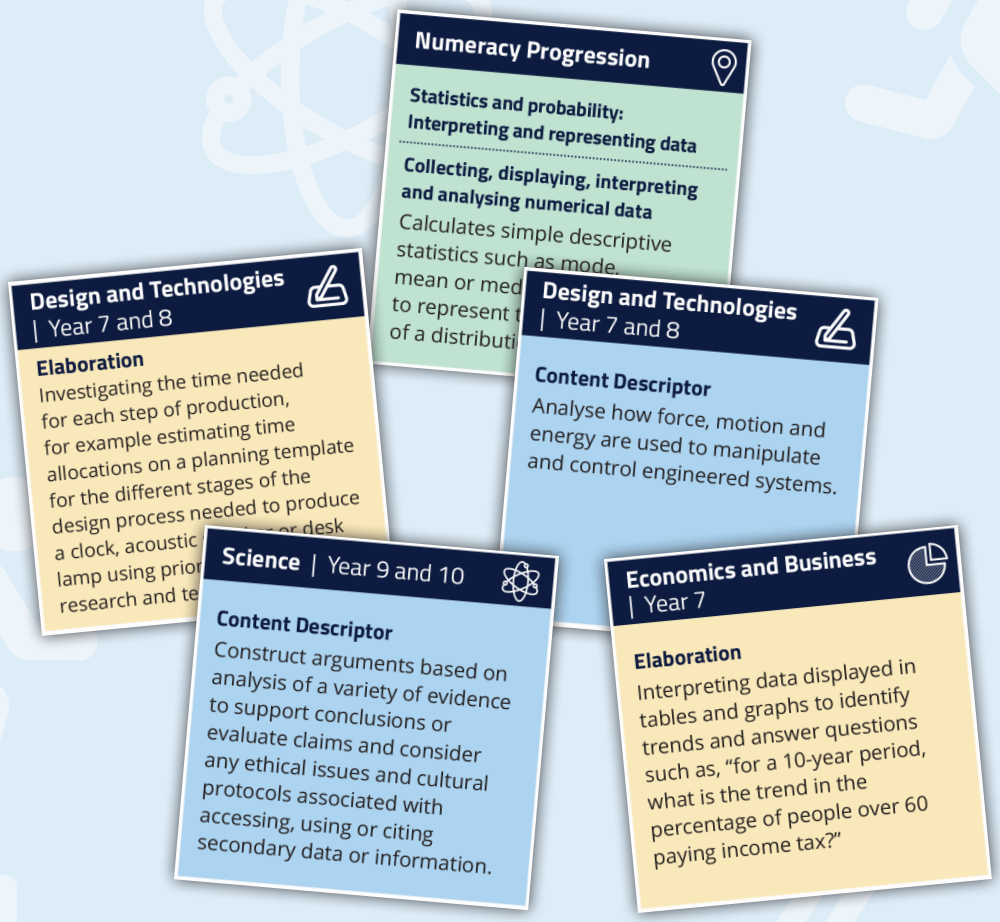
Mathematics Hub

Year 7–10

# Resource 2

## Activity 2: Curriculum jigsaw card sets



# Contents



**Key**

Blue: Content Descriptors

Yellow: Elaborations

Green: Numeracy Progressions

# Design and Technologies | Years 7 and 8

**Design and Technologies** | Year 7 and 8

**Content Descriptor**
Analyse how force, motion and energy are used to manipulate and control engineered systems.

**Design and Technologies** | Year 7 and 8

**Content Descriptor**
Develop project plans to individually and collaboratively manage time, cost and production of designed solutions.

**Design and Technologies** | Year 7 and 8

**Elaboration**
Investigating the time needed for each step of production, for example estimating time allocations on a planning template for the different stages of the design process needed to produce a clock, acoustic speaker or desk lamp using prior knowledge, research and testing.

**Design and Technologies** | Year 7 and 8

**Elaboration**
Calculating an engineered system's outputs, for example speed, brightness of light, volume of sound to determine when the system might fail.

**Design and Technologies** | Year 7 and 8

**Elaboration**
Investigating how a digital system converts audio data to integers as it records, stores and outputs sound.

**Design and Technologies** | Year 7 and 8

**Elaboration**
Explaining how digital systems represent audio using whole numbers for the amplitude of the soundwave at a given sampling rate, for example -32,768 to 32,767 for 16-bit audio at 44,100 Hz.

**Design and Technologies** | Year 7 and 8

**Elaboration**
Explaining how whole numbers can be represented in binary, for example counting in binary from 0 to 31, and recognising that one byte = 8 bits, which can represent from 0 to 255.

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Algebraic relationships**
Interprets and uses formulas and algebraic equations that describe relationships in various contexts.

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Algebraic relationships**
Plots relationships on a graph using a table of values representing authentic data.

**Numeracy Progression**

**Measurement and geometry: Measuring time**

**Measuring time with large and small timescales**
Uses appropriate metric prefixes to measure both large and small durations of time.

**Numeracy Progression**

**Number sense and algebra: Number and place value**

**Numeral recognition and identification**
Reads, represents, interprets and uses negative numbers in computations.

**Numeracy Progression**

**Number sense and algebra: Additive strategies**

**Flexible strategies with rational numbers**
Uses knowledge of equivalent fractions, multiplicative thinking and how to partition fractional numbers to make calculations easier when adding and subtracting fractions with different denominators.

