(no-code)

explain the role of meiosis and mitosis and the function of chromosomes, DNA and genes in heredity and predict of

•

Elaborations

• using and diagrams to represent the between genes, chromosomes, and DNA of an organism's
• explaining how genetic information passed on to offspring from both parents by meiosis and fertilisation increases the variation of a species
• using to predict the ratio of offspring genotypes and phenotypes in monohybrid crosses involving dominant and recessive alleles or in genes that are sex-linked
• using pedigree diagrams to show of inheritance of simple dominant and recessive through multigenerational families
• investigating First Nations Australians' knowledges of heredity as evidenced by the strict adherence to kinship and family structures, especially marriage
• exploring environmental and other factors that cause mutations and identifying changes in DNA or chromosomes
• exploring the role of DNA in cancer or genetic disorders such as haemochromatosis, sickle cell anaemia, cystic fibrosis or Klinefelter syndrome

Students learn to:

explain the role of meiosis and mitosis and the function of chromosomes, DNA and and predict patterns of Mendelian inheritance

(AC9S10U01)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Engaging with cultural and linguistic diversity

• Develop multiple perspectives

Reflecting on culture and cultural diversity

• Examine cultural perspectives and world views

People

• First Nations Australians have sophisticated political, economic and social organisation systems,

which include family and kinship structures, laws, traditions, customs, land tenure systems, and protocols for strong governance and authority.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Inquiring

• Identify, process and evaluate information

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U01

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Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

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AC9S10U01

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Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

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Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U01

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Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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• evaluate the information selected to determine bias and reliability

Snapshot – Develop multiple perspectives

Intercultural Understanding: Engaging with cultural and linguistic diversity: Deve perspectives

Content description

AC9S10U01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• consider multiple perspectives held on unfamiliar topics, identifying commonality and difference, and describe how perspectives may be influenced by cultural beliefs and practices

• analyse unfamiliar topics and develop respectful responses, reconciling different cultural perspectives

Snapshot – Examine cultural perspectives and world views

Intercultural Understanding: Reflecting on culture and cultural diversity: Examine perspectives and world views

Content description

AC9S10U01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• analyse the reasons, experiences and understandings that inform diverse cultural perspectives and world views in a range of intercultural contexts

• evaluate how common and conflicting values within and across cultural and linguistic groups affect the presentation of cultural perspectives and world views

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

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• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U01

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Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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AC9S10U02

use the of evolution by natural selection to explain past and present diversity and analyse the scientific supporting the

•

Elaborations

• outlining processes involved in natural selection including variation, isolation and selection
• examining biodiversity as a function of evolution
• analysing for the of evolution by natural selection including the fossil record, chemical and anatomical similarities, and geographical distribution of species
• investigating changes caused by natural selection in a particular population as a result of a specified selection pressure such as artificial selection in breeding for desired
• relating genetic to survival and reproductive rates
• investigating some of the structural and physiological adaptations of First Nations Australians to the Australian

Students learn to:

use the theory of evolution by natural selection to explain past and present diversity the scientific evidence supporting the theory

(AC9S10U02)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Analysing

• Interpret concepts and problems

Generating

• Create possibilities

Inquiring

• Identify, process and evaluate information

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Engaging with cultural and linguistic diversity

• Develop multiple perspectives

Country/Place

• First Nations communities of Australia maintain a deep connection to, and responsibility for, Country/Place and have holistic values and belief systems that are connected to the land, sea, sky and waterways.

People

• Australia has 2 distinct First Nations Peoples; each encompasses a diversity of nations across Australia. Aboriginal Peoples are the first peoples of Australia and have occupied the Australian continent for more than 60,000 years. Torres Strait Islander Peoples are the First Nations Peoples of the Torres Strait and have occupied the region for over 4,000 years.

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Create possibilities

Critical and Creative Thinking: Generating: Create possibilities

Content description

AC9S10U02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• create possibilities by adapting, combining or elaborating on new and known ideas, and proposing a range of different or creative combinations

• create possibilities by connecting or adapting complex ideas and proposing innovative and detailed variations or combinations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U02

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• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U02

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Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10U02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made

• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U02

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U02

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The following continuum extract shows the alignment of the continuum with this content.

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Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U02

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Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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Snapshot – Develop multiple perspectives

Intercultural Understanding: Engaging with cultural and linguistic diversity: Deve perspectives

Content description

AC9S10U02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• consider multiple perspectives held on unfamiliar topics, identifying commonality and difference, and describe how perspectives may be influenced by cultural beliefs and practices

• analyse unfamiliar topics and develop respectful responses, reconciling different cultural perspectives

AC9S10U03

describe how the big bang the origin and evolution of the universe and analyse the supporting for the

•

Elaborations

• describing the major components of the universe using appropriate scientific terminology and units including astronomical units, scientific notation and light-years

• constructing a timeline to show major changes in the universe which are thought to have occurred from the Big Bang until the formation of the major components such as stars and galaxies

• examining how stars' light spectra and brightness is used to identify compositional elements of stars, their movements and their distances from Earth

• explaining how each different type of , such as cosmic microwave background radiation, red or blue shift of galaxies, Edwin Hubble's and proportion of in the universe, provides support for the acceptance of the big bang

• researching First Nations Australians' knowledges of celestial bodies and of the origin of the universe

• identifying the different technologies used to collect astronomical and the types of collected

• exploring recent advances in astronomy, including the Australian Square Kilometre Array Pathfinder, and astrophysics, such as the discovery of gravitational waves, and ; and identifying new knowledge which has emerged

Students learn to:

describe how the big bang theory models the origin and evolution of the universe a supporting evidence for the theory

(AC9S10U03)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Writing

• Creating texts

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems
• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Engaging with cultural and linguistic diversity

• Develop multiple perspectives

Reflecting on culture and cultural diversity

• Examine cultural perspectives and world views

Country/Place

• First Nations communities of Australia maintain a deep connection to, and responsibility for, Country/Place and have holistic values and belief systems that are connected to the land, sea, sky and waterways.

People

• Australia has 2 distinct First Nations Peoples; each encompasses a diversity of nations across Australia. Aboriginal Peoples are the first peoples of Australia and have occupied the Australian continent for more than 60,000 years. Torres Strait Islander Peoples are the First Nations Peoples of the Torres Strait and have occupied the region for over 4,000 years.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems
• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Resources

Work Samples

WS01 - Big bang theory

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U03

Continuum extract

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• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

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Snapshot – Creating texts

Literacy: Writing: Creating texts

Content description

AC9S10U03

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Crafting ideas

• creates informative texts to explain and analyse (e.g. analyses how artists use visual conventions in artworks)

• creates texts to compare and contrast phenomena (e.g. identify the similarities and differences between species of animals)

• orients the reader clearly to the topic or concept (e.g. using a definition or classification in the opening paragraph)

• intentionally selects structural elements for effect (e.g. includes an effective conclusion that synthesises complex ideas)

• uses evidence and research including digital resources to expand upon information and elaborate concepts

Text forms and features

• varies sentence structure for effect (see Grammar)

• judiciously uses language, visual and audio features to emotionally or intellectually affect the reader

• uses more elaborate noun groups/phrases that include classifying adjectives and specific nouns (e.g. "mineral component of sedimentary rocks")

• creates cohesive flow by condensing previous information into a summarising noun (e.g. "A series of tumultuous events culminated in the outbreak of WWI - modern history’s turning point.")

• uses passive voice and nominalisation to write succinctly (e.g. "the results were analysed") (see Grammar)

Vocabulary

• uses discipline-specific terminology to provide accurate and explicit information (e.g. "discipline metalanguage")

• uses a range of synonyms for frequently occurring words, in a longer text (e.g. "repair", "fix", "remedy")

• uses vocabulary to indicate and describe relationships (e.g. "additionally", "similarly")

Crafting ideas

• creates sustained, informative texts that precisely explain, analyse and evaluate concepts or

abstract entities
• uses structural features flexibly to organise ideas strategically (e.g. includes a defined, cogent conclusion or summation)
• creates texts with forms and features combined strategically for purpose (e.g. describes a historical event from the perspective of a secondary source)
• uses evidence and references
• creates succinct short-answer explanatory texts as well as complex, multi-staged extended texts

Text forms and features

• maintains tone appropriate to the audience
• uses extended noun groups/phrases including adjectival phrases (e.g. "a sturdy construction with modern design features") (see Grammar)

Vocabulary

• uses complex abstractions (e.g. "economic", "sociocultural")

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U03

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Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U03

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Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10U03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made

• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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• evaluate the information selected to determine bias and reliability

Snapshot – Develop multiple perspectives

Intercultural Understanding: Engaging with cultural and linguistic diversity: Deve perspectives

Content description

AC9S10U03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• consider multiple perspectives held on unfamiliar topics, identifying commonality and difference, and describe how perspectives may be influenced by cultural beliefs and practices

• analyse unfamiliar topics and develop respectful responses, reconciling different cultural perspectives

Snapshot – Examine cultural perspectives and world views

Intercultural Understanding: Reflecting on culture and cultural diversity: Examine perspectives and world views

Content description

AC9S10U03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• analyse the reasons, experiences and understandings that inform diverse cultural perspectives and world views in a range of intercultural contexts

• evaluate how common and conflicting values within and across cultural and linguistic groups affect the presentation of cultural perspectives and world views

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

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• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U03

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• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
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• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10U03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
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• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Resource – WS01 - Big bang theory

By the end of Year 10 students explain the processes that underpin heredity and genetic diversity and describe the evidence supporting the theory of evolution by natural selection. They sequence key events in the origin and evolution of the universe and describe the supporting evidence for the big bang theory. They describe trends in patterns of global climate change and identify causal factors. They explain how Newton’s laws describe motion and apply them to predict motion of objects in a system. They explain patterns and trends in the periodic table and predict the products of reactions and the effect of changing reactant and reaction conditions. Students analyse the importance of publication and peer review in the development of scientific knowledge and analyse the relationship between science, technologies and engineering. They analyse the key factors that influence interactions between science and society.

Students plan and conduct safe, valid and reproducible investigations to test relationships or

develop explanatory models. They explain how they have addressed any ethical and intercultural considerations when generating or using primary and secondary data. They select equipment and use it efficiently to generate and record appropriate sample sizes and replicable data with precision. They select and construct effective representations to organise, process and summarise data and information. They analyse and connect a variety of data and information to identify and explain patterns, trends, relationships and anomalies. They evaluate the validity and reproducibility of methods, and the validity of conclusions and claims. They construct logical arguments based on analysis of a variety of evidence to support conclusions and evaluate claims. They select and use content, language and text features effectively to achieve their purpose when communicating their ideas, findings and arguments to diverse audiences.

AC9S10U03

describe how the big bang theory models the origin and evolution of the universe and analyse the supporting evidence for the theory

AC9S10H01

explain■how scientific knowledge is validated and refined, including the role of publication and peer review

AC9S10H02

investigate how advances in technologies enable advances in science, and how science has contributed to developments in technologies and engineering

AC9S10I06

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

AC9S10I07

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

AC9S10I08

write and create texts to communicate ideas, findings and arguments effectively for identified purposes and audiences, including selection of appropriate content, language and text features, using digital tools as appropriate

AC9S10U04

use of energy flow between the geosphere, biosphere, hydrosphere and atmosphere to explain of global climate change

•
•

Elaborations

• examining the role of radiation from the sun and how its interactions with the atmosphere, ocean and land are the foundation for the global climate
• investigating indicators of climate change such as changes in ocean and atmospheric temperatures, sea levels, biodiversity, species distribution, permafrost and sea ice
• identifying changes in global climate over time, exploring visualisations and using to explore why energy balances have changed
• examining the factors, including energy, that drive deep ocean currents, their role in regulating global climate and their effects on marine life
• investigating how quantum computers enhance modelling of complex weather and climate
• predicting changes to the and identifying strategies designed to reduce climate change or mitigate its effects

Students learn to:

use models of energy flow between the geosphere, biosphere, hydrosphere and atm

patterns of global climate change

(AC9S10U04)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Analysing

• Interpret concepts and problems

Generating

• Create possibilities

Inquiring

• Identify, process and evaluate information

Systems

• All life forms, including human life, are connected through Earth’s systems (geosphere, biosphere, hydrosphere and atmosphere) on which they depend for their wellbeing and survival.
• Social, economic and political systems influence the sustainability of Earth’s systems.

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Systems

• All life forms, including human life, are connected through Earth’s systems (geosphere, biosphere, hydrosphere and atmosphere) on which they depend for their wellbeing and survival.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Systems

• All life forms, including human life, are connected through Earth’s systems (geosphere, biosphere, hydrosphere and atmosphere) on which they depend for their wellbeing and survival.

Investigating

• Interpret data

Measurement and geometry

• Measuring time

Systems

• All life forms, including human life, are connected through Earth’s systems (geosphere, biosphere, hydrosphere and atmosphere) on which they depend for their wellbeing and survival.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Systems

• All life forms, including human life, are connected through Earth’s systems (geosphere, biosphere, hydrosphere and atmosphere) on which they depend for their wellbeing and survival.

Analysing

• Interpret concepts and problems
• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems
• Draw conclusions and provide reasons

Generating

• Put ideas into action

Inquiring

• Identify, process and evaluate information

Futures

• Sustainable futures are achieved through informed individual, community, business and political action that values local, national and global equity and fairness across generations into the future.

Systems

• All life forms, including human life, are connected through Earth's systems (geosphere, biosphere, hydrosphere and atmosphere) on which they depend for their wellbeing and survival.

Related content

This content description can be taught with the following content descriptions from other learning areas.

AC9HG10K01

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Create possibilities

Critical and Creative Thinking: Generating: Create possibilities

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• create possibilities by adapting, combining or elaborating on new and known ideas, and proposing a range of different or creative combinations

• create possibilities by connecting or adapting complex ideas and proposing innovative and detailed variations or combinations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Interpret data

Digital Literacy: Investigating: Interpret data

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse and visualise data by selecting and using a range of digital tools to infer relationships and make predictions
• analyse and visualise multidimensional data by selecting and using a range of interactive tools to draw conclusions and make predictions

Snapshot – Measuring time

Numeracy: Measurement and geometry: Measuring time

Content description

AC9S10U04

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Measuring time with large and small timescales

• uses appropriate metric prefixes to measure both large and small durations of time (e.g. millennia, nanoseconds)

• constructs timelines using an appropriate scale (e.g. chronologically sequences historical events)

Measuring how things change over time

• investigates, describes and interprets data collected over time (e.g. uses a travel graph to describe a journey; interprets data collected over a period of time using a graphical representation and makes a prediction for the future behaviour of the data)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made

• draw conclusions and make choices when completing tasks, using analysis of complex evidence and

arguments before making recommendations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made

• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Put ideas into action

Critical and Creative Thinking: Generating: Put ideas into action

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• put ideas into action by making predictions, testing and evaluating options, and reconsidering approaches in complex or unfamiliar situations

• put ideas into action by making predictions, testing and evaluating options, proposing modifications and adapting approaches in complex or unfamiliar situations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

AC9S10U05

investigate Newton’s of motion and quantitatively analyse the between , and acceleration of objects

•

Elaborations

• investigating a moving object to analyse and propose between distance and time, speed, and acceleration
• using mathematical including and algebraic formulas to quantitatively relate , speed, acceleration and
• investigating how First Nations Australians achieve an increase in speed and subsequent impact through the use of spearthrowers and bows
• modelling how a change in net acting on an object affects its motion and relating to the purpose of safety features such as seatbelts, airbags and crumple zones in vehicles
• investigating the application of Newton’s in sport and how these are applied to improve an athlete’s performance or safety
• constructing an , supported by , to support lower speed limits near schools or for trucks in urban
• investigating how driverless vehicles apply Newton’s of motion to brake in time

Students learn to:

investigate Newton’s laws of motion and quantitatively analyse the relationship betw and acceleration of objects

(AC9S10U05)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Engaging with cultural and linguistic diversity

• Develop multiple perspectives

Culture

• First Nations Australians’ ways of life reflect unique ways of being, knowing, thinking and doing.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Reflecting

• Transfer knowledge

Analysing

• Interpret concepts and problems
• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Reflecting

• Transfer knowledge

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Reflecting

• Transfer knowledge

Writing

• Creating texts

Related content

This content description can be taught with the following content descriptions from other learning areas.

AC9HP10M03

AC9TDE10K03

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to

context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Develop multiple perspectives

Intercultural Understanding: Engaging with cultural and linguistic diversity: Deve perspectives

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• consider multiple perspectives held on unfamiliar topics, identifying commonality and difference, and describe how perspectives may be influenced by cultural beliefs and practices

• analyse unfamiliar topics and develop respectful responses, reconciling different cultural perspectives

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Transfer knowledge

Critical and Creative Thinking: Reflecting: Transfer knowledge

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• transfer knowledge and skills gained in previous experiences to both similar and different contexts, and explain reasons for decisions and choices made
• identify, plan and justify opportunities to transfer knowledge into new contexts

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made
• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual

information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Transfer knowledge

Critical and Creative Thinking: Reflecting: Transfer knowledge

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• transfer knowledge and skills gained in previous experiences to both similar and different contexts, and explain reasons for decisions and choices made
• identify, plan and justify opportunities to transfer knowledge into new contexts

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made
• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Transfer knowledge

Critical and Creative Thinking: Reflecting: Transfer knowledge

Content description

AC9S10U05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• transfer knowledge and skills gained in previous experiences to both similar and different contexts, and explain reasons for decisions and choices made
• identify, plan and justify opportunities to transfer knowledge into new contexts

Snapshot – Creating texts

Literacy: Writing: Creating texts

Content description

AC9S10U05

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Crafting ideas

• creates informative texts to explain and analyse (e.g. analyses how artists use visual conventions in artworks)
• creates texts to compare and contrast phenomena (e.g. identify the similarities and differences between species of animals)
• orients the reader clearly to the topic or concept (e.g. using a definition or classification in the opening paragraph)
• intentionally selects structural elements for effect (e.g. includes an effective conclusion that synthesises complex ideas)
• uses evidence and research including digital resources to expand upon information and elaborate concepts

Text forms and features

• varies sentence structure for effect (see Grammar)
• judiciously uses language, visual and audio features to emotionally or intellectually affect the reader
• uses more elaborate noun groups/phrases that include classifying adjectives and specific nouns (e.g. "mineral component of sedimentary rocks")
• creates cohesive flow by condensing previous information into a summarising noun (e.g. "A series of tumultuous events culminated in the outbreak of WWI - modern history’s turning point.")
• uses passive voice and nominalisation to write succinctly (e.g. "the results were analysed") (see Grammar)

Vocabulary

• uses discipline-specific terminology to provide accurate and explicit information (e.g. "discipline metalanguage")
• uses a range of synonyms for frequently occurring words, in a longer text (e.g. "repair", "fix", "remedy")
• uses vocabulary to indicate and describe relationships (e.g. "additionally", "similarly")

Crafting ideas

• creates sustained, informative texts that precisely explain, analyse and evaluate concepts or abstract entities
• uses structural features flexibly to organise ideas strategically (e.g. includes a defined, cogent conclusion or summation)
• creates texts with forms and features combined strategically for purpose (e.g. describes a historical event from the perspective of a secondary source)
• uses evidence and references
• creates succinct short-answer explanatory texts as well as complex, multi-staged extended texts

Text forms and features

• maintains tone appropriate to the audience
• uses extended noun groups/phrases including adjectival phrases (e.g. "a sturdy construction with modern design features") (see Grammar)

Vocabulary

• uses complex abstractions (e.g. "economic", "sociocultural")

AC9S10U06

explain how the structure and of atoms relate to the organisation of the elements in the periodic table

•

Elaborations

• examining how elements are organised in the periodic table and analysing to discern that elements in the same group of the periodic table have similar
• investigating the physical of some metals and non-metals
• using the Bohr of the atom to describe the structure of atoms in terms of electron shells and relating this to their and position in the periodic table
• deducing that repeating of the periodic table reflect of electrons in outer electron shells
• conducting flame tests for a selection of elements and examining emission spectra
• examining how the development of the spectroscope led to further development of the of the atom

Students learn to:

explain how the structure and properties of atoms relate to the organisation of the e periodic table

(AC9S10U06)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Writing

• Creating texts

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10U06

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10U06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made

• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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Snapshot – Creating texts

Literacy: Writing: Creating texts

Content description

AC9S10U06

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Crafting ideas

• creates informative texts to explain and analyse (e.g. analyses how artists use visual conventions in artworks)

• creates texts to compare and contrast phenomena (e.g. identify the similarities and differences between species of animals)

• orients the reader clearly to the topic or concept (e.g. using a definition or classification in the opening paragraph)

• intentionally selects structural elements for effect (e.g. includes an effective conclusion that synthesises complex ideas)

• uses evidence and research including digital resources to expand upon information and elaborate concepts

Text forms and features

• varies sentence structure for effect (see Grammar)

• judiciously uses language, visual and audio features to emotionally or intellectually affect the reader

• uses more elaborate noun groups/phrases that include classifying adjectives and specific nouns (e.g. "mineral component of sedimentary rocks")

• creates cohesive flow by condensing previous information into a summarising noun (e.g. "A series of tumultuous events culminated in the outbreak of WWI - modern history's turning point.")

• uses passive voice and nominalisation to write succinctly (e.g. "the results were analysed") (see Grammar)

Vocabulary

• uses discipline-specific terminology to provide accurate and explicit information (e.g. "discipline metalanguage")

• uses a range of synonyms for frequently occurring words, in a longer text (e.g. "repair", "fix", "remedy")

• uses vocabulary to indicate and describe relationships (e.g. "additionally", "similarly")

Crafting ideas

• creates sustained, informative texts that precisely explain, analyse and evaluate concepts or abstract entities
• uses structural features flexibly to organise ideas strategically (e.g. includes a defined, cogent conclusion or summation)
• creates texts with forms and features combined strategically for purpose (e.g. describes a historical event from the perspective of a secondary source)
• uses evidence and references
• creates succinct short-answer explanatory texts as well as complex, multi-staged extended texts

Text forms and features

• maintains tone appropriate to the audience
• uses extended noun groups/phrases including adjectival phrases (e.g. "a sturdy construction with modern design features") (see Grammar)

Vocabulary

• uses complex abstractions (e.g. "economic", "sociocultural")

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U06

Continuum extract

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AC9S10U07

identify in synthesis, decomposition and displacement reactions and investigate the factors that affect reaction rates

•

Elaborations

• defining and representing synthesis, decomposition and displacement reactions using a variety of formats such as molecular , diagrams, and word and balanced symbolic equations
• identifying reaction type and predicting the products
• investigating such as reaction of metals with oxygen, formation of water and sodium chloride; such as those used to extract metals; and displacement reactions such as metal and acid, neutralisation and
• investigating the effect of a range of factors, such as temperature, concentration, surface area and catalysts, on the rate of chemical reactions
• investigating chemical reactions employed by First Nations Australians in the production of substances such as acids and ethanol
• investigating some of the chemical reactions and methods employed by First Nations Australians to convert toxic plants into edible food products
• examining reactions that are used to produce a range of useful products

Students learn to:

identify patterns in synthesis, decomposition and displacement reactions and inves that affect reaction rates

(AC9S10U07)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Engaging with cultural and linguistic diversity

• Develop multiple perspectives

Reflecting on culture and cultural diversity

• Examine cultural perspectives and world views

Culture

• First Nations Australians’ ways of life reflect unique ways of being, knowing, thinking and doing.

