**ELABORATION REFINEMENT FOR LEARNING AREAS**

**F–10 AUSTRALIAN CURRICULUM: SCIENCE ELABORATIONS REFINEMENT**

| **YEAR LEVEL** | **CODE** | **PREVIOUS ELABORATIONS** | **REVISED ELABORATIONS** |
| --- | --- | --- | --- |
| 1 | ACSHE021 | * discussing why some plants only grow in certain areas
* posing questions about events and features of the local environment that are of interest and affect students lives
* recognising that descriptions of what we observe are used by people to help identify change
 | * jointly constructing questions about the events and features of the local environment with teacher guidance
* recognising that descriptions of what we observe are used by people to help identify change
 |
| 1 | ACSIS024 | * thinking about “What will happen if...?” type questions about everyday objects and events
* using the senses to explore the local environment to pose interesting questions, make inferences and predictions
 | * thinking about "What will happen if……?" type questions about everyday objects and events
* using the senses to explore the local environment to pose interesting questions and making predictions about what will happen
 |
| 1 | ACSIS025 | * manipulating objects and materials and making observations of the results
* researching with the use of simple information sources
* sorting objects and events based on easily observable characteristics
 | * manipulating objects and making observations of what happens
* researching ideas collaboratively using big books, web pages and ICT within the classroom
* exploring different ways of solving science questions through guided discussion
* sorting information and classifying objects based on easily observable characteristics with teacher guidance
 |
| 1 | ACSIS026 | * using units that are familiar to students from home and school, such as cups (cooking), hand spans (length) and walking paces (distance)
 | * using units that are familiar to students from home and school, such as cups (cooking), hand spans (length) and walking paces (distance) to make and record observations with teacher guidance
 |
| 1 | ACSIS027 | * using matching activities, including identifying similar things, odd-one-out and opposites
* using simple column graphs (bar graphs) with guidance from the teacher to record gathered information
 | * using matching activities, including identifying similar things, odd-one-out and opposites
* exploring ways of recording and sharing information through class discussion
* jointly constructing simple column graphs and picture graphs to represent class investigations
 |
| 1 | ACSIS212 | * comparing and discussing, with guidance, whether observations were expected
 | * discussing or representing what was discovered in an investigation
* engaging in whole class or guided small group discussions to share observations and ideas
 |
| 1 | ACSIS213 | * discussing observations with other students to see similarities and differences in results
 | * discussing original predictions and, with guidance, comparing these to their observations
 |
| 2 | ACSIS039 | * using units that are familiar to students from home and school, such as cups (cooking), hand spans (length) and walking paces (distance)
 | * using units that are familiar to students from home and school, such as cups (cooking), hand spans (length) and walking paces (distance) to make and compare observations
 |
| 2 | ACSIS040 | * using simple column graphs (bar graphs) with guidance from the teacher to record gathered information
* using matching activities, including identifying similar things, odd-one-out and opposites
 | * constructing column and picture graphs with teacher guidance to record gathered information
* sorting information in provided tables or graphic organisers
 |
| 3 | ACSIS053 | * choosing questions to investigate from a list of possibilities provided by the teacher
* considering familiar situations in order to think of possible areas for investigation
* working in groups to discuss things that might happen during an investigation
 | * choosing questions to investigate from a list of possibilities
* jointly constructing questions that may form the basis for investigation
* listing shared experiences as a whole class and identifying possible investigations
* working in groups to discuss things that might happen during an investigation
 |
| 3 | ACSIS054 | * working in groups, with teacher guidance, to test simple cause-and-effect relationships
* carrying out class surveys to identify trends and patterns in data
 | * working with teacher guidance to plan investigations to test simple cause-and-effect relationships
* discussing as a whole class ways to investigate questions and evaluating which ways might be most successful
 |
| 3 | ACSIS055 | * recording measurements using familiar formal units and appropriate abbreviations, such as seconds (s), grams (g), centimetres (cm)