**Numeracy Progression**

**Number sense and algebra: Additive strategies**

**Flexible strategies with rational numbers**
Solves additive problems involving the addition and subtraction of rational numbers including fractions with unrelated denominators and integers.

**Numeracy Progression**

**Number sense and algebra: Additive strategies**

**Flexible strategies with rational numbers**
Chooses and uses appropriate strategies to solve multi-step problems involving the addition and subtraction of rational numbers.

# Design and Technologies | Years 9 and 10

**Design and Technologies** | Year 9 and 10

**Content Descriptor**
Analyse and make judgements on how the characteristics and properties of materials are combined with force, motion and energy to control engineered systems.

**Design and Technologies** | Year 9 and 10

**Content Descriptor**
Develop project plans for intended purposes and audiences to individually and collaboratively manage projects, taking into consideration time, cost, risk, processes and production of designed solutions.

**Design and Technologies** | Year 9 and 10

**Elaboration**
Calculating forces, reactions and loads in structures and analysing the relationship between materials of properties, forces and safety in engineered systems such as bridges.

**Design and Technologies** | Year 9 and 10

**Elaboration**
Investigating how the placement of wind turbines in a wind farm affects their performance, for example designing a layout to maximise the productivity of a wind farm within a given space.

**Design and Technologies** | Year 9 and 10

**Elaboration**
Investigating manufacturing processes to identify strategies to enhance production, for example identifying techniques to reduce use, cut costs, speed up processes or to form beneficial partnerships with others in production.

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Algebraic relationships**
Plots relationships on a graph using a table of values representing authentic data.

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Algebraic relationships**
Interprets and uses formulas and algebraic equations that describe relationships in various contexts.

**Numeracy Progression**

**Measurement and geometry: Positioning and locating**

**Using proportional thinking for scaling**
Interprets the scale used to create plans, drawings or maps.

**Numeracy Progression**

**Measurement and geometry: Positioning and locating**

**Using proportional thinking for scaling**
Interprets and uses plans and maps involving scale.

**Numeracy Progression**

**Measurement and geometry: Positioning and locating**

**Using proportional thinking for scaling**
Interprets and uses more formal directional language such as compass bearings, degrees of turn, coordinates and distances to locate position or the distance from one location to another.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Recognising bias**
Applies an understanding of distributions to evaluate claims based on data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Recognising bias**
Justifies criticisms of data sources that include biased statistical elements.

# Digital Technologies | Years 7 and 8

**Digital Technologies** | Year 7 and 8

**Content Descriptor**
Acquire, store and validate data from a range of sources using software, including spreadsheets and databases.

**Digital Technologies** | Year 7 and 8

**Content Descriptor**
Analyse and visualise data using a range of software, including spreadsheets and databases, to draw conclusions and make predictions by identifying trends.

**Digital Technologies** | Year 7 and 8

**Content Descriptor**
Investigate how digital systems represent text, image and audio data using integers.

**Digital Technologies** | Year 7 and 8

**Content Descriptor**
Explain how and why digital systems represent integers in binary.

**Digital Technologies** | Year 7 and 8

**Elaboration**
Summarising data based on its attributes to identify trends and make predictions, for example sorting crime data by type of offence, showing that burglaries have decreased over time to predict fewer burglaries will happen next year.

**Digital Technologies** | Year 7 and 8

**Elaboration**
Visualising multidimensional data by choosing appropriate graphs, for example a scatter plot of food prices and sales, coloured by each food's sugar content, or diagrams such as a social network diagram and maps of crime rates by location to reveal trends, outliers or other information.

**Digital Technologies** | Year 7 and 8

**Elaboration**
Judging how meaningful data is to a question, its correctness and how up to date the data is, for example "Does age affect the chance of cyclist injury?", "Are self-reported accidents reliable?" and "Is the data before cycleways existed relevant?"

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Calculates simple descriptive statistics such as mode, mean or median as measures to represent typical values of a distribution.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Compares the usefulness of different representations of the same data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Poses questions based on variations in continuous numerical data and chooses the appropriate method to collect and record data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Uses numerical and graphical representations relevant to the purpose of the collection of the data and explains their reasoning.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Describes the spread of a data distribution in terms of the range, clusters, skewness and symmetry of the graphical display, and determines and makes connections to the mode, median and mean of the data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Considers the context when determining whether to use data from a sample or a population.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Determines what type of sample to use from a population.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Makes reasonable statements about a population based on evidence from samples.

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Algebraic expressions**
Creates and identifies algebraic equations from word problems involving one or more operations.

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Algebraic expressions**
Interprets a table of values in order to plot points on a graph.

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Algebraic expressions**
Identifies and justifies equivalent algebraic expressions.

# Digital Technologies | Years 9 and 10

**Digital Technologies** | Year 9 and 10

**Content Descriptor**
Develop techniques to acquire, store and validate data from a range of sources using software, including spreadsheets and databases.

**Digital Technologies** | Year 9 and 10

**Content Descriptor**
Analyse and visualise data interactively using a range of software, including spreadsheets and databases, to draw conclusions and make predictions by identifying trends and outliers.

**Digital Technologies** | Year 9 and 10

**Elaboration**
Developing systems that store structured data, for example a movie or travel review website that collects Likert scale ratings and written reviews.

**Digital Technologies** | Year 9 and 10

**Elaboration**
Developing systems that acquire, use and protect data according to the Australian Privacy Principles, for example, ensuring personally identifiable information is not publicly shared without consent and is protected from unauthorised access.

