsets1.pdf>
* Investigation: Using a deck of cards (no pictures), children turn over a number (the answer) and then create a question to match the card. E.g. If a child turns a 4, their question could be ¼ of 16 = 4. Tell children once they use ¼ they are only allowed to use it once again therefore requiring them to use 1/3, ½, 1/5 etc. The child can keep the card if their question is correct. The children add cards together and the one with the highest score wins. Observe for assessment. LOW can just use ½, ¼, 1/3, 1/5. HIGH can only use each unit fraction once.
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| LEARNING SEQUENCEExtension Early S4 | * http://www.snappymaths.com/counting/fractions/resources/unitfractionsofsets2.pdf
* Place some questions on the IWB that do not divide evenly into the whole number. Children work in pairs to complete the questions. Ask the groups to discuss how they got their answers and what they did with left-overs. Children use IWB and this website to test answers http://www.bbc.co.uk/skillswise/game/ma17frac-game-unit-fractions-method
* (Page 21 – Mathletics Workbook- full)
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| **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.