(no-code)

recognise, represent and order using naming and writing conventions for beyond 10■000

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Elaborations

• moving materials from one place to another on a model to show renaming of numbers; for example, 1574 1574 1 5 7 4 can be shown as one thousand, 5 5 5 hundreds, 7 7 7 tens and 4 4 4 ones, or as 15 15 1 5 hundreds, 7 7 7 tens and 4 4 4 ones

• using the of names and spaces within of 3 3 3 to name and write larger numbers: ones, tens, hundreds, ones of thousands, tens of thousands, hundreds of thousands, ones of millions, tens of millions; writing, for example, four hundred and twenty-five thousand as 425 000 425■000 4 2 5 0 0 0

• predicting and naming the number that is one more than 99 , 109 , 199 , 1009 , 1099 , 1999 , 10 009 99, 109, 199, 1009, 1099, 1999, 10■009 9 9 , 1 0 9 , 1 9 9 , 1 0 0 9 , 1 0 9 9 , 1 9 9 9 , 1 0 0 0 9 ... 99 999 99■999 9 9 9 9 9 and discussing what will change when one, one ten and one hundred is added to each

• comparing the Hindu-Arabic system to other systems; for example, investigating the Japanese system, ■■■■■■■■■

• comparing, reading and writing the numbers involved in the more than 60 000 60■000 6 0 0 0 0 years of First Peoples of Australia's presence on the Australian continent through time relating to pre-colonisation and post-colonisation

Students learn to:

recognise, represent and order natural numbers using naming and writing conventi beyond 10■000

(AC9M3N01)

General capabilities and cross-curriculum priorities

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

Number sense and algebra

• Number and place value

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 patterns and algebraic thinking

Number sense and algebra

• Additive strategies

Engaging with cultural and linguistic diversity

• Communicate responsively

Reflecting on culture and cultural diversity

• Reflect on the relationship between cultures and identities

Understanding Asia's global significance

• The peoples of Asia shape human endeavour through aesthetic, creative, political, sporting, economic, technological and scientific domains.

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 – Number and place value

Numeracy: Number sense and algebra: Number and place value

Content description

AC9M3N01

Learning progression extract

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

content.

Numeral recognition and identification

• identifies, names, writes and interprets a numeral from a range of numerals up to 1000 1000 1 0 0 0 (e.g. is shown the numerals 70 , 318 , 576 70, 318, 576 7 0 , 3 1 8 , 5 7 6 and 276 276 2 7 6 and when asked "which is 276 276 2 7 6 ?'" identifies 276 276 2 7 6 ; compares the number of kilojoules in different energy drinks by reading the dietary information)

Place value

• orders and flexibly renames three-digit numbers according to their place value (e.g. 247 247 2 4 7 is 2 2 2 hundreds, 4 4 4 tens and 7 7 7 ones or 2 2 2 hundreds and 47 47 4 7 ones or 24 24 2 4 tens and 7 7 7 ones)

• applies an understanding of zero in place value notation when reading and writing numerals that include internal zeros (e.g. says 807 807 8 0 7 as 8 8 8 hundred and 7 7 7 or 80 80 8 0 tens and 7 7 7 ones, not 80 80 8 0 and 7 7 7)

Numeral recognition and identification

• identifies, reads, writes and interprets numerals beyond 1000 1000 1 0 0 0 applying knowledge of place value, including numerals that contain a zero (e.g. reads 1345 1345 1 3 4 5 as one thousand, 3 3 3 hundred and 45 45 4 5 ; reads one thousand and 15 15 1 5 and writes as 1015 1015 1 0 1 5 ; compares the size of populations of schools, suburbs, cities and ecosystems or the cost of items in shopping catalogues)

Place value

• represents, flexibly partitions and renames four-digit numbers into standard and non-standard place value partitions (e.g. uses grid paper to show the size of each digit in 2202 2202 2 2 0 2 ; renames 5645 5645 5 6 4 5 as 3645 3645 3 6 4 5 and 2000 2000 2 0 0 0 in order to subtract 1998 1998 1 9 9 8)

• estimates and rounds natural numbers to the nearest 10 10 1 0 or nearest 100 100 1 0 0 (e.g. pencils come in a pack of 10 10 1 0 , so estimates the number of packs required for 127 127 1 2 7 Year 6 6 6 students; to check the reasonableness of their solution to the computation 212 + 195 212 + 195 2 1 2 + 1 9 5 , rounds both numbers to 200 200 2 0 0)

• represents and names tenths as one out of 10 10 1 0 equal parts of a whole (e.g. uses a bar model to represent the whole and its parts; uses a straw that has been cut into 10 10 1 0 equal pieces to demonstrate that one piece is one-tenth of a whole straw and 2 2 2 pieces are two-tenths of the whole straw)

• represents and names one-tenth as its decimal equivalent (e.g. 0.1 0.1 0 . 1 , zero point one)

• extends the place value system to tenths

Numeral recognition and identification

• identifies, reads and writes numerals, beyond 4 4 4 digits in length, with spacing after every 3 3 3 digits (e.g. 10 10 1 0 204 204 2 0 4 , 25 25 2 5 000 000 0 0 0 000 000 0 0 0 ; 12 12 1 2 230.25 230.25 2 3 0 . 2 5 ; reads 152 152 1 5 2 450 450 4 5 0 as "one hundred and 52 52 5 2 thousand 4 4 4 hundred and 50 50 5 0 "; compares the size of populations for different countries or the cost of expensive items with an advertised selling price in the millions)

• identifies, reads and writes decimals to one and 2 2 2 decimal places (e.g. reads 4.75 4.75 4 . 7 5 as "four point seven five" or 4 4 4 and 75 75 7 5 hundredths; writes 4 4 4 dollars and 5 5 5 cents as $ 4.05 \$4.05 $ 4 . 0 5)

Place value

• estimates and rounds natural numbers to the nearest 10 thousand, thousand etc. recognising the multiplicative relationships between the place value of the digits (e.g. estimates the crowd numbers at a football match; says that the $ 9863 \$9863 $ 9 8 6 3 raised at a charity event was close to $ 10 \$10 $ 1 0 000 000 0 0 0 ; recognises that 200 years is 10 times as large as 20 years, and applies this to environmental change)

• explains that the place value names for decimal numbers relate to the ones place value

• explains and demonstrates that the place value system extends beyond tenths to hundredths, thousandths … (e.g. uses decimals to represent part units of measurement for length, mass, capacity and temperature)

• represents, compares, orders and interprets decimals up to 2 2 2 decimal places (e.g. constructs a number line to include decimal values between zero and one, when asked "which is greater 0.19 0.19 0 . 1 9 or 0.2 0.2 0 . 2 ?", responds " 0.2 0.2 0 . 2 " ; interprets and compares measurements such as

the temperature on different days or the change in height of a growing plant observed and recorded during science investigations)
• rounds decimals to the nearest natural number in order to estimate answers (e.g. estimates the length of material needed by rounding up the measurement to the nearest natural number)

Snapshot – Number patterns and algebraic thinking

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

Content description

AC9M3N01

Learning progression extract

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

Identifying and creating patterns

• identifies the pattern unit with a simple repeating pattern (e.g. identifies the repeating pattern red, blue, red, blue with red then blue; identifies the repeating patterns in everyday activities, days of the week or seasons of the year)
• continues and creates repeating patterns involving the repetition of a pattern unit with shapes, movements, sounds, physical and virtual materials and numbers (e.g. circle, square, circle, square; stamp, clap, stamp, clap; $1, 2, 3, 1, 2, 3, 1, 2, 3$)
• identifies, continues and creates simple geometric patterns involving shapes, physical or virtual materials
• determines a missing element within a pattern involving shapes, physical or virtual materials
• conceptually subitises by identifying patterns in standard representations (e.g. patterns within ten-frames, uses finger patterns to represent a quantity)

Continuing and generalising patterns

• represents growing patterns where the difference between each successive term is constant, using physical and virtual materials, then summarising the pattern numerically (e.g. constructs a pattern using physical materials such as toothpicks, then summarises the number of toothpicks used as $4, 7, 10, 13$ ...)
• describes rules for replicating or continuing growing patterns where the difference between each successive term is the same (e.g. to determine the next number in the pattern $3, 6, 9, 12$ … you add 3 ; for $20, 15, 10$ … the rule is described as each term is generated by subtracting 5 from the previous term)

Relational thinking

• uses the equals sign to represent "is equivalent to" or "is the same as" in number sentences (e.g. when asked to write an expression that is equivalent to $5 + 3$, responds $6 + 2$ and then writes $5 + 3 = 6 + 2$
• solves number sentences involving unknowns using the inverse relationship between addition and subtraction (e.g. $3 + ? = 5$ and knowing $5 - 3 = 2$ then ? must be 2)

Generalising patterns

• represents growing patterns where each successive term is determined by multiplying the previous term by a constant, using concrete materials, then summarises the pattern numerically (e.g. constructs a pattern using concrete materials such as tiles then summarises the pattern as $2, 6, 18, 54$ ...)
• describes rules for copying or continuing patterns where each successive term is found by multiplying or dividing the previous term by the same factor (e.g. to determine the next term in the pattern $1, 3, 9, 27$ … multiply by 3)

Relational thinking

• uses relational thinking to determine the missing values in a number sentence (e.g. $6 + ? = 7 + 4$)
• uses equivalent number sentences involving addition or subtraction to calculate efficiently or to find an unknown (e.g. $527 + 96 = ?$ is the same as $527 + 100 - 4 = ?$; If $6 + ? = 8 + 3$, then as I know $8 = 6 + 2$, I can write $8 + 3$ as $6 + 2 +$

3 6 + 2 + 3 , which is the same as 6 + 5 6 + 5 6 + 5 therefore '?' is 5 5 5)

• solves numerical equations involving unknowns using the inverse relationship between multiplication and division (e.g. determines the missing number in 2 × 2 \times\space 2 × ? = 10 = 10 = 1 0 knowing 10 ÷ 2 10 ÷ 2 1 0 ÷ 2 is equal to 5 5 5 then ? must be 5 5 5)

Snapshot – Additive strategies

Numeracy: Number sense and algebra: Additive strategies

Content description

AC9M3N01

Learning progression extract

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

Flexible strategies with two-digit numbers

• chooses from a range of known strategies to solve additive problems involving two-digit numbers (e.g. uses place value knowledge, known addition facts and part-part-whole number knowledge to solve problems like 24 + 8 + 13 24 + 8 + 13 2 4 + 8 + 1 3 , partitions 8 8 8 as 6 6 6 and 2 2 2 more, then combines 24 24 2 4 and 6 6 6 to rename it as 30 30 3 0 before combining it with 13 13 1 3 to make 43 43 4 3 , and then combines the remaining 2 2 2 to find 45 45 4 5 ; adds the same quantity to both numbers 47 – 38 = 49 – 40 47\space–\space38 = 49-40 4 7 – 3 8 = 4 9 – 4 0)

• identifies that the same combinations and partitions to 10 10 1 0 are repeated within each decade (e.g. knowing that 8 + 2 = 10 8 + 2 = 10 8 + 2 = 1 0 , knows 18 + 2 = 20 18 + 2 = 20 1 8 + 2 = 2 0 and 28 + 2 = 30 28 + 2 = 30 2 8 + 2 = 3 0 etc.)

• identifies addition as associative and commutative and that subtraction is neither

• applies the commutative and associative properties of addition to simplify mental computation (e.g. to calculate 23 + 9 + 7 23 + 9 + 7 2 3 + 9 + 7 adds 23 23 2 3 to 7 7 7 to get 30 30 3 0 , then adds 9 9 9 to give 39 39 3 9)

• applies inverse relationship of addition and subtraction to solve problems, including solving problems with digital tools, and uses the inverse relationship to justify an answer (e.g. when solving 23 – 16 23\space–\space16 2 3 – 1 6 chooses to use addition 16 + ? = 23 16\space+ \space ? = 23 1 6 + ? = 2 3 ; when using a calculator to solve 16 + ? = 38 16\space+\space? = 38 1 6 + ? = 3 8 decides to use subtraction and inputs 38 – 16 38-16 3 8 – 1 6)

• represents a wide range of additive problem situations involving two-digit numbers using appropriate addition and subtraction number sentences

Flexible strategies with three-digit numbers and beyond

• uses place value, standard and non-standard partitioning, trading or exchanging of units to mentally add and subtract numbers with 3 3 3 or more digits (e.g. to add 250 250 2 5 0 and 457 457 4 5 7 , partitions 250 250 2 5 0 into 2 2 2 hundreds and 5 5 5 tens, says 457 457 4 5 7 plus 2 2 2 hundreds is 657 657 6 5 7 , plus 5 5 5 tens is 707 707 7 0 7 ; to add 184 184 1 8 4 and 270 270 2 7 0 partitions into 150 + 34 + 250 + 20 = 400 + 34 + 20 = 454 150 + 34 + 250 + 20 = 400 + 34+ 20 = 454 1 5 0 + 3 4 + 2 5 0 + 2 0 = 4 0 0 + 3 4 + 2 0 = 4 5 4)

• chooses and uses strategies including algorithms and technology to efficiently solve additive problems (e.g. develops total costings for ingredients or materials for a task or combines measurements to determine the total amount of materials required)

• uses estimation to determine the reasonableness of the solution to an additive problem (e.g. when asked to add 249 249 2 4 9 and 437 437 4 3 7 says " 250 + 440 250 + 440 2 5 0 + 4 4 0 is 690 690 6 9 0 ")

• represents a wide range of familiar real-world additive situations involving large numbers as standard number sentences explaining their reasoning

Flexible strategies with fractions and decimals

• uses knowledge of place value and how to partition numbers in different ways to make the calculation easier when adding and subtracting decimals with up to 3 3 3 decimal places

• identifies and justifies the need for a common denominator when solving additive problems involving fractions with related denominators

• represents a wide range of familiar real-world additive situations involving decimals and common fractions as standard number sentences, explaining their reasoning

Snapshot – Communicate responsively

Intercultural Understanding: Engaging with cultural and linguistic diversity: Comm responsively

Content description

AC9M3N01

Continuum extract

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

• identify and use verbal and non-verbal communication, recognising that these may have different meanings for familiar cultural and linguistic groups

• initiate verbal and non-verbal communication, comparing how members of familiar cultural and linguistic groups respond

• select strategies for open, flexible and focused communication in unfamiliar settings, considering their effect on building understanding

Snapshot – Reflect on the relationship between cultures and identities

Intercultural Understanding: Reflecting on culture and cultural diversity: Reflect c relationship between cultures and identities

Content description

AC9M3N01

Continuum extract

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

• explore examples of cultural practices that draw themselves, family and friends together, identifying how respect is conveyed

• describe the similarities and differences in beliefs, values and cultural practices in the community, sharing how belonging grows

• examine how beliefs, values and cultural practices convey meaning and influence people's sense of identity and belonging

AC9M3A01

recognise and explain the connection between addition and subtraction as , apply to numbers and find unknown values in

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Elaborations

• numbers using materials, part-part-whole diagrams or bar models, and recording addition and subtraction facts for each representation, explaining how each fact is connected to the materials, diagrams or models; for example, $16 + 8 = 24$ $16 + 8 = 24$ $1\,6 + 8 = 2\,4$, $24 - 8 = 16$ $24\space - \space8 = 16$ $2\,4 - 8 = 1\,6$, $8 = 24 - 16$ $8 = 24\space–\space 16$ $8 = 2\,4 - 1\,6$

• using the inverse relationship between addition and subtraction to find unknown values with a calculator; for example, representing the problem, "Peter had some money and then spent $\$375$ $\$375$ $\$3\,7\,5$, now he has $\$158$ $\$158$ $\$1\,5\,8$ left. How much did Peter have to start with?" as $\blacksquare - \$375 = \$158$ $\square - \$375 = \$158$ $\blacksquare - \$3\,7\,5 = \$1\,5\,8$ and solving the problem using $\$375 + \$158 = \$533$ $\$375 + \$158 = \$533$ $\$3\,7\,5 + \$1\,5\,8 = \$5\,3\,3$; solving $27 + \blacksquare = 63$ $27 + \square = 63$ $2\,7 + \blacksquare = 6\,3$ using subtraction, $\blacksquare = 63 - 27$ $\square = 63\space - \space27$ $\blacksquare = 6\,3 - 2\,7$ or by on; $27, 37, 47, 57, 60, 63$, $27, 37, 47, 57, 60, 63$, $2\,7, 3\,7, 4\,7, 5\,7, 6\,0, 6\,3$, so add 3 3 3 tens and 6 6 6 ones, so $\blacksquare = 36$ $\square = 36$ $\blacksquare = 3\,6$

• exploring First Nations Australians' stories and dances that show the connection between addition and subtraction, representing this as a and discussing how this conveys important information about balance in processes on

Students learn to:

recognise and explain the connection between addition and subtraction as inverse to partition numbers and find unknown values in number sentences

(AC9M3A01)

General capabilities and cross-curriculum priorities

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

Number sense and algebra

• Additive strategies
• Number patterns and algebraic thinking

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 .

Culture

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

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.

Resources

Work Samples

WS01 - Ways to make 18

WS03 - Tuck shop lunch

Snapshot – Additive strategies

Numeracy: Number sense and algebra: Additive strategies

Content description

AC9M3A01

Learning progression extract

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

Flexible strategies with two-digit numbers

• chooses from a range of known strategies to solve additive problems involving two-digit numbers (e.g. uses place value knowledge, known addition facts and part-part-whole number knowledge to solve problems like $24 + 8 + 13$, partitions 8 as 6 and 2 more, then combines 24 and 6 to rename it as 30 before combining it with 13 to make 43, and then combines the remaining 2 to find 45 ; adds the same quantity to both numbers $47 - 38 = 49 - 40$)

• identifies that the same combinations and partitions to 10 are repeated within each decade (e.g. knowing that $8 + 2 = 10$, knows $18 + 2 = 20$ and $28 + 2 = 30$ etc.)