**Digital Technologies** | Year 9 and 10

**Elaboration**
Developing systems that check data is correct and meaningful using automated techniques and manual analysis, for example, validating movie review data using rules and user interface elements, and detecting bias and fake reviews through simple statistical analysis.

**Digital Technologies** | Year 9 and 10

**Elaboration**
Summarising data, its attributes and the relationships between data sets, identifying trends and outliers to draw conclusions and make predictions, for example summarising data about electorates and their demographics, historical swings and exceptions to predict an election outcome.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Poses questions based on variations in continuous numerical data and chooses the appropriate method to collect and record data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Uses numerical and graphical representations relevant to the purpose of the collection of the data and explains their reasoning.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Determines and calculates the most appropriate statistic to describe the spread of data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Calculates simple descriptive statistics such as mode, mean or median as measures to represent typical values of a distribution.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Compares the usefulness of different representations of the same data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Describes the spread of a data distribution in terms of the range, clusters, skewness and symmetry of the graphical display, and determines and makes connections to the mode, median and mean of the data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Considers the context when determining whether to use data from a sample or a population.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Determines what type of sample to use from a population. Makes reasonable statements about a population based on evidence from samples.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Plans, executes and reports on sampling-based investigations, taking into account validity of methodology and consistency of data, to answer questions formulated by the student.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Recognising bias**
Applies an understanding of distributions to evaluate claims based on data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Recognising bias**
Justifies criticisms of data sources that include biased statistical elements.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Interprets and describes patterns in graphical representations of data from real-life situations.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Investigates, represents and interprets time series data. Interprets the impact of changes to data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Summarises data using fractions, percentages and decimals.

# Economics and Business | Year 7 and 8

**Economics and Business | Year 7 and 8**

**Content Descriptor**
Locate, select and organise information and data from a range of sources.

**Economics and Business | Year 7 and 8**

**Content Descriptor**
Interpret information and data to identify economic and business issues, trends and economic cause-and-effect relationships.

**Economics and Business | Year 7**

**Elaboration**
Organising data into appropriate formats using specialised digital tools, such as tables and graphs, visual displays.

**Economics and Business | Year 7**

**Elaboration**
Interpreting visual displays of multi-variable data to identify a cause-and-effect relationship within an economic and business issue, such as the relationship between income earned by an individual and levels of saving and spending.

**Economics and Business | Year 7**

**Elaboration**
Interpreting data displayed in tables and graphs to identify trends and answer questions such as, "for a 10-year period, what is the trend in the percentage of people over 60 paying income tax?"

**Economics and Business | Year 7**

**Elaboration**
Interpreting data displayed in tables and graphs to identify trends and answer questions such as, "for a 10-year period, what is the trend in the percentage of people over 60 paying income tax?"

**Economics and Business | Year 8**

**Elaboration**
Interpreting multi-variable data to identify a cause-and-effect relationship within an economic and business issue; for example, an increase in income earned by an individual and taxation paid, or when the supply of a good and service increases, the price adjusts.

**Economics and Business | Year 8**

**Elaboration**
Organising data into appropriate formats using specialised digital tools; for example, constructing a diagram modelling the relationship between consumers, producers and workers in a market or a table showing the features of different ways businesses adapt to opportunities in the market.

**Economics and Business | Year 8**

**Elaboration**
Interpreting multi-variable data to identify a cause-and-effect relationship within an economic and business issue; for example, an increase in income earned by an individual and taxation paid, or when the supply of a good and service increases, the price adjusts.

**Economics and Business | Year 8**

**Elaboration**
Interpreting multi-variable data to identify a cause-and-effect relationship within an economic and business issue; for example, an increase in income earned by an individual and taxation paid, or when the supply of a good and service increases, the price adjusts.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Describes the spread of a data distribution in terms of the range, clusters, skewness and symmetry of the graphical display, and determines and makes connections to the mode, median and mean of the data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Poses questions based on variations in continuous numerical data and chooses the appropriate method to collect and record data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Uses numerical and graphical representations relevant to the purpose of the collection of the data and explains their reasoning.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Compares the usefulness of different representations of the same data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Recognises the impact of outliers on a data set.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Calculates simple descriptive statistics such as mode, mean or median as measures to represent typical values of a distribution.

# Economics and Business | Year 7 and 8

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**

Determines and calculates the most appropriate statistic to describe the spread of data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**

Uses features of graphical representations to make predictions.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**

Summarises data using fractions, percentages and decimals.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**

Explains that continuous variables depicting growth or change often vary over time.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**

Interprets and describes patterns in graphical representations of data from real-life situations.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**

Investigates the association of 2 numerical variables through the representation and interpretation of bivariate data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**

Investigates, represents and interprets time series data.

# Economics and Business | Year 9 and 10

**Economics and Business | Year 9 and 10**

**Content Descriptor**
Locate, select and analyse information and data from a range of sources.

**Economics and Business | Year 9**

**Content Descriptor**
How individuals and businesses manage consumer and financial risks and rewards.

**Economics and Business | Year 10**

**Content Descriptor**
The importance of Australia's superannuation system and how this system affects consumer and financial decision-making.

**Economics and Business | Year 9**

**Elaboration**
Discussing examples of consumer reward programs; for example, innovative products and services, benefits accrued through loyalty schemes, and rewards for building savings and making investments.

**Economics and Business | Year 9**

**Elaboration**
Selecting and presenting data in appropriate formats using specialised digital tools and processes; for example, a table and graph showing the composition and direction of trade between Australia and Asia.