Engaging with cultural and linguistic diversity

• Develop multiple perspectives

Reflecting on culture and cultural diversity

• Examine cultural perspectives and world views

Culture

• First Nations Australians' ways of life reflect unique ways of being, knowing, thinking and doing.

Analysing

• Interpret concepts and problems

Inquiring

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

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Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

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Critical and Creative Thinking: Analysing: Interpret concepts and problems

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Snapshot – Develop multiple perspectives

Intercultural Understanding: Engaging with cultural and linguistic diversity: Deve perspectives

Content description

AC9S10U07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• consider multiple perspectives held on unfamiliar topics, identifying commonality and difference, and describe how perspectives may be influenced by cultural beliefs and practices

• analyse unfamiliar topics and develop respectful responses, reconciling different cultural perspectives

Snapshot – Examine cultural perspectives and world views

Intercultural Understanding: Reflecting on culture and cultural diversity: Examine perspectives and world views

Content description

AC9S10U07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• analyse the reasons, experiences and understandings that inform diverse cultural perspectives and world views in a range of intercultural contexts

• evaluate how common and conflicting values within and across cultural and linguistic groups affect the presentation of cultural perspectives and world views

Snapshot – Develop multiple perspectives

Intercultural Understanding: Engaging with cultural and linguistic diversity: Deve perspectives

Content description

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• analyse unfamiliar topics and develop respectful responses, reconciling different cultural perspectives

Snapshot – Examine cultural perspectives and world views

Intercultural Understanding: Reflecting on culture and cultural diversity: Examine perspectives and world views

Content description

AC9S10U07

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• analyse the reasons, experiences and understandings that inform diverse cultural perspectives and world views in a range of intercultural contexts

• evaluate how common and conflicting values within and across cultural and linguistic groups affect the presentation of cultural perspectives and world views

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10U07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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AC9S10H01

explain■how scientific knowledge is validated and refined, including the role of publication and peer review

•

•

Elaborations

• examining how the work of Rosalind Franklin was critical to the discovery of the double helix structure of DNA and her publications validated the findings of James Watson and Francis Crick

• exploring the role of large sets and statistical analysis in validating scientific findings, such as Gregor Mendel’s experiments with pea plants

• examining why there are different climate change used by scientists when there is a climate change consensus among scientists

• exploring how astronomer Vera Rubin’s discovery of the existence of was validated

• examining how the discovery of gravity waves validated Einstein’s of general relativity and why this discovery did not occur until 100 years after the was proposed

• investigating how the development of the periodic table has been disputed and refined as science has progressed and new elements have been discovered

Students learn to:

explain■how scientific knowledge is validated and refined, including the role of pub

peer review

(AC9S10H01)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Reading and viewing

• Understanding texts

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Statistics and probability

• Interpreting and representing data

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Systems

• All life forms, including human life, are connected through Earth’s systems (geosphere, biosphere, hydrosphere and atmosphere) on which they depend for their wellbeing and survival.

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Reading and viewing

• Understanding texts

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Reading and viewing

• Understanding texts

Resources

Work Samples

WS01 - Big bang theory

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10H01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
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Snapshot – Understanding texts

Literacy: Reading and viewing: Understanding texts

Content description

AC9S10H01

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Comprehension

• reads and views complex texts (see Text complexity)
• identifies the main themes or concepts in complex texts by synthesising key ideas or information
• summarises the text, identifying key details only
• draws inferences, synthesising clues and evidence across a text
• builds meaning by actively linking ideas from a number of texts or a range of digital sources
• distils information from a number of texts according to task and purpose (e.g. uses graphic organisers)
• identifies different interpretations of the text citing evidence from a text
• evaluates language features for relevance to purpose and audience
• analyses texts that have more than one purpose and explains how parts of the text support a particular purpose
• analyses the use of language appropriate to different types of texts (e.g. compare the use of pun in imaginative and persuasive texts)
• identifies techniques used to obscure author's purpose (e.g. inclusion or omission of content)

Processes

• uses processes such as predicting, confirming predictions, monitoring, and connecting relevant elements of the text to build or repair meaning
• uses knowledge of a broader range of cohesive devices to track meaning (e.g. word associations) (see Grammar)
• selects reading or viewing strategies appropriate to reading purpose (e.g. scans text for evidence)
• judiciously selects texts for learning area tasks and purposes

Vocabulary

• identifies language used to create tone or atmosphere
• analyses language and visual features in texts using metalanguage (e.g. cohesion, interpretation, figurative)
• applies knowledge of base words and word origins to understand the meaning of unfamiliar, discipline-specific words
• uses a range of context and grammatical cues to understand unfamiliar words
• interprets complex figurative language (e.g. euphemisms, hyperbole)

Comprehension

• reads and views complex or some highly complex texts (see Text complexity)
• interprets abstract concepts integrating complex ideas

• analyses how language features are used to support the point of view in a text (e.g. the strategic use of images such as a cartoon in an editorial)
• draws inferences using evidence from the text and discounting possible inferences that are not supported by the text
• applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience
• evaluates the reasoning and evidence in a persuasive text
• explains how context (e.g. time, place, situation) influences interpretations of a text
• analyses the author's perspectives in complex or some highly complex texts
• analyses the techniques authors use to position readers
• recognises when ideas or evidence have been omitted from a text to position the reader

Processes

• automatically integrates a range of processes such as predicting, confirming predictions, monitoring and connecting relevant elements of the text, to build meaning
• describes how sophisticated cohesive devices establish patterns of meaning (e.g. "class" – "subclass")
• navigates extended texts including complex digital texts

Vocabulary

• demonstrates an understanding of nuances and subtleties in words of similar meaning (e.g. "frustrated", "discouraged", "baffled")
• verifies interpretations of unfamiliar words using grammatical and contextual cues

Comprehension

• reads and views highly complex texts (see Text complexity)
• interprets symbolism in texts, providing evidence to justify interpretation
• judiciously selects and synthesises evidence from multiple texts to support ideas and arguments
• analyses the credibility and validity of primary and secondary sources
• evaluates the use of devices such as analogy, irony, rhetoric and satire, and how they contribute to an author's individual style
• analyses the cumulative impact of use of language features and vocabulary across texts
• explains assumptions, beliefs and implicit values in texts (e.g. "economic growth is always desirable")
• evaluates the social, moral and ethical positions taken in texts

Processes

• strategically adjusts the processes of reading and viewing to build meaning according to the demands of tasks and texts
• identifies subtle contradictions and inconsistencies in texts

Vocabulary

• interprets complex, formal and impersonal language in academic texts
• uses lexical cues to interpret unfamiliar vocabulary
• demonstrates self-reliance in exploration and application of word learning strategies

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10H01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10H01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made

• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

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• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

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Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10H01

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Sampling

• considers the context when determining whether to use data from a sample or a population

• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)

• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)

• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

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Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

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Continuum extract

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Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

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Snapshot – Understanding texts

Literacy: Reading and viewing: Understanding texts

Content description

AC9S10H01

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Comprehension

• reads and views complex texts (see Text complexity)
• identifies the main themes or concepts in complex texts by synthesising key ideas or information
• summarises the text, identifying key details only
• draws inferences, synthesising clues and evidence across a text
• builds meaning by actively linking ideas from a number of texts or a range of digital sources
• distils information from a number of texts according to task and purpose (e.g. uses graphic organisers)

• identifies different interpretations of the text citing evidence from a text
• evaluates language features for relevance to purpose and audience
• analyses texts that have more than one purpose and explains how parts of the text support a particular purpose
• analyses the use of language appropriate to different types of texts (e.g. compare the use of pun in imaginative and persuasive texts)
• identifies techniques used to obscure author's purpose (e.g. inclusion or omission of content)

Processes

• uses processes such as predicting, confirming predictions, monitoring, and connecting relevant elements of the text to build or repair meaning
• uses knowledge of a broader range of cohesive devices to track meaning (e.g. word associations) (see Grammar)
• selects reading or viewing strategies appropriate to reading purpose (e.g. scans text for evidence)
• judiciously selects texts for learning area tasks and purposes

Vocabulary

• identifies language used to create tone or atmosphere
• analyses language and visual features in texts using metalanguage (e.g. cohesion, interpretation, figurative)
• applies knowledge of base words and word origins to understand the meaning of unfamiliar, discipline-specific words
• uses a range of context and grammatical cues to understand unfamiliar words
• interprets complex figurative language (e.g. euphemisms, hyperbole)

Comprehension

• reads and views complex or some highly complex texts (see Text complexity)
• interprets abstract concepts integrating complex ideas
• analyses how language features are used to support the point of view in a text (e.g. the strategic use of images such as a cartoon in an editorial)
• draws inferences using evidence from the text and discounting possible inferences that are not supported by the text
• applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience
• evaluates the reasoning and evidence in a persuasive text
• explains how context (e.g. time, place, situation) influences interpretations of a text
• analyses the author's perspectives in complex or some highly complex texts
• analyses the techniques authors use to position readers
• recognises when ideas or evidence have been omitted from a text to position the reader

Processes

• automatically integrates a range of processes such as predicting, confirming predictions, monitoring and connecting relevant elements of the text, to build meaning
• describes how sophisticated cohesive devices establish patterns of meaning (e.g. "class" – "subclass")
• navigates extended texts including complex digital texts

Vocabulary

• demonstrates an understanding of nuances and subtleties in words of similar meaning (e.g. "frustrated", "discouraged", "baffled")
• verifies interpretations of unfamiliar words using grammatical and contextual cues

Comprehension

• reads and views highly complex texts (see Text complexity)
• interprets symbolism in texts, providing evidence to justify interpretation
• judiciously selects and synthesises evidence from multiple texts to support ideas and arguments
• analyses the credibility and validity of primary and secondary sources
• evaluates the use of devices such as analogy, irony, rhetoric and satire, and how they contribute to an author's individual style
• analyses the cumulative impact of use of language features and vocabulary across texts
• explains assumptions, beliefs and implicit values in texts (e.g. "economic growth is always

desirable")
• evaluates the social, moral and ethical positions taken in texts

Processes

• strategically adjusts the processes of reading and viewing to build meaning according to the demands of tasks and texts
• identifies subtle contradictions and inconsistencies in texts

Vocabulary

• interprets complex, formal and impersonal language in academic texts
• uses lexical cues to interpret unfamiliar vocabulary
• demonstrates self-reliance in exploration and application of word learning strategies

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10H01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Understanding texts

Literacy: Reading and viewing: Understanding texts

Content description

AC9S10H01

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Comprehension

• reads and views complex texts (see Text complexity)
• identifies the main themes or concepts in complex texts by synthesising key ideas or information
• summarises the text, identifying key details only
• draws inferences, synthesising clues and evidence across a text
• builds meaning by actively linking ideas from a number of texts or a range of digital sources
• distils information from a number of texts according to task and purpose (e.g. uses graphic organisers)
• identifies different interpretations of the text citing evidence from a text
• evaluates language features for relevance to purpose and audience
• analyses texts that have more than one purpose and explains how parts of the text support a particular purpose
• analyses the use of language appropriate to different types of texts (e.g. compare the use of pun in imaginative and persuasive texts)
• identifies techniques used to obscure author’s purpose (e.g. inclusion or omission of content)

Processes

• uses processes such as predicting, confirming predictions, monitoring, and connecting relevant elements of the text to build or repair meaning
• uses knowledge of a broader range of cohesive devices to track meaning (e.g. word associations) (see Grammar)
• selects reading or viewing strategies appropriate to reading purpose (e.g. scans text for evidence)
• judiciously selects texts for learning area tasks and purposes

Vocabulary

• identifies language used to create tone or atmosphere
• analyses language and visual features in texts using metalanguage (e.g. cohesion, interpretation, figurative)
• applies knowledge of base words and word origins to understand the meaning of unfamiliar, discipline-specific words
• uses a range of context and grammatical cues to understand unfamiliar words
• interprets complex figurative language (e.g. euphemisms, hyperbole)

Comprehension

• reads and views complex or some highly complex texts (see Text complexity)
• interprets abstract concepts integrating complex ideas
• analyses how language features are used to support the point of view in a text (e.g. the strategic use of images such as a cartoon in an editorial)
• draws inferences using evidence from the text and discounting possible inferences that are not supported by the text
• applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience
• evaluates the reasoning and evidence in a persuasive text
• explains how context (e.g. time, place, situation) influences interpretations of a text
• analyses the author’s perspectives in complex or some highly complex texts
• analyses the techniques authors use to position readers
• recognises when ideas or evidence have been omitted from a text to position the reader

Processes

• automatically integrates a range of processes such as predicting, confirming predictions, monitoring and connecting relevant elements of the text, to build meaning
• describes how sophisticated cohesive devices establish patterns of meaning (e.g. "class" – "subclass")
• navigates extended texts including complex digital texts

Vocabulary

• demonstrates an understanding of nuances and subtleties in words of similar meaning (e.g. "frustrated", "discouraged", "baffled")
• verifies interpretations of unfamiliar words using grammatical and contextual cues

Comprehension

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• interprets symbolism in texts, providing evidence to justify interpretation
• judiciously selects and synthesises evidence from multiple texts to support ideas and arguments
• analyses the credibility and validity of primary and secondary sources
• evaluates the use of devices such as analogy, irony, rhetoric and satire, and how they contribute to an author’s individual style
• analyses the cumulative impact of use of language features and vocabulary across texts
• explains assumptions, beliefs and implicit values in texts (e.g. "economic growth is always desirable")
• evaluates the social, moral and ethical positions taken in texts

Processes

• strategically adjusts the processes of reading and viewing to build meaning according to the demands of tasks and texts
• identifies subtle contradictions and inconsistencies in texts

Vocabulary

• interprets complex, formal and impersonal language in academic texts
• uses lexical cues to interpret unfamiliar vocabulary
• demonstrates self-reliance in exploration and application of word learning strategies

Resource – WS01 - Big bang theory

By the end of Year 10 students explain the processes that underpin heredity and genetic diversity and describe the evidence supporting the theory of evolution by natural selection. They sequence key events in the origin and evolution of the universe and describe the supporting evidence for the big bang theory. They describe trends in patterns of global climate change and identify causal factors. They explain how Newton's laws describe motion and apply them to predict motion of objects in a system. They explain patterns and trends in the periodic table and predict the products of reactions and the effect of changing reactant and reaction conditions. Students analyse the importance of publication and peer review in the development of scientific knowledge and analyse the relationship between science, technologies and engineering. They analyse the key factors that influence interactions between science and society.

Students plan and conduct safe, valid and reproducible investigations to test relationships or develop explanatory models. They explain how they have addressed any ethical and intercultural considerations when generating or using primary and secondary data. They select equipment and use it efficiently to generate and record appropriate sample sizes and replicable data with precision. They select and construct effective representations to organise, process and summarise data and information. They analyse and connect a variety of data and information to identify and explain patterns, trends, relationships and anomalies. They evaluate the validity and reproducibility of methods, and the validity of conclusions and claims. They construct logical arguments based on analysis of a variety of evidence to support conclusions and evaluate claims. They select and use content, language and text features effectively to achieve their purpose when communicating their ideas, findings and arguments to diverse audiences.

AC9S10U03

describe how the big bang theory models the origin and evolution of the universe and analyse the supporting evidence for the theory

AC9S10H01

explain■how scientific knowledge is validated and refined, including the role of publication and peer review

AC9S10H02

investigate how advances in technologies enable advances in science, and how science has contributed to developments in technologies and engineering

AC9S10I06

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

AC9S10I07

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

AC9S10I08

write and create texts to communicate ideas, findings and arguments effectively for identified purposes and audiences, including selection of appropriate content, language and text features, using digital tools as appropriate

AC9S10H02

investigate how advances in technologies enable advances in science, and how science has contributed

to developments in technologies and engineering

•

•

Elaborations

• examining karyotypes and applications of gene technologies, such as gene therapy and genetic engineering and biotechnologies used to produce therapeutic proteins
• recognising that the development of fast computers has made possible the analysis of DNA sequencing, radio astronomy signals and other generated by major international science projects such as the Event Horizon Telescope, Large Hadron Collider, the Laser Interferometer Gravitational-Wave Observatory and the Square Kilometre Array
• considering how computer modelling has improved knowledge and predictability of phenomena such as climate change and atmospheric pollution
• investigating how satellites generate global including ocean temperatures, sea levels and forest and ice cover and examining how that is used to evaluate the effects of climate change
• researching how an understanding of the way DNA stores has been applied to DNA bar coding to accelerate the pace of research in fields such as chemical engineering, science and nanotechnology
• examining how the recent use of female crash test dummies has shown women are at greater risk of injury in a car accident and considering implications for changing car safety features
• exploring how the development of new and thin films has led to better computer chips and solar cells
• investigating how the development of superstrong, lighter alloys has enabled engineers to improve structural components in building, and industry and to design products such as improved protective armour for police and soldiers

Students learn to:

investigate how advances in technologies enable advances in science, and how sci to developments in technologies and engineering

(AC9S10H02)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Reading and viewing

• Understanding texts

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Futures

• Sustainable futures require individuals to seek information, identify solutions, reflect on and evaluate past actions, and collaborate with and influence others as they work towards a desired change.

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Systems

• All life forms, including human life, are connected through Earth's systems (geosphere, biosphere, hydrosphere and atmosphere) on which they depend for their wellbeing and survival.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Reflecting

• Transfer knowledge

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Reading and viewing

• Understanding texts

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Reflecting

• Transfer knowledge

Design

• Creative and innovative design is integral to the identification of new ways of sustainable living.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Reflecting

• Transfer knowledge

Resources

Work Samples

WS01 - Big bang theory

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Understanding texts

Literacy: Reading and viewing: Understanding texts

Content description

AC9S10H02

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Comprehension

• reads and views complex texts (see Text complexity)
• identifies the main themes or concepts in complex texts by synthesising key ideas or information
• summarises the text, identifying key details only
• draws inferences, synthesising clues and evidence across a text
• builds meaning by actively linking ideas from a number of texts or a range of digital sources
• distils information from a number of texts according to task and purpose (e.g. uses graphic organisers)
• identifies different interpretations of the text citing evidence from a text
• evaluates language features for relevance to purpose and audience
• analyses texts that have more than one purpose and explains how parts of the text support a particular purpose
• analyses the use of language appropriate to different types of texts (e.g. compare the use of pun in imaginative and persuasive texts)
• identifies techniques used to obscure author's purpose (e.g. inclusion or omission of content)

Processes

• uses processes such as predicting, confirming predictions, monitoring, and connecting relevant elements of the text to build or repair meaning
• uses knowledge of a broader range of cohesive devices to track meaning (e.g. word associations) (see Grammar)
• selects reading or viewing strategies appropriate to reading purpose (e.g. scans text for evidence)
• judiciously selects texts for learning area tasks and purposes

Vocabulary

• identifies language used to create tone or atmosphere
• analyses language and visual features in texts using metalanguage (e.g. cohesion, interpretation, figurative)
• applies knowledge of base words and word origins to understand the meaning of unfamiliar, discipline-specific words
• uses a range of context and grammatical cues to understand unfamiliar words
• interprets complex figurative language (e.g. euphemisms, hyperbole)

Comprehension

• reads and views complex or some highly complex texts (see Text complexity)
• interprets abstract concepts integrating complex ideas
• analyses how language features are used to support the point of view in a text (e.g. the strategic use of images such as a cartoon in an editorial)
• draws inferences using evidence from the text and discounting possible inferences that are not supported by the text
• applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience

• evaluates the reasoning and evidence in a persuasive text
• explains how context (e.g. time, place, situation) influences interpretations of a text
• analyses the author's perspectives in complex or some highly complex texts
• analyses the techniques authors use to position readers
• recognises when ideas or evidence have been omitted from a text to position the reader

Processes

• automatically integrates a range of processes such as predicting, confirming predictions, monitoring and connecting relevant elements of the text, to build meaning
• describes how sophisticated cohesive devices establish patterns of meaning (e.g. "class" – "subclass")
• navigates extended texts including complex digital texts

Vocabulary

• demonstrates an understanding of nuances and subtleties in words of similar meaning (e.g. "frustrated", "discouraged", "baffled")
• verifies interpretations of unfamiliar words using grammatical and contextual cues

Comprehension

• reads and views highly complex texts (see Text complexity)
• interprets symbolism in texts, providing evidence to justify interpretation
• judiciously selects and synthesises evidence from multiple texts to support ideas and arguments
• analyses the credibility and validity of primary and secondary sources
• evaluates the use of devices such as analogy, irony, rhetoric and satire, and how they contribute to an author's individual style
• analyses the cumulative impact of use of language features and vocabulary across texts
• explains assumptions, beliefs and implicit values in texts (e.g. "economic growth is always desirable")
• evaluates the social, moral and ethical positions taken in texts

Processes

• strategically adjusts the processes of reading and viewing to build meaning according to the demands of tasks and texts
• identifies subtle contradictions and inconsistencies in texts

Vocabulary

• interprets complex, formal and impersonal language in academic texts
• uses lexical cues to interpret unfamiliar vocabulary
• demonstrates self-reliance in exploration and application of word learning strategies

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual

information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made
• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Transfer knowledge

Critical and Creative Thinking: Reflecting: Transfer knowledge

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• transfer knowledge and skills gained in previous experiences to both similar and different contexts, and explain reasons for decisions and choices made

• identify, plan and justify opportunities to transfer knowledge into new contexts

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made

• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Understanding texts

Literacy: Reading and viewing: Understanding texts

Content description

AC9S10H02

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Comprehension

• reads and views complex texts (see Text complexity)

• identifies the main themes or concepts in complex texts by synthesising key ideas or information

• summarises the text, identifying key details only

• draws inferences, synthesising clues and evidence across a text

• builds meaning by actively linking ideas from a number of texts or a range of digital sources

• distils information from a number of texts according to task and purpose (e.g. uses graphic organisers)

• identifies different interpretations of the text citing evidence from a text

• evaluates language features for relevance to purpose and audience
• analyses texts that have more than one purpose and explains how parts of the text support a particular purpose
• analyses the use of language appropriate to different types of texts (e.g. compare the use of pun in imaginative and persuasive texts)
• identifies techniques used to obscure author's purpose (e.g. inclusion or omission of content)

Processes

• uses processes such as predicting, confirming predictions, monitoring, and connecting relevant elements of the text to build or repair meaning
• uses knowledge of a broader range of cohesive devices to track meaning (e.g. word associations) (see Grammar)
• selects reading or viewing strategies appropriate to reading purpose (e.g. scans text for evidence)
• judiciously selects texts for learning area tasks and purposes

Vocabulary

• identifies language used to create tone or atmosphere
• analyses language and visual features in texts using metalanguage (e.g. cohesion, interpretation, figurative)
• applies knowledge of base words and word origins to understand the meaning of unfamiliar, discipline-specific words
• uses a range of context and grammatical cues to understand unfamiliar words
• interprets complex figurative language (e.g. euphemisms, hyperbole)

Comprehension

• reads and views complex or some highly complex texts (see Text complexity)
• interprets abstract concepts integrating complex ideas
• analyses how language features are used to support the point of view in a text (e.g. the strategic use of images such as a cartoon in an editorial)
• draws inferences using evidence from the text and discounting possible inferences that are not supported by the text
• applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience
• evaluates the reasoning and evidence in a persuasive text
• explains how context (e.g. time, place, situation) influences interpretations of a text
• analyses the author's perspectives in complex or some highly complex texts
• analyses the techniques authors use to position readers
• recognises when ideas or evidence have been omitted from a text to position the reader

Processes

• automatically integrates a range of processes such as predicting, confirming predictions, monitoring and connecting relevant elements of the text, to build meaning
• describes how sophisticated cohesive devices establish patterns of meaning (e.g. "class" – "subclass")
• navigates extended texts including complex digital texts

Vocabulary

• demonstrates an understanding of nuances and subtleties in words of similar meaning (e.g. "frustrated", "discouraged", "baffled")
• verifies interpretations of unfamiliar words using grammatical and contextual cues

Comprehension

• reads and views highly complex texts (see Text complexity)
• interprets symbolism in texts, providing evidence to justify interpretation
• judiciously selects and synthesises evidence from multiple texts to support ideas and arguments
• analyses the credibility and validity of primary and secondary sources
• evaluates the use of devices such as analogy, irony, rhetoric and satire, and how they contribute to an author's individual style
• analyses the cumulative impact of use of language features and vocabulary across texts
• explains assumptions, beliefs and implicit values in texts (e.g. "economic growth is always desirable")

• evaluates the social, moral and ethical positions taken in texts

Processes

• strategically adjusts the processes of reading and viewing to build meaning according to the demands of tasks and texts

• identifies subtle contradictions and inconsistencies in texts

Vocabulary

• interprets complex, formal and impersonal language in academic texts

• uses lexical cues to interpret unfamiliar vocabulary

• demonstrates self-reliance in exploration and application of word learning strategies

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Transfer knowledge

Critical and Creative Thinking: Reflecting: Transfer knowledge

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• transfer knowledge and skills gained in previous experiences to both similar and different contexts, and explain reasons for decisions and choices made

• identify, plan and justify opportunities to transfer knowledge into new contexts

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Transfer knowledge

Critical and Creative Thinking: Reflecting: Transfer knowledge

Content description

AC9S10H02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• transfer knowledge and skills gained in previous experiences to both similar and different contexts, and explain reasons for decisions and choices made

• identify, plan and justify opportunities to transfer knowledge into new contexts

AC9S10H03

analyse the key factors that contribute to science knowledge and practices being adopted more broadly by society

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Elaborations

• investigating why agricultural practices have changed to include widespread use of genetically engineered crops

• examining statistics to compare bicycle or electric scooter injuries sustained by riders with and without helmets and relating these to helmet wearing requirements

• discussing examples of the application of genetic screening and reasons for the adoption of the practice by groups in society

• examining why climate change used by scientists are contested by some people in society

• discussing citizen science projects such as the GLOBE Project or others of local relevance and examining why people would choose to be involved

• considering how the traditional ecological knowledges of First Nations Australians are being reaffirmed by modern science and how these practices are being used by Traditional Owners in carbon farming initiatives

Students learn to:

analyse the key factors that contribute to science knowledge and practices being ad broadly by society

(AC9S10H03)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Responding to ethical issues

• Making and reflecting on ethical decisions

Understanding ethical concepts and perspectives

• Explore ethical concepts

Social management

• Leadership

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Inquiring

• Identify, process and evaluate information

Social awareness

• Community awareness

Analysing

• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Social awareness

• Community awareness

Analysing

• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Social awareness

• Community awareness

Inquiring

• Identify, process and evaluate information

Social awareness

• Community awareness

Social awareness

• Community awareness

Futures

• Sustainable futures are achieved through informed individual, community, business and political action that values local, national and global equity and fairness across generations into the future.