• identifies addition as associative and commutative and that subtraction is neither

• applies the commutative and associative properties of addition to simplify mental computation (e.g. to calculate $23 + 9 + 7$ adds 23 to 7 to get 30, then adds 9 to give 39)

• applies inverse relationship of addition and subtraction to solve problems, including solving problems with digital tools, and uses the inverse relationship to justify an answer (e.g. when solving $23 - 16$ chooses to use addition $16 + ? = 23$; when using a calculator to solve $16 + ? = 38$ decides to use subtraction and inputs $38 - 16$)

• represents a wide range of additive problem situations involving two-digit numbers using appropriate addition and subtraction number sentences

Flexible strategies with three-digit numbers and beyond

• uses place value, standard and non-standard partitioning, trading or exchanging of units to mentally add and subtract numbers with 3 or more digits (e.g. to add 250 and 457, partitions 250 into 2 hundreds and 5 tens, says 457 plus 2 hundreds is 657, plus 5 tens is 707 ; to add 184 and 270 partitions into $150 + 34 + 250 + 20 = 400 + 34 + 20 = 454$)

• chooses and uses strategies including algorithms and technology to efficiently solve additive problems (e.g. develops total costings for ingredients or materials for a task or combines measurements to determine the total amount of materials required)

• uses estimation to determine the reasonableness of the solution to an additive problem (e.g. when

asked to add 249 249 2 4 9 and 437 437 4 3 7 says " 250 + 440 250 + 440 2 5 0 + 4 4 0 is 690 690 6 9 0 ")

• represents a wide range of familiar real-world additive situations involving large numbers as standard number sentences explaining their reasoning

Flexible strategies with fractions and decimals

• uses knowledge of place value and how to partition numbers in different ways to make the calculation easier when adding and subtracting decimals with up to 3 3 3 decimal places

• identifies and justifies the need for a common denominator when solving additive problems involving fractions with related denominators

• represents a wide range of familiar real-world additive situations involving decimals and common fractions as standard number sentences, explaining their reasoning

Snapshot – Number patterns and algebraic thinking

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

Content description

AC9M3A01

Learning progression extract

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

Identifying and creating patterns

• identifies the pattern unit with a simple repeating pattern (e.g. identifies the repeating pattern red, blue, red, blue with red then blue; identifies the repeating patterns in everyday activities, days of the week or seasons of the year)

• continues and creates repeating patterns involving the repetition of a pattern unit with shapes, movements, sounds, physical and virtual materials and numbers (e.g. circle, square, circle, square; stamp, clap, stamp, clap; 1 , 2 , 3 , 1 , 2 , 3 , 1 , 2 , 3 1,2,3, 1,2,3, 1,2,3 1 , 2 , 3 , 1 , 2 , 3 , 1 , 2 , 3)

• identifies, continues and creates simple geometric patterns involving shapes, physical or virtual materials

• determines a missing element within a pattern involving shapes, physical or virtual materials

• conceptually subitises by identifying patterns in standard representations (e.g. patterns within ten-frames, uses finger patterns to represent a quantity)

Continuing and generalising patterns

• represents growing patterns where the difference between each successive term is constant, using physical and virtual materials, then summarising the pattern numerically (e.g. constructs a pattern using physical materials such as toothpicks, then summarises the number of toothpicks used as 4 , 7 , 10 , 13 4, 7, 10, 13 4 , 7 , 1 0 , 1 3 ...)

• describes rules for replicating or continuing growing patterns where the difference between each successive term is the same (e.g. to determine the next number in the pattern 3 , 6 , 9 , 12 3, 6, 9, 12 3 , 6 , 9 , 1 2 … you add 3 3 3 ; for 20 , 15 , 10 20, 15, 10 2 0 , 1 5 , 1 0 … the rule is described as each term is generated by subtracting 5 5 5 from the previous term)

Relational thinking

• uses the equals sign to represent "is equivalent to" or "is the same as" in number sentences (e.g. when asked to write an expression that is equivalent to 5 + 3 5 + 3 5 + 3 , responds 6 + 2 6 + 2 6 + 2 and then writes 5 + 3 = 6 + 2 5 + 3 = 6 + 2 5 + 3 = 6 + 2

• solves number sentences involving unknowns using the inverse relationship between addition and subtraction (e.g. 3 + 3\space + \space 3 + ? = 5 = 5 = 5 and knowing 5 − 3 = 2 5 \space− \space3 = 2 5 − 3 = 2 then ? must be 2 2 2)

Generalising patterns

• represents growing patterns where each successive term is determined by multiplying the previous term by a constant, using concrete materials, then summarises the pattern numerically (e.g. constructs a pattern using concrete materials such as tiles then summarises the pattern as 2 , 6 , 18 , 54 2, 6, 18, 54 2 , 6 , 1 8 , 5 4 ...)

• describes rules for copying or continuing patterns where each successive term is found by multiplying or dividing the previous term by the same factor (e.g. to determine the next term in the pattern 1 , 3 , 9 , 27 1, 3, 9, 27 1 , 3 , 9 , 2 7 … multiply by 3 3 3)

Relational thinking

• uses relational thinking to determine the missing values in a number sentence (e.g. 6 + 6 +\space 6 + ? = 7 + 4 = 7 + 4 = 7 + 4)

• uses equivalent number sentences involving addition or subtraction to calculate efficiently or to find an unknown (e.g. 527 + 96 = 527 + 96 = \space 5 2 7 + 9 6 = ? is the same as 527 + 100 − 4 = 527 + 100\space − 4 = \space 5 2 7 + 1 0 0 − 4 = ? ; If 6 + 6 + \space 6 + ? = 8 + 3 = 8 + 3 = 8 + 3 , then as I know 8 = 6 + 2 8 = 6 + 2 8 = 6 + 2 , I can write 8 + 3 8 + 3 8 + 3 as 6 + 2 + 3 6 + 2 + 3 6 + 2 + 3 , which is the same as 6 + 5 6 + 5 6 + 5 therefore '?' is 5 5 5)

• solves numerical equations involving unknowns using the inverse relationship between multiplication and division (e.g. determines the missing number in 2 × 2 \times\space 2 × ? = 10 = 10 = 1 0 knowing 10 ÷ 2 10 ÷ 2 1 0 ÷ 2 is equal to 5 5 5 then ? must be 5 5 5)

Resource – WS01 - Ways to make 18

By the end of Year 3, students order and represent natural numbers beyond 10 000.■They partition , rearrange and regroup two- and three- digit numbers in different ways to assist in calculations.■Students extend and use single-digit addition and related subtraction facts and apply additive strategies to model and solve problems involving two- and three-digit numbers. They use mathematical modelling to solve practical problems involving single-digit multiplication and division, recalling multiplication facts for twos, threes , fours, fives and tens, and using a range of strategies.■Students represent unit fractions and their multiples in different ways.■They make estimates and determine the reasonableness of financial and other calculations.■Students find unknown values in number sentences involving addition and subtraction.■They create algorithms to investigate numbers and explore simple patterns.

Students use familiar metric units when estimating, comparing and measuring the attributes of objects and events.■They identify angles as measures of turn and compare them to right angles.■Students estimate and compare measures of duration using formal units of time.■They represent money values in different ways.■Students make, compare and classify objects using key features.■They interpret and create two-dimensional representations of familiar environments.

Students conduct guided statistical investigations involving categorical and discrete numerical data, and interpret their results in terms of the context.■They record, represent and compare data they have collected.■Students use practical activities, observation or experiment to identify and describe outcomes and the likelihood of everyday events explaining reasoning.■They conduct repeated chance experiments and discuss variation in results.

AC9M3N03

add and subtract two- and three-digit numbers using place value to partition, rearrange and regroup numbers to assist in calculations without a calculator

AC9M3N04

multiply and divide one- and two-digit numbers, representing problems using number sentences, diagrams and arrays, and using a variety of calculation strategies

AC9M3A01

recognise and explain the connection between addition and subtraction as inverse operations, apply to partition numbers and find unknown values in number sentences

AC9M3A02

extend and apply knowledge of addition and subtraction facts to 20 to develop efficient mental strategies for computation with larger numbers without a calculator

AC9M3A03

recall and demonstrate proficiency with multiplication facts for 3, 4, 5 and 10; extend and apply facts to develop the related division facts

Resource – WS03 - Tuck shop lunch

By the end of Year 3, students order and represent natural numbers beyond 10 000.■They partition, rearrange and regroup two- and three-digit numbers in different ways to assist in calculations.■Students extend and use single-digit addition and related subtraction facts and apply additive strategies to solve problems involving two- and three-digit numbers. They use mathematical modelling to solve practical problems involving single-digit multiplication and division, recalling multiplication facts for twos, threes, fours, fives and tens, and using a range of strategies .■Students represent unit fractions and their multiples in different ways. They make estimates and determine the reasonableness of financial and other calculations. They create algorithms to investigate numbers and explore simple patterns.

Students use familiar metric units when estimating, comparing and measuring the attributes of objects and events.■They identify angles as measures of turn and compare them to right angles.■Students estimate and compare measures of duration using formal units of time. They represent money values in different ways. Students make, compare and classify objects using key features.■They interpret and create two-dimensional representations of familiar environments.

Students conduct guided statistical investigations involving categorical and discrete numerical data, and interpret their results in terms of the context.■They record, represent and compare data they have collected.■Students use practical activities, observation or experiment to identify and describe outcomes and the likelihood of everyday events explaining reasoning.■They conduct repeated chance experiments and discuss variation in results.

AC9M3N03

add and subtract two- and three-digit numbers using■place value■to■partition, rearrange and regroup numbers to assist in calculations without a calculator.

AC9M3A01

recognise and explain the connection between addition and subtraction as inverse operations, apply to partition numbers and find unknown values in number sentences

AC9M3M06

recognise the relationships between dollars and cents and represent money values in different ways

AC9M3A02

extend and apply knowledge of addition and subtraction facts to 20 to develop efficient mental strategies for with larger numbers without a calculator

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Elaborations

• using materials and part-part-whole diagrams to develop subtraction facts related to , such as $8 + 7 = 15$ $8 + 7 = 15$ $8 + 7 = 1 \, 5$ therefore, $15 - 7 = 8$ $15 \space – \space 7 = 8$ $1 \, 5 - 7 = 8$ and $15 - 8 = 7$ $15 \space – \space 8 = 7$ $1 \, 5 - 8 = 7$

• using to develop and record facts systematically; for example, "How many ways can 12 12 1 2 monkeys be among 2 2 2 trees?", $12 = 12 + 0$ $12 = 12 + 0$ $1 \, 2 = 1 \, 2 + 0$, $12 = 11 + 1$ $12 = 11 + 1$ $1 \, 2 = 1 \, 1 + 1$, $12 = 10 + 2$ $12 = 10 + 2$ $1 \, 2 = 1 \, 0 + 2$, $12 = 9 + 3$ $12 = 9 + 3$ $1 \, 2 = 9 + 3$, …; explaining how they know they have found all possible

• understanding basic addition and related subtraction facts and using extensions to these facts; for example, $6 + 6 = 12$, $16 + 6 = 22$, $6 + 7 = 13$, $16 + 7 = 23$ $6 + 6 = 12$, $16 + 6 = 22$, $6 + 7 = 13$, $16 + 7 = 23$ $6 + 6 = 1 \, 2$, $1 \, 6 + 6 = 2 \, 2$, $6 + 7 = 1 \, 3$, $1 \, 6 + 7 = 2 \, 3$, and $60 + 60 = 120$, $600 + 600 = 1200$ $60 + 60 = 120, 600 + 600 = 1200$ $6 \, 0 + 6 \, 0 = 1 \, 2 \, 0$, $6 \, 0 \, 0 + 6 \, 0 \, 0 = 1 \, 2 \, 0 \, 0$

Students learn to:

extend and apply knowledge of addition and subtraction facts to 20 to develop effic strategies for computation with larger numbers without a calculator

(AC9M3A02)

General capabilities and cross-curriculum priorities

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

Generating

• Consider alternatives

• Put ideas into action

Number sense and algebra

• Additive strategies

• Number patterns and algebraic thinking

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

Generating

• Consider alternatives

Resources

Work Samples

WS01 - Ways to make 18

WS02 - Clean our school

Snapshot – Consider alternatives

Critical and Creative Thinking: Generating: Consider alternatives

Content description

AC9M3A02

Continuum extract

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

• consider alternatives and explore different or creative ways to approach a task or problem

• consider alternatives by comparing different or creative ways to approach a task, issue or problem and recommend a preferred option

• consider alternatives by challenging or creatively adjusting existing ideas in situations where current approaches do not work and recommend a preferred option

Snapshot – Put ideas into action

Critical and Creative Thinking: Generating: Put ideas into action

Content description

AC9M3A02

Continuum extract

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

• put ideas into action by experimenting with options and predicting possible results

• put ideas into action by predicting an outcome, trialling options and assessing their effectiveness

• put ideas into action by predicting potential or future outcomes and systematically testing a range of options

Snapshot – Additive strategies

Numeracy: Number sense and algebra: Additive strategies

Content description

AC9M3A02

Learning progression extract

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

Flexible strategies with two-digit numbers

• chooses from a range of known strategies to solve additive problems involving two-digit numbers (e.g. uses place value knowledge, known addition facts and part-part-whole number knowledge to solve problems like $24 + 8 + 13$ $24 + 8 + 13$ $2 4 + 8 + 1 3$, partitions 8 8 8 as 6 6 6 and 2 2 2 more, then combines 24 24 2 4 and 6 6 6 to rename it as 30 30 3 0 before combining it with 13 13 1 3 to make 43 43 4 3 , and then combines the remaining 2 2 2 to find 45 45 4 5 ; adds the same quantity to both

numbers 47 − 38 = 49 − 40 47\space–\space38 = 49-40 4 7 − 3 8 = 4 9 − 4 0)

• identifies that the same combinations and partitions to 10 10 1 0 are repeated within each decade (e.g. knowing that 8 + 2 = 10 8 + 2 = 10 8 + 2 = 1 0 , knows 18 + 2 = 20 18 + 2 = 20 1 8 + 2 = 2 0 and 28 + 2 = 30 28 + 2 = 30 2 8 + 2 = 3 0 etc.)

• identifies addition as associative and commutative and that subtraction is neither

• applies the commutative and associative properties of addition to simplify mental computation (e.g. to calculate 23 + 9 + 7 23 + 9 + 7 2 3 + 9 + 7 adds 23 23 2 3 to 7 7 7 to get 30 30 3 0 , then adds 9 9 9 to give 39 39 3 9)

• applies inverse relationship of addition and subtraction to solve problems, including solving problems with digital tools, and uses the inverse relationship to justify an answer (e.g. when solving 23 − 16 23\space–\space16 2 3 − 1 6 chooses to use addition 16 + ? = 23 16\space+ \space ? = 23 1 6 + ? = 2 3 ; when using a calculator to solve 16 + ? = 38 16\space+\space? = 38 1 6 + ? = 3 8 decides to use subtraction and inputs 38 − 16 38-16 3 8 − 1 6)

• represents a wide range of additive problem situations involving two-digit numbers using appropriate addition and subtraction number sentences

Flexible strategies with three-digit numbers and beyond

• uses place value, standard and non-standard partitioning, trading or exchanging of units to mentally add and subtract numbers with 3 3 3 or more digits (e.g. to add 250 250 2 5 0 and 457 457 4 5 7 , partitions 250 250 2 5 0 into 2 2 2 hundreds and 5 5 5 tens, says 457 457 4 5 7 plus 2 2 2 hundreds is 657 657 6 5 7 , plus 5 5 5 tens is 707 707 7 0 7 ; to add 184 184 1 8 4 and 270 270 2 7 0 partitions into 150 + 34 + 250 + 20 = 400 + 34 + 20 = 454 150 + 34 + 250 + 20 = 400 + 34+ 20 = 454 1 5 0 + 3 4 + 2 5 0 + 2 0 = 4 0 0 + 3 4 + 2 0 = 4 5 4)

• chooses and uses strategies including algorithms and technology to efficiently solve additive problems (e.g. develops total costings for ingredients or materials for a task or combines measurements to determine the total amount of materials required)

• uses estimation to determine the reasonableness of the solution to an additive problem (e.g. when asked to add 249 249 2 4 9 and 437 437 4 3 7 says " 250 + 440 250 + 440 2 5 0 + 4 4 0 is 690 690 6 9 0 ")

• represents a wide range of familiar real-world additive situations involving large numbers as standard number sentences explaining their reasoning

Flexible strategies with fractions and decimals

• uses knowledge of place value and how to partition numbers in different ways to make the calculation easier when adding and subtracting decimals with up to 3 3 3 decimal places

• identifies and justifies the need for a common denominator when solving additive problems involving fractions with related denominators

• represents a wide range of familiar real-world additive situations involving decimals and common fractions as standard number sentences, explaining their reasoning

Snapshot – Number patterns and algebraic thinking

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

Content description

AC9M3A02

Learning progression extract

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

Identifying and creating patterns

• identifies the pattern unit with a simple repeating pattern (e.g. identifies the repeating pattern red, blue, red, blue with red then blue; identifies the repeating patterns in everyday activities, days of the week or seasons of the year)

• continues and creates repeating patterns involving the repetition of a pattern unit with shapes, movements, sounds, physical and virtual materials and numbers (e.g. circle, square, circle, square; stamp, clap, stamp, clap; 1 , 2 , 3 , 1 , 2 , 3 , 1 , 2 , 3 1,2,3, 1,2,3, 1,2,3 1 , 2 , 3 , 1 , 2 , 3 , 1 , 2 , 3)

• identifies, continues and creates simple geometric patterns involving shapes, physical or virtual materials

• determines a missing element within a pattern involving shapes, physical or virtual materials

• conceptually subitises by identifying patterns in standard representations (e.g. patterns within

ten-frames, uses finger patterns to represent a quantity)

Continuing and generalising patterns

• represents growing patterns where the difference between each successive term is constant, using physical and virtual materials, then summarising the pattern numerically (e.g. constructs a pattern using physical materials such as toothpicks, then summarises the number of toothpicks used as 4 , 7 , 10 , 13 4, 7, 10, 13 4 , 7 , 1 0 , 1 3 ...)