**Economics and Business | Year 10**

**Elaboration**
Selecting and representing information and data about an economic or business issue, using specialised digital tools and processes to support interpretation and analysis; for example, a graphic organiser connecting objectives of the Australian economy with examples of government intervention in the economy.

**Economics and Business | Year 10**

**Elaboration**
Identifying why individuals make decisions about superannuation investment options and how their circumstances, such as age, employment status, dependents and anticipated retirement age, affect these decisions.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Uses numerical and graphical representations relevant to the purpose of the collection of the data and explains their reasoning.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Determines and calculates the most appropriate statistic to describe the spread of data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Calculates simple descriptive statistics such as mode, mean or median as measures to represent typical values of a distribution.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Compares the usefulness of different representations of the same data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Describes the spread of a data distribution in terms of the range, clusters, skewness and symmetry of the graphical display, and determines and makes connections to the mode, median and mean of the data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Uses features of graphical representations to make predictions.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Summarises data using fractions, percentages and decimals.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Explains that continuous variables depicting growth or change often vary over time.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Interprets graphs depicting motion such as distance–time and velocity–time graphs.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Investigates, represents and interprets time series data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Interprets the impact of changes to data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Interprets and describes patterns in graphical representations of data from real-life situations.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Investigates the association of 2 numerical variables through the representation and interpretation of bivariate data.

# Economics and Business | Year 9 and 10

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**

Poses questions based on variations in continuous numerical data and chooses the appropriate method to collect and record data.

**Numeracy Progression**

**Number sense and algebra: Understanding money**

**Working with money proportionally**

Calculates the percentage change including the profit or loss made on a transaction.

**Numeracy Progression**

**Number sense and algebra: Understanding money**

**Working with money proportionally**

Applies proportional strategies for decision-making, such as determining "best buys", currency conversion, determining gross domestic product.

**Numeracy Progression**

**Number sense and algebra: Understanding money**

**Working with money proportionally**

Determines the best payment method or payment plan for a variety of contexts using rates, percentages and discounts.

**Numeracy Progression**

**Number sense and algebra: Understanding money**

**Working with money proportionally**

Chooses and uses proportional strategies for decision-making.

**Numeracy Progression**

**Number sense and algebra: Understanding money**

**Working with money proportionally**

Makes decisions about situations involving compound interest.

# Geography | Year 7 and 8

**Geography** | Year 7 and 8

**Content Descriptor**
Collect, represent and compare data and information from primary research methods, including fieldwork and secondary research materials, using geospatial technologies and digital tools as appropriate.

**Geography** | Year 7 and 8

**Content Descriptor**
Interpret and analyse geographical data and information to identify similarities and differences, explain patterns and trends and infer relationships.

**Geography** | Year 7

**Elaboration**
Representing spatial distribution of different types of geographical phenomena by constructing appropriate maps at different scales that conform to cartographic conventions, for example using computer mapping to show the spatial distribution of impacts of hydrological hazards on environments.

**Geography** | Year 7

**Elaboration**
Representing relevant data and information in appropriate formats to combine ideas; for example, applying primary research to the design of a questionnaire or survey on what is meant by liveability, with results presented in a table or graph.

**Geography** | Year 8

**Elaboration**
Representing relevant and reliable data and information in appropriate formats to combine ideas, using digital tools; for example, creating annotated diagrams to show the changes to a landform over time or using digital mapping tools to show the cultural and demographic diversity of First Nations Australians.

**Geography** | Year 8

**Elaboration**
Representing spatial distribution of different types of geographical phenomena by constructing appropriate maps at different scales that conform to cartographic conventions, for example using computer mapping to show the spatial distribution, constructing a map to show the relationship between landforms, or contrasting the spatial distribution of population.

**Geography** | Year 8

**Elaboration**
Inferring relationships from data and information collected during primary research; for example, using observations, field sketches, field measurements, questionnaires or interviews to explain the distribution of population in your local area and suggesting possible causes, effects and trends.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Calculates simple descriptive statistics such as mode, mean or median as measures to represent typical values of a distribution.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Describes the spread of a data distribution in terms of the range, clusters, skewness and symmetry of the graphical display, and determines and makes connections to the mode, median and mean of the data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Poses questions based on variations in continuous numerical data and chooses the appropriate method to collect and record data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Determines and calculates the most appropriate statistic to describe the spread of data.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Identifies, compares, represents and solves problems involving different rates in real world contexts.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Determines the equivalence between 2 rates or ratios by expressing them in their simplest form.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Identifies the common unit rate to compare rates expressed in different units.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Determines the whole given a percentage.

# Geography | Year 9 and 10

**Geography** | Year 9 and 10

**Content Descriptor**
Collect, represent and compare data and information from primary research methods, including fieldwork and secondary research materials, using geospatial technologies and digital tools as appropriate.

**Geography** | Year 9 and 10

**Content Descriptor**
Evaluate geographical data and information to make generalisations and predictions, explain patterns and trends and infer relationships.

**Geography** | Year 9

**Elaboration**
Representing spatial distribution of geographical phenomena by constructing special purpose maps that conform to cartographic conventions, for example creating a map to show the relationship between biomes and world food production.

**Geography** | Year 9

**Elaboration**
Creating a presentation of data and information using geospatial technologies; for example, a 3D diagram illustrating interactions between an oil spill in coral reefs and resultant decline in aquatic food production; a flow diagram showing the daily activities of a female subsistence farmer in Africa; or a diagram of a mangrove ecosystem before and after human interactions.

