**MATHEMATICS STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 5 | STRAND: STATISTICS AND PROBABILITY | **SUB-STRAND: Data 2** | **WORKING MATHEMATICALLY:****MA1-1WM, MA1-2WM, MA1-3WM** |
| OUTCOMES: MA1-17SP | Gathers and organises data, displays data in lists, tables and picture graphs, and interprets the results. |
| **CONTENT:**  | **Identify a question of interest based on one [categorical variable](http://syllabus.bos.nsw.edu.au/glossary/mat/categorical-variable/?ajax" \t "_blank" \o "Click for more information about 'categorical variable') and gather [data](http://syllabus.bos.nsw.edu.au/glossary/mat/data/?ajax" \t "_blank" \o "Click for more information about 'data') relevant to the question (ACMSP048)** * Pose suitable questions that will elicit categorical answers and gather the data.

**Collect, check and classify data (ACMSP049)** * Collect data on familiar topics through questioning, eg 'How many students are in our class each day this week?'
* Use tally marks to assist with data collection. (Communicating)
* Identify categories of data and use them to sort data, eg sort data collected on attendance by day of the week and into boys and girls present.

**Create displays of data using lists, tables and [picture graphs](http://syllabus.bos.nsw.edu.au/glossary/mat/picture-graphs/?ajax" \t "_blank" \o "Click for more information about 'picture graphs') and interpret them (ACMSP050)** * Display data using lists, tables.
* Use displays to communicate information gathered in other learning areas, eg data gathered in a unit on families or local places (
* Interpret information presented in lists, tables and picture graphs
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Collect data on familiar topics through questioning. Sort data relating to the classes favourite pets (birds, cats, dogs, fish) Transfer this information to a tally chart and then convert to a picture graph. Answer questions relating to the graph constructed. Which has more. Which has least. How many more children liked dogs than cats.
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| WARM UP / DRILL | ☐ Place coloured paddle pop sticks in a hoop. Line teams up and have them race to collect one stick at a time with the aim to collect 5 sticks of each colour. Sticks must be laid on the ground as a tally. (Fifth one crossed over other four) Children to play Steal a stick from the other groups. Set a clock or stopwatch and time for 3 minutes. Team with most colours tallied wins. (It would best to space children and set firm ground rules for this activity.)☐ First to fifty. Have students take turns to roll a dice and tally to fifty. |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | ☐ A teacher surveyed the students in her class to find out their favourite pets. Chris and Tom both love dogs. Sally likes having a cat. Jill and Matt each voted for dogs even though they don’t have one. Justin decided goldfish were his favourite. The three students at table four agreed with Sally that cats were the best. Collin convinced Erin and Nathan to all vote for a frog as their favourite. Finally, the last three children from table one voted for dogs as their favourite pets. Create a table using tally marks and then convert the information into a picture graph. |
| 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* Narrative
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| RESOURCES | Internet, computers,Interactive Whiteboard, tubs, Multicubes, cubes, tally graph and picture data graph recording sheets, Smartie packets, tins of pencils, carboard, pencils, paper<http://k6.boardofstudies.nsw.edu.au/wps/portal/go/mathematics/support-students-special-needs/case-studies/case-study-4/selection-of-outcomes-and-content> Examples for teachers <http://cathedralkindergarten.blogspot.com.au/2013/01/free-100-days-of-school-pizza-activity.html><https://docs.google.com/file/d/0B5eMvftNcU03YlhiVkNSV3VIUHc/edit?pli=1> |

**TEACHING AND LEARNING EXPERIENCE**

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| WHOLE CLASS INSTRUCTIONMODELLED ACTIVITIES | GUIDED &INDEPENDENT ACTIVITIES |
| View:<http://www.bbc.co.uk/bitesize/ks2/maths/data/interpreting_data/play/>ite size websiteHow would we show these in a picture graph.* Have the class help construct a graph on the whiteboard.
* Whole Class Teaching Activities

Representing/Recording DataWhen presenting data in a graph the following will need to be stressed:* Using a consistent size symbol to represent equal amounts
* Starting from the baseline
* Equal spacing between symbols
* Students may use a variety of mediums to represent data including:
* Photos and pictures (same size)
* Drawings (same size)
* Coloured paper squares
* Colouring-in squares on grid paper
* Symbols to represent data
* Tally marks
* Computer software
 | LEARNING SEQUENCERemediationES1 | ☐ **Using tally marks Activities** - [Predict and Tally the Weather](http://www.kidzone.ws/math/graphing/groundhog-index.htm) - |
| LEARNING SEQUENCES1 | Identify categories and use them to sort data. Each child is given a small packet of Smarties or a small group of children and a small jar of Smarties. Arrange the Smarties in columns according to colour. Discuss: the frequency of each colour after tallying each one and how many of each colour if you combine with a partner, group, whole class. Colour grid paper to represent the Smarties, and create a picture graph. Give graph a heading and label each axis. ☐ Use digital technologies to create a picture graph from information collected.* **Class Unit of Study**

Use displays to communicate information gathered in other learning areas. Collect data by tallying and create a picture graph relating to a current class unit of study. For example use a current unit of study for example, family studies, local places or weather. Gather this information and represent it in lists and tables and convert to a picture graph displaying one to one correspondence.* **About Us**.