Culture

• The First Peoples of Australia (Aboriginal Peoples) belong to the world's oldest continuous cultures. First Nations Australians demonstrate resilience in the maintenance, practice and revitalisation of culture despite the many historic and enduring impacts of colonisation, and continue to celebrate and share the past, present and future manifestations of their cultures.

People

• The significant and ongoing contributions of First Nations Australians and their histories and cultures are acknowledged locally, nationally and globally.

Design

• Sustainable design requires an awareness of place, past practices, research and technological developments, and balanced judgements based on projected environmental, social and economic impacts.

Related content

This content description can be taught with the following content descriptions from other learning areas.

AC9HG10K02

Snapshot – Making and reflecting on ethical decisions

Ethical Understanding: Responding to ethical issues: Making and reflecting on et

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• consider how values and beliefs influence approaches to ethical issues, and■analyse■how these affect■outcomes

• analyse■biases■when applying ethical concepts,■values■and ethical frameworks,■in order to explore and evaluate ethical decisions

Snapshot – Explore ethical concepts

Ethical Understanding: Understanding ethical concepts and perspectives: Explor

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• analyse■the similarities and differences between ethical concepts, such as integrity, loyalty and equality, in a range of situations and contexts

• evaluate■the consistency in meaning of ethical concepts, such as trust, freedom and rights and responsibilities, in a range of situations and contexts

Snapshot – Leadership

Personal and Social capability: Social management: Leadership

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• devise a plan for leading action and evaluate the appropriateness of various leadership approaches in the process

• propose, implement and evaluate strategies to address needs at local, regional, national or global levels

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Community awareness

Personal and Social capability: Social awareness: Community awareness

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• analyse roles and responsibilities of citizens within communities

• evaluate ways of contributing to communities at local, regional, national and global levels

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made

• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Community awareness

Personal and Social capability: Social awareness: Community awareness

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse roles and responsibilities of citizens within communities
• evaluate ways of contributing to communities at local, regional, national and global levels

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made
• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Community awareness

Personal and Social capability: Social awareness: Community awareness

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse roles and responsibilities of citizens within communities
• evaluate ways of contributing to communities at local, regional, national and global levels

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual

information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Community awareness

Personal and Social capability: Social awareness: Community awareness

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse roles and responsibilities of citizens within communities
• evaluate ways of contributing to communities at local, regional, national and global levels

Snapshot – Community awareness

Personal and Social capability: Social awareness: Community awareness

Content description

AC9S10H03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse roles and responsibilities of citizens within communities
• evaluate ways of contributing to communities at local, regional, national and global levels

AC9S10H04

examine how the values and needs of society influence the focus of scientific research

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Elaborations

• considering the use of genetic testing for decisions such as genetic counselling, embryo selection, identification of carriers of genetic mutations and the use of this information for personal use or by organisations such as insurance companies or medical facilities
• researching how the values of 19th and early 20th century Australian society, combined with scientific misconceptions about heredity and evolution, influenced policies and attitudes towards First Nations Australians
• recognising that financial backing from governments or commercial organisations is needed for scientific developments and that this can determine what research is carried out
• examining the link between scientific research and real-world applications such as space research and new development

Students learn to:

examine how the values and needs of society influence the focus of scientific resea

(AC9S10H04)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Responding to ethical issues

• Making and reflecting on ethical decisions

Understanding ethical concepts and perspectives

• Explore ethical concepts

Social awareness

• Community awareness

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Responding to ethical issues

• Making and reflecting on ethical decisions

Understanding ethical concepts and perspectives

• Explore ethical concepts

Social awareness

• Community awareness

Responding to ethical issues

• Making and reflecting on ethical decisions

Understanding ethical concepts and perspectives

• Explore ethical concepts

Culture

• The First Peoples of Australia (Aboriginal Peoples) belong to the world’s oldest continuous cultures. First Nations Australians demonstrate resilience in the maintenance, practice and revitalisation of culture despite the many historic and enduring impacts of colonisation, and continue to celebrate and share the past, present and future manifestations of their cultures.

Inquiring

• Identify, process and evaluate information

Reflecting

• Transfer knowledge

Snapshot – Making and reflecting on ethical decisions

Ethical Understanding: Responding to ethical issues: Making and reflecting on et

Content description

AC9S10H04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• consider how values and beliefs influence approaches to ethical issues, and■analyse■how these affect■outcomes

• analyse■biases■when applying ethical concepts,■values■and ethical frameworks,■in order to explore and evaluate ethical decisions

Snapshot – Explore ethical concepts

Ethical Understanding: Understanding ethical concepts and perspectives: Explor

Content description

AC9S10H04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• analyse■the similarities and differences between ethical concepts, such as integrity, loyalty and equality, in a range of situations and contexts

• evaluate■the consistency in meaning of ethical concepts, such as trust, freedom and rights and responsibilities, in a range of situations and contexts

Snapshot – Community awareness

Personal and Social capability: Social awareness: Community awareness

Content description

AC9S10H04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• analyse roles and responsibilities of citizens within communities

• evaluate ways of contributing to communities at local, regional, national and global levels

Snapshot – Making and reflecting on ethical decisions

Ethical Understanding: Responding to ethical issues: Making and reflecting on et

Content description

AC9S10H04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• consider how values and beliefs influence approaches to ethical issues, and■analyse■how these

affect■outcomes
• analyse■biases■when applying ethical concepts,■values■and ethical frameworks,■in order to explore and evaluate ethical decisions

Snapshot – Explore ethical concepts

Ethical Understanding: Understanding ethical concepts and perspectives: Explor

Content description

AC9S10H04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse■the similarities and differences between ethical concepts, such as integrity, loyalty and equality, in a range of situations and contexts
• evaluate■the consistency in meaning of ethical concepts, such as trust, freedom and rights and responsibilities, in a range of situations and contexts

Snapshot – Community awareness

Personal and Social capability: Social awareness: Community awareness

Content description

AC9S10H04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse roles and responsibilities of citizens within communities
• evaluate ways of contributing to communities at local, regional, national and global levels

Snapshot – Making and reflecting on ethical decisions

Ethical Understanding: Responding to ethical issues: Making and reflecting on et

Content description

AC9S10H04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• consider how values and beliefs influence approaches to ethical issues, and■analyse■how these affect■outcomes
• analyse■biases■when applying ethical concepts,■values■and ethical frameworks,■in order to explore and evaluate ethical decisions

Snapshot – Explore ethical concepts

Ethical Understanding: Understanding ethical concepts and perspectives: Explor

Content description

AC9S10H04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse■the similarities and differences between ethical concepts, such as integrity, loyalty and equality, in a range of situations and contexts
• evaluate■the consistency in meaning of ethical concepts, such as trust, freedom and rights and responsibilities, in a range of situations and contexts

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10H04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Transfer knowledge

Critical and Creative Thinking: Reflecting: Transfer knowledge

Content description

AC9S10H04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• transfer knowledge and skills gained in previous experiences to both similar and different contexts, and explain reasons for decisions and choices made

• identify, plan and justify opportunities to transfer knowledge into new contexts

AC9S10I01

develop investigable questions, reasoned predictions and hypotheses to test and develop

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Elaborations

• discussing how a tested may lead to further predictions and testing to determine if the prediction is supported

• developing hypotheses about the role of human activity in changes to climate and investigating these using secondary

• observing a change in the frequency of extreme weather events and hypothesising causes from scientific , such as: ‘If the El Niño weather occurs more frequently then there will be more droughts due to decreased rainfall’

• asking questions about the between crash impact and speed and developing a which can then be tested

• observing how changing the surface area, concentration and temperature affects the rate of a chemical reaction and developing reasoned predictions

Students learn to:

develop investigable questions, reasoned predictions and hypotheses to test relatio

develop explanatory models

(AC9S10I01)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Generating

• Put ideas into action

Inquiring

• Develop questions

Speaking and listening

• Interacting

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Generating

• Put ideas into action

Speaking and listening

• Interacting

Systems

• Social, economic and political systems influence the sustainability of Earth’s systems.

Generating

• Put ideas into action

Writing

• Creating texts

Generating

• Put ideas into action

Inquiring

• Develop questions

Speaking and listening

• Interacting

Generating

• Put ideas into action

Snapshot – Put ideas into action

Critical and Creative Thinking: Generating: Put ideas into action

Content description

AC9S10I01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• put ideas into action by making predictions, testing and evaluating options, and reconsidering approaches in complex or unfamiliar situations

• put ideas into action by making predictions, testing and evaluating options, proposing modifications and adapting approaches in complex or unfamiliar situations

Snapshot – Develop questions

Critical and Creative Thinking: Inquiring: Develop questions

Content description

AC9S10I01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• develop questions to investigate complex issues and topics

• questions developed assist in forming an understanding of why phenomena or issues arise

• develop questions to investigate complex issues and topics

• questions developed facilitate increasing understanding of abstract ideas and concepts

Snapshot – Interacting

Literacy: Speaking and listening: Interacting

Content description

AC9S10I01

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

• interacts within school context or the broader community, adjusting language and responses to suit purpose and audience

• synthesises ideas from group discussion into a common theme or hypothesis

• poses problems, hypothesises and formulates questions about abstract ideas in group situations

• restates different views and makes suggestions to negotiate agreement

• poses questions to clarify assumptions made by the speaker

• questions others to evaluate accuracy of thinking or problem-solving processes

• uses language to align the listener with personal position (e.g. "of course", "as you can imagine", "obviously")

• interacts strategically and confidently with a broad range of interactional partners

• gives an extended explanation and evaluation of a complex concept, issue or process

• justifies a personal stance, after analysis of arguments on a particular issue, using evidence and elaboration in a group situation

• uses language strategically to subtly align others to own perspective as appropriate to audience and purpose

Snapshot – Put ideas into action

Critical and Creative Thinking: Generating: Put ideas into action

Content description

AC9S10I01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• put ideas into action by making predictions, testing and evaluating options, and reconsidering approaches in complex or unfamiliar situations

• put ideas into action by making predictions, testing and evaluating options, proposing modifications and adapting approaches in complex or unfamiliar situations

Snapshot – Interacting

Literacy: Speaking and listening: Interacting

Content description

AC9S10I01

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

• interacts within school context or the broader community, adjusting language and responses to suit purpose and audience

• synthesises ideas from group discussion into a common theme or hypothesis

• poses problems, hypothesises and formulates questions about abstract ideas in group situations

• restates different views and makes suggestions to negotiate agreement

• poses questions to clarify assumptions made by the speaker

• questions others to evaluate accuracy of thinking or problem-solving processes

• uses language to align the listener with personal position (e.g. "of course", "as you can imagine", "obviously")

• interacts strategically and confidently with a broad range of interactional partners

• gives an extended explanation and evaluation of a complex concept, issue or process

• justifies a personal stance, after analysis of arguments on a particular issue, using evidence and elaboration in a group situation

• uses language strategically to subtly align others to own perspective as appropriate to audience and purpose

Snapshot – Put ideas into action

Critical and Creative Thinking: Generating: Put ideas into action

Content description

AC9S10I01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• put ideas into action by making predictions, testing and evaluating options, and reconsidering approaches in complex or unfamiliar situations

• put ideas into action by making predictions, testing and evaluating options, proposing modifications and adapting approaches in complex or unfamiliar situations

Snapshot – Creating texts

Literacy: Writing: Creating texts

Content description

AC9S10I01

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Crafting ideas

• creates informative texts to explain and analyse (e.g. analyses how artists use visual conventions in artworks)

• creates texts to compare and contrast phenomena (e.g. identify the similarities and differences between species of animals)

• orients the reader clearly to the topic or concept (e.g. using a definition or classification in the opening paragraph)

• intentionally selects structural elements for effect (e.g. includes an effective conclusion that synthesises complex ideas)

• uses evidence and research including digital resources to expand upon information and elaborate concepts

Text forms and features

• varies sentence structure for effect (see Grammar)
• judiciously uses language, visual and audio features to emotionally or intellectually affect the reader
• uses more elaborate noun groups/phrases that include classifying adjectives and specific nouns (e.g. "mineral component of sedimentary rocks")
• creates cohesive flow by condensing previous information into a summarising noun (e.g. "A series of tumultuous events culminated in the outbreak of WWI - modern history's turning point.")
• uses passive voice and nominalisation to write succinctly (e.g. "the results were analysed") (see Grammar)

Vocabulary

• uses discipline-specific terminology to provide accurate and explicit information (e.g. "discipline metalanguage")
• uses a range of synonyms for frequently occurring words, in a longer text (e.g. "repair", "fix", "remedy")
• uses vocabulary to indicate and describe relationships (e.g. "additionally", "similarly")

Crafting ideas

• creates sustained, informative texts that precisely explain, analyse and evaluate concepts or abstract entities
• uses structural features flexibly to organise ideas strategically (e.g. includes a defined, cogent conclusion or summation)
• creates texts with forms and features combined strategically for purpose (e.g. describes a historical event from the perspective of a secondary source)
• uses evidence and references
• creates succinct short-answer explanatory texts as well as complex, multi-staged extended texts

Text forms and features

• maintains tone appropriate to the audience
• uses extended noun groups/phrases including adjectival phrases (e.g. "a sturdy construction with modern design features") (see Grammar)

Vocabulary

• uses complex abstractions (e.g. "economic", "sociocultural")

Snapshot – Put ideas into action

Critical and Creative Thinking: Generating: Put ideas into action

Content description

AC9S10I01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• put ideas into action by making predictions, testing and evaluating options, and reconsidering approaches in complex or unfamiliar situations
• put ideas into action by making predictions, testing and evaluating options, proposing modifications and adapting approaches in complex or unfamiliar situations

Snapshot – Develop questions

Critical and Creative Thinking: Inquiring: Develop questions

Content description

AC9S10I01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• develop questions to investigate complex issues and topics
• questions developed assist in forming an understanding of why phenomena or issues arise
• develop questions to investigate complex issues and topics
• questions developed facilitate increasing understanding of abstract ideas and concepts

Snapshot – Interacting

Literacy: Speaking and listening: Interacting

Content description

AC9S10I01

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

• interacts within school context or the broader community, adjusting language and responses to suit purpose and audience
• synthesises ideas from group discussion into a common theme or hypothesis
• poses problems, hypothesises and formulates questions about abstract ideas in group situations
• restates different views and makes suggestions to negotiate agreement
• poses questions to clarify assumptions made by the speaker
• questions others to evaluate accuracy of thinking or problem-solving processes
• uses language to align the listener with personal position (e.g. "of course", "as you can imagine", "obviously")
• interacts strategically and confidently with a broad range of interactional partners
• gives an extended explanation and evaluation of a complex concept, issue or process
• justifies a personal stance, after analysis of arguments on a particular issue, using evidence and elaboration in a group situation
• uses language strategically to subtly align others to own perspective as appropriate to audience and purpose

Snapshot – Put ideas into action

Critical and Creative Thinking: Generating: Put ideas into action

Content description

AC9S10I01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• put ideas into action by making predictions, testing and evaluating options, and reconsidering approaches in complex or unfamiliar situations
• put ideas into action by making predictions, testing and evaluating options, proposing modifications and adapting approaches in complex or unfamiliar situations

AC9S10I02

plan and conduct valid, to answer questions and test hypotheses, including identifying and controlling for possible sources of error and, as appropriate, developing and following risk assessments, considering ethical issues, and addressing key considerations regarding heritage sites and artefacts on

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Elaborations

• addressing possible sources of error through choice of equipment, control or further testing
• considering possible confounding or effects and ensuring these are controlled or accounted for in planned methods for collection and analysis
• identifying safety risks and impacts on animal welfare and ensuring these are effectively managed within an
• identifying the potential hazards of chemicals or biological and processes used in experimental and how these should be addressed
• addressing ethical issues when collaborating with First Nations Australians to explore the development of a commercial product based on traditional ecological knowledges
• modelling how to report the discovery of unregistered First Nations Australians artefacts and heritage or any unauthorised disturbance
• considering the ethical and social issues and legal responsibilities involved in the care and use of animals for scientific purposes before starting an involving animals

Students learn to:

plan and conduct valid, reproducible investigations to answer questions and test hy

including identifying and controlling for possible sources of error and, as appropria and following risk assessments, considering ethical issues, and addressing key co regarding heritage sites and artefacts on Country/Place

(AC9S10I02)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Responding to ethical issues

• Explore ethical perspectives and frameworks
• Explore ethical issues

Understanding ethical concepts and perspectives

• Explore ethical concepts
• Recognise influences on ethical behaviour and perspectives

Culture

• The First Peoples of Australia (Aboriginal Peoples) belong to the world's oldest continuous cultures. First Nations Australians demonstrate resilience in the maintenance, practice and revitalisation of culture despite the many historic and enduring impacts of colonisation, and continue to celebrate and share the past, present and future manifestations of their cultures.

Country/Place

• The First Peoples of Australia are the Traditional Owners of Country/Place, protected in Australian Law by the Native Title Act 1993 which recognises pre-existing sovereignty, continuing■systems of law and customs, and connection to Country/Place. This recognised legal right provides for economic sustainability and a voice into the development■and management of Country/Place.

People

• The significant and ongoing contributions of First Nations Australians and their histories and cultures are acknowledged locally, nationally and globally.

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Analysing

• Evaluate actions and outcomes

Statistics and probability

• Interpreting and representing data
• Understanding chance

Analysing

• Evaluate actions and outcomes

Generating

• Put ideas into action

Responding to ethical issues

• Explore ethical issues

Understanding ethical concepts and perspectives

• Examine values, rights and responsibilities and ethical norms

Generating

• Put ideas into action

Reading and viewing

• Understanding texts

Responding to ethical issues

• Explore ethical issues

Understanding ethical concepts and perspectives

• Examine values, rights and responsibilities and ethical norms

Culture

• The First Peoples of Australia (Aboriginal Peoples) belong to the world's oldest continuous cultures. First Nations Australians demonstrate resilience in the maintenance, practice and

revitalisation of culture despite the many historic and enduring impacts of colonisation, and continue to celebrate and share the past, present and future manifestations of their cultures.

Country/Place

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People

• The significant and ongoing contributions of First Nations Australians and their histories and cultures are acknowledged locally, nationally and globally.

Responding to ethical issues

• Explore ethical issues

Understanding ethical concepts and perspectives

• Examine values, rights and responsibilities and ethical norms

Culture

• The First Peoples of Australia (Aboriginal Peoples) belong to the world’s oldest continuous cultures. First Nations Australians demonstrate resilience in the maintenance, practice and revitalisation of culture despite the many historic and enduring impacts of colonisation, and continue to celebrate and share the past, present and future manifestations of their cultures.

Country/Place

• The First Peoples of Australia are the Traditional Owners of Country/Place, protected in Australian Law by the Native Title Act 1993 which recognises pre-existing sovereignty, continuing■systems of law and customs, and connection to Country/Place. This recognised legal right provides for economic sustainability and a voice into the development■and management of Country/Place.

People

• The significant and ongoing contributions of First Nations Australians and their histories and cultures are acknowledged locally, nationally and globally.

Responding to ethical issues

• Explore ethical issues

Understanding ethical concepts and perspectives

• Examine values, rights and responsibilities and ethical norms

Related content

This content description can be taught with the following content descriptions from other learning areas.