• describes rules for replicating or continuing growing patterns where the difference between each successive term is the same (e.g. to determine the next number in the pattern 3 , 6 , 9 , 12 3, 6, 9, 12 3 , 6 , 9 , 1 2 … you add 3 3 3 ; for 20 , 15 , 10 20, 15, 10 2 0 , 1 5 , 1 0 … the rule is described as each term is generated by subtracting 5 5 5 from the previous term)

Relational thinking

• uses the equals sign to represent "is equivalent to" or "is the same as" in number sentences (e.g. when asked to write an expression that is equivalent to 5 + 3 5 + 3 5 + 3 , responds 6 + 2 6 + 2 6 + 2 and then writes 5 + 3 = 6 + 2 5 + 3 = 6 + 2 5 + 3 = 6 + 2

• solves number sentences involving unknowns using the inverse relationship between addition and subtraction (e.g. 3 + 3\space + \space 3 + ? = 5 = 5 = 5 and knowing 5 − 3 = 2 5 \space− \space3 = 2 5 − 3 = 2 then ? must be 2 2 2)

Generalising patterns

• represents growing patterns where each successive term is determined by multiplying the previous term by a constant, using concrete materials, then summarises the pattern numerically (e.g. constructs a pattern using concrete materials such as tiles then summarises the pattern as 2 , 6 , 18 , 54 2, 6, 18, 54 2 , 6 , 1 8 , 5 4 ...)

• describes rules for copying or continuing patterns where each successive term is found by multiplying or dividing the previous term by the same factor (e.g. to determine the next term in the pattern 1 , 3 , 9 , 27 1, 3, 9, 27 1 , 3 , 9 , 2 7 … multiply by 3 3 3)

Relational thinking

• uses relational thinking to determine the missing values in a number sentence (e.g. 6 + 6 +\space 6 + ? = 7 + 4 = 7 + 4 = 7 + 4)

• uses equivalent number sentences involving addition or subtraction to calculate efficiently or to find an unknown (e.g. 527 + 96 = 527 + 96 = \space 5 2 7 + 9 6 = ? is the same as 527 + 100 − 4 = 527 + 100\space − 4 = \space 5 2 7 + 1 0 0 − 4 = ? ; If 6 + 6 + \space 6 + ? = 8 + 3 = 8 + 3 = 8 + 3 , then as I know 8 = 6 + 2 8 = 6 + 2 8 = 6 + 2 , I can write 8 + 3 8 + 3 8 + 3 as 6 + 2 + 3 6 + 2 + 3 6 + 2 + 3 , which is the same as 6 + 5 6 + 5 6 + 5 therefore '?' is 5 5 5)

• solves numerical equations involving unknowns using the inverse relationship between multiplication and division (e.g. determines the missing number in 2 × 2 \times\space 2 × ? = 10 = 10 = 1 0 knowing 10 ÷ 2 10 ÷ 2 1 0 ÷ 2 is equal to 5 5 5 then ? must be 5 5 5)

Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3A02

Continuum extract

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

• draw conclusions and make choices when completing tasks and explain the reasons for choices made

• draw conclusions and make choices when completing tasks, using observation and prior knowledge to provide reasons and construct arguments for choices made

• draw conclusions and make choices when completing tasks, using discipline knowledge to provide reasons and evaluate arguments for choices made

Snapshot – Consider alternatives

Critical and Creative Thinking: Generating: Consider alternatives

Content description

AC9M3A02

Continuum extract

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

• consider alternatives and explore different or creative ways to approach a task or problem

• consider alternatives by comparing different or creative ways to approach a task, issue or problem

and recommend a preferred option
• consider alternatives by challenging or creatively adjusting existing ideas in situations where current approaches do not work and recommend a preferred option

Resource – WS02 - Clean our school

By the end of Year 3, students order and represent natural numbers beyond 10 000.■They partition, rearrange and regroup two- and three-digit numbers in different ways to assist in calculations.■Students extend and use single-digit addition and related subtraction facts and apply additive strategies to model and solve problems involving two- and three-digit numbers. They use mathematical modelling to solve practical problems involving single-digit multiplication and division, recalling multiplication facts for twos, threes, fours, fives and tens, and using a range of strategies.■Students represent unit fractions and their multiples in different ways.■They make estimates and determine the reasonableness of financial and other calculations.■Students find unknown values in number sentences involving addition and subtraction.■They create algorithms to investigate numbers and explore simple patterns.

Students use familiar metric units when estimating, comparing and measuring the attributes of objects and events.■They identify angles as measures of turn and compare them to right angles.■Students estimate and compare measures of duration using formal units of time.■They represent money values in different ways.■Students make, compare and classify objects using key features. They interpret and create two-dimensional representations of familiar environments.

Students conduct guided statistical investigations involving categorical and discrete numerical data, and interpret their results in terms of the context.■They record, represent and compare data they have collected. Students use practical activities, observation or experiment to identify and describe outcomes and the likelihood of everyday events explaining reasoning.■They conduct repeated chance experiments and discuss variation in results.

AC9M3A02

extend and apply knowledge of addition and subtraction facts to 20 to develop efficient mental strategies for computation with larger numbers without a calculator

AC9M3SP02

interpret and create two-dimensional representations of familiar environments, locating key landmarks and objects relative to each other

AC9M3ST01

acquire data for categorical and discrete numerical variables to address a question of interest or purpose by observing, collecting and accessing data sets; record the data using appropriate methods including frequency tables and spreadsheets

AC9M3ST02

create and compare different graphical representations of data sets including using software where appropriate; interpret the data in terms of the context

AC9M3ST03

conduct guided statistical investigations involving the collection, representation and interpretation of data for categorical and discrete numerical variables with respect to questions of interest

AC9M3A03

recall and demonstrate proficiency with for 3 , 4 , 5 3, 4, 5 3 , 4 , 5 and 10 10 1 0 ; extend and apply facts to develop the related

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Elaborations
• using concrete or virtual manipulatives, groups and to recognise patterns and establish the 3 , 4
, 5 3, 4, 5 3 , 4 , 5 and 10 10 1 0 ; ; using the language of " 3 3 3 groups of 2 2 2 equals 6 6 6 "

to develop into " 3 3 3 twos are 6 6 6 " and extend to establish the 3 × 10 3 \times 10 3 × 1 0 and related

• recognising that when they multiply a number by 5 5 5 , the resulting number will either end in a 5 5 5 or a ; using a calculator or spreadsheet to generate a list of the of 5 5 5 to develop the multiplication and related for fives

• practising calculating and deriving for 3 , 4 , 5 3, 4, 5 3 , 4 , 5 and 10 10 1 0 , explaining and recalling the patterns in them and using them to derive related

• systematically exploring used for , comparing and describing what is happening, and using them to establish the for 3 , 4 , 5 3, 4, 5 3 , 4 , 5 and 10 10 1 0 ; for example, following the sequence of steps, the decisions being made and the resulting solution, recognising and generalising any emerging patterns

Students learn to:

recall and demonstrate proficiency with multiplication facts for 3 , 4 , 5 3, 4, 5 3 , 4 , 5 10 1 0 ; extend and apply facts to develop the related division facts

(AC9M3A03)

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

• Put ideas into action

Number sense and algebra

• Multiplicative strategies

• Number patterns and algebraic thinking

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

Managing and operating

• Select and operate tools

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Generating

• Consider alternatives

Resources

Work Samples

WS01 - Ways to make 18

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3A03

Continuum extract

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

• identify the main parts of a concept or problem and describe how these relate to each other

• identify and prioritise significant elements and relationships within a concept or problem

• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Put ideas into action

Critical and Creative Thinking: Generating: Put ideas into action

Content description

AC9M3A03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• put ideas into action by experimenting with options and predicting possible results
• put ideas into action by predicting an outcome, trialling options and assessing their effectiveness
• put ideas into action by predicting potential or future outcomes and systematically testing a range of options

Snapshot – Multiplicative strategies

Numeracy: Number sense and algebra: Multiplicative strategies

Content description

AC9M3A03

Learning progression extract

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

Repeated abstract composite units

• uses composite units in repeated addition using the unit a specified number of times (e.g. interprets " 4 4 4 lots of 3 3 3 " additively and calculates $3 + 3 + 3 + 3$ $3 + 3 + 3 + 3$ $3 + 3 + 3 + 3$ answering " 12 12 1 2 ")
• uses composite units in repeated subtraction using the unit a specified number of times (e.g. when asked "how many groups of 4 4 4 can be formed from our class of 24 24 2 4 ?", repeatedly takes away 4 4 4 from 24 24 2 4 and counts the number of times this can be done. Says " 20 , 16 , 12 , 8 , 4 20, 16, 12, 8, 4 2 0 , 1 6 , 1 2 , 8 , 4 and zero so we can form 6 6 6 groups of 4 4 4 ")

Coordinating composite units

• identifies and represents multiplication in various ways and solves simple multiplicative problems using these representations (e.g. represents multiplication as equal groups and arrays)
• identifies and represents division in various ways such as sharing division or grouping division (e.g. to share a carton of 12 12 1 2 eggs equally between 4 4 4 people, draws 12 12 1 2 dots and circles 3 3 3 groups of 4 4 4 with 3 3 3 in each share)
• identifies and represents multiplication and division abstractly using the symbols $\times$ $\times$ $\times$ and $\div$ $\div$ $\div$ (e.g. represents 3 3 3 groups of 4 4 4 as 3×4 3×4 3×4 ; uses $9 \div 3$ $9 \div 3$ $9 \div 3$ to represent 9 9 9 pieces of fruit being equally shared by 3 3 3 people)

Flexible strategies for single digit multiplication and division

• draws on the structure of multiplication to use known multiples in calculating related multiples (e.g. uses multiples of 4 4 4 to calculate multiples of 8 8 8)
• interprets a range of multiplicative situations using the context of the problem to form a number sentence (e.g. to calculate the total number of buttons in 2 containers, each with 5 buttons, uses the number sentence $2 \times 5 = 2 \times 5 = 2 \times 5 = ?$; if a packet of 20 20 2 0 pens is to be shared equally between 4 4 4 , writes $20 \div 4 = 20 \div 4 = 2 0 \div 4 = ?$)
• demonstrates flexibility in the use of single-digit multiplication facts (e.g. 7 7 7 boxes of 6 6 6 donuts is 42 42 4 2 donuts altogether because $7 \times 6 = 42$ $7 \times 6 = 42$ $7 \times 6 = 4 2$; multiplying any factor by one will always give a product of that factor i.e. $1 \times 6 = 6$ $1 \times 6 = 6$ $1 \times 6 = 6$; if you multiply any number by zero the result will always be zero)
• uses the commutative and distributive properties of multiplication to aid computation when solving problems (e.g. 5×6 5×6 5×6 is the same as 6×5 6×5 6×5 ; calculates 7×4 7×4 7×4 by adding 5×4 5×4 5×4 and 2×4 2×4 2×4)
• applies mental strategies for multiplication to division and can justify their use (e.g. to divide 64 64 6 4 by 4 4 4 , halves 64 64 6 4 then halves 32 32 3 2 to get an answer of 16 16 1 6)
• explains the idea of a remainder as what is "left over" from the division (e.g. an incomplete group, lot of, next row or multiple)

Snapshot – Number patterns and algebraic thinking

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

Content description

AC9M3A03

Learning progression extract

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

Continuing and generalising patterns

• represents growing patterns where the difference between each successive term is constant, using physical and virtual materials, then summarising the pattern numerically (e.g. constructs a pattern using physical materials such as toothpicks, then summarises the number of toothpicks used as 4 , 7 , 10 , 13 4, 7, 10, 13 4 , 7 , 1 0 , 1 3 ...)

• describes rules for replicating or continuing growing patterns where the difference between each successive term is the same (e.g. to determine the next number in the pattern 3 , 6 , 9 , 12 3, 6, 9, 12 3 , 6 , 9 , 1 2 … you add 3 3 3 ; for 20 , 15 , 10 20, 15, 10 2 0 , 1 5 , 1 0 … the rule is described as each term is generated by subtracting 5 5 5 from the previous term)

Relational thinking

• uses the equals sign to represent "is equivalent to" or "is the same as" in number sentences (e.g. when asked to write an expression that is equivalent to 5 + 3 5 + 3 5 + 3 , responds 6 + 2 6 + 2 6 + 2 and then writes 5 + 3 = 6 + 2 5 + 3 = 6 + 2 5 + 3 = 6 + 2

• solves number sentences involving unknowns using the inverse relationship between addition and subtraction (e.g. 3 + 3\space + \space 3 + ? = 5 = 5 = 5 and knowing 5 – 3 = 2 5 \space– \space3 = 2 5 – 3 = 2 then ? must be 2 2 2)

Generalising patterns

• represents growing patterns where each successive term is determined by multiplying the previous term by a constant, using concrete materials, then summarises the pattern numerically (e.g. constructs a pattern using concrete materials such as tiles then summarises the pattern as 2 , 6 , 18 , 54 2, 6, 18, 54 2 , 6 , 1 8 , 5 4 ...)

• describes rules for copying or continuing patterns where each successive term is found by multiplying or dividing the previous term by the same factor (e.g. to determine the next term in the pattern 1 , 3 , 9 , 27 1, 3, 9, 27 1 , 3 , 9 , 2 7 … multiply by 3 3 3)

Relational thinking

• uses relational thinking to determine the missing values in a number sentence (e.g. 6 + 6 +\space 6 + ? = 7 + 4 = 7 + 4 = 7 + 4)

• uses equivalent number sentences involving addition or subtraction to calculate efficiently or to find an unknown (e.g. 527 + 96 = 527 + 96 = \space 5 2 7 + 9 6 = ? is the same as 527 + 100 – 4 = 527 + 100\space – 4 = \space 5 2 7 + 1 0 0 – 4 = ? ; If 6 + 6 + \space 6 + ? = 8 + 3 = 8 + 3 = 8 + 3 , then as I know 8 = 6 + 2 8 = 6 + 2 8 = 6 + 2 , I can write 8 + 3 8 + 3 8 + 3 as 6 + 2 + 3 6 + 2 + 3 6 + 2 + 3 , which is the same as 6 + 5 6 + 5 6 + 5 therefore '?' is 5 5 5)

• solves numerical equations involving unknowns using the inverse relationship between multiplication and division (e.g. determines the missing number in 2 × 2 \times\space 2 × ? = 10 = 10 = 1 0 knowing 10 ÷ 2 10 ÷ 2 1 0 ÷ 2 is equal to 5 5 5 then ? must be 5 5 5)

Generalising patterns

• creates and interprets tables used to summarise patterns (e.g. the cost of hiring a bike based on the cost per hour)

• identifies a single operation rule in numerical patterns and records it in words (e.g. European dress size = Australian dress size + 30 +30 + 3 0)

• relates the position number of shapes within a pattern to the rule for the sequence (e.g. number of counters = = = shape number + 2 + 2 + 2)

• determines a higher term of a pattern using the pattern's rule

• extends number patterns to include rational numbers (e.g. 2 , 2 1 4 , 2 1 2 , 2 3 4 , 3 2, 2 \frac14, 2\frac12, 2\frac34, 3 2 , 2 4 1 ■ , 2 2 1 ■ , 2 4 3 ■ , 3 …; 2 , 2, 2 , - 4 , 8 , 4, 8, 4 , 8 , - 16 16 1 6 …; 10 , 9.8 , 9.6 , 9.4 10, 9.8, 9.6, 9.4 1 0 , 9 . 8 , 9 . 6 , 9 . 4 …)

Relational thinking

• solves numerical equations involving one or more operations following conventions of order of operations (e.g. 5 × 2 + 4 = 4 × 2 + 5 \times 2 + 4 = 4 \times 2 + 5 × 2 + 4 = 4 × 2 + ?; 6 + 6 + 6 + ? × 4 = 9 × 2 \times 4 = 9 \times 2 × 4 = 9 × 2)

• identifies and uses equivalence in number sentences to solve multiplicative problems involving numerical equations (e.g. uses a number balance or other materials to represent the number sentence 6 × 4 = 12 × 6 \times 4 = 12 \times 6 × 4 = 1 2 × ? in order to solve a problem)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3A03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the main parts of a concept or problem and describe how these relate to each other
• identify and prioritise significant elements and relationships within a concept or problem
• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Select and operate tools

Digital Literacy: Managing and operating: Select and operate tools

Content description

AC9M3A03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• use familiar digital tools to complete tasks and consolidate learning
• attempt to solve a problem before seeking help
• select and use a range of digital tools to complete tasks
• attempt to solve a problem individually and with peers before seeking help
• select and use the core features of digital tools to efficiently complete tasks
• troubleshoot basic problems and identify repetitive tasks to automate

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3A03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the main parts of a concept or problem and describe how these relate to each other
• identify and prioritise significant elements and relationships within a concept or problem
• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3A03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks and explain the reasons for choices made
• draw conclusions and make choices when completing tasks, using observation and prior knowledge to provide reasons and construct arguments for choices made
• draw conclusions and make choices when completing tasks, using discipline knowledge to provide reasons and evaluate arguments for choices made

Snapshot – Consider alternatives

Critical and Creative Thinking: Generating: Consider alternatives

Content description

AC9M3A03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• consider alternatives and explore different or creative ways to approach a task or problem
• consider alternatives by comparing different or creative ways to approach a task, issue or problem and recommend a preferred option
• consider alternatives by challenging or creatively adjusting existing ideas in situations where

current approaches do not work and recommend a preferred option

AC9M3M01

identify which metric are used to everyday items; use measurements of familiar items and known to make estimates

•

•

Elaborations

• examining the packaging on supermarket items to determine the metric unit used to describe the or of the contents

• identifying items that have a of one kilogram or 500 500 5 0 0 grams, or a of one litre or 500 500 5 0 0 millilitres and using these benchmarks to estimate the or of other things, explaining their reasoning

• estimating the height of a tree by comparing it to the height of their friend and quoting the result as "the tree is about 3 3 3 times as tall"; estimating the of a fish tank by using a litre milk carton as a benchmark

• choosing and using metres to estimate the dimensions of the classroom

Students learn to:

identify which metric units are used to measure everyday items; use measurements and known units to make estimates

(AC9M3M01)

General capabilities and cross-curriculum priorities

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

Analysing

• Interpret concepts and problems

Measurement and geometry

• Understanding units of measurement

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

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Analysing

• Interpret concepts and problems

Measurement and geometry

• Understanding units of measurement

Number sense and algebra

• Multiplicative strategies

Related content

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

AC9S3I03

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3M01

Continuum extract

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

• identify the main parts of a concept or problem and describe how these relate to each other