**Geography** | Year 9

**Elaboration**
Explaining relationships between causes and impacts of factors represented in data; for example, the impact of the use of Global Positioning System (GPS) and Geographic Information Systems (GIS) on the way farmers control the dispersion of fertilisers and pesticides to produce higher yields and limit run-off, or the effects of the use of GPS to construct maps on how tourists use different transport systems to visits popular places in Australia.

**Geography** | Year 9

**Elaboration**
Creating visual representations of multi-variable geographical data using digital tools; for example, a table to compare the daily consumption of meat per person in developed and developing countries; a complex graph to illustrate the relationship between temperature, precipitation and biomes; or a cross-section identifying horizons in a soil profile, and the impacts of mining and fracking on agricultural land.

**Geography** | Year 9

**Elaboration**
Representing spatial distribution of geographical phenomena by constructing special purpose maps that conform to cartographic conventions, for example creating a map to show the relationship between biomes and world food production.

**Geography** | Year 9

**Elaboration**
Explaining a pattern; for example, using the current Global Hunger Index and the updated Food and Agricultural Organization's Low-Income Food-Deficit Countries (LIFDCs) to identify locations of food scarcity and malnutrition, or comparing maps showing transport networks with survey responses on personal mobility.

**Geography** | Year 10

**Elaboration**
Representing multi-variable data using digital tools; for example, generating pie graphs showing threats to biodiversity; using digital photographs to indicate differences in material goods between people and places, and the influence of environment, culture and income; using tables to measure and compare wellbeing using different indexes and the world gender equality gap.

**Geography** | Year 10

**Elaboration**
Inferring relationships between key environmental indicators and sustainability of places at the national scale; for example, using a geospatial technologies application to create a map of Australia and another country to show measures of environmental change such as air quality, freshwater quality, fish resources, energy use, biodiversity or waste generation.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Determines and calculates the most appropriate statistic to describe the spread of data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Describes the spread of a data distribution in terms of the range, clusters, skewness and symmetry of the graphical display, and determines and makes connections to the mode, median and mean of the data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Calculates simple descriptive statistics such as mode, mean or median as measures to represent typical values of a distribution.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Uses numerical and graphical representations relevant to the purpose of the collection of the data and explains their reasoning.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Poses questions based on variations in continuous numerical data and chooses the appropriate method to collect and record data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**
Compares the usefulness of different representations of the same data (e.g. Chooses to use a line graph to illustrate trends, a bar graph to compare and a histogram to show distribution).

# Geography | Year 9 and 10

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Determines what type of sample to use from a population.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Considers the context when determining whether to use data from a sample or a population.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Makes reasonable statements about a population based on evidence from samples.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Plans, executes and reports on sampling-based investigations, taking into account validity of methodology and consistency of data, to answer questions formulated by the student.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Describes how the proportion is preserved when using a ratio.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Determines the whole given a percentage.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Identifies the common unit rate to compare rates expressed in different units.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Determines the equivalence between 2 rates or ratios by expressing them in their simplest form.

# Health and Physical Education (HPE) | Year 7 and 8

**HPE** | Year 7 and 8

**Content Descriptor**
Plan and implement strategies, using health resources, to enhance their own and others' health, safety, relationships and wellbeing.

**HPE** | Year 7 and 8

**Content Descriptor**
Plan and implement strategies, using health resources, to enhance their own and others' health, safety, relationships and wellbeing.

**HPE** | Year 7 and 8

**Elaboration**
Investigating tools and designing routines that help to regulate the use of digital environments and tools and ensure a healthy pattern of use, such as using "do not disturb" mode or turning off notifications.

**HPE** | Year 7 and 8

**Elaboration**
Researching a variety of snack and lunch options, and evaluating nutritional value, value for money and sustainability to create a weekly menu plan; considering the benefits of eating locally grown, chemical-free produce to support personal health benefits, reduce food miles and support local producers.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Determines the whole given a percentage (e.g. Given 20% is 13 millilitres, determines the whole is 65 millilitres; given 20% is 1300 kilojoules, determines the whole is 6500 kilojoules when calculating the amount of energy consumed as part of a daily recommended intake).

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Identifies, compares, represents and solves problems involving different rates in real world contexts.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Determines the equivalence between 2 rates or ratios by expressing them in their simplest form.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Identifies the common unit rate to compare rates expressed in different units.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Determines the equivalence between 2 rates or ratios by expressing them in their simplest form.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Identifies the common unit rate to compare rates expressed in different units.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Identifies, compares, represents and solves problems involving different rates in real world contexts.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Explains that continuous variables depicting growth or change often vary over time (e g. Represents changes to fitness levels following the implementation of a personal fitness plan; interprets charts).

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Interprets the impact of changes to data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Summarises data using fractions, percentages and decimals.

**Numeracy Progression**

**Measurement and geometry: Measuring time**

**Converting between units of time**
Uses rates involving time to solve problems.

**Numeracy Progression**

**Measurement and geometry: Measuring time**

**Converting between units of time**
Converts between units of time, using appropriate conversion rates, to solve problems involving time.

**Numeracy Progression**

**Measurement and geometry: Measuring time**

**Converting between units of time**
Interprets and converts between 12-hour and 24-hour digital time, and analog and digital representations of time to solve duration problems.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Proportionality and the whole**
Determines the whole given a percentage (e.g. Given 20% is 13 millilitres, determines the whole is 65 millilitres; given 20% is 1300) kilojoules, determines the whole is 6500 kilojoules when calculating the amount of energy consumed as part of a daily recommended intake).

