



Crazy Animals

Year Levels: F-12

Proficiency Strands: Understanding, Fluency, Problem Solving, Reasoning

General Capabilities: Literacy, Numeracy, Critical and Creative Thinking

Cross Curricular Links: English, Art

Content Strands: Statistics and Probability, Geometry and Measurement, Number and Algebra

Statistics and Probability

- Year 1: Identify outcomes of familiar events involving chance and describe them using everyday language such as 'will happen', 'won't happen' or 'might happen' (ACMSP024)
- Year 2: Identify practical activities and everyday events that involve chance. Describe outcomes as 'likely' or 'unlikely' and identify some events as 'certain' or 'impossible' (ACMSP047)
Create displays of data using lists, table and picture graphs and interpret them (ACMSP050)
- Year 3: Conduct chance experiments, identify and describe possible outcomes and recognise variation in results (ACMSP067)
Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies (ACMSP069)
- Year 4: Identify everyday events where one cannot happen if the other happens (ACMSP093)
Identify events where the chance of one will not be affected by the occurrence of the other (ACMSP094)
Construct suitable data displays, with and without the use of digital technologies, from given or collected data. Include tables, column graphs and picture graphs where one picture can represent many data values (ACMSP096)
- Year 5: List outcomes of chance experiments involving equally likely outcomes and represent probabilities of those outcomes using fractions (ACMSP116)
Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies (ACMSP119)
- Year 6: Describe probabilities using fractions, decimals and percentages (ACMSP144)
Conduct chance experiments with both small and large numbers of trials using appropriate digital technologies (ACMSP145)
Compare observed frequencies across experiments with expected frequencies (ACMSP146)
- Year 7: Construct sample spaces for single-step experiments with equally likely outcomes (ACMSP167)
Assign probabilities to the outcomes of events and determine probabilities for events (ACMSP168)
- Year 8: Identify complementary events and use the sum of probabilities to solve problems (ACMSP204)
Describe events using language of 'at least', exclusive 'or' (A or B but not both), inclusive 'or' (A or B or both) and 'and'. (ACMSP205)
Represent events in two-way tables and Venn diagrams and solve related problems (ACMSP292)
- Year 9: List all outcomes for two-step chance experiments, both with and without replacement using tree diagrams or arrays. Assign probabilities to outcomes and determine probabilities for events (ACMSP225)
Calculate relative frequencies from given or collected data to estimate probabilities of events involving 'and' or 'or' (ACMSP226)
- Year 10: Describe the results of two- and three-step chance experiments, both with and without replacements, assign probabilities to outcomes and determine probabilities of events. Investigate the concept of independence (ACMSP246)
Use the language of 'ifthen', 'given', 'of', 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language (ACMSP247)
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Years 11/12

Essential:

Interpret commonly used probability statements, including 'possible', 'probable', 'likely', 'certain' (ACMEM148)
Describe ways of expressing probabilities formally using fractions, decimals, ratios, and percentages. (ACMEM149)
Perform simulations of experiments using technology (ACMEM150)
Recognise that the repetition of chance events is likely to produce different results (ACMEM151)
Identify relative frequency as probability (ACMEM152)
Construct a sample space for an experiment (ACMEM154)
Use a sample space to determine the probability of outcomes for an experiment (ACMEM155)
Use arrays or tree diagrams to determine the outcomes and the probabilities for experiments. (ACMEM156)

Methods:

Understand the notion of a combination as an unordered set of r objects taken from a set of n distinct objects (ACMMM044)
Use the notation $\binom{n}{r}$ and the formula $\binom{n}{r} = \frac{n!}{r!(n-r)!}$ for the number of combinations of r objects taken from a set of n distinct objects (ACMMM045)
Review the concepts and language of outcomes, sample spaces and events as sets of outcomes (ACMMM049)
Use set language and notation for events, including \bar{A} (or A^c) for the complement of an event A , $A \cap B$ for the intersection of events A and B , and $A \cup B$ for the union, and recognise mutually exclusive events (ACMMM050)
Review probability as a measure of 'the likelihood of occurrence' of an event (ACMMM052)
Review the probability scale: $0 \leq P(A) \leq 1$ for each event A , with $P(A) = 0$ if A is an impossibility and $P(A) = 1$ if A is a certainty (ACMMM053)
Use relative frequencies obtained from data as point estimates of probabilities. (ACMMM055)
Understand the notion of a conditional probability and recognise and use language that indicates conditionality (ACMMM056)
Use the notation $P(A|B)$ and the formula $P(A \cap B) = P(A|B)P(B)$ (ACMMM057)

Specialist:

Solve problems involving permutations (ACMSM001)
Use the multiplication principle (ACMSM002)
Use factorial notation (ACMSM003)
Solve problems involving permutations and restrictions with or without repeated objects. (ACMSM004)
Solve problems involving combinations (ACMSM007)
Use the notation $\binom{n}{r}$ or nC_r (ACMSM008)

Number and Algebra

Foundation:

Sort and classify familiar objects and explain the basis for these classifications. Copy, continue and create patterns with objects and drawings (ACMNA005)

Years 11/ 12

Methods:

Expand quadratic and cubic polynomials from factors (ACMMM016)

Measurement and Geometry

Year 3:

Measure, order and compare objects using familiar metric units of length, mass and capacity (ACMMG061)

Year 4:

Use scaled instruments to measure and compare lengths, masses, capacities and temperatures (ACMMG084)