AC9M10ST05

Snapshot – Explore ethical perspectives and frameworks

Ethical Understanding: Responding to ethical issues: Explore ethical perspective

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• explain how different ethical frameworks support developing ethical perspectives and inform ethical decision-making

• analyse and utilise different ethical frameworks when responding to ethical issues and making ethical decisions

Snapshot – Explore ethical issues

Ethical Understanding: Responding to ethical issues: Explore ethical issues

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• analyse■the relationships between values, ethical perspectives■and ethical frameworks when

responding to ethical issues
• apply knowledge of ethical concepts, values, perspectives and frameworks when responding to ethical issues

Snapshot – Explore ethical concepts

Ethical Understanding: Understanding ethical concepts and perspectives: Explor

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse■the similarities and differences between ethical concepts, such as integrity, loyalty and equality, in a range of situations and contexts
• evaluate■the consistency in meaning of ethical concepts, such as trust, freedom and rights and responsibilities, in a range of situations and contexts

Snapshot – Recognise influences on ethical behaviour and perspectives

Ethical Understanding: Understanding ethical concepts and perspectives: Recog

ethical behaviour and perspectives

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• explain how different traits, such as■honesty, trust, courage and selfishness interact with responsibilities or duties to determine ethically appropriate responses
• explore and analyse examples of the tensions between conflicting positions on issues of personal, social and global importance

Snapshot – Evaluate actions and outcomes

Critical and Creative Thinking: Analysing: Evaluate actions and outcomes

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• evaluate the effectiveness of a course of action or the outcome of a task and account for expected and unexpected results, including using a given or co-developed set of criteria to support decisions
• evaluate the effectiveness of a course of action to achieve desired outcomes and suggest improvements, including using a personally developed set of criteria to support judgements and decisions

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I02

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Interpreting graphical representations

• uses features of graphical representations to make predictions (e.g. predicts audience numbers based on historical data; interprets a range of graphs to identify possible trends and make predictions such as economic growth, stock prices, interest rates, population growth)
• summarises data using fractions, percentages and decimals (e.g. 2 3 \frac23 3 2 ■ of a class live in the same suburb; represents road safety and sun safety statistics as a percentage of the Australian population)
• explains that continuous variables depicting growth or change often vary over time (e.g. creates growth charts to illustrate impacts of financial decisions; describes patterns in inflation rates, employment rates, migration rates over time; represents changes to fitness levels following the

implementation of a personal fitness plan; interprets temperature charts)
• interprets graphs depicting motion such as distance–time and velocity–time graphs
• interprets and describes patterns in graphical representations of data from real-life situations such as the motion of a rollercoaster, flight trajectory of a basketball shot and the spread of disease
• investigates the association of 2 2 2 numerical variables through the representation and interpretation of bivariate data (e.g. uses scatter plots to represent bivariate data when investigating the relationship between 2 2 2 variables, such as income per capita, population density and life expectancy for different socio-economic groups)
• investigates, represents and interprets time series data (e.g. interrogates a time series graph showing the change in costs over time; uses a maximum daily temperature chart to determine the average temperature for the month)
• interprets the impact of changes to data (e.g. recognises the impact of outliers on a data set such as the income of a world-class professional athlete on the average income of players at the state/territory level; uses digital tools to enhance the quality of data in a science investigation)

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody’s favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Understanding chance

Numeracy: Statistics and probability: Understanding chance

Content description

AC9S10I02

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Calculating probabilities

• determines the probability of compound events and explains why some results have a higher probability than others (e.g. the results from tossing 2 2 2 coins)
• represents diagrammatically all possible outcomes (e.g. tree diagrams, two-way tables, Venn diagrams)
• measures and compares expected results to the actual results of a chance event over a number of trials, and compares and explains the variation in results (e.g. uses probability to determine expected results of a spinner prior to trial)
• recognises that the chance of something occurring or its complement has a total probability of one (e.g. the probability of rolling a 3 3 3 is 1 6 \frac16 6 1 ■ and the probability of not rolling a 3 3 3 is 5 6 \frac56 6 5 ■
• calculates and explains the difference between the probabilities of chance events with and without

replacement (e.g. "if we put all of the class names in a hat and draw them out one at a time without putting the name back in, the probability of your name getting called out increases each time because the total number of possible outcomes decreases")
• calculates the probabilities of future events based on historical data (e.g. uses historical rainfall data to plan the date for an outdoor event)

Probabilistic reasoning

• recognises combinations of events and the impact they have on assigning probabilities (e.g. and, or, not, if not, at least)
• solves conditional probability problems informally using data in two-way tables and authentic contexts
• evaluates chance data reported in media for meaning and accuracy
• applies probabilistic/chance reasoning to data collected in statistical investigations when making decisions acknowledging uncertainty

Snapshot – Evaluate actions and outcomes

Critical and Creative Thinking: Analysing: Evaluate actions and outcomes

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• evaluate the effectiveness of a course of action or the outcome of a task and account for expected and unexpected results, including using a given or co-developed set of criteria to support decisions
• evaluate the effectiveness of a course of action to achieve desired outcomes and suggest improvements, including using a personally developed set of criteria to support judgements and decisions

Snapshot – Put ideas into action

Critical and Creative Thinking: Generating: Put ideas into action

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• put ideas into action by making predictions, testing and evaluating options, and reconsidering approaches in complex or unfamiliar situations
• put ideas into action by making predictions, testing and evaluating options, proposing modifications and adapting approaches in complex or unfamiliar situations

Snapshot – Explore ethical issues

Ethical Understanding: Responding to ethical issues: Explore ethical issues

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse■the relationships between values, ethical perspectives■and ethical frameworks when responding to ethical issues
• apply knowledge of ethical concepts, values, perspectives and frameworks when responding to ethical issues

Snapshot – Examine values, rights and responsibilities and ethical norms

Ethical Understanding: Understanding ethical concepts and perspectives: Exami responsibilities and ethical norms

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• describe the relationship between the role of individual and community values, rights and

responsibilities, and ethical norms when responding to ethical issues
• describe the importance of values, rights and responsibilities when reaching a position on an ethical issue, and evaluate their role in challenging and defending ethical norms

Snapshot – Put ideas into action

Critical and Creative Thinking: Generating: Put ideas into action

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• put ideas into action by making predictions, testing and evaluating options, and reconsidering approaches in complex or unfamiliar situations
• put ideas into action by making predictions, testing and evaluating options, proposing modifications and adapting approaches in complex or unfamiliar situations

Snapshot – Understanding texts

Literacy: Reading and viewing: Understanding texts

Content description

AC9S10I02

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Comprehension

• reads and views some moderately complex texts (see Text complexity)
• accurately retells a text including most relevant details
• identifies main idea and related or supporting ideas in moderately complex texts (see Text complexity)
• evaluates the accuracy within and across texts on the same topic
• explains how authors use evidence and supporting detail to build and verify ideas
• draws inferences and verifies using textual evidence

Processes

• monitors reading for meaning using grammatical and contextual knowledge (see Fluency)
• explains how textual features support the text’s purpose
• identifies and explains techniques used to present perspective (e.g. emotive or descriptive language, order in which ideas are presented)
• predicts the development of ideas based on a partial read (e.g. predicts the final chapter of a narrative, drawing on understanding of the textual features in the previous chapters)
• uses prior knowledge and context to read unknown words (e.g. uses morphemic knowledge of "explosion" to decode "explosive" and uses context and knowledge of metaphorical use of language to understand "explosive outburst")
• uses knowledge of cohesive devices to track meaning throughout a text (e.g. connectives such as "however", "on the other hand") (see Grammar)
• uses knowledge of the features and conventions of the type of text to build meaning (e.g. recognises that the beginning of a persuasive text may introduce the topic and the line of argument)
• identifies language features used to present opinions or points of view
• skims and scans texts for key words to track the development of ideas
• uses sophisticated punctuation to support meaning (e.g. commas to separate clauses in complex sentences)

Vocabulary

• uses knowledge of prefixes and suffixes to read and interpret unfamiliar words
• identifies how technical and discipline-specific words develop meaning in texts
• analyses the effect of antonyms, synonyms and idiomatic language
• understands precise meaning of words with similar connotations (e.g. "generous", "kind-hearted", "charitable")

Comprehension

• reads and views complex texts (see Text complexity)
• identifies the main themes or concepts in complex texts by synthesising key ideas or information

• summarises the text, identifying key details only
• draws inferences, synthesising clues and evidence across a text
• builds meaning by actively linking ideas from a number of texts or a range of digital sources
• distils information from a number of texts according to task and purpose (e.g. uses graphic organisers)
• identifies different interpretations of the text citing evidence from a text
• evaluates language features for relevance to purpose and audience
• analyses texts that have more than one purpose and explains how parts of the text support a particular purpose
• analyses the use of language appropriate to different types of texts (e.g. compare the use of pun in imaginative and persuasive texts)
• identifies techniques used to obscure author's purpose (e.g. inclusion or omission of content)

Processes

• uses processes such as predicting, confirming predictions, monitoring, and connecting relevant elements of the text to build or repair meaning
• uses knowledge of a broader range of cohesive devices to track meaning (e.g. word associations) (see Grammar)
• selects reading or viewing strategies appropriate to reading purpose (e.g. scans text for evidence)
• judiciously selects texts for learning area tasks and purposes

Vocabulary

• identifies language used to create tone or atmosphere
• analyses language and visual features in texts using metalanguage (e.g. cohesion, interpretation, figurative)
• applies knowledge of base words and word origins to understand the meaning of unfamiliar, discipline-specific words
• uses a range of context and grammatical cues to understand unfamiliar words
• interprets complex figurative language (e.g. euphemisms, hyperbole)

Comprehension

• reads and views complex or some highly complex texts (see Text complexity)
• interprets abstract concepts integrating complex ideas
• analyses how language features are used to support the point of view in a text (e.g. the strategic use of images such as a cartoon in an editorial)
• draws inferences using evidence from the text and discounting possible inferences that are not supported by the text
• applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience
• evaluates the reasoning and evidence in a persuasive text
• explains how context (e.g. time, place, situation) influences interpretations of a text
• analyses the author's perspectives in complex or some highly complex texts
• analyses the techniques authors use to position readers
• recognises when ideas or evidence have been omitted from a text to position the reader

Processes

• automatically integrates a range of processes such as predicting, confirming predictions, monitoring and connecting relevant elements of the text, to build meaning
• describes how sophisticated cohesive devices establish patterns of meaning (e.g. "class" – "subclass")
• navigates extended texts including complex digital texts

Vocabulary

• demonstrates an understanding of nuances and subtleties in words of similar meaning (e.g. "frustrated", "discouraged", "baffled")
• verifies interpretations of unfamiliar words using grammatical and contextual cues

Snapshot – Explore ethical issues

Ethical Understanding: Responding to ethical issues: Explore ethical issues

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• analyse■the relationships between values, ethical perspectives■and ethical frameworks when responding to ethical issues

• apply knowledge of ethical concepts, values, perspectives and frameworks when responding to ethical issues

Snapshot – Examine values, rights and responsibilities and ethical norms

Ethical Understanding: Understanding ethical concepts and perspectives: Examin responsibilities and ethical norms

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• describe the relationship between the role of individual and community values, rights and responsibilities, and ethical norms when responding to ethical issues

• describe the importance of values, rights and responsibilities when reaching a position on an ethical issue, and evaluate their role in challenging and defending ethical norms

Snapshot – Explore ethical issues

Ethical Understanding: Responding to ethical issues: Explore ethical issues

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• analyse■the relationships between values, ethical perspectives■and ethical frameworks when responding to ethical issues

• apply knowledge of ethical concepts, values, perspectives and frameworks when responding to ethical issues

Snapshot – Examine values, rights and responsibilities and ethical norms

Ethical Understanding: Understanding ethical concepts and perspectives: Examin responsibilities and ethical norms

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• describe the relationship between the role of individual and community values, rights and responsibilities, and ethical norms when responding to ethical issues

• describe the importance of values, rights and responsibilities when reaching a position on an ethical issue, and evaluate their role in challenging and defending ethical norms

Snapshot – Explore ethical issues

Ethical Understanding: Responding to ethical issues: Explore ethical issues

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• analyse■the relationships between values, ethical perspectives■and ethical frameworks when responding to ethical issues

• apply knowledge of ethical concepts, values, perspectives and frameworks when responding to ethical issues

Snapshot – Examine values, rights and responsibilities and ethical norms

Ethical Understanding: Understanding ethical concepts and perspectives: Examin responsibilities and ethical norms

Content description

AC9S10I02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• describe the relationship between the role of individual and community values, rights and responsibilities, and ethical norms when responding to ethical issues

• describe the importance of values, rights and responsibilities when reaching a position on an ethical issue, and evaluate their role in challenging and defending ethical norms

AC9S10I03

select and use equipment to generate and record with to obtain useful sample sizes and replicable , using as appropriate

•

•

Elaborations

• ensuring instruments are correctly calibrated before use and planning for recalibration as necessary between uses to improve of results

• explaining how estimation affects and examining the inaccuracy introduced when reading between scale markings

• identifying how human error can affect replicability and reproducibility

• deciding how much is needed to produce valid

Students learn to:

select and use equipment to generate and record data with precision to obtain usefu and replicable data, using digital tools as appropriate

(AC9S10I03)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Investigating

• Acquire and collate data

Measurement and geometry

• Understanding units of measurement

Statistics and probability

• Interpreting and representing data

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Statistics and probability

• Interpreting and representing data

• Understanding chance

Analysing

• Draw conclusions and provide reasons

Measurement and geometry

• Understanding units of measurement

Statistics and probability

• Interpreting and representing data

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Statistics and probability

• Interpreting and representing data

Related content

This content description can be taught with the following content descriptions from other learning areas.

AC9M10M04

AC9M10N01

Snapshot – Acquire and collate data

Digital Literacy: Investigating: Acquire and collate data

Content description

AC9S10I03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• collect and access data from a range of sources, using specialised digital tools in response to problems, and evaluate it for relevance

• collect and evaluate quantitative and qualitative data using specialised digital tools and processes in the context of identified problems

Snapshot – Understanding units of measurement

Numeracy: Measurement and geometry: Understanding units of measurement

Content description

AC9S10I03

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Using metric units and formulas

• establishes and uses formulas for calculating the area of parallelograms, trapeziums, rhombuses and kites

• establishes and uses formulas for calculating the volume and surface area of a range of right prisms

Circle measurements

• informally estimates the circumference of a circle using the radius or diameter

• establishes the relationship between the circumference and the diameter of a circle as the constant π \pi π

• calculates the circumference and the area of a circle using π \pi π and a known diameter or radius

Using metric units and formulas

• uses dissection, rearrangement and estimation to calculate or approximate the area and volume of composite shapes and objects

• uses metric units and formulas to calculate the volume and surface area of right prisms, cylinders, cones and pyramids

• uses the conversion between units of volume and capacity to calculate the capacity of objects based on the internal volume and vice versa

• identifies appropriate metric units to use according to the level of precision required (e.g. building plans show measurements in millimetres, but to purchase enough carpet you need to measure the length and width of the room and round up to the nearest whole metre)

• uses and applies Pythagoras' theorem to authentic contexts (e.g. determines the length of a cross brace given the width of a gate is 1050 1050 1 0 5 0 millimetres and its height is 1450 1450 1 4 5 0 millimetres)

• uses and applies properties of congruent and similar triangles to authentic contexts to determine the size of unknown angles and lengths of sides

• uses trigonometry to calculate the unknown lengths or angles in authentic problems

• chooses an appropriate method to solve problems involving right triangles in authentic contexts

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I03

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Interpreting graphical representations

• uses features of graphical representations to make predictions (e.g. predicts audience numbers

based on historical data; interprets a range of graphs to identify possible trends and make predictions such as economic growth, stock prices, interest rates, population growth)
• summarises data using fractions, percentages and decimals (e.g. 2 3 \frac23 3 2 ■ of a class live in the same suburb; represents road safety and sun safety statistics as a percentage of the Australian population)
• explains that continuous variables depicting growth or change often vary over time (e.g. creates growth charts to illustrate impacts of financial decisions; describes patterns in inflation rates, employment rates, migration rates over time; represents changes to fitness levels following the implementation of a personal fitness plan; interprets temperature charts)
• interprets graphs depicting motion such as distance–time and velocity–time graphs
• interprets and describes patterns in graphical representations of data from real-life situations such as the motion of a rollercoaster, flight trajectory of a basketball shot and the spread of disease
• investigates the association of 2 2 2 numerical variables through the representation and interpretation of bivariate data (e.g. uses scatter plots to represent bivariate data when investigating the relationship between 2 2 2 variables, such as income per capita, population density and life expectancy for different socio-economic groups)
• investigates, represents and interprets time series data (e.g. interrogates a time series graph showing the change in costs over time; uses a maximum daily temperature chart to determine the average temperature for the month)
• interprets the impact of changes to data (e.g. recognises the impact of outliers on a data set such as the income of a world-class professional athlete on the average income of players at the state/territory level; uses digital tools to enhance the quality of data in a science investigation)

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I03

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Interpreting graphical representations

• uses features of graphical representations to make predictions (e.g. predicts audience numbers based on historical data; interprets a range of graphs to identify possible trends and make predictions such as economic growth, stock prices, interest rates, population growth)

• summarises data using fractions, percentages and decimals (e.g. 2 3 \frac23 3 2 ■ of a class live in the same suburb; represents road safety and sun safety statistics as a percentage of the Australian population)
• explains that continuous variables depicting growth or change often vary over time (e.g. creates growth charts to illustrate impacts of financial decisions; describes patterns in inflation rates, employment rates, migration rates over time; represents changes to fitness levels following the implementation of a personal fitness plan; interprets temperature charts)
• interprets graphs depicting motion such as distance–time and velocity–time graphs
• interprets and describes patterns in graphical representations of data from real-life situations such as the motion of a rollercoaster, flight trajectory of a basketball shot and the spread of disease
• investigates the association of 2 2 2 numerical variables through the representation and interpretation of bivariate data (e.g. uses scatter plots to represent bivariate data when investigating the relationship between 2 2 2 variables, such as income per capita, population density and life expectancy for different socio-economic groups)
• investigates, represents and interprets time series data (e.g. interrogates a time series graph showing the change in costs over time; uses a maximum daily temperature chart to determine the average temperature for the month)
• interprets the impact of changes to data (e.g. recognises the impact of outliers on a data set such as the income of a world-class professional athlete on the average income of players at the state/territory level; uses digital tools to enhance the quality of data in a science investigation)

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
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• 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)

Snapshot – Understanding chance

Numeracy: Statistics and probability: Understanding chance

Content description

AC9S10I03

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Calculating probabilities

• determines the probability of compound events and explains why some results have a higher probability than others (e.g. the results from tossing 2 2 2 coins)
• represents diagrammatically all possible outcomes (e.g. tree diagrams, two-way tables, Venn diagrams)
• measures and compares expected results to the actual results of a chance event over a number of

trials, and compares and explains the variation in results (e.g. uses probability to determine expected results of a spinner prior to trial)
• recognises that the chance of something occurring or its complement has a total probability of one (e.g. the probability of rolling a 3 3 3 is 1 6 \frac16 6 1 ■ and the probability of not rolling a 3 3 3 is 5 6 \frac56 6 5 ■
• calculates and explains the difference between the probabilities of chance events with and without replacement (e.g. "if we put all of the class names in a hat and draw them out one at a time without putting the name back in, the probability of your name getting called out increases each time because the total number of possible outcomes decreases")
• calculates the probabilities of future events based on historical data (e.g. uses historical rainfall data to plan the date for an outdoor event)

Probabilistic reasoning

• recognises combinations of events and the impact they have on assigning probabilities (e.g. and, or, not, if not, at least)
• solves conditional probability problems informally using data in two-way tables and authentic contexts
• evaluates chance data reported in media for meaning and accuracy
• applies probabilistic/chance reasoning to data collected in statistical investigations when making decisions acknowledging uncertainty

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10I03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made
• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Understanding units of measurement

Numeracy: Measurement and geometry: Understanding units of measurement

Content description

AC9S10I03

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Using metric units and formulas

• establishes and uses formulas for calculating the area of parallelograms, trapeziums, rhombuses and kites
• establishes and uses formulas for calculating the volume and surface area of a range of right prisms

Circle measurements

• informally estimates the circumference of a circle using the radius or diameter
• establishes the relationship between the circumference and the diameter of a circle as the constant π \pi π
• calculates the circumference and the area of a circle using π \pi π and a known diameter or radius

Using metric units and formulas

• uses dissection, rearrangement and estimation to calculate or approximate the area and volume of composite shapes and objects
• uses metric units and formulas to calculate the volume and surface area of right prisms, cylinders, cones and pyramids
• uses the conversion between units of volume and capacity to calculate the capacity of objects based on the internal volume and vice versa
• identifies appropriate metric units to use according to the level of precision required (e.g. building plans show measurements in millimetres, but to purchase enough carpet you need to measure

the length and width of the room and round up to the nearest whole metre)
• uses and applies Pythagoras' theorem to authentic contexts (e.g. determines the length of a cross brace given the width of a gate is 1050 1050 1 0 5 0 millimetres and its height is 1450 1450 1 4 5 0 millimetres)
• uses and applies properties of congruent and similar triangles to authentic contexts to determine the size of unknown angles and lengths of sides
• uses trigonometry to calculate the unknown lengths or angles in authentic problems
• chooses an appropriate method to solve problems involving right triangles in authentic contexts

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I03

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Interpreting graphical representations

• uses features of graphical representations to make predictions (e.g. predicts audience numbers based on historical data; interprets a range of graphs to identify possible trends and make predictions such as economic growth, stock prices, interest rates, population growth)
• summarises data using fractions, percentages and decimals (e.g. 2 3 \frac23 3 2 ■ of a class live in the same suburb; represents road safety and sun safety statistics as a percentage of the Australian population)
• explains that continuous variables depicting growth or change often vary over time (e.g. creates growth charts to illustrate impacts of financial decisions; describes patterns in inflation rates, employment rates, migration rates over time; represents changes to fitness levels following the implementation of a personal fitness plan; interprets temperature charts)
• interprets graphs depicting motion such as distance–time and velocity–time graphs
• interprets and describes patterns in graphical representations of data from real-life situations such as the motion of a rollercoaster, flight trajectory of a basketball shot and the spread of disease
• investigates the association of 2 2 2 numerical variables through the representation and interpretation of bivariate data (e.g. uses scatter plots to represent bivariate data when investigating the relationship between 2 2 2 variables, such as income per capita, population density and life expectancy for different socio-economic groups)
• investigates, represents and interprets time series data (e.g. interrogates a time series graph showing the change in costs over time; uses a maximum daily temperature chart to determine the average temperature for the month)
• interprets the impact of changes to data (e.g. recognises the impact of outliers on a data set such as the income of a world-class professional athlete on the average income of players at the state/territory level; uses digital tools to enhance the quality of data in a science investigation)

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g.

uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10I03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10I03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made
• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I03

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Interpreting graphical representations

• uses features of graphical representations to make predictions (e.g. predicts audience numbers based on historical data; interprets a range of graphs to identify possible trends and make predictions such as economic growth, stock prices, interest rates, population growth)
• summarises data using fractions, percentages and decimals (e.g. 2 3 \frac23 3 2 ■ of a class live in the same suburb; represents road safety and sun safety statistics as a percentage of the Australian population)
• explains that continuous variables depicting growth or change often vary over time (e.g. creates growth charts to illustrate impacts of financial decisions; describes patterns in inflation rates, employment rates, migration rates over time; represents changes to fitness levels following the implementation of a personal fitness plan; interprets temperature charts)
• interprets graphs depicting motion such as distance–time and velocity–time graphs
• interprets and describes patterns in graphical representations of data from real-life situations such as the motion of a rollercoaster, flight trajectory of a basketball shot and the spread of disease
• investigates the association of 2 2 2 numerical variables through the representation and interpretation of bivariate data (e.g. uses scatter plots to represent bivariate data when investigating the relationship between 2 2 2 variables, such as income per capita, population density and life expectancy for different socio-economic groups)
• investigates, represents and interprets time series data (e.g. interrogates a time series graph showing the change in costs over time; uses a maximum daily temperature chart to determine the

average temperature for the month)
• interprets the impact of changes to data (e.g. recognises the impact of outliers on a data set such as the income of a world-class professional athlete on the average income of players at the state/territory level; uses digital tools to enhance the quality of data in a science investigation)

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

AC9S10I04

select and construct appropriate , including tables, , descriptive statistics, and mathematical , to organise and process and information

•
•

Elaborations

• using spreadsheet software to carry out mathematical analyses of
• describing sample such as mean, median, range and large gaps visible on a to make generalisations, acknowledging uncertainties and the effects of
• considering how or information can be organised and represented to effectively communicate support for , including through visual or interactive
• considering how the scales used for representing affect interpretation of the
• evaluating the merits and limitations of time-lapse visual of changes in polar ice coverage with a mathematical
• comparing merits and limitations of as represented by the periodic table with graphical of such as melting point or boiling point, and with consideration of anomalies

Students learn to:

select and construct appropriate representations, including tables, graphs, descript models and mathematical relationships, to organise and process data and informati

(AC9S10I04)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Investigating

• Acquire and collate data

Number sense and algebra

• Number patterns and algebraic thinking
• Number and place value

Statistics and probability

• Interpreting and representing data

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Investigating

• Interpret data

Statistics and probability

• Interpreting and representing data

Statistics and probability

• Interpreting and representing data

Investigating

• Interpret data

Statistics and probability

• Interpreting and representing data

Analysing

• Draw conclusions and provide reasons

Statistics and probability

• Interpreting and representing data

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Measurement and geometry

• Measuring time

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Related content

This content description can be taught with the following content descriptions from other learning areas.