• identify and prioritise significant elements and relationships within a concept or problem

• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Understanding units of measurement

Numeracy: Measurement and geometry: Understanding units of measurement

Content description

AC9M3M01

Learning progression extract

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

Introducing metric units

• recognises standard metric units are used to measure attributes of shapes, objects and events (e.g. identifies units used to measure everyday items; recognises that distances in athletic events are measured in metres such as 100 and 200 metre races)

• uses the array structure to calculate area measured in square units (e.g. draws and describes the column and row structure to represent area as an array of square units, moving beyond counting of squares by ones)

• estimates the measurement of an attribute by visualising between known informal units (e.g. uses a cup to measure a half cup of rice; determines that about 3 3 3 sheets of paper would fit across a desk, and close to 6 6 6 might fit along it, so the area of the desk is about 18 18 1 8 sheets of paper)

• explains the difference between different attributes of the same shape or object and their associated metric units (e.g. length, mass and capacity)

Angles as measures of turn

• describes the size of an angle as a measure of turn and compares familiar measures of turn to known angles (e.g. the angle between the blades gets bigger as you open the scissors; a quarter turn creates a right angle)

Using metric units

• measures, compares and estimates length, perimeter and area of a surface using metric units (e.g. traces around their hand on centimetre grid paper and counts the number of squares to estimate the area of their hand print to be about 68 68 6 8 square centimetres)

• uses scaled instruments to measure length, mass, capacity and temperature, correctly interpreting any unlabelled calibrations (e.g. 3 3 3 marks between the numbered marks for kilograms means each gap represents 250 250 2 5 0 grams, so it's divided into quarter kilogram intervals)

• estimates measurements of an attribute using metric units (e.g. estimates the width of their thumb is close to a centimetre; compares the mass of 2 2 2 bags of fruit by hefting and says "this one feels like it weighs more than a kilogram"; approximates capacities based on the known capacity of a 600 600 6 0 0 -millilitre bottle of water)

Angles as measures of turn

• compares angles to a right angle and classifies them as equal to, less than or greater than a right angle (e.g. directly compares the size of angles to a right angle, by using the corner of a book; uses reference to a right angle to describe body positions during a choreographed dance or when practising a skill for a particular sport)

Using metric units

• calculates perimeter using properties of two-dimensional shapes to determine unknown lengths

• measures and calculates the area of different shapes using metric units and a range of strategies

Angles as measures of turn

• estimates and measures angles in degrees up to one revolution (e.g. uses a protractor to measure the size of an angle; estimates angles, such as those formed at the elbows when releasing an object; determines the effect of angles on the trajectory, height and distance of flight during jumps and throws in athletics)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3M01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the main parts of a concept or problem and describe how these relate to each other
• identify and prioritise significant elements and relationships within a concept or problem
• identify the relevant and significant aspects of a concept or problem, understanding that
approaches may change depending on the subject or learning area

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3M01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the main parts of a concept or problem and describe how these relate to each other
• identify and prioritise significant elements and relationships within a concept or problem
• identify the relevant and significant aspects of a concept or problem, understanding that
approaches may change depending on the subject or learning area

Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3M01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks and explain the reasons for choices made
• draw conclusions and make choices when completing tasks, using observation and prior knowledge to
provide reasons and construct arguments for choices made
• draw conclusions and make choices when completing tasks, using discipline knowledge to provide
reasons and evaluate arguments for choices made

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3M01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the main parts of a concept or problem and describe how these relate to each other
• identify and prioritise significant elements and relationships within a concept or problem
• identify the relevant and significant aspects of a concept or problem, understanding that
approaches may change depending on the subject or learning area

Snapshot – Understanding units of measurement

Numeracy: Measurement and geometry: Understanding units of measurement

Content description

AC9M3M01

Learning progression extract

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

Introducing metric units

• recognises standard metric units are used to measure attributes of shapes, objects and events
(e.g. identifies units used to measure everyday items; recognises that distances in athletic events
are measured in metres such as 100 and 200 metre races)
• uses the array structure to calculate area measured in square units (e.g. draws and describes the
column and row structure to represent area as an array of square units, moving beyond counting of
squares by ones)
• estimates the measurement of an attribute by visualising between known informal units (e.g. uses a
cup to measure a half cup of rice; determines that about 3 3 3 sheets of paper would fit across a
desk, and close to 6 6 6 might fit along it, so the area of the desk is about 18 18 1 8 sheets of

paper)

• explains the difference between different attributes of the same shape or object and their associated metric units (e.g. length, mass and capacity)

Angles as measures of turn

• describes the size of an angle as a measure of turn and compares familiar measures of turn to known angles (e.g. the angle between the blades gets bigger as you open the scissors; a quarter turn creates a right angle)

Using metric units

• measures, compares and estimates length, perimeter and area of a surface using metric units (e.g. traces around their hand on centimetre grid paper and counts the number of squares to estimate the area of their hand print to be about 68 square centimetres)

• uses scaled instruments to measure length, mass, capacity and temperature, correctly interpreting any unlabelled calibrations (e.g. 3 marks between the numbered marks for kilograms means each gap represents 250 grams, so it's divided into quarter kilogram intervals)

• estimates measurements of an attribute using metric units (e.g. estimates the width of their thumb is close to a centimetre; compares the mass of 2 bags of fruit by hefting and says "this one feels like it weighs more than a kilogram"; approximates capacities based on the known capacity of a 600-millilitre bottle of water)

Angles as measures of turn

• compares angles to a right angle and classifies them as equal to, less than or greater than a right angle (e.g. directly compares the size of angles to a right angle, by using the corner of a book; uses reference to a right angle to describe body positions during a choreographed dance or when practising a skill for a particular sport)

Using metric units

• calculates perimeter using properties of two-dimensional shapes to determine unknown lengths

• measures and calculates the area of different shapes using metric units and a range of strategies

Angles as measures of turn

• estimates and measures angles in degrees up to one revolution (e.g. uses a protractor to measure the size of an angle; estimates angles, such as those formed at the elbows when releasing an object; determines the effect of angles on the trajectory, height and distance of flight during jumps and throws in athletics)

Snapshot – Multiplicative strategies

Numeracy: Number sense and algebra: Multiplicative strategies

Content description

AC9M3M01

Learning progression extract

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

Repeated abstract composite units

• uses composite units in repeated addition using the unit a specified number of times (e.g. interprets " 4 lots of 3 " additively and calculates $3 + 3 + 3 + 3$ answering " 12 ")

• uses composite units in repeated subtraction using the unit a specified number of times (e.g. when asked "how many groups of 4 can be formed from our class of 24 ?", repeatedly takes away 4 from 24 and counts the number of times this can be done. Says " $20, 16, 12, 8, 4$ and zero so we can form 6 groups of 4 ")

Coordinating composite units

• identifies and represents multiplication in various ways and solves simple multiplicative problems using these representations (e.g. represents multiplication as equal groups and arrays)

• identifies and represents division in various ways such as sharing division or grouping division (e.g. to share a carton of 12 eggs equally between 4 people, draws 12 dots and circles 3 groups of 4 with 3 in each share)

• identifies and represents multiplication and division abstractly using the symbols $\times$ and $\div$ (e.g. represents 3 groups of 4 as 3×4 ; uses $9 \div 3$ to represent 9 pieces of fruit being equally shared by 3 people)

Flexible strategies for single digit multiplication and division

• draws on the structure of multiplication to use known multiples in calculating related multiples (e.g. uses multiples of 4 4 4 to calculate multiples of 8 8 8)

• interprets a range of multiplicative situations using the context of the problem to form a number sentence (e.g. to calculate the total number of buttons in 2 containers, each with 5 buttons, uses the number sentence $2 \times 5 = 2 \times 5 = 2 \times 5 = ?$; if a packet of 20 20 2 0 pens is to be shared equally between 4 4 4 , writes $20 \div 4 = 20 \div 4 = 2 0 \div 4 = ?$)

• demonstrates flexibility in the use of single-digit multiplication facts (e.g. 7 7 7 boxes of 6 6 6 donuts is 42 42 4 2 donuts altogether because $7 \times 6 = 42$ $7 \times 6 = 42$ $7 \times 6 = 4 2$; multiplying any factor by one will always give a product of that factor i.e. $1 \times 6 = 6$ $1 \times 6 = 6$ $1 \times 6 = 6$; if you multiply any number by zero the result will always be zero)

• uses the commutative and distributive properties of multiplication to aid computation when solving problems (e.g. 5×6 5×6 5×6 is the same as 6×5 6×5 6×5 ; calculates 7×4 7×4 7×4 by adding 5×4 5×4 5×4 and 2×4 2×4 2×4)

• applies mental strategies for multiplication to division and can justify their use (e.g. to divide 64 64 6 4 by 4 4 4 , halves 64 64 6 4 then halves 32 32 3 2 to get an answer of 16 16 1 6)

• explains the idea of a remainder as what is "left over" from the division (e.g. an incomplete group, lot of, next row or multiple)

AC9M3M02

and compare using familiar metric of length, and , and instruments with labelled markings

•

Elaborations

• making a measuring tape using metric of length and using it to and compare things; for example, the girth of a tree; explaining that the on a ruler show the beginning and end of each unit

• using a strip of centimetre grid paper to and compare the length of , connecting this with centimetre on a ruler and using of a graduation to give a more accurate

• discussing how the of a container or usually refers to the amount of liquid it can hold, measured in millilitres and litres; comparing the of different sizes of familiar drinks; for example, 600 600 6 0 0 millilitres, one litre, 2 2 2 litre and 3 3 3 litre milk containers

• measuring and comparing the of and of containers, using measuring jugs and kitchen or other and standard metric of millilitres, litres, grams and kilograms; interpreting and explaining what the on the measuring jug or

• comparing the of different beakers used in science lessons and using the numbered graduations to out different capacities of liquid

Students learn to:

measure and compare objects using familiar metric units of length, mass and capac

instruments with labelled markings

(AC9M3M02)

General capabilities and cross-curriculum priorities

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

Measurement and geometry

• Understanding units of measurement

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

Analysing

• Interpret concepts and problems

• Draw conclusions and provide reasons

Analysing

• Interpret concepts and problems

Analysing

• Interpret concepts and problems

Related content

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

AC9S3I03

AC9S3U03

Snapshot – Understanding units of measurement

Numeracy: Measurement and geometry: Understanding units of measurement

Content description

AC9M3M02

Learning progression extract

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

Introducing metric units

• recognises standard metric units are used to measure attributes of shapes, objects and events (e.g. identifies units used to measure everyday items; recognises that distances in athletic events are measured in metres such as 100 and 200 metre races)

• uses the array structure to calculate area measured in square units (e.g. draws and describes the column and row structure to represent area as an array of square units, moving beyond counting of squares by ones)

• estimates the measurement of an attribute by visualising between known informal units (e.g. uses a cup to measure a half cup of rice; determines that about 3 3 3 sheets of paper would fit across a desk, and close to 6 6 6 might fit along it, so the area of the desk is about 18 18 1 8 sheets of paper)

• explains the difference between different attributes of the same shape or object and their associated metric units (e.g. length, mass and capacity)

Angles as measures of turn

• describes the size of an angle as a measure of turn and compares familiar measures of turn to known angles (e.g. the angle between the blades gets bigger as you open the scissors; a quarter turn creates a right angle)

Using metric units

• measures, compares and estimates length, perimeter and area of a surface using metric units (e.g. traces around their hand on centimetre grid paper and counts the number of squares to estimate the area of their hand print to be about 68 68 6 8 square centimetres)

• uses scaled instruments to measure length, mass, capacity and temperature, correctly interpreting any unlabelled calibrations (e.g. 3 3 3 marks between the numbered marks for kilograms means each gap represents 250 250 2 5 0 grams, so it's divided into quarter kilogram intervals)

• estimates measurements of an attribute using metric units (e.g. estimates the width of their thumb is close to a centimetre; compares the mass of 2 2 2 bags of fruit by hefting and says "this one feels like it weighs more than a kilogram"; approximates capacities based on the known capacity of a 600 600 6 0 0 -millilitre bottle of water)

Angles as measures of turn

• compares angles to a right angle and classifies them as equal to, less than or greater than a right angle (e.g. directly compares the size of angles to a right angle, by using the corner of a book; uses reference to a right angle to describe body positions during a choreographed dance or when practising a skill for a particular sport)

Using metric units

• calculates perimeter using properties of two-dimensional shapes to determine unknown lengths

• measures and calculates the area of different shapes using metric units and a range of strategies

Angles as measures of turn

• estimates and measures angles in degrees up to one revolution (e.g. uses a protractor to measure the size of an angle; estimates angles, such as those formed at the elbows when releasing an object; determines the effect of angles on the trajectory, height and distance of flight during jumps and throws in athletics)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3M02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the main parts of a concept or problem and describe how these relate to each other
• identify and prioritise significant elements and relationships within a concept or problem
• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3M02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks and explain the reasons for choices made
• draw conclusions and make choices when completing tasks, using observation and prior knowledge to provide reasons and construct arguments for choices made
• draw conclusions and make choices when completing tasks, using discipline knowledge to provide reasons and evaluate arguments for choices made

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3M02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the main parts of a concept or problem and describe how these relate to each other
• identify and prioritise significant elements and relationships within a concept or problem
• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3M02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks and explain the reasons for choices made
• draw conclusions and make choices when completing tasks, using observation and prior knowledge to provide reasons and construct arguments for choices made
• draw conclusions and make choices when completing tasks, using discipline knowledge to provide reasons and evaluate arguments for choices made

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3M02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the main parts of a concept or problem and describe how these relate to each other
• identify and prioritise significant elements and relationships within a concept or problem
• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3M02

Continuum extract

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

• identify the main parts of a concept or problem and describe how these relate to each other

• identify and prioritise significant elements and relationships within a concept or problem

• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

AC9M3M03

recognise and use the relationship between formal of time including days, hours, minutes and seconds to estimate and compare the of

•

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Elaborations

• estimating how long it would take to read a passage of text, and sharing this information to demonstrate understanding of formal of of time

• planning a sequence of based on estimates of the of each ; for example, planning a of activities for a class party by estimating how long each game or activity will take

• reading or setting the time on digital devices to the minute or second; for example, setting an online timing device to count down from a time; or setting the time on a digital clock

• using sand timers and digital timers to and check estimates of short of time, such as one minute, 3 3 3 minutes and 5 5 5 minutes

• exploring how cultural accounts of First Nations Australians explain cycles of time that involve the sun, moon and stars

Students learn to:

recognise and use the relationship between formal units of time including days, hou seconds to estimate and compare the duration of events

(AC9M3M03)

General capabilities and cross-curriculum priorities

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

Inquiring

• Identify, process and evaluate information

Measurement and geometry

• Measuring time

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

Analysing

• Draw conclusions and provide reasons

Inquiring

• Identify, process and evaluate information

Managing and operating

• Select and operate tools

Inquiring

• Identify, process and evaluate information

Culture

• First Nations Australian societies are diverse and have distinct cultural expressions such as language, customs and beliefs. As First Nations Peoples of Australia, they have the right to maintain, control, protect and develop their cultural expressions, while also maintaining the right

to control, protect and develop culture as Indigenous Cultural and Intellectual Property.

Snapshot – Identify, process and evaluate information

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

Content description

AC9M3M03

Continuum extract

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

• identify and explore relevant information from a range of sources, including visual information and digital sources

• identify and explain similarities and differences in selected information

• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources

• condense and combine selected information related to the topic of study

• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources

• compare information and opinion that can be verified against claims based on personal preference

Snapshot – Measuring time

Numeracy: Measurement and geometry: Measuring time

Content description

AC9M3M03

Learning progression extract

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

Units of time

• uses and justifies the appropriate unit of time to describe the duration of events (e.g. uses minutes to describe time taken to clean teeth; uses hours to describe the duration of a long-distance car trip)

• identifies that the clockface is a circle subdivided into 12 12 1 2 parts and uses these to allocate hour markers

• identifies that hour markers on a clock can also represent quarter-hour and half-hour marks and shows that there is a minute hand and an hour hand on a clock

• identifies the direction of clockwise and anticlockwise relating it to the hands of the clock

• reads time on analog clocks to the hour, half-hour and quarter-hour

• names and orders days of the week and months of the year

• uses a calendar to identify the date and determine the number of days in each month

Measuring time

• uses standard instruments and units to describe and measure time to hours, minutes and seconds (e.g. measures time using a stopwatch; sets a timer on an appliance; estimates the time it would take to walk to the other side of the school oval and uses minutes as the unit of measurement)

• reads and interprets different representations of time (e.g. reads the time on an analog clock, watch or digital clock; uses lap times on a stop watch or fitness app)

• identifies the minute hand movement on an analog clock and the 60 60 6 0 -minute markings, interpreting the numbers as representing lots of 5 5 5 (e.g. interprets the time on an analog clock to read 7 7 7 : 40 40 4 0 , by reading the hour hand and the minute hand and explaining how they are related)

• uses smaller units of time such as seconds to record duration of events (e.g. records reaction times in sports or in relation to safe driving)

• uses a calendar to calculate time intervals in days and weeks, bridging months (e.g. develops fitness plans, tracks growth and development progress and sets realistic personal and health goals using a calendar)

Relating units of time

• identifies the relationship between units of time (e.g. months and years; seconds, minutes and hours)

• uses am and pm notation to distinguish between morning and afternoon using 12 12 1 2 -hour time

• determines elapsed time using different units such as hours and minutes, weeks and days (e.g. when

developing project plans, time schedules and tracking growth)
• interprets and uses a timetable
• constructs timelines using a time scale (e.g. chronologically sequences the history of the school)

Snapshot – Identify, process and evaluate information

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

Content description

AC9M3M03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and explore relevant information from a range of sources, including visual information
and digital sources
• identify and explain similarities and differences in selected information
• identify and examine relevant information and opinion from a range of sources, including visual
information and digital sources
• condense and combine selected information related to the topic of study
• identify and examine relevant information and opinion from a range of sources, including visual
information and digital sources
• compare information and opinion that can be verified against claims based on personal preference

Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3M03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks and explain the reasons for choices made
• draw conclusions and make choices when completing tasks, using observation and prior knowledge to
provide reasons and construct arguments for choices made
• draw conclusions and make choices when completing tasks, using discipline knowledge to provide
reasons and evaluate arguments for choices made

Snapshot – Identify, process and evaluate information

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

Content description

AC9M3M03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and explore relevant information from a range of sources, including visual information
and digital sources
• identify and explain similarities and differences in selected information
• identify and examine relevant information and opinion from a range of sources, including visual
information and digital sources
• condense and combine selected information related to the topic of study
• identify and examine relevant information and opinion from a range of sources, including visual
information and digital sources
• compare information and opinion that can be verified against claims based on personal preference

Snapshot – Select and operate tools

Digital Literacy: Managing and operating: Select and operate tools

Content description

AC9M3M03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• use familiar digital tools to complete tasks and consolidate learning
• attempt to solve a problem before seeking help
• select and use a range of digital tools to complete tasks

- attempt to solve a problem individually and with peers before seeking help
- select and use the core features of digital tools to efficiently complete tasks
- troubleshoot basic problems and identify repetitive tasks to automate

Snapshot – Identify, process and evaluate information

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

Content description

AC9M3M03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
- identify and explore relevant information from a range of sources, including visual information and digital sources
- identify and explain similarities and differences in selected information
- identify and examine relevant information and opinion from a range of sources, including visual information and digital sources
- condense and combine selected information related to the topic of study
- identify and examine relevant information and opinion from a range of sources, including visual information and digital sources
- compare information and opinion that can be verified against claims based on personal preference

AC9M3M04

describe the relationship between the hours and minutes on analog and digital clocks, and read the time to the nearest minute

-

Elaborations

- representing and reading the time on an using the markings and the positions of the hands, to the nearest minute mark or five-minute interval
- reading and connecting analog and digital time, interpreting times, recognising and using the language of time; for example, 12 12 1 2 : 15 15 1 5 as a quarter past 12 12 1 2 , or 15 15 1 5 minutes past 12 , 12 12, 12 1 2 , 1 2 : 45 45 4 5 as a quarter to one or 15 15 1 5 minutes before one o'clock and 10 10 1 0 : 05 05 0 5 as 5 5 5 minutes past 10 10 1 0
- reading throughout the day, and noticing and connecting the position of the hour hand and the distance the minute hand has travelled during the current hour

Students learn to:

describe the relationship between the hours and minutes on analog and digital cloc time to the nearest minute

(AC9M3M04)
General capabilities and cross-curriculum priorities

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

Measurement and geometry

- Measuring time

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 .

