**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 3 | 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, line graphs and two-way tables** | | |
| **CONTENT:** | | **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  - 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)  - Consider the type of data and draw the most appropriate displays  - Discuss and justify the choice of data display used (Communicating and Reasoning)  **Describe and interpret different data sets in context (ACMSP120)**  - Identify and describe the relationships that can be observed in data displays (Communicating and Reasoning)  - Interpret line graphs using the scales on the axes  - Use information presented in data to aid decision making (Reasoning) | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | * **Worksheet 5 Handing Data Questions 2**   Look at the following graph and discuss it with the students. Talk about the data shown and what it tells us about the children’s spelling scores. Students attempt to answer questions 1 to 5 independently. Then as a class discuss questions 6-10 and get the students to complete the rest of the sheet. This activity will show you the students who are ready to move onto line graphs and the ones who will need further consolidation with column graphs. | | |
| WARM UP / DRILL | | * **Temperature of the Playground.** Previous day students measure the temperature of the playground every hour. Using the data gathered the class creates a line graph. Discuss an appropriate title, label the axes, work out a scale for the vertical axes, plot the dots and join the line. Discuss the graph, what it shows, advantages and disadvantages. How could it be better, collecting every ½ hour. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | Rolling dice. If you rolled two dice and added the sides shown on the top, what would be the highest total and what would be the lowest total? What would be the most common total shown? | | |
| 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, Worksheet 5, Assessment 3,4,5, class set of atlases, student’s grid books. | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTIONMODELLED ACTIVITIES | GUIDED &INDEPENDENT ACTIVITIES | |
| * **Definition of a line graph.**A graph that uses points connected by lines to show how something changes in value (as time goes by, or as something else happens).<http://www.mathsisfun.com/definitions/line-graph.html> * **How to draw a line graph.** Watch this short youtube video with your class to show them how to draw a line graph and how to read it.<http://www.youtube.com/watch?v=n2YkbdNORp8> * **Revision of Language:** data, represent, graph, column graph, bar graph, results, symbols, vertical, horizontal, scale, category, average, advantages, disadvantages. * **Divided Bar graph.** A divided bar graph is shown as a rectangle or a bar broken into sections. The proportion of the rectangle indicates the part of the ‘whole’ that each graphed amount represents.   example of  Divided Bar Graph | LEARNING SEQUENCERemediationS2 or Early S3 | * **Boxes of chocolate**. Tom was selling boxes of chocolate candy for his school’s fundraiser. He plotted the number of boxes he sold in the line plot below. Use his line plot to answer the questions.   **Assessment 3**<http://www.commoncoresheets.com/Math/Line%20Plots/Interpreting/English/1.pdf> |
| LEARNING SEQUENCES3 | * **Increasing and decreasing graphs** The teacher provides each student with a copy of a graph that increases and decreases of a period of time. Possible questions include: * How many minutes are shown on the graph? * What has happened when the line goes sharply up? * What has happened when the line goes down?   <http://www.haesemathematics.com.au/samples/ibmyp2_17.pdf>Examples of increasing and decreasing   * **Divided Bar Graph** Students collect divided bar graphs from sources such as newspapers and the internet, or the teacher provides them with a graph. Students discuss the relative sizes of the proportions or sections of the graph. Students answer questions using the data in the divided bar graph.   Investigation:   * **Assessment 4** Year 5 Data Assessment Line Graphs. Students complete this sheet independently and this will allow you to evaluate which students are able to display and interpret data in line graphs with scales many-to-one correspondence. * **Assessment 5**Students survey the class on their favourite sport, colour, food, etc. They determine what type of graph is the best to display their set of data and use the data to draw their graph on a computer. Students answer the following questions:  1. What type of graph did you select and why? 2. What are the advantages and disadvantages of different types of graphs? 3. Could you have used a different type of graph? |
| LEARNING SEQUENCEExtensionEarly S4 | * Tell me a story. Students use the placements of points on a line graph that represent changes in the depth of water, to write a story. They are provided with the completed line graph with axes marked eg time and depth o f water in centimetres. Students give their graph a suitable title. Students brainstorm to a checklist of event s for each point on the line graph that they will include in their story and then write their story. |
| **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.