* using a digital camera to record observations
* considering safety rules for equipment used
 | * using provided tables to organise materials and objects based on observable properties
* discussing how to graph data presented in a table
 |
| 3 | ACSIS058 | * describing experiences of carrying out investigations to the teacher, small group or whole class
 | * describing experiences of carrying out investigations to the teacher, small group or whole class
* discussing as a whole class the idea of fairness in testing
 |
| 3 | ACSIS060 | * Communicating with other students carrying out similar investigations to share experiences and improve investigation skills
* using simple explanations and arguments, reports or graphical representations to communicate ideas to other students
 | * communicating with other students carrying out similar investigations to share experiences and improve investigation skill
* exploring different ways to show processes and relationships through diagrams, models and role play
* using simple explanations and arguments, reports or graphical representations to communicate ideas to other students
 |
| 4 | ACSIS064 | * working in groups to discuss things that might happen during an investigation
* considering familiar situations in order to think of possible areas for investigation
* choosing questions to investigate from a list of possibilities provided by the teacher
 | * considering familiar situations in order to think about possible areas for investigation
* reflecting on familiar situations to make predictions with teacher guidance
* choosing questions to investigate from a list of possibilities
 |
| 4 | ACSIS065 | * working in groups, with teacher guidance, to test simple cause-and-effect relationships
* carrying out class surveys to identify trends and patterns in data
 | * exploring different ways to conduct investigations and connecting these to the types of questions asked with teacher guidance
* working in groups, with teacher guidance, to plan ways to investigate questions
 |
| 4 | ACSIS066 | * considering safety rules for equipment used
* using a digital camera to record observations
* recording measurements using familiar formal units and appropriate abbreviations, such as seconds (s), grams (g), centimetres (cm)
 | * discussing and recording safety rules for equipment as a whole class
* making and recording measurements using familiar formal units and appropriate abbreviations, such as seconds (s), grams (g), centimeters (cm) and mililitres (mL)
 |
| 4 | ACSIS068 | * identifying and discussing numerical and visual patterns in data collected from students' own investigations and from other sources
* using tables to organise materials and objects based on observable properties
 | * identifying and discussing numerical and visual patterns in data collected from students' investigations and from other sources
* using provided graphic organisers to sort and represent information
* discussing with teacher guidance which graphic organisers will be most useful in sorting or organising data arising from investigations
 |
| 4 | ACSIS069 | * describing experiences of carrying out investigations to the teacher, small group or whole class
 | * reflecting on investigations, identifying what went well, what was difficult or didn't work so well, and how well the investigation helped answer the question
* discussing which aspects of the investigation helped improve fairness, and any aspects that weren't fair
 |
| 4 | ACSIS216 | * discussing how well predictions matched results from an investigation and sharing ideas about what was learnt
 | * discussing how well predictions matched results from an investigation and proposing reasons for findings
* comparing, in small groups, proposed reasons for findings and explaining their reasoning
 |
| 4 | ACSSU076 | * observing qualitatively how speed is affected by the size of a force
* comparing the effect of friction between different surfaces, such as tyres and shoes on a range of surfaces
* investigating the effect of forces on the behaviour of an object through actions such as throwing, dropping, bouncing and rolling
* investigating the forces of attraction and repulsion between magnets
 | * observing qualitatively how speed is affected by the size of a force
* exploring how non-contact forces are similar to contact forces in terms of objects pushing and pulling another object
* comparing and contrasting the effect of friction on different surfaces, such as tyres and shoes on a range of surfaces
* investigating the effect of forces on the behaviour of an object through actions such as throwing, dropping, bouncing and rolling
* exploring the forces of attraction and repulsion between magnets
 |
| 5 | ACSIS086 | * experiencing a range of ways of finding information and ideas, including internet research

