**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 6 | STRAND: Statistics and Probability | **SUB-STRAND: Data 2** | **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:**  | **Interpret and compare a range of [data displays](http://syllabus.bos.nsw.edu.au/glossary/mat/data-display/?ajax" \o "Click for more information about 'data displays'" \t "_blank), including [side-by-side column graphs](http://syllabus.bos.nsw.edu.au/glossary/mat/side-by-side-column-graph/?ajax" \o "Click for more information about 'side-by-side column graphs'" \t "_blank) for two [categorical variables](http://syllabus.bos.nsw.edu.au/glossary/mat/categorical-variable/?ajax" \o "Click for more information about 'categorical variables'" \t "_blank)(ACMSP147)*** Explain which display is the most appropriate for interpretation of a particular data set (Communicating, Reasoning)
* Compare representations of the same data set in a side-by-side column graph and in a two-way table (Reasoning)

**Interpret [secondary data](http://syllabus.bos.nsw.edu.au/glossary/mat/secondary-data-set/?ajax" \o "Click for more information about 'secondary data'" \t "_blank) presented in digital media and elsewhere (ACMSP148)*** Critically evaluate data representations found in digital media and relate claims
* Discuss the messages that those who created a particular data representation might have wanted to convey (Communicating)
* Identify sources of possible bias in representations of data in the media by discussing various influences on data collection and representation, (Communicating, Reasoning)
* Identify misleading representations of data in the media, eg broken axes, graphics that are not drawn to scale (Reasoning)
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Ask students to draw a line graph from simple data
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| WARM UP / DRILL | * Students predict which colour M&M’s is most used in a random packet. They justify their predictions and suggest how they could test their predictions. The teacher gives each student a packet of M&Ms so that students can tally the colours and test their predictions. The results are collated into a table and each student decides on an appropriate graph to use the display the results effectively. Students construct a graph to show the results. and discusses the reasons for selecting the presentation format
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| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | * There are five children in a family. Their average age is 9. How old might the children be?
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| QUALITY TEACHING ELEMENTS | **INTELLECTUALQUALITY** | **QUALITY LEARNINGENVIRONMENT** | **SIGNIFICANCE** |
| * Deepknowledge
* Deepunderstanding
* Problematicknowledge
* Higher-orderthinking
* Metalanguage
* Substantivecommunication
 | * Explicit quality criteria
* Engagement
* High expectations
* Social support
* Students’ self-regulation
* Student direction
 | * Background knowledge
* Cultural knowledge
* Knowledge integration
* Inclusivity
* Connectedness
* Narrative
 |
| RESOURCES | Worksheet from targeting maths – attachedNewspapers, magazines and online sources to research graphs |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTIONMODELLED ACTIVITIES | GUIDED &INDEPENDENT ACTIVITIES |
| * Students should be able to communicate using the following language: data, collect, category, display, table, column graph, scale, axes, **two-way table**, **side- by-side column graph**, misleading, **bias**.
* Interpretation of pie graphs should be limited to finding simple fractions of whole or relative sizes of categories. Measurement of angles in not required.
* Divided bar graphs use a bar to show a quantity is divided up, usually something that has a well understood ‘whole’ concept, such as ‘a day’ or ‘total budget’.
* Divided bar charts are often grouped for single comparisons or ratios. Data for a divided bar graph could be collected from a survey or from observations (eg “how we spend our weekly pocket money”
* Questions about divided bar graphs would be the type “what fraction of?”
 | LEARNING SEQUENCERemediationS2 or Early S3 | * **Sector Graphs**

Students collect sector graphs from sources such as newspapers and the Internet, or the teacher provides a graph.Students discuss the relative sizes of sectors, stating absolute quantities only where half and quarter circles are involved.Students answer questions using the data in the sector graph* Complete eye colour worksheet pg 27 Targeting Maths
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| LEARNING SEQUENCES3 | * **Media Graphs**

Students collect a variety of graphs used in the media and in factual texts. They consider each graph separately.Possible questions include: What type of graph is used? What is its purpose? What information can you interpret from the graph? Who would use the information? Who produced the graph and why? Is the graph misleading? Why?* Students represent the information in a different way.
* Complete line graphs worksheet pg 47 Targeting Maths
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| LEARNING SEQUENCEExtension Early S4 | * **Interpret tables and graphs found in digital mediaMedia Graphs**Students collect a variety of graphs used in the media and in factual texts. They consider each graph separately.Possible questions include: What type of graph is used? What is its purpose? What information can you interpret from the graph? who would use the information? Who produced the graph and why? Is the graph misleading? Why?Students represent the information in a different way.
* Students investigate and share graphs from their favourite football team, weather, financial sites..... anything that displays data.
* Identify and describe conclusionsDiscuss the messages that those who created the data might have wanted to conveyIdentify sources of possible biasDiscuss various influences on data collection and representationIdentify misleading representations of data in the media eg broken axis, graphics that are not drawn to scale
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| **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.