**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| --- | --- | --- | --- | --- |
| TERM:  | WEEK: 12 | STRAND: Number and Algebra | **SUB-STRAND:** Multiplication and Division 2 | **WORKING MATHEMATICALLY:** MA2-1WM, MA2-2WM, MA2-3WM |
| OUTCOMES: MA2-6NA | **Uses mental and informal written strategies for multiplication and division.** |
| **CONTENT:**  | **Develop efficient mental and written strategies, and use appropriate digital technologies, for multiplication and for division where there is no [remainder](http://syllabus.bos.nsw.edu.au/glossary/mat/remainder/?ajax" \t "_blank" \o "Click for more information about 'remainder')*** Use mental and informal written strategies to multiply a two-digit number by a one digit number, including:
* using known facts
* multiplying by tens then units
* using an area model
* using doubling and repeated doubling
* using the relationship between multiplication facts
 |
| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Worksheet - Area multiplication

Show the cardboard unit square and the “7 x 3” rectangle. How many squares like this would you need to cover the rectangle completely? Provide the students with a copy of the grid and ask: Can you draw what the squares would look like? |
| WARM UP / DRILL | * **Salute!**

This game is played with a pack of cards. One player is the “dealer” who deals a single card to each player. When the dealer deals the cards he/she says “Salute” and the two other players hold the card up to their forehead so that the dealer and the other player can see the card. They aren’t allowed to look at the card dealt to themselves. The dealer multiplies the cards mentally and announces the total. The first player to calculate the number on their own card wins both cards. The winner is the one with the most cards by the end of the deck. The dealer plays the winner and the game continues.  |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | There were 6 cars in the car park and 6 people in each car. How many people were there altogether? |
| 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 | Pack of playing cards, Area model questions stencil, cards with written multiplication problems, dice, calculators, iPads or camera, 1cm grid paper. |

**TEACHING AND LEARNING EXPERIENCES**

|  |  |
| --- | --- |
| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
|  Explicitly teach * **WC** use mental and informal written strategies to multiply a two-digit number by a one-digit number, including: CCT

using an **area model**, eg 10 x 4 * Watch video on you tube demonstrating the area model – 2 digit x 1-digit

<https://www.youtube.com/watch?v=8LkEBiq3Xsg>2. Use base 10 blocks to model the area model **Start with 14 made up of a 10 and a 4 units**

|  |  |  |
| --- | --- | --- |
|   | 10 | 4 |
|   | 10 cuisenaire rod | 4 cuisenaire rod |

**5 times (5x) means we need five (5) 14s.**

|  |  |  |
| --- | --- | --- |
|   | 10 | 4 |
| 5  | 10 cuisenaire rod | 4 cuisenaire rod |
| 10 cuisenaire rod | 4 cuisenaire rod |
| 10 cuisenaire rod | 4 cuisenaire rod |
| 10 cuisenaire rod | 4 cuisenaire rod |
| 10 cuisenaire rod | 4 cuisenaire rod |

**5 x 14 = (5 x 10) + (5 x 4)**

|  |  |
| --- | --- |
| 5 x 10 =5 x 4 = | 5020 |
|   | 70 |

**Metalanguage:**groups of, rows of, lots of, totals, equals, makes, is the same as, factor, multiple, width, product, times, multiply, multiplied by, multiplication, multiplication facts, tens, ones, double, area  | LEARNING SEQUENCERemediationS1 or Early S2 | * Students complete activities based on creating arrays for various numbers.
 |
| LEARNING SEQUENCES2 | **Whole class instruction and modelled activities*** **Area model**

**GW** - Students roll dice to develop multiplication question (2 digit x 1 digit). Students model the algorithm using Base 10 blocks (as explicitly taught during modelled activities). Write the calculations required on a whiteboard/paper and place underneath the model. Check calculation with a calculator. Students use technology and take a photo of their models, then display in the class.* **GW** or **Independent**. - Students develop their own area model as a strategy. Using an area model, eg 27 × 8. Draw onto paper and display in the class. Check calculations with a calculator.

http://syllabus.bos.nsw.edu.au/assets/mathematicsk10/images/s2namd019.png**I** - Worksheets – Students complete worksheets showing area model questions.* **Investigation**

**GW** – Written ProblemsDistribute cards with written multiplication problems. Students work in pairs to solve the problems using the area model (on small whiteboards, paper).* **GW** Writing Problems.

Students write their own problems on a piece of paper, with the answer on the back (demonstrating the use of the area model). Students may roll dice to come up with initial multiplication algorithm that the problem will be based on.Assessment - Students complete worksheets based on the area model of multiplication. |
| LEARNING SEQUENCEExtensionLate S2 or Early S3 | * Extension

Students create multiplication area models showing 2-digit x 2-digit questions. |
| **EVALUATION & REFLECTION** | Were the students engaged in learning?Were resources appropriate/easily available? | Did group work allow for differentiation?Were students able to reflect on their learning? |

* All assessment tasks should be written in **red** and planning should be based around developing the skills to complete that task..