AC9HG10S02

AC9M10A04

AC9M10M02

AC9M10ST05

Snapshot – Acquire and collate data

Digital Literacy: Investigating: Acquire and collate data

Content description

AC9S10I04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• collect and access data from a range of sources, using specialised digital tools in response to problems, and evaluate it for relevance

• collect and evaluate quantitative and qualitative data using specialised digital tools and processes in the context of identified problems

Snapshot – Number patterns and algebraic thinking

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

Content description

AC9S10I04

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Algebraic relationships

• interprets and uses formulas and algebraic equations that describe relationships in various contexts (e.g. uses A = π r 2 \mathrm A=\mathrm{πr}^2 A = π r 2 to calculate the area of a circular

space; uses A = P (1 + r n) n t \mathrm A=\mathrm P(1+\frac{\mathrm r}{\mathrm n})^{\mathrm{nt}} A = P (1 + n r ■) n t when working with compound interest; uses v = u + a t v=u+at v = u + a t to calculate the velocity of an object

• plots relationships on a graph using a table of values representing authentic data (e.g. uses data recorded in a spreadsheet to plot results of a science experiment)

Linear and non-linear relationships

• identifies the difference between linear and non-linear relationships in everyday contexts (e.g. explains that in a linear relationship, the rate of change is constant such as the cost of babysitting by the hour, whereas in a non-linear relationship the rate of change will vary and it could grow multiplicatively or exponentially such as a social media post going viral)

• describes and interprets the graphical features of linear and non-linear growth in authentic problems (e.g. compares simple and compound interest graphs; describes the relationship between scientific data plotted on a graph; analyses a graph to identify the inverse relationship between price and quantity demanded or the relationship between Human Development Index (HDI) and standards of living)

Snapshot – Number and place value

Numeracy: Number sense and algebra: Number and place value

Content description

AC9S10I04

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Numeral recognition and identification

• reads, represents, interprets and uses negative numbers in computation (e.g. explains that the temperature – 10 10 1 0 °C is colder than the temperature – 2.5 2.5 2 . 5 °C; recognises that negative numbers are less than zero; locates – 12 12 1 2 on a number line)

Place value

• identifies that negative numbers are integers that represent both size and direction (e.g. uses a number line to represent position and order negative numbers; uses negative numbers in financial contexts such as to model an overdrawn account)

• understands that multiplying and dividing numbers by 10 , 100 , 1000 10, 100, 1000 1 0 , 1 0 0 , 1 0 0 0 changes the positional value of the digits (e.g. explains that 100 100 1 0 0 times 0.125 0.125 0 . 1 2 5 is 12.5 12.5 1 2 . 5 because each digit value in 0.125 0.125 0 . 1 2 5 is multiplied by 100 100 1 0 0 , so 100 × 0.1 100 \times 0.1 1 0 0 × 0 . 1 is 10 10 1 0 , 100 × 0.02 100 \times 0.02 1 0 0 × 0 . 0 2 is 2 2 2 and 100 × 0.005 100 \times 0.005 1 0 0 × 0 . 0 0 5 is 0.5 0.5 0 . 5 ; converts between units of centimetres and millimetres when planning, measuring and marking materials for cutting)

• rounds decimals to a specified number of decimal places for a purpose (e.g. the mean distance thrown in a school javelin competition was rounded to 2 2 2 decimal places; if the percentage profit was calculated as 12.467921 12.467921 1 2 . 4 6 7 9 2 1 %, rounds the calculation to 12.5 12.5 1 2 . 5 %)

Numeral recognition and identification

• identifies, reads and interprets very large numbers and very small numbers (e.g. reads that the world population is estimated to be seven billion and interprets this to mean 7 7 7 000 000 0 0 0 000 000 0 0 0 000 000 0 0 0 or 7 × 1 0 9 7 \times 10^9 7 × 1 0 9 ; interprets the approximate mass of protons and neutrons as 1.67 × 1 0 – 24 1.67 \times10^{-24} 1 . 6 7 × 1 0 – 2 4 g; identifies and interprets the value of national government debt)

Place value

• compares and orders very large numbers and very small numbers (e.g. understands the relative size of very large time scales such as a millennium)

• relates place value parts to exponents (e.g. 1000 1000 1 0 0 0 is 100 100 1 0 0 times greater than 10 10 1 0 , and that is why 10 × 1 0 2 = 1 0 3 10 \times 10^2 = 10^3 1 0 × 1 0 2 = 1 0 3 and why 1 0 3 10^3 1 0 3 divided by 10 10 1 0 is equal to 1 0 2 10^2 1 0 2)

• expresses numbers in scientific notation (e.g. when calculating the distance of the Earth from the sun uses 1.5 × 1 0 8 1.5\times 10^8 1 . 5 × 1 0 8 as an approximation; a nanometre has an order of

magnitude of – 9 9 9 and is represented as 1 0 – 9 10^{-9} 1 0 – 9)

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I04

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

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 (e.g. collects information on the heights of buildings or daily temperatures, tabulates the results and represents these graphically; uses a survey to collect primary data or secondary data extracted from census data)
• uses numerical and graphical representations relevant to the purpose of the collection of the data and explains their reasoning (e.g. "I can’t use a frequency histogram for categorical data because there is no numerical connection between the categories"; converts their data to percentages in order to compare the girls' results to those of the boys, as the total number of boys and girls who participated in the survey was different)
• determines and calculates the most appropriate statistic to describe the spread of data (e.g. when creating an infographic, uses the mean of the data to describe household income and the median of the data for house prices)
• calculates simple descriptive statistics such as mode, mean or median as measures to represent typical values of a distribution (e.g. describes the mean kilojoule intake and median hours of exercise of a sample population when investigating community health and wellbeing; describes central tendency when analysing road safety statistics)
• 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 the living standards of different economies and a histogram to show income distribution)
• 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

Interpreting graphical representations

• uses features of graphical representations to make predictions (e.g. predicts audience numbers based on historical data; interprets a range of graphs to identify possible trends and make predictions such as economic growth, stock prices, interest rates, population growth)
• summarises data using fractions, percentages and decimals (e.g. 2 3 \frac23 3 2 ■ of a class live in the same suburb; represents road safety and sun safety statistics as a percentage of the Australian population)
• explains that continuous variables depicting growth or change often vary over time (e.g. creates growth charts to illustrate impacts of financial decisions; describes patterns in inflation rates, employment rates, migration rates over time; represents changes to fitness levels following the implementation of a personal fitness plan; interprets temperature charts)
• interprets graphs depicting motion such as distance–time and velocity–time graphs
• interprets and describes patterns in graphical representations of data from real-life situations such as the motion of a rollercoaster, flight trajectory of a basketball shot and the spread of disease
• investigates the association of 2 2 2 numerical variables through the representation and interpretation of bivariate data (e.g. uses scatter plots to represent bivariate data when investigating the relationship between 2 2 2 variables, such as income per capita, population density and life expectancy for different socio-economic groups)
• investigates, represents and interprets time series data (e.g. interrogates a time series graph showing the change in costs over time; uses a maximum daily temperature chart to determine the average temperature for the month)
• interprets the impact of changes to data (e.g. recognises the impact of outliers on a data set such as the income of a world-class professional athlete on the average income of players at the state/territory level; uses digital tools to enhance the quality of data in a science investigation)

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Snapshot – Interpret data

Digital Literacy: Investigating: Interpret data

Content description

AC9S10I04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse and visualise data by selecting and using a range of digital tools to infer relationships and make predictions
• analyse and visualise multidimensional data by selecting and using a range of interactive tools to draw conclusions and make predictions

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I04

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

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 (e.g. collects information on the heights of buildings or daily temperatures, tabulates the results and represents these graphically; uses a survey to collect primary data or secondary data extracted from census data)
• uses numerical and graphical representations relevant to the purpose of the collection of the data and explains their reasoning (e.g. "I can’t use a frequency histogram for categorical data because there is no numerical connection between the categories"; converts their data to percentages in order to compare the girls' results to those of the boys, as the total number of boys and girls who participated in the survey was different)
• determines and calculates the most appropriate statistic to describe the spread of data (e.g. when creating an infographic, uses the mean of the data to describe household income and the median of the data for house prices)
• calculates simple descriptive statistics such as mode, mean or median as measures to represent typical values of a distribution (e.g. describes the mean kilojoule intake and median hours of exercise of a sample population when investigating community health and wellbeing; describes central tendency when analysing road safety statistics)
• 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 the living standards of different economies and a histogram to show income distribution)
• 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

Interpreting graphical representations

• uses features of graphical representations to make predictions (e.g. predicts audience numbers based on historical data; interprets a range of graphs to identify possible trends and make predictions such as economic growth, stock prices, interest rates, population growth)
• summarises data using fractions, percentages and decimals (e.g. 2 3 \frac23 3 2 ■ of a class live in the same suburb; represents road safety and sun safety statistics as a percentage of the

Australian population)
• explains that continuous variables depicting growth or change often vary over time (e.g. creates growth charts to illustrate impacts of financial decisions; describes patterns in inflation rates, employment rates, migration rates over time; represents changes to fitness levels following the implementation of a personal fitness plan; interprets temperature charts)
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• interprets and describes patterns in graphical representations of data from real-life situations such as the motion of a rollercoaster, flight trajectory of a basketball shot and the spread of disease
• investigates the association of 2 2 2 numerical variables through the representation and interpretation of bivariate data (e.g. uses scatter plots to represent bivariate data when investigating the relationship between 2 2 2 variables, such as income per capita, population density and life expectancy for different socio-economic groups)
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• interprets the impact of changes to data (e.g. recognises the impact of outliers on a data set such as the income of a world-class professional athlete on the average income of players at the state/territory level; uses digital tools to enhance the quality of data in a science investigation)

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I04

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Interpreting graphical representations

• uses features of graphical representations to make predictions (e.g. predicts audience numbers based on historical data; interprets a range of graphs to identify possible trends and make predictions such as economic growth, stock prices, interest rates, population growth)
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average temperature for the month)
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Sampling

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• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Interpret data

Digital Literacy: Investigating: Interpret data

Content description

AC9S10I04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse and visualise data by selecting and using a range of digital tools to infer relationships and make predictions
• analyse and visualise multidimensional data by selecting and using a range of interactive tools to draw conclusions and make predictions

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I04

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Collecting, displaying and interpreting numerical data

• collects and records discrete numerical data using an appropriate method for recording (e.g. uses a frequency table to record the experimental results for rolling a dice; records sample measurements taken during a science investigation)
• constructs graphical representations of numerical data and explains the difference between continuous and discrete data (e.g. explains that measurements such as length, mass and temperature are continuous data whereas a count such as the number of people in a queue is discrete)
• explains how data displays can be misleading (e.g. whether a scale should start at zero; not using uniform intervals on the axes)
• interprets visual representations of data displayed using a multi-unit scale, reading values between the marked units and describing any variation and trends in the 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 (e.g. collects information on the heights of buildings or daily temperatures, tabulates the results and represents these graphically; uses a survey to collect primary data or secondary data extracted from census data)
• uses numerical and graphical representations relevant to the purpose of the collection of the data and explains their reasoning (e.g. "I can’t use a frequency histogram for categorical data because there is no numerical connection between the categories"; converts their data to percentages in order to compare the girls' results to those of the boys, as the total number of boys and girls who participated in the survey was different)
• determines and calculates the most appropriate statistic to describe the spread of data (e.g. when creating an infographic, uses the mean of the data to describe household income and the median of the data for house prices)
• calculates simple descriptive statistics such as mode, mean or median as measures to represent typical values of a distribution (e.g. describes the mean kilojoule intake and median hours of exercise of a sample population when investigating community health and wellbeing; describes central tendency when analysing road safety statistics)
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• 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

Interpreting graphical representations

• uses features of graphical representations to make predictions (e.g. predicts audience numbers based on historical data; interprets a range of graphs to identify possible trends and make predictions such as economic growth, stock prices, interest rates, population growth)
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Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10I04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made
• draw conclusions and make choices when completing tasks, using analysis of complex evidence and

arguments before making recommendations

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I04

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Collecting, displaying and interpreting numerical data

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• explains how data displays can be misleading (e.g. whether a scale should start at zero; not using uniform intervals on the axes)
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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 (e.g. collects information on the heights of buildings or daily temperatures, tabulates the results and represents these graphically; uses a survey to collect primary data or secondary data extracted from census data)
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• 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

Interpreting graphical representations

• uses features of graphical representations to make predictions (e.g. predicts audience numbers based on historical data; interprets a range of graphs to identify possible trends and make predictions such as economic growth, stock prices, interest rates, population growth)
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• interprets graphs depicting motion such as distance–time and velocity–time graphs
• interprets and describes patterns in graphical representations of data from real-life situations such as the motion of a rollercoaster, flight trajectory of a basketball shot and the spread of

disease
• investigates the association of 2 2 2 numerical variables through the representation and interpretation of bivariate data (e.g. uses scatter plots to represent bivariate data when investigating the relationship between 2 2 2 variables, such as income per capita, population density and life expectancy for different socio-economic groups)
• investigates, represents and interprets time series data (e.g. interrogates a time series graph showing the change in costs over time; uses a maximum daily temperature chart to determine the average temperature for the month)
• interprets the impact of changes to data (e.g. recognises the impact of outliers on a data set such as the income of a world-class professional athlete on the average income of players at the state/territory level; uses digital tools to enhance the quality of data in a science investigation)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10I04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10I04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made
• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Measuring time

Numeracy: Measurement and geometry: Measuring time

Content description

AC9S10I04

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Measuring time with large and small timescales

• uses appropriate metric prefixes to measure both large and small durations of time (e.g. millennia, nanoseconds)
• constructs timelines using an appropriate scale (e.g. chronologically sequences historical events)

Measuring how things change over time

• investigates, describes and interprets data collected over time (e.g. uses a travel graph to describe a journey; interprets data collected over a period of time using a graphical representation and makes a prediction for the future behaviour of the data)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10I04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements

necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10I04

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made
• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

AC9S10I05

analyse and connect a variety of and information to identify and explain , , and anomalies

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Elaborations

• identifying similar and in from different sources such as homologous structures and fossil
• analysing regarding the distribution of species in time and space to identify and between organisms
• exploring between using spreadsheets, databases, tables, charts, and statistics to make reasoned predictions about global climate change
• representing speed and acceleration from or in tables and and comparing how these facilitate the identification of
• exploring how different interpretations can be made from that is organised or processed in different ways, and the implications of this for analysis

Students learn to:

analyse and connect a variety of data and information to identify and explain patter relationships and anomalies

(AC9S10I05)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Statistics and probability

• Interpreting and representing data

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Statistics and probability

• Interpreting and representing data

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Investigating

• Interpret data

Statistics and probability

• Interpreting and representing data

Analysing

• Interpret concepts and problems

Inquiring

• Identify, process and evaluate information

Statistics and probability

• Interpreting and representing data

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Investigating

• Interpret data

Related content

This content description can be taught with the following content descriptions from other learning areas.

AC9M10ST03

AC9M10ST05

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10I05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10I05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I05

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Sampling

• considers the context when determining whether to use data from a sample or a population

• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10I05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10I05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I05

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)

• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10I05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10I05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Interpret data

Digital Literacy: Investigating: Interpret data

Content description

AC9S10I05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse and visualise data by selecting and using a range of digital tools to infer relationships and make predictions
• analyse and visualise multidimensional data by selecting and using a range of interactive tools to draw conclusions and make predictions

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I05

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10I05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context
• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10I05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study
• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources
• evaluate the information selected to determine bias and reliability

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I05

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

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 (e.g. collects information on the heights of buildings or daily temperatures, tabulates the results and represents these graphically; uses a survey to collect primary data or secondary data extracted from census data)
• uses numerical and graphical representations relevant to the purpose of the collection of the data and explains their reasoning (e.g. "I can't use a frequency histogram for categorical data because there is no numerical connection between the categories"; converts their data to percentages in order to compare the girls' results to those of the boys, as the total number of boys and girls who participated in the survey was different)
• determines and calculates the most appropriate statistic to describe the spread of data (e.g. when creating an infographic, uses the mean of the data to describe household income and the median of the data for house prices)
• calculates simple descriptive statistics such as mode, mean or median as measures to represent typical values of a distribution (e.g. describes the mean kilojoule intake and median hours of exercise of a sample population when investigating community health and wellbeing; describes central tendency when analysing road safety statistics)
• 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 the living standards of different economies and a histogram to show income distribution)
• 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

Interpreting graphical representations

• uses features of graphical representations to make predictions (e.g. predicts audience numbers based on historical data; interprets a range of graphs to identify possible trends and make predictions such as economic growth, stock prices, interest rates, population growth)
• summarises data using fractions, percentages and decimals (e.g. 2 3 \frac23 3 2 ■ of a class live in the same suburb; represents road safety and sun safety statistics as a percentage of the Australian population)
• explains that continuous variables depicting growth or change often vary over time (e.g. creates growth charts to illustrate impacts of financial decisions; describes patterns in inflation rates, employment rates, migration rates over time; represents changes to fitness levels following the implementation of a personal fitness plan; interprets temperature charts)
• interprets graphs depicting motion such as distance–time and velocity–time graphs
• interprets and describes patterns in graphical representations of data from real-life situations such as the motion of a rollercoaster, flight trajectory of a basketball shot and the spread of disease
• investigates the association of 2 2 2 numerical variables through the representation and interpretation of bivariate data (e.g. uses scatter plots to represent bivariate data when investigating the relationship between 2 2 2 variables, such as income per capita, population density and life expectancy for different socio-economic groups)
• investigates, represents and interprets time series data (e.g. interrogates a time series graph showing the change in costs over time; uses a maximum daily temperature chart to determine the average temperature for the month)
• interprets the impact of changes to data (e.g. recognises the impact of outliers on a data set such as the income of a world-class professional athlete on the average income of players at the state/territory level; uses digital tools to enhance the quality of data in a science investigation)

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9S10I05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context

• identify the objective and subjective aspects of a complex concept or problem, with sensitivity to context

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10I05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made

• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10I05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Interpret data

Digital Literacy: Investigating: Interpret data

Content description

AC9S10I05

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• analyse and visualise data by selecting and using a range of digital tools to infer relationships and make predictions

• analyse and visualise multidimensional data by selecting and using a range of interactive tools to draw conclusions and make predictions

AC9S10I06

assess the and reproducibility of methods and evaluate the of and , including by identifying , conflicting and areas of

•

•

Elaborations

• evaluating the strength of a that can be inferred from a particular set

• distinguishing between random and systematic errors and how these can affect results

• judging the of science-related media reports and how these reports might be interpreted by the public

• identifying in methods then examining if further testing or extra control is needed
• considering how variation can indicate and might affect confidence in reached and made
• analysing and to identify facts or premises that are taken for granted to be true, and evaluating the reasonableness of those

Students learn to:

assess the validity and reproducibility of methods and evaluate the validity of concl claims, including by identifying assumptions, conflicting evidence and areas of unc

(AC9S10I06)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Analysing

• Draw conclusions and provide reasons
• Evaluate actions and outcomes

Reading and viewing

• Understanding texts

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Analysing

• Draw conclusions and provide reasons

Statistics and probability

• Interpreting and representing data

Analysing

• Evaluate actions and outcomes

Analysing

• Draw conclusions and provide reasons
• Evaluate actions and outcomes

Statistics and probability

• Interpreting and representing data

Analysing

• Draw conclusions and provide reasons
• Evaluate actions and outcomes

Reading and viewing

• Understanding texts

Analysing

• Draw conclusions and provide reasons

Statistics and probability

• Interpreting and representing data

Reading and viewing

• Understanding texts

Statistics and probability

• Understanding chance

Related content

This content description can be taught with the following content descriptions from other learning areas.