# Health and Physical Education (HPE) | Year 9 and 10

**HPE** | Year 7 and 8

**Content Descriptor**
Critique health information, services and media messaging about relationships, lifestyle choices, health decisions and behaviours to evaluate their influence on individual attitudes and actions.

**HPE** | Year 7 and 8

**Elaboration**
Investigating health issues specific to First Nations Australian communities and proposing proactive community strategies for promoting better access and health outcomes; for example, remote area dialysis buses and community-based treatment options.

**HPE** | Year 7 and 8

**Elaboration**
Critiquing health information and services that provide advice and support on issues targeted at specific groups of young people, including support with substance use, healthy food choices, fitness and exercise plans, mental health support, sexual health and personal safety.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Recognising bias**
Identifies and explains bias as a possible source of error in media reports of survey data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Recognising bias**
Justifies criticisms of data sources that include biased statistical elements.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Recognising bias**
Applies an understanding of distributions to evaluate claims based on data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Recognising bias**
Applies an understanding of distributions to evaluate claims based on data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Considers the context when determining whether to use data from a sample or a population.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Makes reasonable statements about a population based on evidence from samples.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Plans, executes and reports on sampling-based investigations, taking into account validity of methodology and consistency of data, to answer questions formulated by the student.

# Science | Year 7 and 8

**Science** | Year 7 and 8

**Content Descriptor**
Select and use equipment to generate and record data with precision, using digital tools as appropriate.

**Science** | Year 7 and 8

**Content Descriptor**
Plan and conduct reproducible investigations to answer questions and test hypotheses, including identifying variables and assumptions and, as appropriate, recognising and managing risks, considering ethical issues and recognising key considerations regarding heritage sites and artefacts on Country/Place.

**Science** | Year 7 and 8

**Content Descriptor**
Select and construct appropriate representations, including tables, graphs, models and mathematical relationships, to organise and process data and information.

**Science** | Year 7 and 8

**Content Descriptor**
Analyse data and information to describe patterns, trends and relationships and identify anomalies.

**Science** | Year 7

**Elaboration**
Examining how the use of digital tools such as stopwatches and digital scales can enable the generation of more precise data.

**Science** | Year 7

**Elaboration**
Using appropriate standard units and performing simple unit conversions when recording data.

**Science** | Year 7

**Elaboration**
Using spreadsheets to aid the presentation and analysis of data.

**Science** | Year 7

**Elaboration**
Analysing data, including secondary data, to determine mathematical relationships, such as tidal variations over the course of a lunar cycle.

**Science** | Year 7

**Elaboration**
Distinguishing between discrete and continuous data and selecting appropriate data representations.

**Science** | Year 8

**Elaboration**
Selecting and using equipment with required precision such as adjusting magnification to observe specific cell structures and recording this magnification and reading the bottom of the meniscus to determine the precise volume of liquid.

**Science** | Year 8

**Elaboration**
Recording data with precision appropriate to the instrument such as rounding up or down with finer graduations or estimating an intermediate value with coarser graduations.

**Science** | Year 8

**Elaboration**
Using simple formulas in spreadsheets to organise and process collected data.

**Science** | Year 8

**Elaboration**
Using appropriate positive and negative signs for standard units, number of decimal points and exponential notation where relevant when recording data.

**Science** | Year 8

**Elaboration**
Designing reproducible investigations that specifically test variables of the causal relationship and control the remaining variables.

**Science** | Year 8

**Elaboration**
Using visual displays of large data sets, such as maps showing the location of volcanoes and earthquakes, charts showing the structure of body systems and graphs showing variable energy production, to identify temporal.

**Numeracy Progression**

**Number sense and algebra: Number and place value**

**Numeral recognition and identification**
Describes the multiplicative relationship between the adjacent positions in place value for decimals (e.g. Understands that 0.2 is 10 times as great as 0.02 and that 100 times 0.005 is 0.5.

**Numeracy Progression**

**Number sense and algebra: Number and place value**

**Numeral recognition and identification**
Compares the size of decimals to other numbers including natural numbers and decimals expressed to different numbers of places.

**Numeracy Progression**

**Number sense and algebra: Number and place value**

**Numeral recognition and identification**
Rounds decimals to one and 2 decimal places for a purpose.

**Numeracy Progression**

**Number sense and algebra: Number and place value**

**Numeral recognition and identification**
Identifies, reads, writes and interprets decimal numbers applying knowledge of the place value periods of tenths, hundredths and thousandths and beyond.

**Numeracy Progression**

**Number sense and algebra: Number and place value**

**Numeral recognition and identification**
Compares and orders decimals greater than one including those expressed to an unequal number of places.

# Science | Year 7 and 8

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Determines a percentage as a part of a whole**

Explains and fluently uses interchangeably the equivalence relationship between a fraction, decimal and percentage.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Determines a percentage as a part of a whole**

Uses key percentages and their equivalences to determine the percentage of a quantity.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Determines a percentage as a part of a whole**

Calculates a percentage of an amount and expresses one quantity as a percentage of another.

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Algebraic relationships**

Interprets and uses formulas and algebraic equations that describe relationships in various contexts.

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Algebraic relationships**

Interprets and uses formulas and algebraic equations that describe relationships in various contexts.

