**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TERM: | WEEK:3 | STRAND:Probability and Data | **SUB-STRAND:**  Chance 1 | **WORKING MATHEMATICALLY:**  MA3-1WM |
| OUTCOMES: MA3-19SP | | **Conducts chance experiments and assigns chance experiments and probabilities as values between 0 and 1 to describe their outcome** | | |
| **CONTENT:** | | **List outcomes of chance experiments involving equally likely outcomes and represent probabilities of those outcomes using fractions**   * Use the term ‘probability’ to describe the numerical value that represents the likelihood of an outcome of a chance experiment * Represent probabilities of outcomes of chance experiments using fractions, eg for one throw of a standard six-sided die or for one spin of an eight-sector spinner | | |
|  | | * Pre- assessment activity- Students measure a 1 metre length of tape. They label each end of the tape 0 and 1. They then divide the number line into tenths. Students discuss and determine what chance words would equate with 0 and 1.   0 - would describe an event that is impossible  1 - would describe an event that is certain  Ask students to assign a number value to the likelihood of certain events. Mark on number line.  Provide students with the following chance words on cards - impossible, even chance, fifty-fifty, likely, unlikely, certain (Set 1). They place the chance words along the number line, to produce a scale of chance words from 0 to 1.  Students then report back on where they placed each of the chance cards. | | |
| WARM UP / DRILL | | * IWB-FISH TANK- <http://www.bbc.co.uk/schools/mathsfile/shockwave/games/fish.html> * IWB- ZOOK RACE- <http://www.bbc.co.uk/bitesize/ks2/maths/data/probability/play/> | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | There are 50 marbles in a bag. 10 marbles are blue the others are red. Sally picks a marble without looking. What are the chances of picking a blue marble? | | |
| QUALITY TEACHING ELEMENTS | | **INTELLECTUAL QUALITY** | **QUALITY LEARNING ENVIRONMENT** | **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 | | Dice, IWB dice, Chance word s to be displayed for reference | | |

**TEACHING AND LEARNING EXPERIENCES**

|  |  |  |
| --- | --- | --- |
| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| * **Explicitly teach** and review the metalanguage of chance and how to record likelihood of events on a probability line.   Establish that the sum of the probabilities of the outcomes of any chance experiment is equal to 1.  The teacher will model how to collect and organise data.  Use the term 'frequency' to describe the number of times a particular outcome occurs in a chance experiment  Distinguish between the 'frequency' of an outcome and the 'probability' of an outcome in a chance experiment  Compare the expected frequencies of outcomes of chance experiments with observed frequencies, including where the outcomes are not equally likely  Some random generators have outcomes that are not equally likely and discuss the effect on expected outcomes   * **Ask:**   Are these results likely to be the same at another school?  What different results would we get if we surveyed the teachers only?   * **Define and reinforce metalanguage** * **IWB-**   Use interactive die to play Fair game and Running Race | LEARNING SEQUENCERemediationS2 or Early S3 | * Describes and compares chance events in social and experimental contexts. * The students are introduced to a cline and must label according to likelihood.   <http://www.schools.nsw.edu.au/learning/7-12assessments/naplan/teachstrategies/yr2011/index.php?id=numeracy/nn_numb/nn_numb_s2d_11> |
| LEARNING SEQUENCES3 | * **IWB-WRITING NUMBERS**- Assigning a numerical value <http://lrr.dlr.det.nsw.edu.au/Web/chance/probableChance/index.htm> * **IWB-LARGER NUMBERS**   <http://lrr.dlr.det.nsw.edu.au/Web/chance/probableChance/index.htm>   * **Investigation**-   Sampling the School Population  Students select a sample of a group of students and ask them to name their favourite  food, TV program, etc. From this sample students predict school population results.  Possible questions include:  ❚ would we get different results if all students in the sample were from Year 2? were girls? tall? had blue eyes?  ❚ what strategies could be used to ensure the sample reflected the whole population?  ❚ what examples of sampling are used in real-life situations?   * **Assigning a Number Value**   Students survey the whole school or a sample of students, and consider the chance of  the next enrolment at the school being:  ❚ a boy  ❚ left-handed  ❚ brown-eyed  ❚ the eldest in the family  ❚ a twin.  The students assign a number value between 0 and 1 for each possibility. Students compare data for the whole school to their predictions.   * Assessment- Students in pairs, read these events and think about the chance of each event happening. Rate the likelihood of each event by writing a matching chance word then using a scale of 0 to 1   <http://www.schools.nsw.edu.au/learning/7-12assessments/naplan/teachstrategies/yr2011/index.php?id=numeracy/nn_numb/nn_numb_s3e_11> |
| LEARNING SEQUENCEExtension Early S4 |  |
| **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.