* considering different investigation methods, including experimental testing, field work and conducting surveys
 | * experiencing a range of ways of investigating questions, including experimental testing, internet research, field observations and exploring simulations
* discussing the advantages of certain types of investigation for answering certain types of questions
* considering different ways to approach problem solving, including researching, using trial and error, experimental testing and creating models
 |
| 5 | ACSIS087 | * discussing in groups how investigations can be made as fair as possible
* using familiar tools such as rulers, weighing scales and watches to measure objects and events in investigations
* using the idea of an independent variable (note: this terminology does not need to be used at this stage) as something that is being investigated by changing it and measuring the effect of this change
* using familiar units such as grams, seconds and metres and developing the use of standard multipliers such as kilometres and millimetres
* adding information to tables, graphs and spreadsheets
 | * discussing in groups how investigations can be made as fair as possible
* using tools to accurately measure objects and events in investigation and exploring which tools provide the most accurate measurements
* using familiar units such as grams, seconds and meters and developing the use of standard multipliers such as kilometres and millimetres

* recording data in tables and diagrams or electronically as digital images and spreadsheets
 |
| 5 | ACSIS088 | * discussing possible hazards involved in conducting investigations, and how these risks can be reduced
 | * explaining rules for safe processes and use of equipment
 |
| 5 | ACSIS090 | * describing simple cause-and-effect relationships as shown by trends in quantitative data
* identifying similarities and differences in qualitative data in order to group items or materials
 | * constructing tables, graphs and other graphic organisers to show trends in data
* identifying patterns in data and developing explanations that fit these patterns
* identifying similarities and differences in qualitative data in order to group items or materials
 |
| 5 | ACSIS091 | * working collaboratively to suggest improvements to the methods used
 | * working collaboratively to identify where methods could be improved, including where testing was not fair and practices could be improved
 |
| 5 | ACSIS093 | * understanding how models can be used to represent scientific ideas and constructing physical models to demonstrate an aspect of scientific understanding
* using a variety of communication modes such as reports, explanations, arguments, debates and procedural accounts, to communicate scientific ideas
* using labelled diagrams, including cross-sectional representations, to communicate ideas
 | * discussing how models represent scientific ideas and constructing physical models to demonstrate an aspect of scientific understanding

* constructing multi-modal texts to communicate science ideas

* using labelled diagrams, including cross-sectional representations, to communicate ideas
 |
| 5 | ACSIS231 | * discussing in groups possible situations to investigate

* sharing ideas about what may happen and why
* applying experience from similar situations in the past to predict what may happen in a new situation
 | * exploring the range of questions that can be asked about a problem or phenomena and with guidance, identifying those questions that could be investigated
* applying experience from similar situations in the past to predict what might happen in a new situation
 |
| 5 | ACSSU043 | * explaining how particular adaptations help survival such as nocturnal behaviour, silvery coloured leaves of dune plants
* describing and listing adaptations of living things suited for the Australian environment
* exploring general adaptations for particular environments such as water conservation in deserts
* comparing types of adaptations such as behavioural and structural
 | * explaining how particular adaptations help survival such as nocturnal behaviour, silvery coloured leaves of dune plants

* describing and listing adaptations of living things suited for particular Australian environments
* exploring general adaptations for particular environments such as adaptations that aid water conservation in deserts
 |
| 5 | ACSSU077 | * recognising that substances exist in different states depending on the temperature
* observing that gases have mass and take up space demonstrated by using balloons or bubbles
* exploring the way solids, liquids and gases change under different situations such as heating and cooling
* recognising that some materials such as foam are composite materials and cannot be easily classified as solids, liquids or gases on the basis of their observable properties
* comparing solids and liquids by investigating differences, such as the ability to flow or maintain shape and volume
 | * recognising that substances exist in different states depending on the temperature
* observing that gases have mass and take up space, demonstrated by using balloons or bubbles
* exploring the way solids, liquids and gases change under different situations such as heating and cooling
* recognising that not all substances can be easily classified on the basis of their observable properties
 |
| 6 | ACSIS103 | * experiencing a range of ways of finding information and ideas, including internet research
* considering different investigation methods, including experimental testing, field work and conducting surveys
 | * following a procedure to design an experimental or field investigation
* discussing methods chosen with other students, and refining methods accordingly
* considering which investigation methods are most suited to answer a particular question or solve a problem
 |
| 6 | ACSIS104 | * discussing in groups how investigations can be made as fair as possible