AC9M10M04
AC9M10ST02

Resources

Work Samples

WS01 - Big bang theory

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10I06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made

• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Evaluate actions and outcomes

Critical and Creative Thinking: Analysing: Evaluate actions and outcomes

Content description

AC9S10I06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• evaluate the effectiveness of a course of action or the outcome of a task and account for expected and unexpected results, including using a given or co-developed set of criteria to support decisions

• evaluate the effectiveness of a course of action to achieve desired outcomes and suggest improvements, including using a personally developed set of criteria to support judgements and decisions

Snapshot – Understanding texts

Literacy: Reading and viewing: Understanding texts

Content description

AC9S10I06

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Comprehension

• reads and views complex texts (see Text complexity)

• identifies the main themes or concepts in complex texts by synthesising key ideas or information

• summarises the text, identifying key details only

• draws inferences, synthesising clues and evidence across a text

• builds meaning by actively linking ideas from a number of texts or a range of digital sources

• distils information from a number of texts according to task and purpose (e.g. uses graphic organisers)

• identifies different interpretations of the text citing evidence from a text

• evaluates language features for relevance to purpose and audience

• analyses texts that have more than one purpose and explains how parts of the text support a particular purpose

• analyses the use of language appropriate to different types of texts (e.g. compare the use of pun in imaginative and persuasive texts)

• identifies techniques used to obscure author’s purpose (e.g. inclusion or omission of content)

Processes

• uses processes such as predicting, confirming predictions, monitoring, and connecting relevant elements of the text to build or repair meaning

• uses knowledge of a broader range of cohesive devices to track meaning (e.g. word associations) (see Grammar)

• selects reading or viewing strategies appropriate to reading purpose (e.g. scans text for evidence)

• judiciously selects texts for learning area tasks and purposes

Vocabulary

• identifies language used to create tone or atmosphere

• analyses language and visual features in texts using metalanguage (e.g. cohesion, interpretation, figurative)

• applies knowledge of base words and word origins to understand the meaning of unfamiliar,

discipline-specific words
• uses a range of context and grammatical cues to understand unfamiliar words
• interprets complex figurative language (e.g. euphemisms, hyperbole)

Comprehension

• reads and views complex or some highly complex texts (see Text complexity)
• interprets abstract concepts integrating complex ideas
• analyses how language features are used to support the point of view in a text (e.g. the strategic use of images such as a cartoon in an editorial)
• draws inferences using evidence from the text and discounting possible inferences that are not supported by the text
• applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience
• evaluates the reasoning and evidence in a persuasive text
• explains how context (e.g. time, place, situation) influences interpretations of a text
• analyses the author's perspectives in complex or some highly complex texts
• analyses the techniques authors use to position readers
• recognises when ideas or evidence have been omitted from a text to position the reader

Processes

• automatically integrates a range of processes such as predicting, confirming predictions, monitoring and connecting relevant elements of the text, to build meaning
• describes how sophisticated cohesive devices establish patterns of meaning (e.g. "class" – "subclass")
• navigates extended texts including complex digital texts

Vocabulary

• demonstrates an understanding of nuances and subtleties in words of similar meaning (e.g. "frustrated", "discouraged", "baffled")
• verifies interpretations of unfamiliar words using grammatical and contextual cues

Comprehension

• reads and views highly complex texts (see Text complexity)
• interprets symbolism in texts, providing evidence to justify interpretation
• judiciously selects and synthesises evidence from multiple texts to support ideas and arguments
• analyses the credibility and validity of primary and secondary sources
• evaluates the use of devices such as analogy, irony, rhetoric and satire, and how they contribute to an author's individual style
• analyses the cumulative impact of use of language features and vocabulary across texts
• explains assumptions, beliefs and implicit values in texts (e.g. "economic growth is always desirable")
• evaluates the social, moral and ethical positions taken in texts

Processes

• strategically adjusts the processes of reading and viewing to build meaning according to the demands of tasks and texts
• identifies subtle contradictions and inconsistencies in texts

Vocabulary

• interprets complex, formal and impersonal language in academic texts
• uses lexical cues to interpret unfamiliar vocabulary
• demonstrates self-reliance in exploration and application of word learning strategies

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10I06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made
• draw conclusions and make choices when completing tasks, using analysis of complex evidence and

arguments before making recommendations

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I06

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Evaluate actions and outcomes

Critical and Creative Thinking: Analysing: Evaluate actions and outcomes

Content description

AC9S10I06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• evaluate the effectiveness of a course of action or the outcome of a task and account for expected and unexpected results, including using a given or co-developed set of criteria to support decisions
• evaluate the effectiveness of a course of action to achieve desired outcomes and suggest improvements, including using a personally developed set of criteria to support judgements and decisions

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10I06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made
• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Evaluate actions and outcomes

Critical and Creative Thinking: Analysing: Evaluate actions and outcomes

Content description

AC9S10I06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• evaluate the effectiveness of a course of action or the outcome of a task and account for expected and unexpected results, including using a given or co-developed set of criteria to support decisions

• evaluate the effectiveness of a course of action to achieve desired outcomes and suggest improvements, including using a personally developed set of criteria to support judgements and decisions

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I06

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Sampling

• considers the context when determining whether to use data from a sample or a population

• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)

• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)

• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)

• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)

• 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)

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10I06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made

• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Evaluate actions and outcomes

Critical and Creative Thinking: Analysing: Evaluate actions and outcomes

Content description

AC9S10I06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• evaluate the effectiveness of a course of action or the outcome of a task and account for expected and unexpected results, including using a given or co-developed set of criteria to support decisions

• evaluate the effectiveness of a course of action to achieve desired outcomes and suggest improvements, including using a personally developed set of criteria to support judgements and decisions

Snapshot – Understanding texts

Literacy: Reading and viewing: Understanding texts

Content description

AC9S10I06

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Comprehension

• reads and views complex texts (see Text complexity)

• identifies the main themes or concepts in complex texts by synthesising key ideas or information

• summarises the text, identifying key details only

• draws inferences, synthesising clues and evidence across a text

• builds meaning by actively linking ideas from a number of texts or a range of digital sources

• distils information from a number of texts according to task and purpose (e.g. uses graphic organisers)

• identifies different interpretations of the text citing evidence from a text

• evaluates language features for relevance to purpose and audience

• analyses texts that have more than one purpose and explains how parts of the text support a particular purpose

• analyses the use of language appropriate to different types of texts (e.g. compare the use of pun in imaginative and persuasive texts)

• identifies techniques used to obscure author's purpose (e.g. inclusion or omission of content)

Processes

• uses processes such as predicting, confirming predictions, monitoring, and connecting relevant elements of the text to build or repair meaning

• uses knowledge of a broader range of cohesive devices to track meaning (e.g. word associations) (see Grammar)

• selects reading or viewing strategies appropriate to reading purpose (e.g. scans text for evidence)

• judiciously selects texts for learning area tasks and purposes

Vocabulary

• identifies language used to create tone or atmosphere

• analyses language and visual features in texts using metalanguage (e.g. cohesion, interpretation, figurative)

• applies knowledge of base words and word origins to understand the meaning of unfamiliar, discipline-specific words

• uses a range of context and grammatical cues to understand unfamiliar words

• interprets complex figurative language (e.g. euphemisms, hyperbole)

Comprehension

• reads and views complex or some highly complex texts (see Text complexity)

• interprets abstract concepts integrating complex ideas

• analyses how language features are used to support the point of view in a text (e.g. the strategic use of images such as a cartoon in an editorial)

• draws inferences using evidence from the text and discounting possible inferences that are not supported by the text

• applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience

• evaluates the reasoning and evidence in a persuasive text

• explains how context (e.g. time, place, situation) influences interpretations of a text

• analyses the author's perspectives in complex or some highly complex texts

• analyses the techniques authors use to position readers
• recognises when ideas or evidence have been omitted from a text to position the reader

Processes

• automatically integrates a range of processes such as predicting, confirming predictions, monitoring and connecting relevant elements of the text, to build meaning
• describes how sophisticated cohesive devices establish patterns of meaning (e.g. "class" – "subclass")
• navigates extended texts including complex digital texts

Vocabulary

• demonstrates an understanding of nuances and subtleties in words of similar meaning (e.g. "frustrated", "discouraged", "baffled")
• verifies interpretations of unfamiliar words using grammatical and contextual cues

Comprehension

• reads and views highly complex texts (see Text complexity)
• interprets symbolism in texts, providing evidence to justify interpretation
• judiciously selects and synthesises evidence from multiple texts to support ideas and arguments
• analyses the credibility and validity of primary and secondary sources
• evaluates the use of devices such as analogy, irony, rhetoric and satire, and how they contribute to an author's individual style
• analyses the cumulative impact of use of language features and vocabulary across texts
• explains assumptions, beliefs and implicit values in texts (e.g. "economic growth is always desirable")
• evaluates the social, moral and ethical positions taken in texts

Processes

• strategically adjusts the processes of reading and viewing to build meaning according to the demands of tasks and texts
• identifies subtle contradictions and inconsistencies in texts

Vocabulary

• interprets complex, formal and impersonal language in academic texts
• uses lexical cues to interpret unfamiliar vocabulary
• demonstrates self-reliance in exploration and application of word learning strategies

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10I06

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made
• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I06

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers

accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Understanding texts

Literacy: Reading and viewing: Understanding texts

Content description

AC9S10I06

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Comprehension

• reads and views complex texts (see Text complexity)
• identifies the main themes or concepts in complex texts by synthesising key ideas or information
• summarises the text, identifying key details only
• draws inferences, synthesising clues and evidence across a text
• builds meaning by actively linking ideas from a number of texts or a range of digital sources
• distils information from a number of texts according to task and purpose (e.g. uses graphic organisers)
• identifies different interpretations of the text citing evidence from a text
• evaluates language features for relevance to purpose and audience
• analyses texts that have more than one purpose and explains how parts of the text support a particular purpose
• analyses the use of language appropriate to different types of texts (e.g. compare the use of pun in imaginative and persuasive texts)
• identifies techniques used to obscure author's purpose (e.g. inclusion or omission of content)

Processes

• uses processes such as predicting, confirming predictions, monitoring, and connecting relevant elements of the text to build or repair meaning
• uses knowledge of a broader range of cohesive devices to track meaning (e.g. word associations) (see Grammar)
• selects reading or viewing strategies appropriate to reading purpose (e.g. scans text for evidence)
• judiciously selects texts for learning area tasks and purposes

Vocabulary

• identifies language used to create tone or atmosphere
• analyses language and visual features in texts using metalanguage (e.g. cohesion, interpretation, figurative)
• applies knowledge of base words and word origins to understand the meaning of unfamiliar, discipline-specific words
• uses a range of context and grammatical cues to understand unfamiliar words
• interprets complex figurative language (e.g. euphemisms, hyperbole)

Comprehension

• reads and views complex or some highly complex texts (see Text complexity)
• interprets abstract concepts integrating complex ideas
• analyses how language features are used to support the point of view in a text (e.g. the strategic use of images such as a cartoon in an editorial)
• draws inferences using evidence from the text and discounting possible inferences that are not supported by the text
• applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience
• evaluates the reasoning and evidence in a persuasive text
• explains how context (e.g. time, place, situation) influences interpretations of a text
• analyses the author's perspectives in complex or some highly complex texts
• analyses the techniques authors use to position readers
• recognises when ideas or evidence have been omitted from a text to position the reader

Processes

• automatically integrates a range of processes such as predicting, confirming predictions, monitoring and connecting relevant elements of the text, to build meaning
• describes how sophisticated cohesive devices establish patterns of meaning (e.g. "class" – "subclass")
• navigates extended texts including complex digital texts

Vocabulary

• demonstrates an understanding of nuances and subtleties in words of similar meaning (e.g. "frustrated", "discouraged", "baffled")
• verifies interpretations of unfamiliar words using grammatical and contextual cues

Comprehension

• reads and views highly complex texts (see Text complexity)
• interprets symbolism in texts, providing evidence to justify interpretation
• judiciously selects and synthesises evidence from multiple texts to support ideas and arguments
• analyses the credibility and validity of primary and secondary sources
• evaluates the use of devices such as analogy, irony, rhetoric and satire, and how they contribute to an author's individual style
• analyses the cumulative impact of use of language features and vocabulary across texts
• explains assumptions, beliefs and implicit values in texts (e.g. "economic growth is always desirable")
• evaluates the social, moral and ethical positions taken in texts

Processes

• strategically adjusts the processes of reading and viewing to build meaning according to the demands of tasks and texts
• identifies subtle contradictions and inconsistencies in texts

Vocabulary

• interprets complex, formal and impersonal language in academic texts
• uses lexical cues to interpret unfamiliar vocabulary
• demonstrates self-reliance in exploration and application of word learning strategies

Snapshot – Understanding chance

Numeracy: Statistics and probability: Understanding chance

Content description

AC9S10I06

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Calculating probabilities

• determines the probability of compound events and explains why some results have a higher probability than others (e.g. the results from tossing 2 2 2 coins)
• represents diagrammatically all possible outcomes (e.g. tree diagrams, two-way tables, Venn diagrams)
• measures and compares expected results to the actual results of a chance event over a number of

trials, and compares and explains the variation in results (e.g. uses probability to determine expected results of a spinner prior to trial)
• recognises that the chance of something occurring or its complement has a total probability of one (e.g. the probability of rolling a 3 3 3 is 1 6 \frac16 6 1 ■ and the probability of not rolling a 3 3 3 is 5 6 \frac56 6 5 ■
• calculates and explains the difference between the probabilities of chance events with and without replacement (e.g. "if we put all of the class names in a hat and draw them out one at a time without putting the name back in, the probability of your name getting called out increases each time because the total number of possible outcomes decreases")
• calculates the probabilities of future events based on historical data (e.g. uses historical rainfall data to plan the date for an outdoor event)

Probabilistic reasoning

• recognises combinations of events and the impact they have on assigning probabilities (e.g. and, or, not, if not, at least)
• solves conditional probability problems informally using data in two-way tables and authentic contexts
• evaluates chance data reported in media for meaning and accuracy
• applies probabilistic/chance reasoning to data collected in statistical investigations when making decisions acknowledging uncertainty

Resource – WS01 - Big bang theory

By the end of Year 10 students explain the processes that underpin heredity and genetic diversity and describe the evidence supporting the theory of evolution by natural selection. They sequence key events in the origin and evolution of the universe and describe the supporting evidence for the big bang theory. They describe trends in patterns of global climate change and identify causal factors. They explain how Newton’s laws describe motion and apply them to predict motion of objects in a system. They explain patterns and trends in the periodic table and predict the products of reactions and the effect of changing reactant and reaction conditions. Students analyse the importance of publication and peer review in the development of scientific knowledge and analyse the relationship between science, technologies and engineering. They analyse the key factors that influence interactions between science and society.

Students plan and conduct safe, valid and reproducible investigations to test relationships or develop explanatory models. They explain how they have addressed any ethical and intercultural considerations when generating or using primary and secondary data. They select equipment and use it efficiently to generate and record appropriate sample sizes and replicable data with precision. They select and construct effective representations to organise, process and summarise data and information. They analyse and connect a variety of data and information to identify and explain patterns, trends, relationships and anomalies. They evaluate the validity and reproducibility of methods, and the validity of conclusions and claims. They construct logical arguments based on analysis of a variety of evidence to support conclusions and evaluate claims. They select and use content, language and text features effectively to achieve their purpose when communicating their ideas, findings and arguments to diverse audiences.

AC9S10U03

describe how the big bang theory models the origin and evolution of the universe and analyse the supporting evidence for the theory

AC9S10H01

explain■how scientific knowledge is validated and refined, including the role of publication and peer review

AC9S10H02

investigate how advances in technologies enable advances in science, and how science has contributed to developments in technologies and engineering

AC9S10I06

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

AC9S10I07

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

AC9S10I08

write and create texts to communicate ideas, findings and arguments effectively for identified purposes and audiences, including selection of appropriate content, language and text features, using digital tools as appropriate

AC9S10I07

construct based on analysis of a variety of to support or evaluate , and consider any ethical issues and cultural protocols associated with accessing, using or citing secondary or information

•
•

Elaborations

• constructing a scientific showing how a range of supports a relating to the age of the universe
• engaging in evidence-based debates about the role of human activity in global climate change
• reasoning from a range of to support or rebut made in news reports on scientific research
• examining secondary to determine the of the source and the and reproducibility of the , and identifying the extent to which the is consistent with from other sources
• acknowledging the need to critically analyse scientific literature for potential cultural in relation to First Nations Australians
• considering the ethical issues of non-therapeutic genetic testing performed by commercial companies
• using primary or secondary scientific to support or oppose a local action that may impact on global climate change
• preparing an for increased funding for a particular scientific research focus

Students learn to:

construct arguments based on analysis of a variety of evidence to support conclusi claims, and consider any ethical issues and cultural protocols associated with acce citing secondary data or information

(AC9S10I07)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Analysing

• Draw conclusions and provide reasons
• Evaluate actions and outcomes

Culture

• The First Peoples of Australia (Aboriginal Peoples) belong to the world’s oldest continuous cultures. First Nations Australians demonstrate resilience in the maintenance, practice and revitalisation of culture despite the many historic and enduring impacts of colonisation, and continue to celebrate and share the past, present and future manifestations of their cultures.

People

• The significant and ongoing contributions of First Nations Australians and their histories and cultures are acknowledged locally, nationally and globally.

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Number sense and algebra

• Number and place value

Writing

• Creating texts

Analysing

• Evaluate actions and outcomes

Responding to ethical issues

• Making and reflecting on ethical decisions

Understanding ethical concepts and perspectives

• Explore ethical concepts

Analysing

• Draw conclusions and provide reasons

• Evaluate actions and outcomes

Inquiring

• Identify, process and evaluate information

Writing

• Creating texts

• Creating texts

Reading and viewing

• Understanding texts

Statistics and probability

• Interpreting and representing data

Responding to ethical issues

• Explore ethical issues

Understanding ethical concepts and perspectives

• Examine values, rights and responsibilities and ethical norms

Culture

• The First Peoples of Australia (Aboriginal Peoples) belong to the world’s oldest continuous cultures. First Nations Australians demonstrate resilience in the maintenance, practice and revitalisation of culture despite the many historic and enduring impacts of colonisation, and continue to celebrate and share the past, present and future manifestations of their cultures.

People

• The significant and ongoing contributions of First Nations Australians and their histories and cultures are acknowledged locally, nationally and globally.

Responding to ethical issues

• Explore ethical issues

Understanding ethical concepts and perspectives

• Examine values, rights and responsibilities and ethical norms

Reading and viewing

• Understanding texts

Reading and viewing

• Understanding texts

Statistics and probability

• Interpreting and representing data

Analysing

• Evaluate actions and outcomes

Related content

This content description can be taught with the following content descriptions from other learning areas.

AC9M10ST01

AC9M10ST05

Resources

Work Samples

WS01 - Big bang theory

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10I07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made

• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Evaluate actions and outcomes

Critical and Creative Thinking: Analysing: Evaluate actions and outcomes

Content description

AC9S10I07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• evaluate the effectiveness of a course of action or the outcome of a task and account for expected and unexpected results, including using a given or co-developed set of criteria to support decisions

• evaluate the effectiveness of a course of action to achieve desired outcomes and suggest improvements, including using a personally developed set of criteria to support judgements and decisions

Snapshot – Number and place value

Numeracy: Number sense and algebra: Number and place value

Content description

AC9S10I07

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Numeral recognition and identification

• reads, represents, interprets and uses negative numbers in computation (e.g. explains that the temperature – 10 10 1 0 °C is colder than the temperature – 2.5 2.5 2 . 5 °C; recognises that negative numbers are less than zero; locates – 12 12 1 2 on a number line)

Place value

• identifies that negative numbers are integers that represent both size and direction (e.g. uses a number line to represent position and order negative numbers; uses negative numbers in financial contexts such as to model an overdrawn account)

• understands that multiplying and dividing numbers by 10 , 100 , 1000 10, 100, 1000 1 0 , 1 0 0 , 1 0 0 0 changes the positional value of the digits (e.g. explains that 100 100 1 0 0 times 0.125 0.125 0 . 1 2 5 is 12.5 12.5 1 2 . 5 because each digit value in 0.125 0.125 0 . 1 2 5 is multiplied by 100 100 1 0 0 , so 100 × 0.1 100 \times 0.1 1 0 0 × 0 . 1 is 10 10 1 0 , 100 × 0.02 100 \times 0.02 1 0 0 × 0 . 0 2 is 2 2 2 and 100 × 0.005 100 \times 0.005 1 0 0 × 0 . 0 0 5 is 0.5 0.5 0 . 5 ; converts between units of centimetres and millimetres when planning, measuring and marking materials for cutting)

• rounds decimals to a specified number of decimal places for a purpose (e.g. the mean distance thrown in a school javelin competition was rounded to 2 2 2 decimal places; if the percentage profit was calculated as 12.467921 12.467921 1 2 . 4 6 7 9 2 1 %, rounds the calculation to 12.5 12.5 1 2 . 5 %)

Numeral recognition and identification

• identifies, reads and interprets very large numbers and very small numbers (e.g. reads that the world population is estimated to be seven billion and interprets this to mean 7 7 7 000 000 0 0 0 000 000 0 0 0 000 000 0 0 0 or 7 × 1 0 9 7 \times 10^9 7 × 1 0 9 ; interprets the approximate mass of protons and neutrons as 1.67 × 1 0 – 24 1.67 \times10^{-24} 1 . 6 7 × 1 0 – 2 4 g; identifies and interprets the value of national government debt)

Place value

• compares and orders very large numbers and very small numbers (e.g. understands the relative size

of very large time scales such as a millennium)
• relates place value parts to exponents (e.g. 1000 1000 1 0 0 0 is 100 100 1 0 0 times greater than 10 10 1 0 , and that is why 10 × 1 0 2 = 1 0 3 10 \times 10^2 = 10^3 1 0 × 1 0 2 = 1 0 3 and why 1 0 3 10^3 1 0 3 divided by 10 10 1 0 is equal to 1 0 2 10^2 1 0 2)
• expresses numbers in scientific notation (e.g. when calculating the distance of the Earth from the sun uses 1.5 × 1 0 8 1.5\times 10^8 1 . 5 × 1 0 8 as an approximation; a nanometre has an order of magnitude of – 9 9 9 and is represented as 1 0 – 9 10^{-9} 1 0 – 9)

Snapshot – Creating texts

Literacy: Writing: Creating texts

Content description

AC9S10I07

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Crafting ideas

• creates persuasive texts that take a position and supports it with arguments (e.g. examines the benefits of physical activity to health and wellbeing)
• selects structural elements to suit the purpose (e.g. introduces an argument with a clearly articulated statement of position)
• includes 2 or more elaborated arguments
• develops a clear persuasive line through inclusion of a number of arguments with supporting points
• orients the reader to the persuasive premise of the text
• concludes by synthesising the arguments

Text forms and features

• uses cohesive devices to link arguments, evidence and reasons (e.g. uses text connectives such as "therefore", "furthermore")
• includes salient visual and audio features to complement written ideas
• uses vocabulary to position the reader (e.g. precise nouns and adjectives)
• uses a broader range of modal verbs and adverbs (e.g. "definitely")

Vocabulary

• uses words to express cause and effect (e.g. "consequently", "thus")
• selects vocabulary to persuade (e.g. uses words to introduce an argument such as "obviously")
• uses technical and topic specific words to add authority (e.g. "innovative design", "solution")

Crafting ideas

• creates persuasive texts to discuss, evaluate and review (e.g. evaluates and reviews design ideas)
• includes persuasive points with effective elaborations and supporting evidence
• intentionally selects structural elements for effect (e.g. includes an appropriate conclusion that sums up, recommends or reiterates)
• includes counter argument or refutation if appropriate
• uses evidence and research including digital resources to expand upon information and elaborate concepts

Text forms and features

• uses rhetorical devices such as rhetorical questions
• varies sentence structure for effect (see Grammar)
• judiciously uses language, visual and audio features to emotionally or intellectually affect the audience
• skilfully uses a range of cohesive devices to make connections between arguments (e.g. foreshadows key points in introduction and reinforces key points in topic sentences)
• judiciously selects evidence and language to strengthen arguments
• uses passive voice and nominalisation strategically to avoid stating the actor in the sentence (e.g. "an expectation of failure became common")

Vocabulary

• uses a range of synonyms for frequently occurring words, in a longer text (e.g. "impact", "consequence", "result")
• uses topic-specific vocabulary to add credibility and weight to arguments (e.g. "cadence",

"interplanetary", "silt")
• uses language that evokes an emotional response (e.g. "Although they faced relentless opposition, the netballers triumphed.")
• uses words that create connotations (e.g. "miserly", "frugal")

Crafting ideas

• creates sustained, robust arguments on complex learning area topics (e.g. "Should bushrangers be afforded hero status?")
• uses structural features flexibly to organise ideas strategically (e.g. includes a defined, cogent summation or call to action)
• uses citation and referencing from authoritative sources
• anticipates reader knowledge and possible bias and accommodates these in development of arguments (e.g. "you may have thought that …")
• positions the reader effectively by providing a clear thesis and relevant context (e.g. by previewing the arguments)
• strategically selects visual and audio resources to position the reader/viewer (e.g. a video clip of an authoritative source)

Text forms and features

• uses sophisticated evaluative language devices such as allusion, evocative vocabulary and extended metaphor

Vocabulary

• uses vocabulary for precision (e.g. "the underwhelming performance of the opening batters")