Measurement and geometry

- Understanding units of measurement

Snapshot – Measuring time

Numeracy: Measurement and geometry: Measuring time

Content description

AC9M3M04

Learning progression extract

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

Units of time

• uses and justifies the appropriate unit of time to describe the duration of events (e.g. uses minutes to describe time taken to clean teeth; uses hours to describe the duration of a long-distance car trip)

• identifies that the clockface is a circle subdivided into 12 12 1 2 parts and uses these to allocate hour markers

• identifies that hour markers on a clock can also represent quarter-hour and half-hour marks and shows that there is a minute hand and an hour hand on a clock

• identifies the direction of clockwise and anticlockwise relating it to the hands of the clock

• reads time on analog clocks to the hour, half-hour and quarter-hour

• names and orders days of the week and months of the year

• uses a calendar to identify the date and determine the number of days in each month

Measuring time

• uses standard instruments and units to describe and measure time to hours, minutes and seconds (e.g. measures time using a stopwatch; sets a timer on an appliance; estimates the time it would take to walk to the other side of the school oval and uses minutes as the unit of measurement)

• reads and interprets different representations of time (e.g. reads the time on an analog clock, watch or digital clock; uses lap times on a stop watch or fitness app)

• identifies the minute hand movement on an analog clock and the 60 60 6 0 -minute markings, interpreting the numbers as representing lots of 5 5 5 (e.g. interprets the time on an analog clock to read 7 7 7 : 40 40 4 0 , by reading the hour hand and the minute hand and explaining how they are related)

• uses smaller units of time such as seconds to record duration of events (e.g. records reaction times in sports or in relation to safe driving)

• uses a calendar to calculate time intervals in days and weeks, bridging months (e.g. develops fitness plans, tracks growth and development progress and sets realistic personal and health goals using a calendar)

Relating units of time

• identifies the relationship between units of time (e.g. months and years; seconds, minutes and hours)

• uses am and pm notation to distinguish between morning and afternoon using 12 12 1 2 -hour time

• determines elapsed time using different units such as hours and minutes, weeks and days (e.g. when developing project plans, time schedules and tracking growth)

• interprets and uses a timetable

• constructs timelines using a time scale (e.g. chronologically sequences the history of the school)

Snapshot – Understanding units of measurement

Numeracy: Measurement and geometry: Understanding units of measurement

Content description

AC9M3M04

Learning progression extract

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

Introducing metric units

• recognises standard metric units are used to measure attributes of shapes, objects and events (e.g. identifies units used to measure everyday items; recognises that distances in athletic events are measured in metres such as 100 and 200 metre races)

• uses the array structure to calculate area measured in square units (e.g. draws and describes the column and row structure to represent area as an array of square units, moving beyond counting of squares by ones)

• estimates the measurement of an attribute by visualising between known informal units (e.g. uses a cup to measure a half cup of rice; determines that about 3 3 3 sheets of paper would fit across a desk, and close to 6 6 6 might fit along it, so the area of the desk is about 18 18 1 8 sheets of paper)

• explains the difference between different attributes of the same shape or object and their associated metric units (e.g. length, mass and capacity)

Angles as measures of turn

• describes the size of an angle as a measure of turn and compares familiar measures of turn to

known angles (e.g. the angle between the blades gets bigger as you open the scissors; a quarter turn creates a right angle)

Using metric units

• measures, compares and estimates length, perimeter and area of a surface using metric units (e.g. traces around their hand on centimetre grid paper and counts the number of squares to estimate the area of their hand print to be about 68 68 6 8 square centimetres)

• uses scaled instruments to measure length, mass, capacity and temperature, correctly interpreting any unlabelled calibrations (e.g. 3 3 3 marks between the numbered marks for kilograms means each gap represents 250 250 2 5 0 grams, so it's divided into quarter kilogram intervals)

• estimates measurements of an attribute using metric units (e.g. estimates the width of their thumb is close to a centimetre; compares the mass of 2 2 2 bags of fruit by hefting and says "this one feels like it weighs more than a kilogram"; approximates capacities based on the known capacity of a 600 600 6 0 0 -millilitre bottle of water)

Angles as measures of turn

• compares angles to a right angle and classifies them as equal to, less than or greater than a right angle (e.g. directly compares the size of angles to a right angle, by using the corner of a book; uses reference to a right angle to describe body positions during a choreographed dance or when practising a skill for a particular sport)

Using metric units

• calculates perimeter using properties of two-dimensional shapes to determine unknown lengths
• measures and calculates the area of different shapes using metric units and a range of strategies

Angles as measures of turn

• estimates and measures angles in degrees up to one revolution (e.g. uses a protractor to measure the size of an angle; estimates angles, such as those formed at the elbows when releasing an object; determines the effect of angles on the trajectory, height and distance of flight during jumps and throws in athletics)

AC9M3M05

identify as and compare with in everyday situations

•

Elaborations

• using quarter, half and three-quarter turns and comparing them to a ; for example, a quarter turn is the same as a ; a half a turn is greater than a and is the same as 2 2 2 ; a three-quarter turn is greater than a and is the same as 3 3 3

• recognising that occur at the corners of many everyday ; for example, books, windows, table tops and whiteboards

• identifying that are bigger than, smaller than and the same as a in the environment; for example, opening doors partially and fully and comparing the created to a

• exploring First Nations Australian children's instructive games to investigate as ; for example, the game Waayin from the Datiwuy People in the northern part of the Northern Territory

Students learn to:

identify angles as measures of turn and compare angles with right angles in everyd

(AC9M3M05)

General capabilities and cross-curriculum priorities

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

Measurement and geometry

• Understanding geometric properties
• Understanding units of measurement

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

Inquiring

• Identify, process and evaluate information

Inquiring

• Identify, process and evaluate information

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.

Snapshot – Understanding geometric properties

Numeracy: Measurement and geometry: Understanding geometric properties

Content description

AC9M3M05

Learning progression extract

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

Features of shapes and objects

• identifies and describes features of shapes and objects (e.g. sides, corners, faces, edges and vertices)

• sorts and classifies familiar shapes and objects based on obvious features (e.g. triangles have 3 3 3 sides; a sphere is round like a ball)

Transformations

• identifies features of shapes and objects of different sizes and in different orientations in the environment (e.g. identifies a rotated view of an object made out of centicubes; compares representation of familiar shapes and objects in visual artworks from different cultures, times and places commenting on their features)

• explains that the shape or object does not change when presented in different orientations (e.g. a square remains a square when rotated)

Angles

• identifies angles in the environment (e.g. an angle formed when a door is opened; identifies that there are 4 4 4 angles in a square)

Properties of shapes and objects

• identifies the relationship between the number of sides of a two-dimensional shape and the number of vertices (e.g. if the shape has 4 4 4 sides, it has 4 4 4 vertices)

• describes and identifies the two-dimensional shapes that form the faces of three-dimensional objects (e.g. recognises the faces of a triangular prism as triangles and rectangles)

• represents shapes and objects (e.g. drawing and sketching; model building such as skeletal models and centi-cubes; using digital drawing packages; manipulates body to create shapes and objects when choreographing dance)

Transformations

• determines whether a shape has line symmetry (e.g. folds paper cut-outs of basic shapes to demonstrate which has line symmetry and which does not)

• identifies symmetry in the environment

• identifies and creates geometrical patterns involving the repetition of familiar shapes (e.g. uses pattern blocks to create a pattern and describes how the pattern was created)

Angles

• compares angles to a right angle, classifying them as greater than, less than or equal to a right angle

Properties of shapes and object

• identifies, names and classifies two-dimensional shapes according to their side and angle properties (e.g. describes a square as a regular rectangle)

• identifies key features of shapes (e.g. explains that quadrilaterals have 2 2 2 diagonals however they are not always equal in length)

• aligns three-dimensional objects to their two-dimensional nets

• identifies the relationship between the number of faces, edges and the number of vertices of a three-dimensional object (e.g. uses a table to list the number of faces, edges and vertices of common three-dimensional objects and identifies the relationships in the data)

Transformations

• identifies that shapes can have rotational symmetry (e.g. "this drawing of a flower is symmetrical as I can spin it around both ways and it always looks exactly the same")
• creates symmetrical designs using a range of shapes and identifies the type of symmetry as appropriate (e.g. uses symmetry as a stimulus for choreographing a dance; analyses the symmetrical qualities, shapes and lines in examples of Islamic art)
• creates tessellating patterns with common shapes, deciding which will tessellate and which will not by referring to their sides and angles

Angles

• estimates, compares and constructs angles (e.g. uses a ruler and protractor to construct a 45■ angle; compares the size of angles in the environment and estimates their size)
• describes angles in the environment according to their size as acute, obtuse, right, straight, reflex or a revolution and identifies them in shapes and objects (e.g. identifies slope as angles in the environment such as the ramp outside of the school block)

Snapshot – Understanding units of measurement

Numeracy: Measurement and geometry: Understanding units of measurement

Content description

AC9M3M05

Learning progression extract

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

Introducing metric units

• recognises standard metric units are used to measure attributes of shapes, objects and events (e.g. identifies units used to measure everyday items; recognises that distances in athletic events are measured in metres such as 100 and 200 metre races)
• uses the array structure to calculate area measured in square units (e.g. draws and describes the column and row structure to represent area as an array of square units, moving beyond counting of squares by ones)
• estimates the measurement of an attribute by visualising between known informal units (e.g. uses a cup to measure a half cup of rice; determines that about 3 3 3 sheets of paper would fit across a desk, and close to 6 6 6 might fit along it, so the area of the desk is about 18 18 1 8 sheets of paper)
• explains the difference between different attributes of the same shape or object and their associated metric units (e.g. length, mass and capacity)

Angles as measures of turn

• describes the size of an angle as a measure of turn and compares familiar measures of turn to known angles (e.g. the angle between the blades gets bigger as you open the scissors; a quarter turn creates a right angle)

Using metric units

• measures, compares and estimates length, perimeter and area of a surface using metric units (e.g. traces around their hand on centimetre grid paper and counts the number of squares to estimate the area of their hand print to be about 68 68 6 8 square centimetres)
• uses scaled instruments to measure length, mass, capacity and temperature, correctly interpreting any unlabelled calibrations (e.g. 3 3 3 marks between the numbered marks for kilograms means each gap represents 250 250 2 5 0 grams, so it's divided into quarter kilogram intervals)
• estimates measurements of an attribute using metric units (e.g. estimates the width of their thumb is close to a centimetre; compares the mass of 2 2 2 bags of fruit by hefting and says "this one feels like it weighs more than a kilogram"; approximates capacities based on the known capacity of a 600 600 6 0 0 -millilitre bottle of water)

Angles as measures of turn

• compares angles to a right angle and classifies them as equal to, less than or greater than a right angle (e.g. directly compares the size of angles to a right angle, by using the corner of a book; uses reference to a right angle to describe body positions during a choreographed dance or when practising a skill for a particular sport)

Using metric units

• calculates perimeter using properties of two-dimensional shapes to determine unknown lengths

• measures and calculates the area of different shapes using metric units and a range of strategies

Angles as measures of turn

• estimates and measures angles in degrees up to one revolution (e.g. uses a protractor to measure the size of an angle; estimates angles, such as those formed at the elbows when releasing an object; determines the effect of angles on the trajectory, height and distance of flight during jumps and throws in athletics)

Snapshot – Identify, process and evaluate information

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

Content description

AC9M3M05

Continuum extract

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

• identify and explore relevant information from a range of sources, including visual information and digital sources

• identify and explain similarities and differences in selected information

• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources

• condense and combine selected information related to the topic of study

• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources

• compare information and opinion that can be verified against claims based on personal preference

Snapshot – Identify, process and evaluate information

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

Content description

AC9M3M05

Continuum extract

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

• identify and explore relevant information from a range of sources, including visual information and digital sources

• identify and explain similarities and differences in selected information

• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources

• condense and combine selected information related to the topic of study

• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources

• compare information and opinion that can be verified against claims based on personal preference

Snapshot – Identify, process and evaluate information

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

Content description

AC9M3M05

Continuum extract

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

• identify and explore relevant information from a range of sources, including visual information and digital sources

• identify and explain similarities and differences in selected information

• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources

• condense and combine selected information related to the topic of study

• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources

• compare information and opinion that can be verified against claims based on personal preference

AC9M3M06

recognise the relationships between dollars and cents and represent money values in different ways

-

Elaborations

• investigating the relationship between dollars and cents, using physical or to make different combinations of the same amount of money

• representing money amounts in different ways using knowledge of part-part-whole relationships; for example, knowing that $\$1$ is equal to 100 cents; representing $\$1.85$ as $\$1 + 50c + 20c + 10c + 5c$ or $50c + 50c + 50c + 10c + 10c + 10c + 5c$; when calculating change from buying an item for $\$1.30$ from $\$2$, starting from $\$1.30$ add $20c$ and $50c$ which gives $\$2$

• representing money values in multiple ways when role-playing money transactions; for example, using play money to represent the coins and dollars you could use to pay for items

Students learn to:

recognise the relationships between dollars and cents and represent money values

(AC9M3M06)

General capabilities and cross-curriculum priorities

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

Number sense and algebra

• Understanding money

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

• Understanding money

Number sense and algebra

• Understanding money

Number sense and algebra

• Additive strategies

• Understanding money

Resources

Work Samples

WS03 - Tuck shop lunch

Snapshot – Understanding money

Numeracy: Number sense and algebra: Understanding money

Content description

AC9M3M06

Learning progression extract

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

Counting money

• determines the equivalent value of coins or notes sorted into one denomination

• counts small collections of coins or notes according to their value

• writes the value of a small collection of coins or notes in whole dollars, or whole cents using numbers and the correct dollar sign or cent symbol

Equivalent money

• understands that the Australian monetary system includes both coins and notes and how they are related (e.g. orders a collection of money based on its monetary value)

• determines the equivalent value of coins to $\$5$ using any combination of $5c$, $10c$, $20c$ or $50c$ coins

• represents different values of money in multiple ways

Counting money

• counts a larger collection of coins by making groups (e.g. counts the coins in a money box by sorting the $5c$, $10c$ and $20c$ pieces into $\$1$ groups)

• determines the amount of money in a collection, including both notes and coins, using basic counting principles and the standard form of writing dollars and cents in decimal format, to 2 2 2 decimal places

Snapshot – Understanding money

Numeracy: Number sense and algebra: Understanding money

Content description

AC9M3M06

Learning progression extract

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

Counting money

• determines the equivalent value of coins or notes sorted into one denomination

• counts small collections of coins or notes according to their value

• writes the value of a small collection of coins or notes in whole dollars, or whole cents using numbers and the correct dollar sign or cent symbol

Equivalent money

• understands that the Australian monetary system includes both coins and notes and how they are related (e.g. orders a collection of money based on its monetary value)

• determines the equivalent value of coins to $ 5 \$5 $ 5 using any combination of 5 5 5 c, 10 10 1 0 c, 20 20 2 0 c or 50 50 5 0 c coins

• represents different values of money in multiple ways

Counting money

• counts a larger collection of coins by making groups (e.g. counts the coins in a money box by sorting the 5 5 5 c, 10 10 1 0 c and 20 20 2 0 c pieces into $ 1 \$1 $ 1 groups)

• determines the amount of money in a collection, including both notes and coins, using basic counting principles and the standard form of writing dollars and cents in decimal format, to 2 2 2 decimal places

Snapshot – Additive strategies

Numeracy: Number sense and algebra: Additive strategies

Content description

AC9M3M06
Learning progression extract

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

Flexible strategies with two-digit numbers

• chooses from a range of known strategies to solve additive problems involving two-digit numbers (e.g. uses place value knowledge, known addition facts and part-part-whole number knowledge to solve problems like 24 + 8 + 13 24 + 8 + 13 2 4 + 8 + 1 3 , partitions 8 8 8 as 6 6 6 and 2 2 2 more, then combines 24 24 2 4 and 6 6 6 to rename it as 30 30 3 0 before combining it with 13 13 1 3 to make 43 43 4 3 , and then combines the remaining 2 2 2 to find 45 45 4 5 ; adds the same quantity to both numbers 47 − 38 = 49 − 40 47\space–\space38 = 49-40 4 7 − 3 8 = 4 9 − 4 0)

• identifies that the same combinations and partitions to 10 10 1 0 are repeated within each decade (e.g. knowing that 8 + 2 = 10 8 + 2 = 10 8 + 2 = 1 0 , knows 18 + 2 = 20 18 + 2 = 20 1 8 + 2 = 2 0 and 28 + 2 = 30 28 + 2 = 30 2 8 + 2 = 3 0 etc.)

