**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 2 | STRAND: STATISTICS AND PROBABILITY | **SUB-STRAND: Data 1** | **WORKING MATHEMATICALLY:**  **MA3-1WM & MA3-3WM** |
| OUTCOMES: MA3-18SP | | **Uses appropriate methods to collect data and constructs, interprets and evaluates data displays, including dot plots, column graphs, line graphs and two-way tables** | | |
| **CONTENT:** | | **Pose questions and collect [categorical](http://syllabus.bos.nsw.edu.au/glossary/mat/categorical-variable/?ajax" \o "Click for more information about 'categorical'" \t "_blank) or [numerical data](http://syllabus.bos.nsw.edu.au/glossary/mat/numerical-data/?ajax" \o "Click for more information about 'numerical data'" \t "_blank) by observation or survey (ACMSP118)**  - Collect categorical and numerical data through observation or by conducting surveys  **Construct displays, including [column graphs](http://syllabus.bos.nsw.edu.au/glossary/mat/column-graph/?ajax" \o "Click for more information about 'column graphs'" \t "_blank), [dot plots](http://syllabus.bos.nsw.edu.au/glossary/mat/dot-plot/?ajax" \o "Click for more information about 'dot plots'" \t "_blank) and tables, appropriate for [data](http://syllabus.bos.nsw.edu.au/glossary/mat/data/?ajax" \o "Click for more information about 'data'" \t "_blank) type, with and without the use of digital technologies (ACMSP119)**  - Construct column and line graphs of numerical data using a scale of many-to-one correspondence, with and without the use of digital technologies  - Name and label the horizontal and vertical axes when constructing graphs (Communicating)  - Choose an appropriate title to describe the data represented in a data display (Reasoning)  - Mark equal spaces on the axes when constructing graphs, and use the scale and label the markers (Communicating)  **Describe and interpret different data sets in context (ACMSP120)**  - Describe and interpret data in tables, dot plot, column and line graphs, eg the heights of all students are between 125cm and 154cm  - Determine the total number of data values represented in dot plots and column graphs (Problem solving and Reasoning)  - Identify and describe the relationships that can be observed in data displays (Communicating and Reasoning) | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | * **Worksheet 4,22 Column Graphs:** Ice-creams sold at Pascal Primary canteen.   - Display the survey table for students to interpret. Discuss the questions on the sheet with the class. Students complete.  Pre-assessment will be derived from class discussions and observations of students work. | | |
| WARM UP / DRILL | | * **Secret column graph** Teacher displays a column graph with no heading, the vertical axes marked in centimetres and horizontal axes labelled with the letters A to M, with no title. Students are broken into groups and need to discuss and work out a theory of what the title could be for the graph. Groups come back together and argue their theories. The class then decides the most appropriate title. Teacher poses these questions: What strategies did you use to decide on your title? What information do you need to interpret a graph correctly? | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | There are 52 cards in a deck. If there are four different suites (hearts, diamonds, spades and clubs). What is the chance of selecting a card (any suite) with a value of 6, 7, 8 or 9? | | |
| QUALITY TEACHING ELEMENTS | | **INTELLECTUALQUALITY** | **QUALITY LEARNINGENVIRONMENT** | **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 | | Deck of cards, access to internet for students, Worksheet4, Assessment 2, class set of atlases, student’s grid books. | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTIONMODELLED ACTIVITIES | GUIDED &INDEPENDENT ACTIVITIES | |
| * **Explicitly communicate lesson outcomes and work quality.** * **Class discussion Language: data, represent, graph, column graph, bar graph, results, symbols, vertical, horizontal, scale, category, average, advantages, disadvantages.** * **Column Graphs**. Introduce the feature of a column graph and what information best suits a column graph. Create one as a whole class. Discuss the title, horizontal and vertical axes. Relate the importance of these features and refer back to the Secret Graph exercise. * **Scale**. Determine a suitable scale for a graph. Create a table with number less than ten and discuss the vertical axes being able to go up by ones. * **Many-to–one scale.** Create a table with large numbers up to one hundred and discuss the need for the vertical axes to go up by 5’s or 10’s. * **Column graphs are useful in recording the results obtained from simple probability experiments.** Advantages and disadvantages of different representations of the same data should be explicitly taught. * **Possible Questions:** Have you given your graph a title and a key? How did you determine the scale? How do the scale and the key allow interpretation of your graph? Can you pose 3 questions that can be answered from the information displayed in your graph? | LEARNING SEQUENCERemediationS2 or Early S3 | * These are the results of a survey. What might the survey be about?  |  |  | | --- | --- | | Place | Tally  Accept any reasonable suggestions. For example it could be a survey of where the children are playing, or where accidents occurred. | | Library | lll | | Play equipment | This picture shows five tally marks. Tally marks are used as a form of counting and are useful for writing results without having to erase information.This picture shows five tally marks. Tally marks are used as a form of counting and are useful for writing results without having to erase information.ll | | Under the trees | This picture shows five tally marks. Tally marks are used as a form of counting and are useful for writing results without having to erase information.ll | | Oval | lll | |
| LEARNING SEQUENCES3 | * **Population of countries.** Students use an atlas with countries and their populations to complete this activity. Students choose 10 countries and find their populations. They need to use this information to create a column graph remembering to include a title, horizontal and vertical axes with labels, a key and an appropriate scale. After the activity discuss the advantages and disadvantages of using a column graph to display this type of information. * **Investigation:**   **Survey.** Students survey the class on their favourite computer games. **Aspects** of a survey to consider:   1. You want to answer a question. 2. Want to make a change. 3. Make decisions. 4. Provide goods/services.   Students create a column graph from this survey and discuss what companies would use this information e.g product design and advertisement.   * **Assessment 2 Column Graph** Farmer Blake and his weekly boxes.Students need to interpret a column graph using the given scale and answer the questions provided. |
| LEARNING SEQUENCEExtensionEarly S4 | **Survey extension.** Using the information that they surveyed the class on their favourite computer games, students need to research the top 5 computer gaming companies. Present their data in table and graph form. Then explain what the information shows about the likes and dislikes of a Year 5 student and where improvements can be made by the computer gaming companies to increase their sales.  Students need to consider if there was a better way to display this information. E.g picture or line graphs |
| **EVALUATION &REFLECTION** | **Student engagement: Achievement of Outcomes:**  **Resources:**  **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.