* using familiar units such as grams, seconds and metres and developing the use of standard multipliers such as kilometres and millimetres
* using the idea of an independent variable
* (note: this terminology does not need to be used at this stage) as something that is being investigated by changing it and measuring the effect of this change
* using familiar tools such as rulers, weighing scales and watches to measure objects and events in investigations
 | * using familiar units such as grams, seconds and metres and developing the use of standard multipliers such as kilometres and millimetres
* using the idea of an independent variable (note: this terminology does not need to be used at this stage) as something that is being investigated by changing it and measuring the effect of this change
* using digital technologies to make accurate measurements and to record data
 |
| 6 | ACSIS107 | * identifying similarities and differences in qualitative data in order to group items or materials
* describing simple cause-and-effect relationships as shown by trends in quantitative data
 | * exploring how different representations can be used to show different aspects of relationships, processes or trends

* using digital technologies to construct representations, including dynamic representations
 |
| 6 | ACSIS108 | * working collaboratively to suggest improvements to the methods used
 | * discussing improvements to the methods used, and how these methods would improve the quality of the data obtained
 |
| 6 | ACSIS110 | * using a variety of communication modes, such as reports, explanations, arguments, debates and procedural accounts, to communicate science ideas
* understanding how models can be used to represent scientific ideas and constructing physical models to demonstrate an aspect of scientific understanding
* using labelled diagrams, including cross-sectional representations, to communicate ideas
 | * discussing the best way to communicate science ideas and what should be considered when planning a text

* using a variety of communication modes, such as reports, explanations, arguments, debates and procedural accounts, to communicate science ideas

* using labelled diagrams, including cross-sectional representations, to communicate ideas and processes within multi-modal texts
 |
| 6 | ACSIS221 | * sharing ideas as to whether observations match predictions, and discussing possible reasons for predictions being incorrect
 | * sharing ideas as to whether observations match predictions, and discussing possible reasons for predictions being incorrect
* discussing the difference between data and evidence
* referring to evidence when explaining the outcomes of an investigation
 |
| 6 | ACSIS232 | * applying experience from similar situations in the past to predict what may happen in a new situation
* discussing in groups possible situations to investigate or identify problems that relate to students lives
* sharing ideas about what may happen in an investigation and why
 | * refining questions to enable scientific investigation

* asking questions to understand the scope or nature of a problem

* applying experience from previous investigations to predict the outcomes of investigations in new contexts
 |
| 7 | ACSIS124 | * working collaboratively to identify a problem to investigate
* using information and knowledge from previous investigations to predict the expected results from an investigation
 | * working collaboratively to identify a problem to investigate

* recognising that the solution of some questions and problems requires consideration of social, cultural, economic or moral aspects rather than or as well as scientific investigation
* using information and knowledge from previous investigations to predict the expected results from an investigation
 |
| 7 | ACSIS125 | * working collaboratively to decide how to approach an investigation
* developing strategies and techniques for effective research using secondary sources, including use of the internet
 | * working collaboratively to decide how to approach an investigation
* learning and applying specific skills and rules relating to the safe use of scientific equipment
* identifying whether the use of their own observations and experiments or the use of other research materials is appropriate for their investigation
* developing strategies and techniques for effective research using secondary sources, including use of the internet
 |
| 7 | ACSIS126 | * recognising the differences between controlled, dependent and independent variables
* learning and applying specific skills and rules relating to the safe use of scientific equipment
* using a digital camera to record observations and compare images using information technologies
* using specialised equipment to increase the accuracy of measurement within an investigation
 | * recognising the differences between controlled, dependent and independent variables
* using a digital camera to record observations and compare images using information technologies
* using specialised equipment to increase the accuracy of measurement within an investigation
 |
| 7 | ACSIS129 | * understanding different types of graphical representation and considering their advantages and disadvantages
* using spreadsheets to aid the presentation and simple analysis of data
 | * understanding different types of graphical and physical representation and considering their advantages and disadvantages
* using spreadsheets to aid the presentation and simple analysis of data
* describing the trends shown in collected data
 |
| 7 | ACSIS130 | * using diagrammatic representations to convey abstract ideas and to simplify complex situations
 | * using diagrammatic representations to convey abstract ideas and to simplify complex situations
* comparing and contrasting data from a number of sources in order to create a summary of collected data
* identifying data which provides evidence to support or negate the hypothesis under investigation
* referring to relevant evidence when presenting conclusions drawn from an investigation
 |
| 7 | ACSIS131 | * discussing investigation methods with others to share ideas about the quality of the inquiry process
* suggesting improvements to inquiry methods based on experience
 | * discussing investigation methods with others to share ideas about the quality of the inquiry process
* identifying and considering indicators of the quality of the data when analysing results
* suggesting improvements to inquiry methods based on experience
 |
| 7 | ACSIS132 | * identifying where science has been used to make claims relating to products and practices
 | * using the evidence provided by scientific investigations to evaluate the claims or conclusions of their peers
 |
| 7 | ACSIS133 | * using digital technologies to access information and to communicate and collaborate with others on and off site
 | * presenting the outcomes of research using effective forms of representation of data or ideas and scientific language that is appropriate for the target audience
* using digital technologies to access information and to communicate and collaborate with others on and off site
 |
| 8 | ACSIS139 | * working collaboratively to identify a problem to investigate