• identifies addition as associative and commutative and that subtraction is neither

• applies the commutative and associative properties of addition to simplify mental computation (e.g. to calculate 23 + 9 + 7 23 + 9 + 7 2 3 + 9 + 7 adds 23 23 2 3 to 7 7 7 to get 30 30 3 0 , then adds 9 9 9 to give 39 39 3 9)

• applies inverse relationship of addition and subtraction to solve problems, including solving problems with digital tools, and uses the inverse relationship to justify an answer (e.g. when solving 23 − 16 23\space–\space16 2 3 − 1 6 chooses to use addition 16 + ? = 23 16\space+ \space ? = 23 1 6 + ? = 2 3 ; when using a calculator to solve 16 + ? = 38 16\space+\space? = 38 1 6 + ? = 3 8 decides to use subtraction and inputs 38 − 16 38-16 3 8 − 1 6)

• represents a wide range of additive problem situations involving two-digit numbers using appropriate addition and subtraction number sentences

Flexible strategies with three-digit numbers and beyond

• uses place value, standard and non-standard partitioning, trading or exchanging of units to mentally add and subtract numbers with 3 3 3 or more digits (e.g. to add 250 250 2 5 0 and 457 457 4 5 7 , partitions 250 250 2 5 0 into 2 2 2 hundreds and 5 5 5 tens, says 457 457 4 5 7 plus 2 2 2 hundreds is 657 657 6 5 7 , plus 5 5 5 tens is 707 707 7 0 7 ; to add 184 184 1 8 4 and 270 270 2 7 0 partitions into 150 + 34 + 250 + 20 = 400 + 34 + 20 = 454 150 + 34 + 250 + 20 = 400 + 34+ 20 = 454 1 5 0 + 3 4 + 2 5 0 + 2 0 = 4 0 0 + 3 4 + 2 0 = 4 5 4)

• chooses and uses strategies including algorithms and technology to efficiently solve additive problems (e.g. develops total costings for ingredients or materials for a task or combines measurements to determine the total amount of materials required)

• uses estimation to determine the reasonableness of the solution to an additive problem (e.g. when asked to add 249 249 2 4 9 and 437 437 4 3 7 says " 250 + 440 250 + 440 2 5 0 + 4 4 0 is 690 690 6 9 0 ")

• represents a wide range of familiar real-world additive situations involving large numbers as standard number sentences explaining their reasoning

Flexible strategies with fractions and decimals

• uses knowledge of place value and how to partition numbers in different ways to make the calculation easier when adding and subtracting decimals with up to 3 3 3 decimal places

• identifies and justifies the need for a common denominator when solving additive problems involving fractions with related denominators

• represents a wide range of familiar real-world additive situations involving decimals and common fractions as standard number sentences, explaining their reasoning

Snapshot – Understanding money

Numeracy: Number sense and algebra: Understanding money

Content description

AC9M3M06
Learning progression extract

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

Counting money

• determines the equivalent value of coins or notes sorted into one denomination
• counts small collections of coins or notes according to their value
• writes the value of a small collection of coins or notes in whole dollars, or whole cents using numbers and the correct dollar sign or cent symbol

Equivalent money

• understands that the Australian monetary system includes both coins and notes and how they are related (e.g. orders a collection of money based on its monetary value)
• determines the equivalent value of coins to $ 5 \$5 $ 5 using any combination of 5 5 5 c, 10 10 1 0 c, 20 20 2 0 c or 50 50 5 0 c coins
• represents different values of money in multiple ways

Counting money

• counts a larger collection of coins by making groups (e.g. counts the coins in a money box by sorting the 5 5 5 c, 10 10 1 0 c and 20 20 2 0 c pieces into $ 1 \$1 $ 1 groups)
• determines the amount of money in a collection, including both notes and coins, using basic counting principles and the standard form of writing dollars and cents in decimal format, to 2 2 2 decimal places

Resource – WS03 - Tuck shop lunch

By the end of Year 3, students order and represent natural numbers beyond 10 000.■They partition, rearrange and regroup two- and three-digit numbers in different ways to assist in calculations.■Students extend and use single-digit addition and related subtraction facts and apply additive strategies to solve problems involving two- and three-digit numbers. They use mathematical modelling to solve practical problems involving single-digit multiplication and division, recalling multiplication facts for twos, threes, fours, fives and tens, and using a range of strategies .■Students represent unit fractions and their multiples in different ways. They make estimates and determine the reasonableness of financial and other calculations. They create algorithms to investigate numbers and explore simple patterns.

Students use familiar metric units when estimating, comparing and measuring the attributes of objects and events.■They identify angles as measures of turn and compare them to right angles.■Students estimate and compare measures of duration using formal units of time. They represent money values in different ways. Students make, compare and classify objects using key features.■They interpret and create two-dimensional representations of familiar environments.

Students conduct guided statistical investigations involving categorical and discrete numerical data, and interpret their results in terms of the context.■They record, represent and compare data they have collected.■Students use practical activities, observation or experiment to identify and describe outcomes and the likelihood of everyday events explaining reasoning.■They conduct repeated chance experiments and discuss variation in results.

AC9M3N03

add and subtract two- and three-digit numbers using■place value■to■partition, rearrange and regroup numbers to assist in calculations without a calculator.

AC9M3A01

recognise and explain the connection between addition and subtraction as inverse operations, apply to partition numbers and find unknown values in number sentences

AC9M3M06

recognise the relationships between dollars and cents and represent money values in different ways

AC9M3SP01

make, compare and classify , identifying key features and explaining why these features make them suited to their uses

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•

Elaborations

- classifying a collection of geometric , including , spheres, and pyramids according to key features such as the and number of faces and/or surfaces, edges and vertices
- making and comparing built out of cubic blocks and discussing key features; for example, comparing the amount of space occupy by how many blocks it takes to build different rectangular that have the same height but different bases
- making geometric in solid form out of connecting cubes, in skeleton form with straws, and constructing using , recognising, comparing and discussing the features of the using the different representations
- using familiar and to build or models and compare the suitability of different and for aspects of the model; for example, building rectangular towers out of connecting cubes and recognising that the taller the tower, the less stable it becomes unless the base is increased; building bridges out of straws bent into different and comparing the strength of different designs
- identifying, classifying and comparing common found on as cubes, rectangular , , and spheres
- investigating and explaining how First Nations Australians' dwellings are oriented in the environment to accommodate climatic conditions

Students learn to:

make, compare and classify objects, identifying key features and explaining why the them suited to their uses

(AC9M3SP01)

General capabilities and cross-curriculum priorities

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

Analysing

- Interpret concepts and problems

Measurement and geometry

- Understanding geometric properties

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

Number sense and algebra

- Counting processes

Analysing

- Interpret concepts and problems

People

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

Culture

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

Design

- Sustainably designed products, environments and services aim to minimise the impact on or restore the quality and diversity of environmental, social and economic systems.

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3SP01

Continuum extract

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

- identify the main parts of a concept or problem and describe how these relate to each other
- identify and prioritise significant elements and relationships within a concept or problem
- identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Understanding geometric properties

Numeracy: Measurement and geometry: Understanding geometric properties

Content description

AC9M3SP01

Learning progression extract

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

Features of shapes and objects

• identifies and describes features of shapes and objects (e.g. sides, corners, faces, edges and vertices)

• sorts and classifies familiar shapes and objects based on obvious features (e.g. triangles have 3 3 3 sides; a sphere is round like a ball)

Transformations

• identifies features of shapes and objects of different sizes and in different orientations in the environment (e.g. identifies a rotated view of an object made out of centicubes; compares representation of familiar shapes and objects in visual artworks from different cultures, times and places commenting on their features)

• explains that the shape or object does not change when presented in different orientations (e.g. a square remains a square when rotated)

Angles

• identifies angles in the environment (e.g. an angle formed when a door is opened; identifies that there are 4 4 4 angles in a square)

Properties of shapes and objects

• identifies the relationship between the number of sides of a two-dimensional shape and the number of vertices (e.g. if the shape has 4 4 4 sides, it has 4 4 4 vertices)

• describes and identifies the two-dimensional shapes that form the faces of three-dimensional objects (e.g. recognises the faces of a triangular prism as triangles and rectangles)

• represents shapes and objects (e.g. drawing and sketching; model building such as skeletal models and centi-cubes; using digital drawing packages; manipulates body to create shapes and objects when choreographing dance)

Transformations

• determines whether a shape has line symmetry (e.g. folds paper cut-outs of basic shapes to demonstrate which has line symmetry and which does not)

• identifies symmetry in the environment

• identifies and creates geometrical patterns involving the repetition of familiar shapes (e.g. uses pattern blocks to create a pattern and describes how the pattern was created)

Angles

• compares angles to a right angle, classifying them as greater than, less than or equal to a right angle

Properties of shapes and object

• identifies, names and classifies two-dimensional shapes according to their side and angle properties (e.g. describes a square as a regular rectangle)

• identifies key features of shapes (e.g. explains that quadrilaterals have 2 2 2 diagonals however they are not always equal in length)

• aligns three-dimensional objects to their two-dimensional nets

• identifies the relationship between the number of faces, edges and the number of vertices of a three-dimensional object (e.g. uses a table to list the number of faces, edges and vertices of common three-dimensional objects and identifies the relationships in the data)

Transformations

• identifies that shapes can have rotational symmetry (e.g. "this drawing of a flower is symmetrical as I can spin it around both ways and it always looks exactly the same")

• creates symmetrical designs using a range of shapes and identifies the type of symmetry as appropriate (e.g. uses symmetry as a stimulus for choreographing a dance; analyses the symmetrical qualities, shapes and lines in examples of Islamic art)

• creates tessellating patterns with common shapes, deciding which will tessellate and which will not by referring to their sides and angles

Angles

• estimates, compares and constructs angles (e.g. uses a ruler and protractor to construct a 45■
angle; compares the size of angles in the environment and estimates their size)

• describes angles in the environment according to their size as acute, obtuse, right, straight,
reflex or a revolution and identifies them in shapes and objects (e.g. identifies slope as angles in
the environment such as the ramp outside of the school block)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3SP01

Continuum extract

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

• identify the main parts of a concept or problem and describe how these relate to each other

• identify and prioritise significant elements and relationships within a concept or problem

• identify the relevant and significant aspects of a concept or problem, understanding that
approaches may change depending on the subject or learning area

Snapshot – Counting processes

Numeracy: Number sense and algebra: Counting processes

Content description

AC9M3SP01

Learning progression extract

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

Counting sequences

• uses knowledge of the counting sequence to determine the next number or previous number from a
number in the range 1 – 10 1–10 1 – 1 0 (e.g. when asked what number comes directly after 8 8 8 ,
immediately responds with " 9 9 9 " without needing to count from one)

• continues a count starting from a number other than one

Perceptual counting

• interprets the count independently of the type of objects being counted (e.g. a quantity of 5 5 5
counters is the same quantity as 5 5 5 basketball courts)

• counts a collection, keeping track of items that have been counted and those that haven't been
counted yet to ensure they are only counted exactly once (e.g. when asked to count a pile of blocks,
moves each block to the side as it is counted)

Counting sequences

• uses knowledge of the counting sequence to determine the next number or previous number from any
starting point within the range 1 – 100 1–100 1 – 1 0 0

Perceptual counting

• matches known numerals to collections of up to 20 20 2 0 , counting items using a one-to-one
correspondence

• uses zero to denote when no objects are present (e.g. when asked "how many cards have you got?"
and has no cards left, says "zero")

• counts objects in a collection independent of the order, appearance or arrangement (e.g.
understands that counting 7 7 7 people in a row from left to right is the same as counting them from
right to left)

Counting sequences

• continues counting from any number forwards and backwards beyond 100 100 1 0 0 using knowledge of
place value

• counts in sequence by twos and fives starting at zero (e.g. counts items using number rhymes " 2 ,
4 , 6 , 8 2, 4, 6, 8 2 , 4 , 6 , 8 Mary's at the cottage gate …"; skip counts in fives as " 5 , 10 ,
15 , 20 5, 10, 15, 20 5 , 1 0 , 1 5 , 2 0 ")

• counts in sequence forwards and backwards by tens on the decade up to 100 100 1 0 0

Perceptual counting

• counts items in groups of twos, fives and tens (e.g. counts a quantity of 10 10 1 0 -cent pieces

as 10 , 20 , 30 10, 20, 30 1 0 , 2 0 , 3 0 … to give the total value of the coins; counts the number
of students by twos when lined up in pairs)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3SP01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the main parts of a concept or problem and describe how these relate to each other
• identify and prioritise significant elements and relationships within a concept or problem
• identify the relevant and significant aspects of a concept or problem, understanding that
approaches may change depending on the subject or learning area

AC9M3SP02

**interpret and create representations of familiar environments, locating key landmarks and relative
to each other**

•

•

Elaborations

• designing the layout of a space; for example, a proposed games room or the classroom using a blank
sheet of paper as the boundary and cut outs of to represent furniture from a top view perspective
• locating themselves within a space such as a basketball court, an oval, stage or assembly hall,
guided by a simple hand-held plan indicating the different positions of the participants in the
activity
• sketching a map within the classroom indicating where they have hidden an , swapping maps with
partners and then providing feedback about what was helpful and what was confusing in the map
• identifying differences in the representation of a place on a map, in an aerial photograph, in a
street view and in a satellite image and discussing the different information the representations
can give
• creating a plan of the school on a floor mat, representing key buildings and landmarks, then
programming a robot to move to different locations within the space
• exploring land maps or cultural maps used by First Nations Australians to locate, identify and
position important landmarks such as waterholes
Students learn to:

interpret and create two-dimensional representations of familiar environments, loca

landmarks and objects relative to each other

(AC9M3SP02)

General capabilities and cross-curriculum priorities

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

Analysing

• Interpret concepts and problems

Measurement and geometry

• Positioning and locating

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

Generating

• Consider alternatives

Measurement and geometry

• Positioning and locating

Analysing

• Interpret concepts and problems

Measurement and geometry

• Positioning and locating

Analysing

• Interpret concepts and problems

Measurement and geometry

• Positioning and locating

Analysing

• Interpret concepts and problems
• Draw conclusions and provide reasons

Measurement and geometry

• Positioning and locating

Creating and exchanging

• Plan

Managing and operating

• Select and operate tools

Measurement and geometry

• Positioning and locating

Analysing

• Interpret concepts and problems

Measurement and geometry

• Positioning and locating

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.

Related content

This content description can be taught with the following content descriptions from other learning areas.
AC9HS3S02
AC9HS3S03
AC9TDE4P02

Resources

Work Samples

WS02 - Clean our school

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3SP02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the main parts of a concept or problem and describe how these relate to each other
• identify and prioritise significant elements and relationships within a concept or problem
• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Positioning and locating

Numeracy: Measurement and geometry: Positioning and locating

Content description

AC9M3SP02

Learning progression extract

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

Position to other

• uses positional terms with reference to themselves (e.g. "sit next to me", "you stood in front of me", "this is my left hand")

• interprets a simple diagram or picture to describe the position of an object in relation to other objects (e.g. "the house is between the river and the school")

• gives and follows simple directions to move from one place to another using familiar reference points (e.g. "walk past the flagpole around the vegetable patch and you will find Mr Smith's classroom")

Using informal maps and plans

• draws an informal map or sketch to provide directions (e.g. draws a dance map when planning choreography; sketches the pathway to provide directions for a robotic vehicle to move from one location to another within a space)

• describes and locates relative positions on an informal map or plan (e.g. locates the starting position for the cross-country race using an informal map of the course; uses a seating plan to describe where they sit relative to the teacher's desk)

• orients an informal map using recognisable landmarks and current location (e.g. orients a map to show the location of the audience and locates the entry and exit points of the school gymnasium)

• locates self on an informal map to select an appropriate path to a given location

Using formal maps and plans

• locates position on maps using grid references (e.g. locates the school in cell E5; uses grid references to identify specific locations on a stage and when creating a stage plan, lighting design or prompt script)

• describes routes using landmarks and directional language including reference to quarter, half, three-quarter turns; turns to the left and right; clockwise and anticlockwise turns (e.g. communicates strategic plays in relation to coaching a team game or sport)

• interprets keys, simple scales and compass directions contained within a map to locate features (e.g. uses a map and compass directions when bush walking or orienteering)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3SP02

Continuum extract

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

• identify the main parts of a concept or problem and describe how these relate to each other

• identify and prioritise significant elements and relationships within a concept or problem

• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Consider alternatives

Critical and Creative Thinking: Generating: Consider alternatives

Content description

AC9M3SP02

Continuum extract

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

• consider alternatives and explore different or creative ways to approach a task or problem

• consider alternatives by comparing different or creative ways to approach a task, issue or problem and recommend a preferred option

• consider alternatives by challenging or creatively adjusting existing ideas in situations where current approaches do not work and recommend a preferred option

Snapshot – Positioning and locating

Numeracy: Measurement and geometry: Positioning and locating

Content description

AC9M3SP02

Learning progression extract

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

Position to other

• uses positional terms with reference to themselves (e.g. "sit next to me", "you stood in front of me", "this is my left hand")

• interprets a simple diagram or picture to describe the position of an object in relation to other objects (e.g. "the house is between the river and the school")

• gives and follows simple directions to move from one place to another using familiar reference points (e.g. "walk past the flagpole around the vegetable patch and you will find Mr Smith's classroom")

Using informal maps and plans

• draws an informal map or sketch to provide directions (e.g. draws a dance map when planning choreography; sketches the pathway to provide directions for a robotic vehicle to move from one location to another within a space)

