**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 1 | STRAND: NUMBER & ALGEBRA | **SUB-STRAND:** FRACTIONS AND DECIMALS 2 | **WORKING MATHEMATICALLY:** MA2-1WM; MA2-3WM |
| OUTCOMES: MA2-7NA | **Represents, models and compares commonly used fractions and decimals.**  |
| **CONTENT:**  | **MODEL AND REPRESENT UNIT FRACTIONS, INCLUDING ONE HALF, ONE THIRD, ONE FIFTH AND ONE QUARTER AND THEIR MULTIPLES TO MAKE A WHOLE. (ACMNA058)*** Use fraction language in a variety of everyday contexts, e.g. the half-hour, one-quarter of the class.
* Model fractions with denominators of 2, 3, 4, 5 and 8 of whole objects, shapes and collections using concrete materials and diagrams.
* Recognise that as the number of parts that a whole is divided into becomes larger, the size of each part becomes smaller. (Reasoning)
* Recognise that fractions are used to describe one or more parts of a whole where the parts are equal. (Communicating, Reasoning)
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Prior knowledge: what is a fraction? A fraction is a part of a whole.
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| WARM UP / DRILL | * **Counting**: Skip counting by $^{1}/\_{2},^{1}/\_{3},^{1}/\_{4},^{1}/\_{5,}^{1}/\_{8}$, using a number line. Ensure to extend beyond 1.
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| 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
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| RESOURCES | Collections of items (for discrete fractions), such as beads, cubes, counters, small toys, seeds, pencils, paper clips, lollies, popsticks, etc.Paper circles or squares to be used as denominators, or sub-units.Paper, whiteboards, pencils, markers, etc. for recording.Paper plates, paper circles or counters to represent pikelets in investigative activity.Interactive Games and Resources at:[www.resources.woodlands-junior.kent.sch.uk/maths](http://www.resources.woodlands-junior.kent.sch.uk/maths)[www.rainforestmaths.com](http://www.rainforestmaths.com)[www.harcourtschool.com/activity/cross\_the\_river/](http://www.harcourtschool.com/activity/cross_the_river/) “Teaching Fractions: A Primary Concern” at:[https://portalsrvs.det.nsw.edu.au/f5-w-687474703a2f2f6c72722e636c692e6465742e6e73772e6564752e6175$$/LRRDownloads/14375/1/TeachingFractions.pdf](https://portalsrvs.det.nsw.edu.au/f5-w-687474703a2f2f6c72722e636c692e6465742e6e73772e6564752e6175%24%24/LRRDownloads/14375/1/TeachingFractions.pdf) |

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| `TEACHING AND LEARNING EXPERIENCES |
| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| * **Language:**

Whole, part, equal parts, half, quarter, eighth, third, fifth, one-third, one-fifth, fraction, denominator, numerator, whole number.* **Introduce the terms**:

Numerator:* The top part of the fraction.
* How many each person gets after sharing.
* The number of equal parts selected.
* NU = **n**ever **u**nder, always the top number

Denominator* The bottom part of the fraction
* How many parts into which the whole collection or unit is divided.
* The total number of equal parts.
* D = **d**own.
* Show the Numerator/Denominator Song on YouTube:

[www.youtube.com/watch?v=j7WhRMvlQwo](http://www.youtube.com/watch?v=j7WhRMvlQwo)* Demonstrate and explain that the denominator tells us the number of equal parts a whole has been divided into, the bigger the denominator, the smaller the piece of fraction.
* Demonstrate and explain the numerator as the number of equal fractional parts, e.g. 3/8 means 3 equal parts of 8. Show students how to write fractions, e.g. 1/5 to 5/5. Do students understand that, for example, 5/5 is one whole?
* **Comparisons of Fifths:**

Q: When is one fifth not one fifth? A: When it is one fifth of different wholes! For example, one fifth of a strip of paper is not the same size as one fifth of an apple. It is the proportion of the whole that is important, not the comparison between different wholes. This is important as students will be using different sized ‘wholes’ to look at fractions. | LEARNING SEQUENCERemediationS1  | * **Explain that a fraction is a part of a whole.**

Fractions are used in different ways:* To describe equal parts of a whole
* To describe equal parts of a collection of objects
* To denote numbers (e.g. ½ is midway between 0 and 1 on the number line)
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| LEARNING SEQUENCES2 | * **Activity 1:**

**Circular Fractions:** Students are given paper circles and asked to imagine that it is the top view of a cake. They use pencils or popsticks to show where they would cut the cake to have two, three, four, five and eight equal slices. Guide the students to use fractional language: I have cut my cake into fifths, thirds, etc.* **Activity 2:**

**Sharing**: Students form groups of 8 and share a slice of ‘bread’ (a picture) so that each person gets the same amount and there is none left over. Each group discusses how they shared the bread and names the pieces ‘eighths’. Students regroup into groups of 4, and then into groups of 2, and repeat the activity, naming the pieces ‘quarters’ or ‘halves’. Students compare the relative sizes of the fractions and then order them according to their size. This can be repeated for fifths and thirds. Students record their findings.* **Investigation:** Is 1/8 smaller or larger than 1/4? Explain your answer with examples.
* **Assessment:**

Using a ‘rod’ of 12 connected unifix cubes, can you split it into halves, quarters, thirds?Using a ‘rod’ of 15 connected unifix cubes, can you split it into halves, quarters, thirds, fifths, eighths? Why, or why not?Repeat using 16 cubes, 20 cubes, asking the student for explanations about the resulting fractions. |
| LEARNING SEQUENCEExtension Late S2 | * **Number Line Fractions:**

Distribute fraction cards, e.g. 1/8, 2/8, ¼, 3/8, 4/8, 2/4, ½, 5/8, ¾, 1 ¼, 1 ½, and place cards for 0 and 1. Discuss where to place ½, ¼ and 1/8 and have students peg cards on a string number line in the appropriate place and explain their reason why. Place all remaining cards. What happens when students try to put equivalent fractions on the number line? |
| **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.