* using information and knowledge from previous investigations to predict the expected results from an investigation
 | * considering whether investigation using available resources is possible when identifying questions or problems to investigate
* recognising that the solution of some questions and problems requires consideration of social, cultural, economic or moral aspects rather than or as well as scientific investigation
* using information and knowledge from their own investigations and secondary sources to predict the expected results from an investigation
 |
| 8 | ACSIS140 | * working collaboratively to decide how to best approach an investigation
* developing strategies and techniques for effective research using secondary sources, including use of the internet
 | * working collaboratively to decide how to best approach an investigation
* identifying any ethical considerations that may apply to the investigation
* taking into consideration all aspects of fair testing, available equipment and safe investigation when planning investigations
 |
| 8 | ACSIS141 | * using a digital camera to record observations and compare images using information technologies
* learning and applying specific skills and rules relating to the safe use of scientific equipment
* using specialised equipment to increase the accuracy of measurement within an investigation
* recognising the differences between controlled, dependent and independent variables
 | * using specialised equipment to increase the accuracy of measurement within an investigation
* identifying and explaining the differences between controlled, dependent and independent variables
 |
| 8 | ACSIS144 | * understanding different types of graphical representation and considering their advantages and disadvantages
* using spreadsheets to aid the presentation and simple analysis of data
 | * describing measures of central tendency and identifying outliers for quantitative data

* explaining the strengths and limitations of representations such as physical models, diagrams and simulations in terms of the attributes of systems included or not included
 |
| 8 | ACSIS145 | * using diagrammatic representations to convey abstract ideas and to simplify complex situations
 | * constructing tables, graphs, keys and models to represent relationships and trends in collected data
* drawing conclusions based on a range of evidence including primary and secondary sources
 |
| 8 | ACSIS146 | * discussing investigation methods with others to share ideas about the quality of the inquiry process
* suggesting improvements to inquiry methods based on experience
 | * suggesting improvements to investigation methods that would improve the accuracy of the data recorded

* discussing investigation methods with others to share ideas about the quality of the inquiry process
 |
| 8 | ACSIS148 | * using digital technologies to access information and to communicate and collaborate with others on and off site
 | * using digital technologies to construct a range of text types to present science ideas
* Selecting and using appropriate language and representations to communicate science ideas within a specified text type and for a specified audience
 |
| 8 | ACSIS234 | * identifying where science has been used to make claims relating to products and practices
 | * identifying the scientific evidence available to evaluate claims
* deciding whether or not to accept claims based on scientific evidence
* identifying where science has been used to make claims relating to products and practices
 |
| 8 | ACSSU151 | * linking the energy of particles to temperature changes
* modelling the arrangement of particles in solids, liquids and gases
 | * explaining why a model for the structure of matter is needed
* modelling the arrangement of particles in solids, liquids and gases
* using the particle model to explain observed phenomena linking the energy of particles to temperature changes
 |
| 9 | ACSIS164 | * using internet research to identify problems that can be investigated
* evaluating information from secondary sources as part of the research process
* developing ideas from students own or others' investigations and experiences to investigate further
 | * using internet research to identify problems that can be investigated
* evaluating information from secondary sources as part of the research process
* revising and refining research questions to target specific information and data collection or finding a solution to the specific problem identified
* developing ideas from students own or others' investigations and experiences to investigate further
 |
| 9 | ACSIS165 | * using modelling and simulations, including using digital technology to investigate situations and events
* combining research using primary and secondary sources with students own experimental investigation
 | * explaining the choice of variables to be controlled, changed and measured in an investigation