• describes and locates relative positions on an informal map or plan (e.g. locates the starting position for the cross-country race using an informal map of the course; uses a seating plan to describe where they sit relative to the teacher's desk)

• orients an informal map using recognisable landmarks and current location (e.g. orients a map to show the location of the audience and locates the entry and exit points of the school gymnasium)

• locates self on an informal map to select an appropriate path to a given location

Using formal maps and plans

• locates position on maps using grid references (e.g. locates the school in cell E5; uses grid references to identify specific locations on a stage and when creating a stage plan, lighting design or prompt script)

• describes routes using landmarks and directional language including reference to quarter, half, three-quarter turns; turns to the left and right; clockwise and anticlockwise turns (e.g. communicates strategic plays in relation to coaching a team game or sport)

• interprets keys, simple scales and compass directions contained within a map to locate features (e.g. uses a map and compass directions when bush walking or orienteering)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3SP02

Continuum extract

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

• identify the main parts of a concept or problem and describe how these relate to each other

• identify and prioritise significant elements and relationships within a concept or problem

• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Positioning and locating

Numeracy: Measurement and geometry: Positioning and locating

Content description

AC9M3SP02

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

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Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

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Snapshot – Positioning and locating

Numeracy: Measurement and geometry: Positioning and locating

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Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3SP02

Continuum extract

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

• draw conclusions and make choices when completing tasks and explain the reasons for choices made

• draw conclusions and make choices when completing tasks, using observation and prior knowledge to provide reasons and construct arguments for choices made

• draw conclusions and make choices when completing tasks, using discipline knowledge to provide reasons and evaluate arguments for choices made

Snapshot – Positioning and locating

Numeracy: Measurement and geometry: Positioning and locating

Content description

AC9M3SP02

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Using informal maps and plans

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Using formal maps and plans

• locates position on maps using grid references (e.g. locates the school in cell E5; uses grid

references to identify specific locations on a stage and when creating a stage plan, lighting design or prompt script)

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Snapshot – Plan

Digital Literacy: Creating and exchanging: Plan

Content description

AC9M3SP02

Continuum extract

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

• use simple digital tools to contribute to a basic plan to complete a task

• use familiar digital tools to develop and follow a basic plan to complete a task

• select and use digital tools to develop and follow a plan to complete individual tasks and group projects

Snapshot – Select and operate tools

Digital Literacy: Managing and operating: Select and operate tools

Content description

AC9M3SP02

Continuum extract

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

• use familiar digital tools to complete tasks and consolidate learning

• attempt to solve a problem before seeking help

• select and use a range of digital tools to complete tasks

• attempt to solve a problem individually and with peers before seeking help

• select and use the core features of digital tools to efficiently complete tasks

• troubleshoot basic problems and identify repetitive tasks to automate

Snapshot – Positioning and locating

Numeracy: Measurement and geometry: Positioning and locating

Content description

AC9M3SP02

Learning progression extract

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

Using informal maps and plans

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• describes and locates relative positions on an informal map or plan (e.g. locates the starting position for the cross-country race using an informal map of the course; uses a seating plan to describe where they sit relative to the teacher's desk)

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(e.g. uses a map and compass directions when bush walking or orienteering)

Using proportional thinking for scaling

• interprets the scale used to create plans, drawings or maps (e.g. interprets scale to determine the approximate distance between two locations when orienteering)

• interprets and uses plans and maps involving scale (e.g. creates and interprets scale drawings when designing and making set pieces for a production)

• describes and interprets maps to determine the geographical location and positioning of states and territories within Australia and of countries relative to Australia

• interprets and uses more formal directional language such as compass bearings, degrees of turn, coordinates and distances to locate position or the distance from one location to another (e.g. identifies coordinates using GPS technologies)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3SP02

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Snapshot – Positioning and locating

Numeracy: Measurement and geometry: Positioning and locating

Content description

AC9M3SP02

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Resource – WS02 - Clean our school

By the end of Year 3, students order and represent natural numbers beyond 10 000.■They partition, rearrange and regroup two- and three-digit numbers in different ways to assist in calculations.■Students extend and use single-digit addition and related subtraction facts and apply additive strategies to model and solve problems involving two- and three-digit numbers. They use mathematical modelling to solve practical problems involving single-digit multiplication and division, recalling multiplication facts for twos, threes, fours, fives and tens, and using a range of strategies.■Students represent unit fractions and their multiples in different ways.■They make estimates and determine the reasonableness of financial and other calculations.■Students find unknown values in number sentences involving addition and subtraction.■They create algorithms to investigate numbers and explore simple patterns.

Students use familiar metric units when estimating, comparing and measuring the attributes of objects and events.■They identify angles as measures of turn and compare them to right angles.■Students estimate and compare measures of duration using formal units of time.■They represent money values in different ways.■Students make, compare and classify objects using key features. They interpret and create two-dimensional representations of familiar environments.

Students conduct guided statistical investigations involving categorical and discrete numerical data, and interpret their results in terms of the context.■They record, represent and compare data they have collected. Students use practical activities, observation or experiment to identify and describe outcomes and the likelihood of everyday events explaining reasoning.■They conduct repeated chance experiments and discuss variation in results.

AC9M3A02

extend and apply knowledge of addition and subtraction facts to 20 to develop efficient mental strategies for computation with larger numbers without a calculator

AC9M3SP02

interpret and create two-dimensional representations of familiar environments, locating key landmarks and objects relative to each other

AC9M3ST01

acquire data for categorical and discrete numerical variables to address a question of interest or purpose by observing, collecting and accessing data sets; record the data using appropriate methods including frequency tables and spreadsheets

AC9M3ST02

create and compare different graphical representations of data sets including using software where appropriate; interpret the data in terms of the context

AC9M3ST03

conduct guided statistical investigations involving the collection, representation and interpretation of data for categorical and discrete numerical variables with respect to questions of interest

AC9M3ST01

for categorical and discrete to address a question of interest or purpose by observing, collecting and accessing ; record the using appropriate methods including and spreadsheets

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Elaborations

• using efficient ways to collect and record ; for example, written , online , polling the class using interactive digital mediums, and representing and reporting the results of investigations
• developing questions of interest and using , observations or experiments to collect categorical, discrete numerical or qualitative and discussing what kind of can be used to help inform or answer the question in a statistical investigation

• using lists, tallies, symbols and digital tables to record and display collected during a chance experiment for interpretation
• using different online sources to access ; for example, using online query interfaces to select and retrieve from an online database such as weather records, Google Trends or the World Health Organization
• using software to sort and calculate when solving problems; for example, sorting discrete numerical and in ascending or descending order and automating simple arithmetic calculations using nearby cells and the Sum in spreadsheets to calculate total frequencies of collected
Students learn to:

acquire data for categorical and discrete numerical variables to address a question purpose by observing, collecting and accessing data sets; record the data using ap including frequency tables and spreadsheets

(AC9M3ST01)
General capabilities and cross-curriculum priorities
This content description connects to the following general capabilities and cross-curriculum priorities.
Investigating
• Acquire and collate data
• Interpret data
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
• Draw conclusions and provide reasons
Inquiring
• Identify, process and evaluate information
Investigating
• Acquire and collate data
• Interpret data
Analysing
• Draw conclusions and provide reasons
Inquiring
• Identify, process and evaluate information
Investigating
• Acquire and collate data
• Interpret data
Number sense and algebra
• Counting processes
Analysing
• Draw conclusions and provide reasons
Inquiring
• Identify, process and evaluate information
Investigating
• Acquire and collate data
• Interpret data
Managing and operating
• Manage content
Analysing
• Draw conclusions and provide reasons
Inquiring
• Identify, process and evaluate information
Investigating

• Acquire and collate data
• Interpret data
Managing and operating
• Select and operate tools
Related content

This content description can be taught with the following content descriptions from other learning areas.
AC9HP4P09
AC9HS3S02
AC9HS3S03
AC9S3I03
AC9S3I04
AC9TDI4K03
Resources
Work Samples

WS02 - Clean our school

Snapshot – Acquire and collate data

Digital Literacy: Investigating: Acquire and collate data

Content description

AC9M3ST01
Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• collect data by counting, measuring and observing with familiar digital tools
• collect and access data using a range of digital tools and methods in response to a defined question
• collect and access data using a range of digital tools and methods in response to a defined question or problem

Snapshot – Interpret data

Digital Literacy: Investigating: Interpret data

Content description

AC9M3ST01
Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• classify and group data using digital familiar tools to answer simple questions
• organise, summarise and visualise data using a range of digital tools to identify patterns and answer questions
• analyse and visualise data using a range of digital tools to identify patterns and make predictions

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9M3ST01
Learning progression extract

The following learning progression extract shows the alignment of the learning progression with this content.
Collecting, displaying and interpreting categorical data

• designs survey questions to collect categorical data (e.g. creates a suite of survey questions to plan the end of year class party)
• collects, records and displays one-variable data in variety of ways such as tables, charts, plots and graphs using the appropriate digital tools (e.g. uses a spreadsheet to record data collected in a class survey and generates a column graph to display the results)
• displays and interprets categorical data in one-to-many data displays
• interprets and represents categorical data in simple displays such as bar and column graphs, pie

charts, models, maps, colour wheels, and pictorial timelines, and makes simple inferences from such displays
• makes comparisons from categorical data displays using relative heights from a common baseline (e.g. compares the heights of the columns in a simple column graph to determine the tallest and recognises this as the most frequent response)

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

Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3ST01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks and explain the reasons for choices made
• draw conclusions and make choices when completing tasks, using observation and prior knowledge to provide reasons and construct arguments for choices made
• draw conclusions and make choices when completing tasks, using discipline knowledge to provide reasons and evaluate arguments for choices made

Snapshot – Identify, process and evaluate information

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

Content description

AC9M3ST01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and explore relevant information from a range of sources, including visual information and digital sources
• identify and explain similarities and differences in selected information
• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources
• condense and combine selected information related to the topic of study
• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources
• compare information and opinion that can be verified against claims based on personal preference

Snapshot – Acquire and collate data

Digital Literacy: Investigating: Acquire and collate data

Content description

AC9M3ST01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• collect data by counting, measuring and observing with familiar digital tools
• collect and access data using a range of digital tools and methods in response to a defined question
• collect and access data using a range of digital tools and methods in response to a defined question or problem

Snapshot – Interpret data

Digital Literacy: Investigating: Interpret data

Content description

AC9M3ST01

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The following continuum extract shows the alignment of the continuum with this content.
• classify and group data using digital familiar tools to answer simple questions
• organise, summarise and visualise data using a range of digital tools to identify patterns and answer questions
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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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Snapshot – Identify, process and evaluate information

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

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Digital Literacy: Investigating: Acquire and collate data

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Snapshot – Counting processes

Numeracy: Number sense and algebra: Counting processes

Content description

AC9M3ST01

Learning progression extract

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

Counting sequences

• continues counting from any number forwards and backwards beyond 100 100 1 0 0 using knowledge of place value
• counts in sequence by twos and fives starting at zero (e.g. counts items using number rhymes " 2 , 4 , 6 , 8 2, 4, 6, 8 2 , 4 , 6 , 8 Mary's at the cottage gate …"; skip counts in fives as " 5 , 10 , 15 , 20 5, 10, 15, 20 5 , 1 0 , 1 5 , 2 0 ")
• counts in sequence forwards and backwards by tens on the decade up to 100 100 1 0 0

Perceptual counting

• counts items in groups of twos, fives and tens (e.g. counts a quantity of 10 10 1 0 -cent pieces as 10 , 20 , 30 10, 20, 30 1 0 , 2 0 , 3 0 … to give the total value of the coins; counts the number of students by twos when lined up in pairs)

Counting sequences

• counts in sequence forwards and backwards by tens or fives off the decade to 100 100 1 0 0 and by hundreds up to 1000 1000 1 0 0 0 and beyond using knowledge of place value (e.g. 2 , 12 , 22 2, 12, 22 2 , 1 2 , 2 2 … or 8 , 13 , 18 , 23 8, 13, 18, 23 8 , 1 3 , 1 8 , 2 3 ; 100 , 200 100, 200 1 0 0 , 2 0 0 … 1000 1000 1 0 0 0)

Perceptual counting

• counts large quantities in groups or multiples (e.g. groups items into piles of 10 10 1 0 , then counts the piles, adding on the residual to quantify the whole collection)
• estimates the number of items to count to assist with determining group sizes (e.g. decides that

counting in twos would not be the most efficient counting strategy based on a quick estimate of the quantity and decides instead to use groups of 10 10 1 0)

Counting sequences

• counts forwards and backwards from any number

• applies counting processes flexibly to count in rational numbers (e.g. counts in thirds such as $\frac13$ 3 1 ■ , 2 3 , 1 , 1 1 3 , 1 2 3 , 2 $\frac23$, 1, 1$\frac13$, 1$\frac23$, 2 3 2 ■ , 1 , 1 3 1 ■ , 1 3 2 ■ , 2 …; starting from 4 4 4 counts backwards by 0.3 0.3 0 . 3 (e.g. 4 , 3.7 , 3.4 , 3.1 4, 3.7, 3.4, 3.1 4 , 3 . 7 , 3 . 4 , 3 . 1 …)

• counts backwards from zero understanding that the count can be extended in the negative direction (e.g. 0 0 0 , - 1 1 1 , - 2 2 2 , - 3 3 3 , - 4 4 4)

Abstract counting

• applies counting processes to quantify any type of conceivable collection (e.g. systematically counts the number of possible outcomes of an event; applies a frequency count; estimates and compares the difference between a word or character count in a text)

Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3ST01

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Snapshot – Identify, process and evaluate information

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

Content description

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Continuum extract

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

• identify and explore relevant information from a range of sources, including visual information and digital sources

• identify and explain similarities and differences in selected information

• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources

• condense and combine selected information related to the topic of study

• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources

• compare information and opinion that can be verified against claims based on personal preference

Snapshot – Acquire and collate data

Digital Literacy: Investigating: Acquire and collate data

Content description

AC9M3ST01

Continuum extract

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

• collect data by counting, measuring and observing with familiar digital tools

• collect and access data using a range of digital tools and methods in response to a defined question

• collect and access data using a range of digital tools and methods in response to a defined question or problem

Snapshot – Interpret data

Digital Literacy: Investigating: Interpret data

Content description

AC9M3ST01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• classify and group data using digital familiar tools to answer simple questions
• organise, summarise and visualise data using a range of digital tools to identify patterns and answer questions
• analyse and visualise data using a range of digital tools to identify patterns and make predictions

Snapshot – Manage content

Digital Literacy: Managing and operating: Manage content

Content description

AC9M3ST01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• save and retrieve content with an agreed name
• save and retrieve content in agreed locations with an appropriate name
• store content using appropriate names and folders for ease of retrieval

Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3ST01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• draw conclusions and make choices when completing tasks and explain the reasons for choices made
• draw conclusions and make choices when completing tasks, using observation and prior knowledge to provide reasons and construct arguments for choices made
• draw conclusions and make choices when completing tasks, using discipline knowledge to provide reasons and evaluate arguments for choices made

Snapshot – Identify, process and evaluate information

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

Content description

AC9M3ST01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and explore relevant information from a range of sources, including visual information and digital sources
• identify and explain similarities and differences in selected information
• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources
• condense and combine selected information related to the topic of study
• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources
• compare information and opinion that can be verified against claims based on personal preference

Snapshot – Acquire and collate data

Digital Literacy: Investigating: Acquire and collate data

Content description

AC9M3ST01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• collect data by counting, measuring and observing with familiar digital tools
• collect and access data using a range of digital tools and methods in response to a defined question

- collect and access data using a range of digital tools and methods in response to a defined question or problem

Snapshot – Interpret data

Digital Literacy: Investigating: Interpret data

Content description

AC9M3ST01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
- classify and group data using digital familiar tools to answer simple questions
- organise, summarise and visualise data using a range of digital tools to identify patterns and answer questions
- analyse and visualise data using a range of digital tools to identify patterns and make predictions

Snapshot – Select and operate tools

Digital Literacy: Managing and operating: Select and operate tools

Content description

AC9M3ST01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
- use familiar digital tools to complete tasks and consolidate learning
- attempt to solve a problem before seeking help
- select and use a range of digital tools to complete tasks
- attempt to solve a problem individually and with peers before seeking help
- select and use the core features of digital tools to efficiently complete tasks
- troubleshoot basic problems and identify repetitive tasks to automate

Resource – WS02 - Clean our school

By the end of Year 3, students order and represent natural numbers beyond 10 000.■They partition, rearrange and regroup two- and three-digit numbers in different ways to assist in calculations.■Students extend and use single-digit addition and related subtraction facts and apply additive strategies to model and solve problems involving two- and three-digit numbers. They use mathematical modelling to solve practical problems involving single-digit multiplication and division, recalling multiplication facts for twos, threes, fours, fives and tens, and using a range of strategies.■Students represent unit fractions and their multiples in different ways.■They make estimates and determine the reasonableness of financial and other calculations.■Students find unknown values in number sentences involving addition and subtraction.■They create algorithms to investigate numbers and explore simple patterns.

Students use familiar metric units when estimating, comparing and measuring the attributes of objects and events.■They identify angles as measures of turn and compare them to right angles.■Students estimate and compare measures of duration using formal units of time.■They represent money values in different ways.■Students make, compare and classify objects using key features. They interpret and create two-dimensional representations of familiar environments.

Students conduct guided statistical investigations involving categorical and discrete numerical data, and interpret their results in terms of the context.■They record, represent and compare data they have collected. Students use practical activities, observation or experiment to identify and describe outcomes and the likelihood of everyday events explaining reasoning.■They conduct repeated chance experiments and discuss variation in results.