Make cards using statements from students e.g. I like to swim, I help my dad in the garden, I like chocolate.Cards are placed around the room and students use tally marks on the statements that relate to them. The tallies are counted and a picturegraph created to represent the data and/or * Display data in lists and tables from class surveys
* Interpret information presented in these lists and tables. Teacher made worksheet or Analysing and Interpreting data From Smarties and or About Us
* Determine: The most popular colour/statement. The least popular colour/statement. Numbers of specified colours.

Differences between specified colours/statements. Were the contents of any boxes identical?Have students make question cards or design a worksheet and swap with a peer to complete. |
| LEARNING SEQUENCEExtension Early S2 | * **Review the terms: Metalanguage**

least popular, most popular, predict, dot plot, column graph, data, survey, category, display.* **Combination Dice** <http://www.mathsisfun.com/activity/dice-experiment-1.html>

Students roll two dice 30 times, add the two numbers and keep a tally of the results. The data is transferred to a column graph and the students interpret the data.Which number came up most/least often?Did any two numbers come up the same number of times? What were they? |
| **EVALUATION &REFLECTION** | **Student engagement: Achievement of Outcomes:****Resources: Follow up:** |

**TEACHING AND LEARNING EXPERIENCE**

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| WHOLE CLASS INSTRUCTIONMODELLED ACTIVITIES | GUIDED &INDEPENDENT ACTIVITIES |
| * **Explicit teaching**

<http://www.bbc.co.uk/bitesize/ks2/maths/data/interpreting_data/play/>* **Whole Class Teaching Activities-**

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* Coloured paper squares

Macintosh HD:Users:student:Desktop:pizza+clips.jpg* **Metalanguage:**

Students should be able to communicate using the following language: information, data, collect, gather, **category,** display, symbol, tallymark, **picture graph, list, table, equal spacing, key, baseline,** largest, smallest, more than, the same as, less than, equal to, similar, different, compare, least popular, most popular, favourite, row, column, survey, sort, category, compare, prefer, tally, arrangement, picture graph, spinner. | LEARNING SEQUENCERemediationES1  | * **Learning to tally** and learning how to display this information in lists and tables ‘Soccer Spin’ may be downloaded from Teachers Pay Teachers (Free to join) [Math Game of Probability, Predictions & Tally Marks](http://www.teacherspayteachers.com/Product/Soccer-Spin-A-Kindergarten-Math-Game-of-Probability-Predictions-Tally-Marks-1051479) By [Prince Padania](http://www.teacherspayteachers.com/Store/Prince-Padania)
* How could we Tally this information in a picture graph.
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| LEARNING SEQUENCES1 | **Anyone for Pizza?*** Have the children make and include ingredients for a pizza. Teacher can supply a stencil with toppings or the children can have fun using paper and their imaginations to make toppings. Supply students with a circle template and have them make their pizza to a customer,(class friends) ingredient specifications. Predict the likely responses within data to be collected (Reasoning)Have children present their pizza to their customer to convert to tallies and then to construct a picture graph. Represent data in a picture graph using a baseline, equal spacing, same-sized symbols and a key indicating [one-to-one correspondence](http://syllabus.bos.nsw.edu.au/glossary/mat/one-to-one-correspondence/?ajax" \t "_blank" \o "Click for more information about 'one-to-one correspondence')**.**
* **Make a roll** for your class over a set period of time. Identify categories of data and use them to sort data into lists and tableseg collected on attendance by day of the week and into boys and girls present.
* Use digital technologies to make a graph. Have the children explain how technology can help us make this more uniform. Use digital technologies to create picture graphs (Communicating)Determine what data to gather in order investigate a question of interest, eg favourite or least favourite topping or pizza (Problem Solving)
* **Interpret information presented in lists, tables and picture graphs.** (Teacher makes/sources worksheet) Alternatively, have children make up their own questions and have peers answer them. “What is the favourite kind of pizza in our class?” “How many more students like ham on their pizza than pepperoni?” “Which was the least favourite pizza?” “Why do you think the fewest students chose ‘…’ as their favourite pizza ingredient?”
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| LEARNING SEQUENCEExtension Early S2 | * **Temperature of the Playground.** Previous day students measure the temperature of the playground every hour. Using the data gathered the class creates a column graph. Discuss an appropriate title, label the axes, work out a scale for the vertical axes, columns. Discuss the graph, what it shows, advantages and disadvantages. How could it be better, collecting every ½ hour.
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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