* identifying the potential hazards of chemicals or biological materials used in experimental investigations
* ensuring that any investigation involving or impacting on animals is justified, humane and considerate of each animal's needs
* using modelling and simulations, including using digital technology to investigate situations and events
* combining research using primary and secondary sources with students' own experimental investigation
* considering how investigation methods and equipment may influence the reliability of collected data
 |
| 9 | ACSIS166 | * considering the potential hazards of chemicals or biological materials used in experimental investigations
* explaining the choice of variables to be controlled, changed and measured in an investigation
* using probes and data loggers to record information
* ensuring that any investigation involving or impacting on animals is justified, humane and considerate of each animals needs
* learning specific skills for the use of scientific instruments
* describing specific safety precautions required for investigations
 | * using probes and data loggers to record information
* applying specific skills for the use of scientific instruments
 |
| 9 | ACSIS169 | * using spreadsheets to present data in tables and graphical forms and to carry out mathematical analyses on data
* calculating means and ranges from data and considering the distribution of sets of quantitative data
* designing and constructing appropriate graphs to represent data and analysing graphs for trends and patterns
 | * using spreadsheets to present data in tables and graphical forms and to carry out mathematical analyses on data
* describing sample properties (such as mean, median, range, large gaps visible on a graph) to predict characteristics of the larger population
* designing and constructing appropriate graphs to represent data and analysing graphs for trends and patterns
 |
| 9 | ACSIS171 | * distinguishing between random and systematic errors and how these can affect investigation results
 | * identifying gaps or weaknesses in conclusions (their own or those of others)
* identifying alternative explanations that are also consistent with the evidence
 |
| 9 | ACSIS172 | * explaining why suggested changes will improve the accuracy of investigations
* researching the methods used by scientists in studies reported in the media
* describing how scientific arguments are used to make decisions regarding personal and community issues
 | * discussing what is meant by 'validity' and how we can evaluate the validity of information in secondary sources
* researching the methods used by scientists in studies reported in the media
* describing how scientific arguments are used to make decisions regarding personal and community issues
 |
| 9 | ACSSU182 | * exploring how and why the movement of energy varies according to the medium through which it is transferred
* investigating how the human body receives sound and light waves
* investigating the transfer of heat in terms of convection, conduction and radiation, and identifying situations in which each occurs
* investigating factors that affect the transfer of energy through an electric circuit
* exploring situations where energy is transferred in the form of waves, such as sound and light
 | * exploring how and why the movement of energy varies according to the medium through which it is transferred
* discussing the wave and particle models and how they are useful for understanding aspects of phenomena
* investigating the transfer of heat in terms of convection, conduction and radiation, and identifying situations in which each occurs
* understanding the processes underlying convection and conduction in terms of the particle model
* investigating factors that affect the transfer of energy through an electric circuit
* exploring the properties of waves, and situations where energy is transferred in the form of waves, such as sound and light
 |
| 10 | ACSIS198 | * using internet research to identify problems that can be investigated
* developing ideas from students own or others' investigations and experiences to investigate further
* evaluating information from secondary sources as part of the research process
 | * developing hypotheses based on well-developed models and theories
* using internet research to identify problems that can be investigated
* formulating questions that can be investigated within the scope of the classroom or field with available resources
* developing ideas from students own or others'
* investigations and experiences to investigate further
* evaluating information from secondary sources as part of the research process
 |
| 10 | ACSIS199 | * combining research using primary and secondary sources with a students own experimental investigation
* using modelling and simulations, including using digital technology, to investigate situations and events