Snapshot – Evaluate actions and outcomes

Critical and Creative Thinking: Analysing: Evaluate actions and outcomes

Content description

AC9S10I07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• evaluate the effectiveness of a course of action or the outcome of a task and account for expected and unexpected results, including using a given or co-developed set of criteria to support decisions
• evaluate the effectiveness of a course of action to achieve desired outcomes and suggest improvements, including using a personally developed set of criteria to support judgements and decisions

Snapshot – Making and reflecting on ethical decisions

Ethical Understanding: Responding to ethical issues: Making and reflecting on et

Content description

AC9S10I07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• consider how values and beliefs influence approaches to ethical issues, and■analyse■how these affect■outcomes
• analyse■biases■when applying ethical concepts,■values■and ethical frameworks,■in order to explore and evaluate ethical decisions

Snapshot – Explore ethical concepts

Ethical Understanding: Understanding ethical concepts and perspectives: Explor

Content description

AC9S10I07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse■the similarities and differences between ethical concepts, such as integrity, loyalty and equality, in a range of situations and contexts
• evaluate■the consistency in meaning of ethical concepts, such as trust, freedom and rights and responsibilities, in a range of situations and contexts

Snapshot – Draw conclusions and provide reasons

Critical and Creative Thinking: Analysing: Draw conclusions and provide reasons

Content description

AC9S10I07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• draw conclusions and make choices when completing tasks by connecting evidence from within and across discipline areas to provide reasons and evaluate arguments for choices made

• draw conclusions and make choices when completing tasks, using analysis of complex evidence and arguments before making recommendations

Snapshot – Evaluate actions and outcomes

Critical and Creative Thinking: Analysing: Evaluate actions and outcomes

Content description

AC9S10I07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• evaluate the effectiveness of a course of action or the outcome of a task and account for expected and unexpected results, including using a given or co-developed set of criteria to support decisions

• evaluate the effectiveness of a course of action to achieve desired outcomes and suggest improvements, including using a personally developed set of criteria to support judgements and decisions

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10I07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Creating texts

Literacy: Writing: Creating texts

Content description

AC9S10I07

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Crafting ideas

• creates informative texts that describe, explain and document (e.g. describe an artwork, document the materials and explain why it was created)

• selects structural elements to comprehensively and accurately represent the information (e.g. a fact sheet includes an opening statement, labelled diagrams and text boxes)

• orients the reader to the topic or concept using a definition or classification

• develops ideas with details and examples

• uses ideas derived from research

• uses written and visual supporting evidence

Text forms and features

• uses cohesive devices to link concepts across texts (e.g. uses lexical cohesion such as word associations and synonyms)

• uses cohesive devices to express cause and effect (e.g. uses text connectives such as "therefore", "subsequently")

• includes salient visual and audio features to expand on written information (e.g. creates graphs and other technical diagrams from authentic data)
• uses language to compare (e.g. "alternatively", "whereas")
• uses formatting appropriately to reference and label graphics

Vocabulary

• uses a range of learnt, technical and discipline-specific terms (e.g. "adapt", "survive")
• uses more sophisticated words to express cause and effect (e.g. "therefore", "subsequently")

Crafting ideas

• creates informative texts to explain and analyse (e.g. analyses how artists use visual conventions in artworks)
• creates texts to compare and contrast phenomena (e.g. identify the similarities and differences between species of animals)
• orients the reader clearly to the topic or concept (e.g. using a definition or classification in the opening paragraph)
• intentionally selects structural elements for effect (e.g. includes an effective conclusion that synthesises complex ideas)
• uses evidence and research including digital resources to expand upon information and elaborate concepts

Text forms and features

• varies sentence structure for effect (see Grammar)
• judiciously uses language, visual and audio features to emotionally or intellectually affect the reader
• uses more elaborate noun groups/phrases that include classifying adjectives and specific nouns (e.g. "mineral component of sedimentary rocks")
• creates cohesive flow by condensing previous information into a summarising noun (e.g. "A series of tumultuous events culminated in the outbreak of WWI - modern history's turning point.")
• uses passive voice and nominalisation to write succinctly (e.g. "the results were analysed") (see Grammar)

Vocabulary

• uses discipline-specific terminology to provide accurate and explicit information (e.g. "discipline metalanguage")
• uses a range of synonyms for frequently occurring words, in a longer text (e.g. "repair", "fix", "remedy")
• uses vocabulary to indicate and describe relationships (e.g. "additionally", "similarly")

Crafting ideas

• creates sustained, informative texts that precisely explain, analyse and evaluate concepts or abstract entities
• uses structural features flexibly to organise ideas strategically (e.g. includes a defined, cogent conclusion or summation)
• creates texts with forms and features combined strategically for purpose (e.g. describes a historical event from the perspective of a secondary source)
• uses evidence and references
• creates succinct short-answer explanatory texts as well as complex, multi-staged extended texts

Text forms and features

• maintains tone appropriate to the audience
• uses extended noun groups/phrases including adjectival phrases (e.g. "a sturdy construction with modern design features") (see Grammar)

Vocabulary

• uses complex abstractions (e.g. "economic", "sociocultural")

Snapshot – Creating texts

Literacy: Writing: Creating texts

Content description

AC9S10I07

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this

content.

Crafting ideas

• creates persuasive texts that take a position and supports it with arguments (e.g. examines the benefits of physical activity to health and wellbeing)
• selects structural elements to suit the purpose (e.g. introduces an argument with a clearly articulated statement of position)
• includes 2 or more elaborated arguments
• develops a clear persuasive line through inclusion of a number of arguments with supporting points
• orients the reader to the persuasive premise of the text
• concludes by synthesising the arguments

Text forms and features

• uses cohesive devices to link arguments, evidence and reasons (e.g. uses text connectives such as "therefore", "furthermore")
• includes salient visual and audio features to complement written ideas
• uses vocabulary to position the reader (e.g. precise nouns and adjectives)
• uses a broader range of modal verbs and adverbs (e.g. "definitely")

Vocabulary

• uses words to express cause and effect (e.g. "consequently", "thus")
• selects vocabulary to persuade (e.g. uses words to introduce an argument such as "obviously")
• uses technical and topic specific words to add authority (e.g. "innovative design", "solution")

Crafting ideas

• creates persuasive texts to discuss, evaluate and review (e.g. evaluates and reviews design ideas)
• includes persuasive points with effective elaborations and supporting evidence
• intentionally selects structural elements for effect (e.g. includes an appropriate conclusion that sums up, recommends or reiterates)
• includes counter argument or refutation if appropriate
• uses evidence and research including digital resources to expand upon information and elaborate concepts

Text forms and features

• uses rhetorical devices such as rhetorical questions
• varies sentence structure for effect (see Grammar)
• judiciously uses language, visual and audio features to emotionally or intellectually affect the audience
• skilfully uses a range of cohesive devices to make connections between arguments (e.g. foreshadows key points in introduction and reinforces key points in topic sentences)
• judiciously selects evidence and language to strengthen arguments
• uses passive voice and nominalisation strategically to avoid stating the actor in the sentence (e.g. "an expectation of failure became common")

Vocabulary

• uses a range of synonyms for frequently occurring words, in a longer text (e.g. "impact", "consequence", "result")
• uses topic-specific vocabulary to add credibility and weight to arguments (e.g. "cadence", "interplanetary", "silt")
• uses language that evokes an emotional response (e.g. "Although they faced relentless opposition, the netballers triumphed.")
• uses words that create connotations (e.g. "miserly", "frugal")

Crafting ideas

• creates sustained, robust arguments on complex learning area topics (e.g. "Should bushrangers be afforded hero status?")
• uses structural features flexibly to organise ideas strategically (e.g. includes a defined, cogent summation or call to action)
• uses citation and referencing from authoritative sources
• anticipates reader knowledge and possible bias and accommodates these in development of arguments (e.g. "you may have thought that …")
• positions the reader effectively by providing a clear thesis and relevant context (e.g. by previewing the arguments)

• strategically selects visual and audio resources to position the reader/viewer (e.g. a video clip of an authoritative source)

Text forms and features

• uses sophisticated evaluative language devices such as allusion, evocative vocabulary and extended metaphor

Vocabulary

• uses vocabulary for precision (e.g. "the underwhelming performance of the opening batters")

Snapshot – Understanding texts

Literacy: Reading and viewing: Understanding texts

Content description

AC9S10I07

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Comprehension

• reads and views complex texts (see Text complexity)
• identifies the main themes or concepts in complex texts by synthesising key ideas or information
• summarises the text, identifying key details only
• draws inferences, synthesising clues and evidence across a text
• builds meaning by actively linking ideas from a number of texts or a range of digital sources
• distils information from a number of texts according to task and purpose (e.g. uses graphic organisers)
• identifies different interpretations of the text citing evidence from a text
• evaluates language features for relevance to purpose and audience
• analyses texts that have more than one purpose and explains how parts of the text support a particular purpose
• analyses the use of language appropriate to different types of texts (e.g. compare the use of pun in imaginative and persuasive texts)
• identifies techniques used to obscure author’s purpose (e.g. inclusion or omission of content)

Processes

• uses processes such as predicting, confirming predictions, monitoring, and connecting relevant elements of the text to build or repair meaning
• uses knowledge of a broader range of cohesive devices to track meaning (e.g. word associations) (see Grammar)
• selects reading or viewing strategies appropriate to reading purpose (e.g. scans text for evidence)
• judiciously selects texts for learning area tasks and purposes

Vocabulary

• identifies language used to create tone or atmosphere
• analyses language and visual features in texts using metalanguage (e.g. cohesion, interpretation, figurative)
• applies knowledge of base words and word origins to understand the meaning of unfamiliar, discipline-specific words
• uses a range of context and grammatical cues to understand unfamiliar words
• interprets complex figurative language (e.g. euphemisms, hyperbole)

Comprehension

• reads and views complex or some highly complex texts (see Text complexity)
• interprets abstract concepts integrating complex ideas
• analyses how language features are used to support the point of view in a text (e.g. the strategic use of images such as a cartoon in an editorial)
• draws inferences using evidence from the text and discounting possible inferences that are not supported by the text
• applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience
• evaluates the reasoning and evidence in a persuasive text

• explains how context (e.g. time, place, situation) influences interpretations of a text
• analyses the author's perspectives in complex or some highly complex texts
• analyses the techniques authors use to position readers
• recognises when ideas or evidence have been omitted from a text to position the reader

Processes

• automatically integrates a range of processes such as predicting, confirming predictions, monitoring and connecting relevant elements of the text, to build meaning
• describes how sophisticated cohesive devices establish patterns of meaning (e.g. "class" – "subclass")
• navigates extended texts including complex digital texts

Vocabulary

• demonstrates an understanding of nuances and subtleties in words of similar meaning (e.g. "frustrated", "discouraged", "baffled")
• verifies interpretations of unfamiliar words using grammatical and contextual cues

Comprehension

• reads and views highly complex texts (see Text complexity)
• interprets symbolism in texts, providing evidence to justify interpretation
• judiciously selects and synthesises evidence from multiple texts to support ideas and arguments
• analyses the credibility and validity of primary and secondary sources
• evaluates the use of devices such as analogy, irony, rhetoric and satire, and how they contribute to an author's individual style
• analyses the cumulative impact of use of language features and vocabulary across texts
• explains assumptions, beliefs and implicit values in texts (e.g. "economic growth is always desirable")
• evaluates the social, moral and ethical positions taken in texts

Processes

• strategically adjusts the processes of reading and viewing to build meaning according to the demands of tasks and texts
• identifies subtle contradictions and inconsistencies in texts

Vocabulary

• interprets complex, formal and impersonal language in academic texts
• uses lexical cues to interpret unfamiliar vocabulary
• demonstrates self-reliance in exploration and application of word learning strategies

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I07

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)

• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Explore ethical issues

Ethical Understanding: Responding to ethical issues: Explore ethical issues

Content description

AC9S10I07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse■the relationships between values, ethical perspectives■and ethical frameworks when responding to ethical issues
• apply knowledge of ethical concepts, values, perspectives and frameworks when responding to ethical issues

Snapshot – Examine values, rights and responsibilities and ethical norms

Ethical Understanding: Understanding ethical concepts and perspectives: Exami responsibilities and ethical norms

Content description

AC9S10I07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• describe the relationship between the role of individual and community values, rights and responsibilities, and ethical norms when responding to ethical issues
• describe the importance of values, rights and responsibilities when reaching a position on an ethical issue, and evaluate their role in challenging and defending ethical norms

Snapshot – Explore ethical issues

Ethical Understanding: Responding to ethical issues: Explore ethical issues

Content description

AC9S10I07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• analyse■the relationships between values, ethical perspectives■and ethical frameworks when responding to ethical issues
• apply knowledge of ethical concepts, values, perspectives and frameworks when responding to ethical issues

Snapshot – Examine values, rights and responsibilities and ethical norms

Ethical Understanding: Understanding ethical concepts and perspectives: Exami responsibilities and ethical norms

Content description

AC9S10I07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• describe the relationship between the role of individual and community values, rights and responsibilities, and ethical norms when responding to ethical issues
• describe the importance of values, rights and responsibilities when reaching a position on an ethical issue, and evaluate their role in challenging and defending ethical norms

Snapshot – Understanding texts

Literacy: Reading and viewing: Understanding texts

Content description

AC9S10I07

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Comprehension

• reads and views complex texts (see Text complexity)
• identifies the main themes or concepts in complex texts by synthesising key ideas or information
• summarises the text, identifying key details only
• draws inferences, synthesising clues and evidence across a text
• builds meaning by actively linking ideas from a number of texts or a range of digital sources
• distils information from a number of texts according to task and purpose (e.g. uses graphic organisers)
• identifies different interpretations of the text citing evidence from a text
• evaluates language features for relevance to purpose and audience
• analyses texts that have more than one purpose and explains how parts of the text support a particular purpose
• analyses the use of language appropriate to different types of texts (e.g. compare the use of pun in imaginative and persuasive texts)
• identifies techniques used to obscure author's purpose (e.g. inclusion or omission of content)

Processes

• uses processes such as predicting, confirming predictions, monitoring, and connecting relevant elements of the text to build or repair meaning
• uses knowledge of a broader range of cohesive devices to track meaning (e.g. word associations) (see Grammar)
• selects reading or viewing strategies appropriate to reading purpose (e.g. scans text for evidence)
• judiciously selects texts for learning area tasks and purposes

Vocabulary

• identifies language used to create tone or atmosphere
• analyses language and visual features in texts using metalanguage (e.g. cohesion, interpretation, figurative)
• applies knowledge of base words and word origins to understand the meaning of unfamiliar, discipline-specific words
• uses a range of context and grammatical cues to understand unfamiliar words
• interprets complex figurative language (e.g. euphemisms, hyperbole)

Comprehension

• reads and views complex or some highly complex texts (see Text complexity)
• interprets abstract concepts integrating complex ideas
• analyses how language features are used to support the point of view in a text (e.g. the strategic use of images such as a cartoon in an editorial)
• draws inferences using evidence from the text and discounting possible inferences that are not supported by the text
• applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience
• evaluates the reasoning and evidence in a persuasive text
• explains how context (e.g. time, place, situation) influences interpretations of a text
• analyses the author's perspectives in complex or some highly complex texts
• analyses the techniques authors use to position readers
• recognises when ideas or evidence have been omitted from a text to position the reader

Processes

• automatically integrates a range of processes such as predicting, confirming predictions, monitoring and connecting relevant elements of the text, to build meaning
• describes how sophisticated cohesive devices establish patterns of meaning (e.g. "class" – "subclass")
• navigates extended texts including complex digital texts

Vocabulary

• demonstrates an understanding of nuances and subtleties in words of similar meaning (e.g. "frustrated", "discouraged", "baffled")
• verifies interpretations of unfamiliar words using grammatical and contextual cues

Comprehension

• reads and views highly complex texts (see Text complexity)
• interprets symbolism in texts, providing evidence to justify interpretation
• judiciously selects and synthesises evidence from multiple texts to support ideas and arguments
• analyses the credibility and validity of primary and secondary sources
• evaluates the use of devices such as analogy, irony, rhetoric and satire, and how they contribute to an author's individual style
• analyses the cumulative impact of use of language features and vocabulary across texts
• explains assumptions, beliefs and implicit values in texts (e.g. "economic growth is always desirable")
• evaluates the social, moral and ethical positions taken in texts

Processes

• strategically adjusts the processes of reading and viewing to build meaning according to the demands of tasks and texts
• identifies subtle contradictions and inconsistencies in texts

Vocabulary

• interprets complex, formal and impersonal language in academic texts
• uses lexical cues to interpret unfamiliar vocabulary
• demonstrates self-reliance in exploration and application of word learning strategies

Snapshot – Understanding texts

Literacy: Reading and viewing: Understanding texts

Content description

AC9S10I07

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Comprehension

• reads and views complex or some highly complex texts (see Text complexity)
• interprets abstract concepts integrating complex ideas
• analyses how language features are used to support the point of view in a text (e.g. the strategic use of images such as a cartoon in an editorial)
• draws inferences using evidence from the text and discounting possible inferences that are not supported by the text
• applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience
• evaluates the reasoning and evidence in a persuasive text
• explains how context (e.g. time, place, situation) influences interpretations of a text
• analyses the author's perspectives in complex or some highly complex texts
• analyses the techniques authors use to position readers
• recognises when ideas or evidence have been omitted from a text to position the reader

Processes

• automatically integrates a range of processes such as predicting, confirming predictions, monitoring and connecting relevant elements of the text, to build meaning
• describes how sophisticated cohesive devices establish patterns of meaning (e.g. "class" – "subclass")
• navigates extended texts including complex digital texts

Vocabulary

• demonstrates an understanding of nuances and subtleties in words of similar meaning (e.g. "frustrated", "discouraged", "baffled")
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Comprehension

• reads and views highly complex texts (see Text complexity)

• interprets symbolism in texts, providing evidence to justify interpretation
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• explains assumptions, beliefs and implicit values in texts (e.g. "economic growth is always desirable")
• evaluates the social, moral and ethical positions taken in texts

Processes

• strategically adjusts the processes of reading and viewing to build meaning according to the demands of tasks and texts
• identifies subtle contradictions and inconsistencies in texts

Vocabulary

• interprets complex, formal and impersonal language in academic texts
• uses lexical cues to interpret unfamiliar vocabulary
• demonstrates self-reliance in exploration and application of word learning strategies

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I07

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Evaluate actions and outcomes

Critical and Creative Thinking: Analysing: Evaluate actions and outcomes

Content description

AC9S10I07

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• evaluate the effectiveness of a course of action or the outcome of a task and account for expected and unexpected results, including using a given or co-developed set of criteria to support decisions
• evaluate the effectiveness of a course of action to achieve desired outcomes and suggest

improvements, including using a personally developed set of criteria to support judgements and decisions

AC9S10I08

write and create texts to communicate ideas, findings and effectively for identified purposes and audiences, including selection of appropriate content, language and text features, using as appropriate

•
•

Elaborations

• examining how scientific texts develop ; considering the structure of the text, the selection of content and the use of language and text features; and reflecting on how these might be modified for different audiences
• writing a report on a scientific ensuring only relevant and are reported in the results and including a discussion that presents: an based on the results with comparisons related to accepted values; an of ; and the effect of possible sources of error
• collaboratively designing a public performance about climate change to encourage people to take specific action
• creating a digital infographic to highlight the multiple lines of from polar ice caps, ocean temperatures and extreme weather to explain how climate change is impacting Earth
• using animation or comic strip software to create an of the Big Bang for an audience of their peers
• creating a campaign to lower speed limits in specific areas of the local community

Students learn to:

write and create texts to communicate ideas, findings and arguments effectively for purposes and audiences, including selection of appropriate content, language and t using digital tools as appropriate

(AC9S10I08)

General capabilities and cross-curriculum priorities

This content description connects to the following general capabilities and cross-curriculum priorities.

Creating and exchanging

• Create, communicate and collaborate
• Respect intellectual property

Social management

• Communication

Elaborations

Content elaborations provide suggestions of ways to teach the content description and connect it to general capabilities and cross-curriculum priorities. Content elaborations are optional .

Analysing

• Evaluate actions and outcomes

Inquiring

• Identify, process and evaluate information

Reading and viewing

• Understanding texts

Statistics and probability

• Interpreting and representing data

Writing

• Creating texts

Writing

• Creating texts

Futures

• Sustainable futures require individuals to seek information, identify solutions, reflect on and evaluate past actions, and collaborate with and influence others as they work towards a desired change.