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Algebraic relationships**

Plots relationships on a graph using a table of values representing authentic data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**

Makes reasonable statements about a population based on evidence from samples.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**

Plans, executes and reports on sampling-based investigations, taking into account validity of methodology and consistency of data, to answer questions formulated by the student.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**

Poses questions based on variations in continuous numerical data and chooses the appropriate method to collect and record data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**

Describes the spread of a data distribution in terms of the range, clusters, skewness and symmetry of the graphical display, and determines and makes connections to the mode, median and mean of the data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**

Determines what type of sample to use from a population.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**

Considers the context when determining whether to use data from a sample or a population.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**

Poses questions based on variations in continuous numerical data and chooses the appropriate method to collect and record data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**

Calculates simple descriptive statistics such as mode, mean or median as measures to represent typical values of a distribution.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**

Uses numerical and graphical representations relevant to the purpose of the collection of the data and explains their reasoning.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**

Determines and calculates the most appropriate statistic to describe the spread of data.

# **Science** | Year 7 and 8

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Collecting, displaying, interpreting and analysing numerical data**

Compares the usefulness of different representations of the same data.

**Numeracy Progression**

**Measurement and geometry: Understanding units of measurement**

**Converting units**

Establishes and uses formulas and metric units for calculating the area of rectangles and triangles.

**Numeracy Progression**

**Measurement and geometry: Understanding units of measurement**

**Converting units**

Describes and uses the relationship between metric units of measurement and the base-10 place value system to accurately measure and record measurements using decimals.

**Numeracy Progression**

**Measurement and geometry: Understanding units of measurement**

**Converting units**

Measures and uses key angles 45˚, 90˚, 180˚, 360˚) to define other angles according to their size.

**Numeracy Progression**

**Measurement and geometry: Understanding units of measurement**

**Converting units**

Using metric units and formulas.

**Numeracy Progression**

**Measurement and geometry: Understanding units of measurement**

**Converting units**

Converts between metric units of measurement of the same attribute.

**Numeracy Progression**

**Measurement and geometry: Understanding units of measurement**

**Converting units**

Angles as measures of turn.

# Science | Year 9 and 10 (A)

**Science** | Year 9 and 10

**Content Descriptor**
Select and construct appropriate representations, including tables, graphs, descriptive statistics, models and mathematical relationships, to organise and process data and information.

**Science** | Year 9 and 10

**Content Descriptor**
Analyse and connect a variety of data and information to identify and explain patterns, trends, relationships and anomalies.

**Science** | Year 9

**Elaboration**
Applying algorithms to measure carbon storage of different vegetation types.

**Science** | Year 9

**Elaboration**
Identifying which sample properties, such as mean, median and range, are the most appropriate to use to make generalisations.

**Science** | Year 9

**Elaboration**
Analysing representations of data from atmospheric monitoring and ice cores to identify patterns and trends in the amount of carbon dioxide in the atmosphere, highlighting inconsistencies.

**Science** | Year 9

**Elaboration**
Analysing data on heat transfer through multiple layers of an insulating material and identifying patterns and proportional relationships, such as: 'when the thickness of the material is doubled the amount of heat transferred is halved'.

**Science** | Year 9

**Elaboration**
Examining tables, graphs and digital simulations of radioactive decay half-life to predict changes in mass over time.

**Science** | Year 9

**Elaboration**
Comparing published data with experimental data such as the sound-insulating levels of different materials and identifying any trends or patterns in difference.

**Science** | Year 9

**Elaboration**
Identifying any trends or patterns in differences, such as: 'the published sound levels are usually higher than the experimentally determined levels'.

**Science** | Year 9

**Elaboration**
Applying ratios to accurately represent usable and waste energy in transfer and transformation diagrams such as Sankey diagrams.

**Science** | Year 9

**Elaboration**
Using spreadsheet software to present data in tabular and graphical forms.

**Science** | Year 10

**Elaboration**
Representing speed and acceleration data from investigations or simulations in tables and graphs and comparing how these facilitate the identification of relationships.

**Science** | Year 10

**Elaboration**
Considering how the scales used for representing data affect interpretation of the data.

**Science** | Year 10

**Elaboration**
Exploring relationships between variables using spreadsheets, databases, tables, charts, graphs and statistics to make reasoned predictions about global climate change.

**Science** | Year 10

**Elaboration**
Using spreadsheet software to carry out mathematical analyses of data.

**Science** | Year 10

**Elaboration**
Identifying similar trends and patterns in data from different sources such as homologous structures and fossil evidence.

**Science** | Year 10

**Elaboration**
Describing sample properties such as mean, median, range and large gaps visible on a graph to make generalisations, acknowledging uncertainties and the effects of outliers.

**Science** | Year 10

**Elaboration**
Considering how data or information can be organised and represented to effectively communicate support for conclusions, including through visual or interactive models.

**Science** | Year 10

**Elaboration**
Exploring how different interpretations can be made from data that is organised or processed in different ways, and the implications of this for data analysis.

**Science** | Year 10

**Elaboration**
Evaluating the merits and limitations of time-lapse visual representations of changes in polar ice coverage with a mathematical representation.

# **Science** | Year 9 and 10 (A)

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Algebraic relationships**
Interprets and uses formulas and algebraic equations that describe relationships in various contexts.

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Algebraic relationships**
Plots relationships on a graph using a table of values representing authentic data.

**Numeracy Progression**

**Number sense and algebra: Number and place value**

**Numeral recognition and identification**
Identifies, reads, interprets, compares and orders very large numbers and very small numbers.