 | * combining research using primary and secondary sources with a student's own experimental investigation
* using modelling and simulations, including using digital technology, to investigate situations and events
* Deciding how much data are needed to produce reliable measurements
* considering possible confounding variables or effects and ensuring these are controlled
* identifying the potential hazards of chemicals or biological materials used in experimental investigations
* identifying safety risks and impacts on animal welfare and ensuring these are effectively managed within the investigation
 |
| 10 | ACSIS200 | * describing specific safety precautions required for investigations
* considering the potential hazards of chemicals or biological materials used in experimental investigations
* using probes and data loggers to record information
* explaining the choice of variables to be controlled, changed and measured in an investigation
* ensuring that any investigation involving or impacting on animals is justified, humane and considerate of each animals needs
* learning specific skills for the use of scientific instruments
 | * selecting and using probes and data loggers to record information
* applying specific skills for the use of scientific instruments
* identifying where human error can influence the reliability of data
 |
| 10 | ACSIS203 | * designing and constructing appropriate graphs to represent data and analysing graphs for trends and patterns
* using spreadsheets to present data in tables and graphical forms and to carry out mathematical analysis on data
* calculating means and ranges from data and considering the distribution of sets of quantitative data
 | * using spreadsheets to present data in tables and graphical forms and to carry out mathematical analyses on data
* describing sample properties (such as mean, median, range, large gaps visible on a graph) to predict characteristics of the larger population, acknowledging uncertainties and the effects of outliers
* exploring relationships between variables using spreadsheets, databases, tables, charts, graphs and statistics
 |
| 10 | ACSIS204 | * comparing conclusions with earlier predictions and reviewing scientific understanding where appropriate
* suggesting more than one possible explanation of the data presented
 | * using primary or secondary scientific evidence to support or refute a conclusion
* constructing a scientific argument showing how their evidence supports their claim
 |
| 10 | ACSIS205 | * distinguishing between random and systematic errors and how these can affect investigation results
 | * evaluating the strength of a conclusion that can be inferred from a particular data set
* distinguishing between random and systematic errors and how these can affect investigation results
* identifying alternative explanations that are also consistent with the evidence
 |
| 10 | ACSIS206 | * researching the methods used by scientists in studies reported in the media
* explaining why suggested changes will improve the accuracy of investigations
* describing how scientific arguments are used to make decisions regarding personal and community issues
 | * researching the methods used by scientists in studies reported in the media
* judging the validity of science-related media reports and how these reports might be interpreted by the public
* describing how scientific arguments, as well as ethical, economic and social arguments, are used to make decisions regarding personal and community issues
 |
| 10 | ACSIS208 | * using the internet to facilitate collaboration in joint projects and discussions
* using secondary sources as well as a student’s own findings to help explain a scientific concept
* presenting results and ideas using formal experimental reports, oral presentations, slide shows, poster presentations and contributing to group discussions
 | * using the internet to facilitate collaboration in joint projects and discussions
* constructing evidence based arguments and engaging in debate about scientific ideas
* presenting results and ideas using formal experimental reports, oral presentations, slide shows, poster presentations and contributing to group discussions
* using a range of representations, including mathematical and symbolic forms, to communicate science ideas
 |

**F–10 AUSTRALIAN CURRICULUM: HISTORY ELABORATIONS REFINEMENT**

|  |  |  |  |
| --- | --- | --- | --- |
| **YEAR LEVEL** | **CODE** | * **PREVIOUS ELABORATIONS**
 | * **ADDITIONAL ELABORATIONS**
 |
| 3  | ACHHS215  | * No previous elaboration
 | * identifying sources to investigate change in the community in the past, including photographs, maps, oral histories and diary entries
 |
| 4 | ACHHS216  | * No previous elaboration
 | * identifying sources to investigate the story of the First Fleet and its arrival, including paintings, maps, written accounts and the remains of buildings
 |