Creating and exchanging

• Create, communicate and collaborate

• Respect intellectual property

Number sense and algebra

• Proportional thinking

Statistics and probability

• Interpreting and representing data

Creating and exchanging

• Create, communicate and collaborate

• Respect intellectual property

Writing

• Creating texts

Statistics and probability

• Interpreting and representing data

Writing

• Creating texts

Resources

Work Samples

WS01 - Big bang theory

Snapshot – Create, communicate and collaborate

Digital Literacy: Creating and exchanging: Create, communicate and collaborate

Content description

AC9S10I08

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• select and control advanced features of appropriate digital tools to independently create content and effectively communicate and collaborate with wider groups

• select and control the features of digital tools to purposefully create content and effectively communicate and collaborate, inclusive of diverse groups

Snapshot – Respect intellectual property

Digital Literacy: Creating and exchanging: Respect intellectual property

Content description

AC9S10I08

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• respect intellectual property by applying practices that comply with ethical and legal obligations, referencing conventions and copyright protocols

• respect intellectual property by identifying and applying practices that meet legal and ethical obligations, referencing conventions, copyright and trademark protocols

Snapshot – Communication

Personal and Social capability: Social management: Communication

Content description

AC9S10I08

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• demonstrate communication skills in a range of contexts, responding to the enablers of, and barriers to, effective verbal and non-verbal communication

• devise strategies that apply effective verbal and non-verbal communication in response to feedback

Snapshot – Evaluate actions and outcomes

Critical and Creative Thinking: Analysing: Evaluate actions and outcomes

Content description

AC9S10I08

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• evaluate the effectiveness of a course of action or the outcome of a task and account for expected and unexpected results, including using a given or co-developed set of criteria to support decisions

• evaluate the effectiveness of a course of action to achieve desired outcomes and suggest improvements, including using a personally developed set of criteria to support judgements and decisions

Snapshot – Identify, process and evaluate information

Critical and Creative Thinking: Inquiring: Identify, process and evaluate informati

Content description

AC9S10I08

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the accuracy, validity and relevance of the information and opinion to the topic of study

• identify and clarify significant information and opinion from a range of sources, including visual information and digital sources

• evaluate the information selected to determine bias and reliability

Snapshot – Understanding texts

Literacy: Reading and viewing: Understanding texts

Content description

AC9S10I08

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Comprehension

• reads and views complex or some highly complex texts (see Text complexity)

• interprets abstract concepts integrating complex ideas

• analyses how language features are used to support the point of view in a text (e.g. the strategic use of images such as a cartoon in an editorial)

• draws inferences using evidence from the text and discounting possible inferences that are not supported by the text

• applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience

• evaluates the reasoning and evidence in a persuasive text

• explains how context (e.g. time, place, situation) influences interpretations of a text

• analyses the author’s perspectives in complex or some highly complex texts

• analyses the techniques authors use to position readers

• recognises when ideas or evidence have been omitted from a text to position the reader

Processes

• automatically integrates a range of processes such as predicting, confirming predictions, monitoring and connecting relevant elements of the text, to build meaning

• describes how sophisticated cohesive devices establish patterns of meaning (e.g. "class" – "subclass")

• navigates extended texts including complex digital texts

Vocabulary

• demonstrates an understanding of nuances and subtleties in words of similar meaning (e.g. "frustrated", "discouraged", "baffled")

• verifies interpretations of unfamiliar words using grammatical and contextual cues

Comprehension

• reads and views highly complex texts (see Text complexity)

• interprets symbolism in texts, providing evidence to justify interpretation

• judiciously selects and synthesises evidence from multiple texts to support ideas and arguments

• analyses the credibility and validity of primary and secondary sources
• evaluates the use of devices such as analogy, irony, rhetoric and satire, and how they contribute to an author's individual style
• analyses the cumulative impact of use of language features and vocabulary across texts
• explains assumptions, beliefs and implicit values in texts (e.g. "economic growth is always desirable")
• evaluates the social, moral and ethical positions taken in texts

Processes

• strategically adjusts the processes of reading and viewing to build meaning according to the demands of tasks and texts
• identifies subtle contradictions and inconsistencies in texts

Vocabulary

• interprets complex, formal and impersonal language in academic texts
• uses lexical cues to interpret unfamiliar vocabulary
• demonstrates self-reliance in exploration and application of word learning strategies

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I08

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Creating texts

Literacy: Writing: Creating texts

Content description

AC9S10I08

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Crafting ideas

• creates informative texts to explain and analyse (e.g. analyses how artists use visual conventions in artworks)

• creates texts to compare and contrast phenomena (e.g. identify the similarities and differences between species of animals)
• orients the reader clearly to the topic or concept (e.g. using a definition or classification in the opening paragraph)
• intentionally selects structural elements for effect (e.g. includes an effective conclusion that synthesises complex ideas)
• uses evidence and research including digital resources to expand upon information and elaborate concepts

Text forms and features

• varies sentence structure for effect (see Grammar)
• judiciously uses language, visual and audio features to emotionally or intellectually affect the reader
• uses more elaborate noun groups/phrases that include classifying adjectives and specific nouns (e.g. "mineral component of sedimentary rocks")
• creates cohesive flow by condensing previous information into a summarising noun (e.g. "A series of tumultuous events culminated in the outbreak of WWI - modern history's turning point.")
• uses passive voice and nominalisation to write succinctly (e.g. "the results were analysed") (see Grammar)

Vocabulary

• uses discipline-specific terminology to provide accurate and explicit information (e.g. "discipline metalanguage")
• uses a range of synonyms for frequently occurring words, in a longer text (e.g. "repair", "fix", "remedy")
• uses vocabulary to indicate and describe relationships (e.g. "additionally", "similarly")

Crafting ideas

• creates sustained, informative texts that precisely explain, analyse and evaluate concepts or abstract entities
• uses structural features flexibly to organise ideas strategically (e.g. includes a defined, cogent conclusion or summation)
• creates texts with forms and features combined strategically for purpose (e.g. describes a historical event from the perspective of a secondary source)
• uses evidence and references
• creates succinct short-answer explanatory texts as well as complex, multi-staged extended texts

Text forms and features

• maintains tone appropriate to the audience
• uses extended noun groups/phrases including adjectival phrases (e.g. "a sturdy construction with modern design features") (see Grammar)

Vocabulary

• uses complex abstractions (e.g. "economic", "sociocultural")

Snapshot – Creating texts

Literacy: Writing: Creating texts

Content description

AC9S10I08

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Crafting ideas

• creates persuasive texts for a broader range of learning area purposes (e.g. designs a healthy food campaign)
• includes structural features appropriate to the type of text and task such as an introduction with a statement of position, body paragraphs and simple conclusion
• presents a position and supports it with one or a few simply stated arguments
• includes arguments and ideas which are relevant to the purpose of the text
• organises arguments into paragraphs to support the reader
• concludes by restating

Text forms and features

• uses cohesive devices to link points in an argument (e.g. uses text connectives such as "however", "on the other hand")
• uses some rhetorical devices such as repetition
• uses adjectives to persuade (e.g. "dangerous behaviour")
• uses simple modal verbs and adverbs (e.g. "should", "will", "quickly")
• selects visual and audio features to expand argument in written texts (e.g. images, music)
• uses inclusive language (e.g. "we cannot allow this to happen")

Vocabulary

• uses a range of learnt topic words to add credibility to arguments

Crafting ideas

• creates persuasive texts that take a position and supports it with arguments (e.g. examines the benefits of physical activity to health and wellbeing)
• selects structural elements to suit the purpose (e.g. introduces an argument with a clearly articulated statement of position)
• includes 2 or more elaborated arguments
• develops a clear persuasive line through inclusion of a number of arguments with supporting points
• orients the reader to the persuasive premise of the text
• concludes by synthesising the arguments

Text forms and features

• uses cohesive devices to link arguments, evidence and reasons (e.g. uses text connectives such as "therefore", "furthermore")
• includes salient visual and audio features to complement written ideas
• uses vocabulary to position the reader (e.g. precise nouns and adjectives)
• uses a broader range of modal verbs and adverbs (e.g. "definitely")

Vocabulary

• uses words to express cause and effect (e.g. "consequently", "thus")
• selects vocabulary to persuade (e.g. uses words to introduce an argument such as "obviously")
• uses technical and topic specific words to add authority (e.g. "innovative design", "solution")

Crafting ideas

• creates persuasive texts to discuss, evaluate and review (e.g. evaluates and reviews design ideas)
• includes persuasive points with effective elaborations and supporting evidence
• intentionally selects structural elements for effect (e.g. includes an appropriate conclusion that sums up, recommends or reiterates)
• includes counter argument or refutation if appropriate
• uses evidence and research including digital resources to expand upon information and elaborate concepts

Text forms and features

• uses rhetorical devices such as rhetorical questions
• varies sentence structure for effect (see Grammar)
• judiciously uses language, visual and audio features to emotionally or intellectually affect the audience
• skilfully uses a range of cohesive devices to make connections between arguments (e.g. foreshadows key points in introduction and reinforces key points in topic sentences)
• judiciously selects evidence and language to strengthen arguments
• uses passive voice and nominalisation strategically to avoid stating the actor in the sentence (e.g. "an expectation of failure became common")

Vocabulary

• uses a range of synonyms for frequently occurring words, in a longer text (e.g. "impact", "consequence", "result")
• uses topic-specific vocabulary to add credibility and weight to arguments (e.g. "cadence", "interplanetary", "silt")
• uses language that evokes an emotional response (e.g. "Although they faced relentless opposition, the netballers triumphed.")
• uses words that create connotations (e.g. "miserly", "frugal")

Snapshot – Create, communicate and collaborate

Digital Literacy: Creating and exchanging: Create, communicate and collaborate

Content description

AC9S10I08

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• select and control advanced features of appropriate digital tools to independently create content and effectively communicate and collaborate with wider groups

• select and control the features of digital tools to purposefully create content and effectively communicate and collaborate, inclusive of diverse groups

Snapshot – Respect intellectual property

Digital Literacy: Creating and exchanging: Respect intellectual property

Content description

AC9S10I08

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.

• respect intellectual property by applying practices that comply with ethical and legal obligations, referencing conventions and copyright protocols

• respect intellectual property by identifying and applying practices that meet legal and ethical obligations, referencing conventions, copyright and trademark protocols

Snapshot – Proportional thinking

Numeracy: Number sense and algebra: Proportional thinking

Content description

AC9S10I08

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Proportionality and the whole

• determines the whole given a percentage (e.g. given 20 20 2 0 % is 13 13 1 3 millilitres, determines the whole is 65 65 6 5 millilitres; given 20 20 2 0 % is 1300 1300 1 3 0 0 kilojoules, determines the whole is 6500 6500 6 5 0 0 kilojoules when calculating the amount of energy consumed as part of a daily recommended intake)

• identifies the common unit rate to compare rates expressed in different units (e.g. calculates best buys; compares the relative speed of 2 2 2 vehicles)

• identifies, compares, represents and solves problems involving different rates in real world contexts (e.g. measures heart rate and breathing rate to monitor the body’s reaction to a range of physical activities)

• determines the equivalence between 2 2 2 rates or ratios by expressing them in their simplest form

• describes how the proportion is preserved when using a ratio (e.g. uses the ratio 1 : 4 : 15 1:4:15 1 : 4 : 1 5 for the composition of silver, copper and gold to determine the mass of copper in a rose gold ring that weighs 8 8 8 grams; applies an aspect ratio when resizing images of an artwork such as if the aspect ratio is 3 : 2 3:2 3 : 2 then a picture that is 600 600 6 0 0 pixels wide would be 400 400 4 0 0 pixels tall)

Applying proportion

• recognises that percentages can be greater than 100 100 1 0 0 % (e.g. the entry price to the show has gone up from $ 20 \$20 $ 2 0 last year to $ 25 \$25 $ 2 5 this year, that’s 125 125 1 2 5 % of last year's price; examines food labels and nutritional tables to determine whether the percentage a fast food meal exceeds a recommended daily intake for sugar/fats)

• uses common fractions and decimals for proportional increase or decrease of a given amount

• increases and decreases quantities by a percentage and expresses a percentage increase or decrease using a multiplier (e.g. calculates 70 70 7 0 % or 0.7 0.7 0 . 7 of the original marked price to apply a 30 30 3 0 % discount; multiplies by 1.03 1.03 1 . 0 3 when predicting a 3 3 3 % future capital gain; calculates percentage increase or decrease in international migration in Australia)

• models situations uses percentages, rates and ratios (e.g. calculates interest payable on loans; compares taxation rates and the effect of a pay increase on how much annual income tax is payable;

mixes chemical solutions using ratios; uses Mendelian inheritance to predict the ratio of offspring genotypes and phenotypes in monohybrid crosses)
• identifies and interprets situations where direct proportion is involved (e.g. hours worked and payment received; increase in income and increase in demand for branded products; increasing the mass will increase the force provided that acceleration remains constant)
• identifies and interprets situations where inverse proportion is involved (e.g. number of people working on a job and time taken to complete the job; speed and time taken to travel recognising that travelling at a greater speed will mean the journey takes less time; decrease in price and increase in demand)
• uses ratio and scale factors to enlarge or reduce the size of objects (e.g. interprets the scale used on a map and determines the real distance between 2 2 2 locations; draws engineering drawings to scale)

Flexible proportional thinking

• identifies proportional relationships in formulas and uses proportional thinking flexibly to explore this relationship (e.g. recognises the proportional relationship between concentration and volume of a solution in the formula c = n v c=\frac nv c = v n ■ and uses this relationship to make decisions when diluting solutions)
• identifies, represents and chooses appropriate strategies to solve percentage problems involving proportional thinking (e.g. percentage of a percentage for calculating successive discounts; uses percentages to calculate compound interest on loans and investments; uses percentage increases or decreases as an operator, such as a 3 3 3 % increase is achieved by multiplying by 1.03 1.03 1 . 0 3 , and 4 4 4 successive increases is achieved by multiplying by (1.03) 4 (1.03)^4 (1 . 0 3) 4 to make meaning of the formula

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I08

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Collecting, displaying and interpreting numerical data

• collects and records discrete numerical data using an appropriate method for recording (e.g. uses a frequency table to record the experimental results for rolling a dice; records sample measurements taken during a science investigation)
• constructs graphical representations of numerical data and explains the difference between continuous and discrete data (e.g. explains that measurements such as length, mass and temperature are continuous data whereas a count such as the number of people in a queue is discrete)
• explains how data displays can be misleading (e.g. whether a scale should start at zero; not using uniform intervals on the axes)
• interprets visual representations of data displayed using a multi-unit scale, reading values between the marked units and describing any variation and trends in the 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 (e.g. collects information on the heights of buildings or daily temperatures, tabulates the results and represents these graphically; uses a survey to collect primary data or secondary data extracted from census data)
• uses numerical and graphical representations relevant to the purpose of the collection of the data and explains their reasoning (e.g. "I can’t use a frequency histogram for categorical data because there is no numerical connection between the categories"; converts their data to percentages in order to compare the girls' results to those of the boys, as the total number of boys and girls who participated in the survey was different)
• determines and calculates the most appropriate statistic to describe the spread of data (e.g. when creating an infographic, uses the mean of the data to describe household income and the median of the data for house prices)
• calculates simple descriptive statistics such as mode, mean or median as measures to represent typical values of a distribution (e.g. describes the mean kilojoule intake and median hours of

exercise of a sample population when investigating community health and wellbeing; describes central tendency when analysing road safety statistics)
• 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 the living standards of different economies and a histogram to show income distribution)
• 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

Interpreting graphical representations

• uses features of graphical representations to make predictions (e.g. predicts audience numbers based on historical data; interprets a range of graphs to identify possible trends and make predictions such as economic growth, stock prices, interest rates, population growth)
• summarises data using fractions, percentages and decimals (e.g. 2 3 \frac23 3 2 ■ of a class live in the same suburb; represents road safety and sun safety statistics as a percentage of the Australian population)
• explains that continuous variables depicting growth or change often vary over time (e.g. creates growth charts to illustrate impacts of financial decisions; describes patterns in inflation rates, employment rates, migration rates over time; represents changes to fitness levels following the implementation of a personal fitness plan; interprets temperature charts)
• interprets graphs depicting motion such as distance–time and velocity–time graphs
• interprets and describes patterns in graphical representations of data from real-life situations such as the motion of a rollercoaster, flight trajectory of a basketball shot and the spread of disease
• investigates the association of 2 2 2 numerical variables through the representation and interpretation of bivariate data (e.g. uses scatter plots to represent bivariate data when investigating the relationship between 2 2 2 variables, such as income per capita, population density and life expectancy for different socio-economic groups)
• investigates, represents and interprets time series data (e.g. interrogates a time series graph showing the change in costs over time; uses a maximum daily temperature chart to determine the average temperature for the month)
• interprets the impact of changes to data (e.g. recognises the impact of outliers on a data set such as the income of a world-class professional athlete on the average income of players at the state/territory level; uses digital tools to enhance the quality of data in a science investigation)

Snapshot – Create, communicate and collaborate

Digital Literacy: Creating and exchanging: Create, communicate and collaborate

Content description

AC9S10I08

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• select and control advanced features of appropriate digital tools to independently create content and effectively communicate and collaborate with wider groups
• select and control the features of digital tools to purposefully create content and effectively communicate and collaborate, inclusive of diverse groups

Snapshot – Respect intellectual property

Digital Literacy: Creating and exchanging: Respect intellectual property

Content description

AC9S10I08

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• respect intellectual property by applying practices that comply with ethical and legal obligations, referencing conventions and copyright protocols
• respect intellectual property by identifying and applying practices that meet legal and ethical obligations, referencing conventions, copyright and trademark protocols

Snapshot – Creating texts

Literacy: Writing: Creating texts

Content description

AC9S10I08

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Crafting ideas

• creates informative texts that describe, explain and document (e.g. describe an artwork, document the materials and explain why it was created)
• selects structural elements to comprehensively and accurately represent the information (e.g. a fact sheet includes an opening statement, labelled diagrams and text boxes)
• orients the reader to the topic or concept using a definition or classification
• develops ideas with details and examples
• uses ideas derived from research
• uses written and visual supporting evidence

Text forms and features

• uses cohesive devices to link concepts across texts (e.g. uses lexical cohesion such as word associations and synonyms)
• uses cohesive devices to express cause and effect (e.g. uses text connectives such as "therefore", "subsequently")
• includes salient visual and audio features to expand on written information (e.g. creates graphs and other technical diagrams from authentic data)
• uses language to compare (e.g. "alternatively", "whereas")
• uses formatting appropriately to reference and label graphics

Vocabulary

• uses a range of learnt, technical and discipline-specific terms (e.g. "adapt", "survive")
• uses more sophisticated words to express cause and effect (e.g. "therefore", "subsequently")

Crafting ideas

• creates informative texts to explain and analyse (e.g. analyses how artists use visual conventions in artworks)
• creates texts to compare and contrast phenomena (e.g. identify the similarities and differences between species of animals)
• orients the reader clearly to the topic or concept (e.g. using a definition or classification in the opening paragraph)
• intentionally selects structural elements for effect (e.g. includes an effective conclusion that synthesises complex ideas)
• uses evidence and research including digital resources to expand upon information and elaborate concepts

Text forms and features

• varies sentence structure for effect (see Grammar)
• judiciously uses language, visual and audio features to emotionally or intellectually affect the reader
• uses more elaborate noun groups/phrases that include classifying adjectives and specific nouns (e.g. "mineral component of sedimentary rocks")
• creates cohesive flow by condensing previous information into a summarising noun (e.g. "A series of tumultuous events culminated in the outbreak of WWI - modern history’s turning point.")
• uses passive voice and nominalisation to write succinctly (e.g. "the results were analysed") (see Grammar)

Vocabulary

• uses discipline-specific terminology to provide accurate and explicit information (e.g. "discipline metalanguage")
• uses a range of synonyms for frequently occurring words, in a longer text (e.g. "repair", "fix", "remedy")
• uses vocabulary to indicate and describe relationships (e.g. "additionally", "similarly")

Crafting ideas

• creates sustained, informative texts that precisely explain, analyse and evaluate concepts or abstract entities

• uses structural features flexibly to organise ideas strategically (e.g. includes a defined, cogent conclusion or summation)
• creates texts with forms and features combined strategically for purpose (e.g. describes a historical event from the perspective of a secondary source)
• uses evidence and references
• creates succinct short-answer explanatory texts as well as complex, multi-staged extended texts

Text forms and features

• maintains tone appropriate to the audience
• uses extended noun groups/phrases including adjectival phrases (e.g. "a sturdy construction with modern design features") (see Grammar)

Vocabulary

• uses complex abstractions (e.g. "economic", "sociocultural")

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9S10I08

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Interpreting graphical representations

• uses features of graphical representations to make predictions (e.g. predicts audience numbers based on historical data; interprets a range of graphs to identify possible trends and make predictions such as economic growth, stock prices, interest rates, population growth)
• summarises data using fractions, percentages and decimals (e.g. 2 3 \frac23 3 2 ■ of a class live in the same suburb; represents road safety and sun safety statistics as a percentage of the Australian population)
• explains that continuous variables depicting growth or change often vary over time (e.g. creates growth charts to illustrate impacts of financial decisions; describes patterns in inflation rates, employment rates, migration rates over time; represents changes to fitness levels following the implementation of a personal fitness plan; interprets temperature charts)
• interprets graphs depicting motion such as distance–time and velocity–time graphs
• interprets and describes patterns in graphical representations of data from real-life situations such as the motion of a rollercoaster, flight trajectory of a basketball shot and the spread of disease
• investigates the association of 2 2 2 numerical variables through the representation and interpretation of bivariate data (e.g. uses scatter plots to represent bivariate data when investigating the relationship between 2 2 2 variables, such as income per capita, population density and life expectancy for different socio-economic groups)
• investigates, represents and interprets time series data (e.g. interrogates a time series graph showing the change in costs over time; uses a maximum daily temperature chart to determine the average temperature for the month)
• interprets the impact of changes to data (e.g. recognises the impact of outliers on a data set such as the income of a world-class professional athlete on the average income of players at the state/territory level; uses digital tools to enhance the quality of data in a science investigation)

Sampling

• considers the context when determining whether to use data from a sample or a population
• determines what type of sample to use from a population (e.g. decides to use a representative sample when conducting targeted market research or when researching beliefs about a health-related issue)
• makes reasonable statements about a population based on evidence from samples (e.g. considers accuracy of representation of marginalised individuals or population groups)
• 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

Recognising bias

• applies an understanding of distributions to evaluate claims based on data (e.g. recognises that

the accuracy of using a sample for predicting population values depends on both the relative size of the sample and how well the characteristics of the sample reflect the characteristics of the population; critically analyses statistics that reinforce stereotypes; evaluates claims made by the media regarding young people in relation to drugs and/or risk-taking behaviours)
• identifies and explains bias as a possible source of error in media reports of survey data (e.g. uses data to evaluate veracity of review headlines such as "everybody's favourite game"; investigates media claims on attitudes to government responses to market failure or income redistribution)
• 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)

Snapshot – Creating texts

Literacy: Writing: Creating texts

Content description

AC9S10I08

Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.

Crafting ideas

• creates persuasive texts for a broader range of learning area purposes (e.g. designs a healthy food campaign)
• includes structural features appropriate to the type of text and task such as an introduction with a statement of position, body paragraphs and simple conclusion
• presents a position and supports it with one or a few simply stated arguments
• includes arguments and ideas which are relevant to the purpose of the text
• organises arguments into paragraphs to support the reader
• concludes by restating

Text forms and features

• uses cohesive devices to link points in an argument (e.g. uses text connectives such as "however", "on the other hand")
• uses some rhetorical devices such as repetition
• uses adjectives to persuade (e.g. "dangerous behaviour")
• uses simple modal verbs and adverbs (e.g. "should", "will", "quickly")
• selects visual and audio features to expand argument in written texts (e.g. images, music)
• uses inclusive language (e.g. "we cannot allow this to happen")

Vocabulary

• uses a range of learnt topic words to add credibility to arguments

Crafting ideas

• creates persuasive texts that take a position and supports it with arguments (e.g. examines the benefits of physical activity to health and wellbeing)
• selects structural elements to suit the purpose (e.g. introduces an argument with a clearly articulated statement of position)
• includes 2 or more elaborated arguments
• develops a clear persuasive line through inclusion of a number of arguments with supporting points
• orients the reader to the persuasive premise of the text
• concludes by synthesising the arguments

Text forms and features

• uses cohesive devices to link arguments, evidence and reasons (e.g. uses text connectives such as "therefore", "furthermore")
• includes salient visual and audio features to complement written ideas
• uses vocabulary to position the reader (e.g. precise nouns and adjectives)
• uses a broader range of modal verbs and adverbs (e.g. "definitely")

Vocabulary

• uses words to express cause and effect (e.g. "consequently", "thus")
• selects vocabulary to persuade (e.g. uses words to introduce an argument such as "obviously")

• uses technical and topic specific words to add authority (e.g. "innovative design", "solution")

Crafting ideas

• creates persuasive texts to discuss, evaluate and review (e.g. evaluates and reviews design ideas)
• includes persuasive points with effective elaborations and supporting evidence
• intentionally selects structural elements for effect (e.g. includes an appropriate conclusion that sums up, recommends or reiterates)
• includes counter argument or refutation if appropriate
• uses evidence and research including digital resources to expand upon information and elaborate concepts

Text forms and features

• uses rhetorical devices such as rhetorical questions
• varies sentence structure for effect (see Grammar)
• judiciously uses language, visual and audio features to emotionally or intellectually affect the audience
• skilfully uses a range of cohesive devices to make connections between arguments (e.g. foreshadows key points in introduction and reinforces key points in topic sentences)
• judiciously selects evidence and language to strengthen arguments
• uses passive voice and nominalisation strategically to avoid stating the actor in the sentence (e.g. "an expectation of failure became common")

Vocabulary

• uses a range of synonyms for frequently occurring words, in a longer text (e.g. "impact", "consequence", "result")
• uses topic-specific vocabulary to add credibility and weight to arguments (e.g. "cadence", "interplanetary", "silt")
• uses language that evokes an emotional response (e.g. "Although they faced relentless opposition, the netballers triumphed.")
• uses words that create connotations (e.g. "miserly", "frugal")