**MATHEMATICS STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 4 | STRAND: STATISTICS AND PROBABILITY | **SUB-STRAND: Data 2** | **WORKING MATHEMATICALLY:****MA1-1WM MA1-2WM MA1-3WM****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 (ACMSP04)** * 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).** * 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')
* Identify misleading representations of data in a picture graph, eg where the symbol used to represent one item is shown in different sizes or where symbols are not equally spaced. (Reasoning)
* Use digital technologies to create picture graphs. (Communicating)
* Interpret information presented in lists, tables and picture graphs.
* Use digital technologies to create picture graphs (Communicating)
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | **Pre Assessment** * **Students fill in a graph using symbols provided.** The class is given the following scenario. Each child in class \_\_\_\_\_ had a piece of fruit for recess. These were the results: 8 apples, 5 pears, 6 bananas, 4 oranges and 2 strawberries Using these results students record the information by constructing a tally table using concrete materials. They represent the table on paper using tally marks and then convert the information to a picture graph. (Alternatively you could tally and graph, pencils, crayons, birthdays)
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| WARM UP / DRILL | ☐**Skip Count by 5.** Move to the counting. Eg add movement like the Macarena dance movements. There are songs on the internet that can be utilised for this activity, and/or Group Multicubes into 5 and use skip counting by throwing cubes into tub.☐**Fingers**Play a movement game of making groups within the class. Using only your fingers how many people do you need in a group to make eg, 25, 35,45 etc. |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | You will need Tally Mark blank cards. A 1 minute timer (e.g. a stopwatch or whiteboard timer).Pair all students. One person records tallies and the other does the action.Clap for one minute, jump for one minute, write a spelling word as many times in one minute. In pairs, analyse selected data and tell your partner at least 3 different statements. What do you think the tally marks are referring to on your page? Invent and record at least one scenario. |
| 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 and internet site resources as specified, computers, Interactive Whiteboard, tubs, Multicubes, cubes, tally graph and picture data graph recording sheets, art paper, circles, split pins, paper clips pattern blocks. **Free Downloadable Resources** Pattern Block Alphabet sheets used for tallying and graphing may be downloaded from [www.confessionsofahomeschooler.com](http://www.confessionsofahomeschooler.com).Animal Pattern Block mat used for tallying and graphing may be downloaded at [www.prekinders.com](http://www.prekinders.com).Blank cards and minute timers, or a whiteboard timer.‘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). |

**TEACHING AND LEARNING OVERVIEW**

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| WHOLE CLASS INSTRUCTIONMODELLED ACTIVITIES | GUIDED &INDEPENDENT ACTIVITIES |
| Establish what children know about tallies graphs through questioning. Watch:<http://www.brainpopjr.com/math/data/tallychartsandbargraphs/>Restate that tally charts help people count. Each tally mark in a tally chart represents one object. Get children to start counting by raising their little finger 1,2,3,4, and on 5 cross their thumb over. Explain that this is how we tally. 5th one crosses over other four vertical strokes.Children should know learn how to create a picture graph from a tally chart. (One to one correspondence.) Picture graphs allow people to analyse data and compare information. This type of graph can be potentially misleading if pictures are not all represented to the same scale. A picture graph uses appealing pictures to represent and display data. The bottom of the graph (the x-axis) can list categories in a given data set and the (the y-axis) does not list numbers. Children will need to count in order to represent the number of objects in that category. Remind children to give their picture graph a title and a key with one to one correspondence. On the Whiteboard <http://www.beaconlearningcenter.com/WebLessons/IAmSpecial/default.htm>And /or<http://www.mathsisfun.com/data/pictographs.html><http://www.ixl.com/math/grade-1/interpret-data-in-tally-charts-picture-graphs-tables>**Metalanguage** 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 | ☐**[Kindergarten tally marks up to 20](http://www.ixl.com/math/practice/kindergarten-tally-marks-up-to-20%22%20%5Ct%20%22_blank)**☐**Dice-Roll and Tally Game**(After watching <http://www.brainpopjr.com/math/data/tallychartsandbargraphs/>), give each child a die and a recording sheet with columns marked with the numbers 1 through to 6 on the bottom (x axis of the column). Get children to roll the dice 40 times and then record tally. A recording sheet may be downloaded from [www.op97.org/jcolella/documents/dice-rollandtallygame.pdf](http://www.op97.org/jcolella/documents/dice-rollandtallygame.pdf). |
| LEARNING SEQUENCES1 | ☐ Narrate to children that graphs are useful tools for organising and showing information. People can collect data, or information, by taking surveys. Tally charts and picture graphs can help people visualise data, answer questions, and make predictions. During a survey, people ask others questions to collect information, or data.☐**View:** <http://www.brainpopjr.com/math/data/tallychartsandbargraphs/>☐After watching:<http://www.beaconlearningcenter.com/WebLessons/IAmSpecial/default.htm> Teacher asks the students: ”What is your favourite coloured car?” or Ask : ”What is your favourite fruit?” This could include a class fruit salad taste testing or seeing what fruit the children have for recess or ‘Crunch and Sip’*.*☐**Direct students to collect data from their classmates by asking for their responses and recording tallies on the data collection sheet. After collecting tally data, students total the responses for each kind of car colour or fruit type.** Have students independently represent their data from tallies and then convert to picture graphs using a baseline, equal spacing, same sized symbols and a key indicating one to one correspondence on paper or on a work sheet.☐**Next interpret information presented in picture graphs, lists tables and picture graphs.**Consider using tables and lists and have children interpret information in these. Which was the most popular? Which is the least? What is the total number of blue and red car? How many more blue than red cars are there?Identify misleading representations in worksheet picture graphs or by studying other students picture graphs.☐**Investigation**: Invent a game that uses tally marks to count.☐Use digital technologies and use tally results create picture graphs. ☐ **Research the history of tally marks. Who invented them? Make Your Own ‘Ancient’ Tally Stick** |
| LEARNING SEQUENCEExtension Early S2 | ☐**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.* **Make your own bar graph:** <http://www.softschools.com/math/data_analysis/bar_graph/activities/make_your_own_bar_graph/>

☐**School Canteen survey.** Students collect daily sales of drinks, pies, iceblocks etc. Students decide on an appropriate title, scale, symbol and key 🍽= 10 for their picture graph. |
| **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.