**Numeracy Progression**

**Number sense and algebra: Number and place value**

**Place value**
Relates place value parts to exponents (e.g. 100 is 100 times greater than 10, and that is why $10 \times 10^2 = 10^3$ and why $10^3$ divided by 10 is equal to $10^2$).

**Numeracy Progression**

**Number sense and algebra: Number and place value**

**Place value**
Expresses numbers in scientific notation.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Using ratios and rates**
Uses a ratio to create, increase or decrease quantities to maintain a given proportion.

**Numeracy Progression**

**Number sense and algebra: Proportional thinking**

**Using ratios and rates**
Uses rates to determine how quantities change.

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Linear and non-linear relationships**
Identifies the difference between linear and non-linear relationships in everyday contexts.

**Numeracy Progression**

**Number sense and algebra: Number patterns and algebraic thinking**

**Linear and non-linear relationships**
Describes and interprets the graphical features of linear and non-linear growth in authentic problems.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Uses features of graphical representations to make predictions.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Summarises data using fractions, percentages and decimals.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Explains that continuous variables depicting growth or change often vary over time.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Interprets graphs depicting motion such as distance–time and velocity–time graphs.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Investigates the association of 2 numerical variables through the representation and interpretation of bivariate data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Interprets and describes patterns in graphical representations of data from real-life situations.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Investigates, represents and interprets time series data.

# **Science** | Year 9 and 10 (A)

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Interpreting graphical representations**
Interprets the impact of changes to data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Considers the context when determining whether to use data from a sample or a population and determines what type of sample to use.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Plans, executes and reports on sampling-based investigations, taking into account validity of methodology and consistency of data, to answer questions formulated by the student.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Recognising bias**
Justifies criticisms of data sources that include biased statistical elements (e.g. Inappropriate sampling from populations; identifying sources of uncertainty in a scientific investigation; checks the authenticity of a data set).

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Recognising bias**
Applies an understanding of distributions to evaluate claims based on data.

# **Science** | Year 9 and 10 (B)

**Science** | Year 9 and 10

**Content Descriptor**
Assess the validity and reproducibility of methods and evaluate the validity of conclusions and claims, including by identifying assumptions, conflicting evidence and areas of uncertainty.

**Science** | Year 9 and 10

**Content Descriptor**
Construct arguments based on analysis of a variety of evidence to support conclusions or evaluate claims and consider any ethical issues and cultural protocols associated with accessing, using or citing secondary data or information.

**Science** | Year 9

**Elaboration**
Interrogating the evidence and reasoning used to justify claims regarding the age of ancient artefacts.

**Science** | Year 9

**Elaboration**
Identifying gaps or weaknesses in conclusions and relating these to the validity and reproducibility of the method.

**Science** | Year 10

**Elaboration**
Constructing a scientific argument showing how a range of evidence supports a claim relating to the age of the universe.

**Science** | Year 10

**Elaboration**
Examining secondary data to determine the credibility of the source and the validity and reproducibility of the data and identifying the extent to which the data is consistent with data from other sources.

**Science** | Year 10

**Elaboration**
Using primary or secondary scientific evidence to support or oppose a local action that may impact on global climate change.

**Science** | Year 10

**Elaboration**
Considering how data variation can indicate uncertainty and might affect confidence in conclusions reached and claims made.

**Science** | Year 10

**Elaboration**
Evaluating the strength of a conclusion that can be inferred from a particular data set.

**Science** | Year 10

**Elaboration**
Judging the validity of science-related media reports and how these reports might be interpreted by considering how data variation can indicate uncertainty and might affect confidence in conclusions reached and claims made.

**Science** | Year 10

**Elaboration**
Analysing conclusions and claims to identify facts or premises that are taken for granted to be true and evaluating the reasonableness of those assumptions.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Considers the context when determining whether to use data from a sample or a population and determines what type of sample to use.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Sampling**
Plans, executes and reports on sampling-based investigations, taking into account validity of methodology and consistency of data, to answer questions formulated by the student.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Recognising bias**
Applies an understanding of distributions to evaluate claims based on data.

**Numeracy Progression**

**Statistics and probability: Interpreting and representing data**

**Recognising bias**
Justifies criticisms of data sources that include biased statistical elements.

**Numeracy Progression**

**Statistics and probability: Understanding chance**

**Probabilistic reasoning**
Solves conditional probability problems informally using data in two-way tables and authentic contexts.

# **Science** | Year 9 and 10 (B)

**Numeracy Progression**

**Statistics and probability: Understanding chance**

**Probabilistic reasoning**

Evaluates chance data reported in media for meaning and accuracy.

**Numeracy Progression**

**Statistics and probability: Understanding chance**

**Probabilistic reasoning**

Applies probabilistic/chance reasoning to data collected in statistical investigations when making decisions acknowledging uncertainty.

**Numeracy Progression**

**Statistics and probability: Understanding chance**

**Probabilistic reasoning**

Recognises combinations of events and the impact they have on assigning probabilities.

**Numeracy Progression**

**Number sense and algebra: Number and place value**

**Place value**

Expresses numbers in scientific notation.

**Numeracy Progression**

**Number sense and algebra: Number and place value**

**Place value**

Relates place value parts to exponents (e.g. 100 is 100 times greater than 10, and that is why $10 \times 10^2 = 10^3$ and why $10^3$ divided by 10 is equal to $10^2$).

**Numeracy Progression**

**Number sense and algebra: Number and place value**

**Numeral recognition and identification**

Identifies, reads, interprets, compares and orders very large numbers and very small numbers.