

Level 7	Level 8	Level 9	Level 10	Level 10A
Statistics and Probability				
Chance				
Construct sample spaces for single-step experiments with equally likely outcomes	Identify complementary events and use the sum of probabilities to solve problems	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	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	Investigate reports of studies in digital media and elsewhere for information on their planning and implementation
Assign probabilities to the outcomes of events and determine probabilities for events	Describe events using language of 'at least', exclusive 'or' (A or B but not both), inclusive 'or' (A or B or both) and 'and'	Calculate relative frequencies from given or collected data to estimate probabilities of events involving 'and' or 'or'	Use the language of 'if ....then', 'given', 'of', 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language	
	Represent events in two-way tables and Venn diagrams and solve related problems	Investigate reports of surveys in digital media and elsewhere for information on how data were obtained to estimate population means and medians		
Data representation and interpretation				
Identify and investigate issues involving numerical data collected from primary and secondary sources	Distinguish between a population and a sample and investigate techniques for collecting data, including census, sampling and observation	Identify everyday questions and issues involving at least one numerical and at least one categorical variable, and collect data directly from secondary sources	Determine quartiles and interquartile range and investigate the effect of individual data values, including outliers on the interquartile range	Calculate and interpret the mean and standard deviation of data and use these to compare data sets. Investigate the effect of individual data values including outliers, on the standard deviation
Construct and compare a range of data displays including stem-and-leaf plots and dot plots	Explore the practicalities and implications of obtaining data through sampling using a variety of investigative processes	Construct back-to-back stem-and-leaf plots and histograms and describe data, using terms including 'skewed', 'symmetric' and 'bi modal'	Construct and interpret box plots and use them to compare data sets	Use digital technology to investigate bivariate numerical data sets. Where appropriate use a straight line to describe the relationship allowing for variation, make predictions based on this straight line and discuss limitations
Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data	Explore the variation of means and proportions of random samples drawn from the same population	Compare data displays using mean, median and range to describe and interpret numerical data sets in terms of location (centre) and spread	Compare shapes of box plots to corresponding histograms and dot plots and discuss the distribution of data	
Describe and interpret data displays using median, mean and range	Investigate the effect of individual data values including outliers, on the range, mean and median		Use scatter plots to investigate and comment on relationships between two numerical variables	
			Investigate and describe bivariate numerical data, including where the independent variable is time	
			Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data	
Achievement Standard				
Students identify issues involving the collection of discrete and continuous data from primary and secondary sources. They construct stem-and-leaf plots and dot-plots. Students identify or calculate mean, mode, median and range for data sets, using digital technology for larger data sets. They describe the relationship between the median and mean in data displays. Students determine the sample space for simple experiments with equally likely outcomes, and assign probabilities outcomes.	Students explain issues related to the collection of sample data and discuss the effect of outliers on means and medians of the data. They use various approaches, including the use of digital technology, to generate simple random samples from a population. Students model situations with Venn diagrams and two-way tables and explain the use of 'not', 'and' and 'or'. Students choose appropriate language to describe events and experiments. They determine complementary events and calculate the sum of probabilities.	Students compare techniques for collecting data from primary and secondary sources, and identify questions and issues involving different data types. They construct histograms and back-to-back stem-and-leaf plots with and without the use of digital technology. Students identify mean and median in skewed, symmetric and bi-modal displays and use these to describe and interpret the distribution of the data. They calculate relative frequencies to estimate probabilities. Students list outcomes for two-step experiments and assign probabilities for those outcomes and related events.	Students compare univariate data sets by referring to summary statistics and the shape of their displays. They describe bivariate data where the independent variable is time and use scatter-plots generated by digital technology to investigate relationships between two continuous variables. Students evaluate the use of statistics in the media. They list outcomes for multi-step chance experiments involving independent and dependent events, and assign probabilities for these experiments.	