AC9M3A02

extend and apply knowledge of addition and subtraction facts to 20 to develop efficient mental strategies for computation with larger numbers without a calculator

AC9M3SP02

interpret and create two-dimensional representations of familiar environments, locating key landmarks and objects relative to each other

AC9M3ST01

acquire data for categorical and discrete numerical variables to address a question of interest or purpose by observing, collecting and accessing data sets; record the data using appropriate methods including frequency tables and spreadsheets

AC9M3ST02

create and compare different graphical representations of data sets including using software where appropriate; interpret the data in terms of the context

AC9M3ST03

conduct guided statistical investigations involving the collection, representation and interpretation of data for categorical and discrete numerical variables with respect to questions of interest

AC9M3ST02

create and compare different graphical representations of including using software where appropriate; interpret the in terms of the

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Elaborations

• comparing various student-generated representations and describing their similarities and differences

• using , including generative artificial intelligence tools or graphing software, to graphs of acquired through experiments or observation and interpreting the and making ; for example, graphing from a science experiment and interpreting the results

• selecting appropriate formats or layout styles to present as information, depending on the type of and the audience; for example, lists, tables, graphs and infographics

• using newspapers or magazines to find examples of different displays of , interpreting and describing the information they present

Students learn to:

create and compare different graphical representations of data sets including using appropriate; interpret the data in terms of the context

(AC9M3ST02)

General capabilities and cross-curriculum priorities

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

Investigating

• Acquire and collate data

• Interpret data

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

Investigating

• Acquire and collate data

• Interpret data

Analysing

• Interpret concepts and problems

Related content

This content description can be taught with the following content descriptions from other learning areas.
AC9HS3S02
AC9HS3S03
AC9S3I04
AC9TDI4K03
Resources
Work Samples
WS02 - Clean our school

Snapshot – Acquire and collate data
Digital Literacy: Investigating: Acquire and collate data
Content description
AC9M3ST02
Continuum extract
The following continuum extract shows the alignment of the continuum with this content.
• collect data by counting, measuring and observing with familiar digital tools
• collect and access data using a range of digital tools and methods in response to a defined question
• collect and access data using a range of digital tools and methods in response to a defined question or problem

Snapshot – Interpret data
Digital Literacy: Investigating: Interpret data
Content description
AC9M3ST02
Continuum extract
The following continuum extract shows the alignment of the continuum with this content.
• classify and group data using digital familiar tools to answer simple questions
• organise, summarise and visualise data using a range of digital tools to identify patterns and answer questions
• analyse and visualise data using a range of digital tools to identify patterns and make predictions

Snapshot – Interpreting and representing data
Numeracy: Statistics and probability: Interpreting and representing data
Content description
AC9M3ST02
Learning progression extract
The following learning progression extract shows the alignment of the learning progression with this content.
Collecting, displaying and interpreting categorical data
• designs survey questions to collect categorical data (e.g. creates a suite of survey questions to plan the end of year class party)
• collects, records and displays one-variable data in variety of ways such as tables, charts, plots and graphs using the appropriate digital tools (e.g. uses a spreadsheet to record data collected in a class survey and generates a column graph to display the results)
• displays and interprets categorical data in one-to-many data displays
• interprets and represents categorical data in simple displays such as bar and column graphs, pie charts, models, maps, colour wheels, and pictorial timelines, and makes simple inferences from such displays
• makes comparisons from categorical data displays using relative heights from a common baseline (e.g. compares the heights of the columns in a simple column graph to determine the tallest and recognises this as the most frequent response)
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

Snapshot – Interpret data

Digital Literacy: Investigating: Interpret data

Content description

AC9M3ST02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• classify and group data using digital familiar tools to answer simple questions
• organise, summarise and visualise data using a range of digital tools to identify patterns and answer questions
• analyse and visualise data using a range of digital tools to identify patterns and make predictions

Snapshot – Interpreting and representing data

Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9M3ST02

Learning progression extract

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

Collecting, displaying and interpreting categorical data

• designs survey questions to collect categorical data (e.g. creates a suite of survey questions to plan the end of year class party)
• collects, records and displays one-variable data in variety of ways such as tables, charts, plots and graphs using the appropriate digital tools (e.g. uses a spreadsheet to record data collected in

a class survey and generates a column graph to display the results)
- displays and interprets categorical data in one-to-many data displays
- interprets and represents categorical data in simple displays such as bar and column graphs, pie charts, models, maps, colour wheels, and pictorial timelines, and makes simple inferences from such displays
- makes comparisons from categorical data displays using relative heights from a common baseline (e.g. compares the heights of the columns in a simple column graph to determine the tallest and recognises this as the most frequent response)

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

Snapshot – Acquire and collate data

Digital Literacy: Investigating: Acquire and collate data

Content description

AC9M3ST02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
- collect data by counting, measuring and observing with familiar digital tools
- collect and access data using a range of digital tools and methods in response to a defined question
- collect and access data using a range of digital tools and methods in response to a defined question or problem

Snapshot – Interpret data

Digital Literacy: Investigating: Interpret data

Content description

AC9M3ST02

Continuum extract

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

• classify and group data using digital familiar tools to answer simple questions

• organise, summarise and visualise data using a range of digital tools to identify patterns and answer questions

• analyse and visualise data using a range of digital tools to identify patterns and make predictions

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3ST02

Continuum extract

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

• identify the main parts of a concept or problem and describe how these relate to each other

• identify and prioritise significant elements and relationships within a concept or problem

• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

AC9M3ST03

conduct involving the collection, representation and interpretation of for categorical and discrete with respect to questions of interest

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Elaborations

• creating a poster, flowchart or infographic that describes the process of statistical investigation, and the components, the tools and the types of that can be collected, represented and interpreted for a purpose

• collaboratively working through a whole class investigation by choosing a question of interest, using an efficient collection method and recording collected ; interpreting the in terms of the question

• planning and carrying out investigations that involve collecting ; for example, narrowing the focus of a question such as, "Which is the most popular breakfast cereal?" to "Which is the most popular breakfast cereal among Year 3 3 3 students in our class?"

• conducting a whole class statistical investigation into the best day to hold an open day for parents by creating a simple ; collecting the by asking the parents, representing and interpreting the results, and deciding as a class which day would be best

• investigating seasonal calendars of First Nations Australians by collecting and creating and spreadsheets based on environmental indicators; creating one-to-one about of environmental indicators for the current season

Students learn to:

conduct guided statistical investigations involving the collection, representation an interpretation of data for categorical and discrete numerical variables with respect t interest

(AC9M3ST03)

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

Inquiring

• Develop questions

• 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 .

Investigating

• Acquire and collate data

• Interpret data

Inquiring

• Develop questions

Inquiring

• Develop questions

Inquiring

• Develop questions

Culture

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

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.

Related content

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

AC9HS3S02

AC9HS3S03

Resources

Work Samples

WS02 - Clean our school

Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3ST03

Continuum extract

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

• draw conclusions and make choices when completing tasks and explain the reasons for choices made

• draw conclusions and make choices when completing tasks, using observation and prior knowledge to provide reasons and construct arguments for choices made

• draw conclusions and make choices when completing tasks, using discipline knowledge to provide reasons and evaluate arguments for choices made

Snapshot – Develop questions

Critical and Creative Thinking: Inquiring: Develop questions

Content description

AC9M3ST03

Continuum extract

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

• develop questions to explore a familiar idea or topic

• questions developed are fit for the purpose of the investigation

• develop■questions to examine unfamiliar ideas and topics

• questions developed support the process of improving knowledge and understanding about a topic or investigation

• develop■questions to examine unfamiliar ideas and topics

• questions developed focus on improving understanding about a topic and clarifying information about processes or procedures

Snapshot – Identify, process and evaluate information
Critical and Creative Thinking: Inquiring: Identify, process and evaluate informatio

Content description

AC9M3ST03

Continuum extract

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

• identify and explore relevant information from a range of sources, including visual information and digital sources
• identify and explain similarities and differences in selected information
• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources
• condense and combine selected information related to the topic of study
• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources
• compare information and opinion that can be verified against claims based on personal preference

Snapshot – Interpreting and representing data
Numeracy: Statistics and probability: Interpreting and representing data

Content description

AC9M3ST03

Learning progression extract

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

Collecting, displaying and interpreting categorical data

• designs survey questions to collect categorical data (e.g. creates a suite of survey questions to plan the end of year class party)
• collects, records and displays one-variable data in variety of ways such as tables, charts, plots and graphs using the appropriate digital tools (e.g. uses a spreadsheet to record data collected in a class survey and generates a column graph to display the results)
• displays and interprets categorical data in one-to-many data displays
• interprets and represents categorical data in simple displays such as bar and column graphs, pie charts, models, maps, colour wheels, and pictorial timelines, and makes simple inferences from such displays
• makes comparisons from categorical data displays using relative heights from a common baseline (e.g. compares the heights of the columns in a simple column graph to determine the tallest and recognises this as the most frequent response)

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

Snapshot – Acquire and collate data

Digital Literacy: Investigating: Acquire and collate data

Content description

AC9M3ST03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• collect data by counting, measuring and observing with familiar digital tools
• collect and access data using a range of digital tools and methods in response to a defined question
• collect and access data using a range of digital tools and methods in response to a defined question or problem

Snapshot – Interpret data

Digital Literacy: Investigating: Interpret data

Content description

AC9M3ST03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• classify and group data using digital familiar tools to answer simple questions
• organise, summarise and visualise data using a range of digital tools to identify patterns and answer questions
• analyse and visualise data using a range of digital tools to identify patterns and make predictions

Snapshot – Develop questions

Critical and Creative Thinking: Inquiring: Develop questions

Content description

AC9M3ST03

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• develop questions to explore a familiar idea or topic
• questions developed are fit for the purpose of the investigation
• develop■questions to examine unfamiliar ideas and topics
• questions developed support the process of improving knowledge and understanding about a topic or investigation
• develop■questions to examine unfamiliar ideas and topics
• questions developed focus on improving understanding about a topic and clarifying information about processes or procedures

Snapshot – Develop questions

Critical and Creative Thinking: Inquiring: Develop questions

Content description

AC9M3ST03
Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
- develop questions to explore a familiar idea or topic
- questions developed are fit for the purpose of the investigation
- develop■questions to examine unfamiliar ideas and topics
- questions developed support the process of improving knowledge and understanding about a topic or investigation
- develop■questions to examine unfamiliar ideas and topics
- questions developed focus on improving understanding about a topic and clarifying information about processes or procedures

Snapshot – Develop questions

Critical and Creative Thinking: Inquiring: Develop questions

Content description

AC9M3ST03
Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
- develop questions to explore a familiar idea or topic
- questions developed are fit for the purpose of the investigation
- develop■questions to examine unfamiliar ideas and topics
- questions developed support the process of improving knowledge and understanding about a topic or investigation
- develop■questions to examine unfamiliar ideas and topics
- questions developed focus on improving understanding about a topic and clarifying information about processes or procedures

AC9M3P01

identify practical activities and everyday involving chance; describe possible outcomes and as 'likely' or 'unlikely' and identify some as 'certain' or 'impossible' explaining reasoning

•

•

Elaborations

• predicting what could happen next in practical activities that involve an element of chance, considering possible outcomes and using terms such as "likely" or "unlikely" to explain their predictions

• classifying a list of everyday or sorting a of cards according to how likely they are to happen, using the language of chance and giving reasons for classifications; discussing how impossible outcomes cannot ever happen, uncertain outcomes are affected by chance as they may or may not happen whereas certain must always happen, so they are not affected by chance

• making predictions■and testing■what would happen; for example,■if 10 10 1 0 names■were put in a■box, and names were then drawn out one at a time and replaced after each selection, discussing how likely it would be after 10 10 1 0 selections that all 10 10 1 0 names were drawn from the box or that one name was drawn multiple times

• role-playing being a chatbot or virtual assistant responding to a user about the likelihood of ; for example, using preset questions on cards relating to the likelihood of , role-playing in pairs responding as a virtual assistant, giving reasons for their response

Students learn to:

identify practical activities and everyday events involving chance; describe possibl events as 'likely' or 'unlikely' and identify some events as 'certain' or 'impossible' e reasoning

(AC9M3P01)
General capabilities and cross-curriculum priorities

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

- Interpret concepts and problems
- Draw conclusions and provide reasons

Statistics and probability

- Understanding chance

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 .

Speaking and listening

- Speaking

Analysing

- Interpret concepts and problems

Generating

- Consider alternatives

Speaking and listening

- Speaking

Analysing

- Draw conclusions and provide reasons
- Evaluate actions and outcomes

Analysing

- Draw conclusions and provide reasons

Statistics and probability

- Understanding chance

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3P01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
- identify the main parts of a concept or problem and describe how these relate to each other
- identify and prioritise significant elements and relationships within a concept or problem
- identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3P01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
- draw conclusions and make choices when completing tasks and explain the reasons for choices made
- draw conclusions and make choices when completing tasks, using observation and prior knowledge to provide reasons and construct arguments for choices made
- draw conclusions and make choices when completing tasks, using discipline knowledge to provide reasons and evaluate arguments for choices made

Snapshot – Understanding chance

Numeracy: Statistics and probability: Understanding chance

Content description

AC9M3P01

Learning progression extract

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

Describing chance

- describes everyday occurrences that involve chance (e.g. chance of it raining tomorrow, choosing a name from a hat, making it to the grand final)

• makes predictions on the likelihood of simple, everyday occurrences as to it will or won't, might or might not happen, based on experiences (e.g. "the plant will die if we don't water it", "next year I will be … years old"; "my tower might not fall down if I add one more brick but it won't reach the roof", "we might see a pelican at the lake")

Comparing chance

• describes and orders the likelihood of events in non-quantitative terms such as certain, likely, highly likely, unlikely, impossible (e.g. "if there are more blue than red marbles in a bag, blue is more likely to be selected"; "I am certain that I won't win the competition because I didn't enter")

• records outcomes of chance experiments in tables and charts

• demonstrates that outcomes of chance experiments may differ from expected results (e.g. we will not get the same results every time we roll a dice)

• draws conclusions that recognise variation in results of chance experiments (e.g. you rolled a lot of sixes this game, I hope I get more sixes next time)

Fairness

• identifies all possible outcomes of one-step experiments and records outcomes in tables and charts

• explains why outcomes of chance experiments may differ from expected results (e.g. "just because there are 6 6 6 numbers on a dice doesn't mean you are going to roll a 6 6 6 every 6 6 6 rolls, you may not roll a 6 6 6 in the entire game")

• explains the difference between the notion of equal likelihood of possible outcomes and those that are not equally likely   (e.g. explains the use of phrases such as fifty-fifty when there are 2 2 2 outcomes and when 2 2 2 events occurring are equally likely as opposed to head and tail are more likely than 2 2 2 heads or 2 2 2 tails)

• identifies unfair elements in games that affect the chances of winning (e.g. having an unequal number of turns; weighted dice)

• explains that the outcomes of chance events are either "certain to happen", "certain not to happen" or lie somewhere in between and knows that impossible events are events that are "certain not to happen"

• identifies events where the chance of one event occurring will not affect the occurrence of the other (e.g. if a coin is tossed and heads have come up 7 7 7 times in a row, it is still equally likely that the next toss will be either a head or a tail)

Snapshot – Speaking

Literacy: Speaking and listening: Speaking

Content description

AC9M3P01

Learning progression extract

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

Crafting ideas

• creates short texts using a few connected sentences, on familiar and learnt topics (e.g. retells a familiar story or describes a process)

• speaks audibly and clearly to a familiar audience (e.g. own class)

• uses some extended sentences

• organises key ideas in logical sequence

• provides some supporting details

• expresses causal relationships (e.g. "when the egg cracked, the chicken came out")

• provides simple justifications (e.g. "I chose cherries because they are red.")

• uses some varying intonation or volume for emphasis

• regulates pace with pausing

Vocabulary

• uses some precise vocabulary from learning areas

• uses connectives to sequence ideas (e.g. "first", "then", "next", "finally") (see Grammar)

• uses vocabulary to express cause and effect (e.g. "The excursion was cancelled because it rained.")

• uses some modal language to influence or persuade (e.g. "should", "will") (see Grammar)

Crafting ideas

- creates spoken texts for a range of purposes across learning areas (e.g. explains how the mathematics problem was solved)
- uses complex sentence constructions including relative clauses (e.g. "The boy who drew the picture got a prize.") (see Grammar)
- adjusts register according to purpose and audience
- elaborates on ideas using a short sequence of sentences
- incorporates learnt content into spoken text
- sequences ideas and events appropriately
- uses mainly correct grammatical constructions (e.g. pronoun references; noun-verb agreement)
- varies volume and intonation to suit purpose and audience
- plans and delivers spoken presentations using appropriate structure and language
- includes video and audio enhancements to spoken texts, where appropriate (e.g. includes slides or pictures in a spoken presentation)

Vocabulary

- experiments with vocabulary drawn from a variety of sources
- uses adverbials to give more precise meaning to verbs (e.g. talking loudly) (see Grammar)
- uses a range of vocabulary to indicate connections (e.g. consequences)
- uses conditional vocabulary to expand upon ideas (e.g. "If Goldilocks ate all the porridge the bears would be hungry.")

Crafting ideas

- creates detailed spoken texts on a broad range of learning area topics
- includes details and elaborations to expand ideas
- uses connectives to signal a change in relationship (e.g. "however", "although", "on the other hand") or to show causal relationships (e.g. "due to", "since") (see Grammar)
- uses a range of expressions to introduce an alternative point of view (e.g. "in my opinion", "he did not agree with")
- rehearses spoken text to accommodate time and technology
- controls tone, volume, pitch and pace to suit content and audience
- uses technologies or audio and visual features to enhance spoken text (e.g. videos a spoken presentation with music, sound effect enhancements)

Vocabulary

- uses a broader range of more complex noun groups/phrases to expand description (e.g. "protective, outer covering")
- selects more specific and precise words to replace general words (e.g. uses "difficult" or "challenging" for "hard")
- uses some rhetorical devices (e.g. "don't you agree?")

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3P01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
- identify the main parts of a concept or problem and describe how these relate to each other
- identify and prioritise significant elements and relationships within a concept or problem
- identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Consider alternatives

Critical and Creative Thinking: Generating: Consider alternatives

Content description

AC9M3P01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
- consider alternatives and explore different or creative ways to approach a task or problem
- consider alternatives by comparing different or creative ways to approach a task, issue or problem and recommend a preferred option

• consider alternatives by challenging or creatively adjusting existing ideas in situations where current approaches do not work and recommend a preferred option

Snapshot – Speaking

Literacy: Speaking and listening: Speaking

Content description

AC9M3P01

Learning progression extract

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

Crafting ideas

• creates short texts using a few connected sentences, on familiar and learnt topics (e.g. retells a familiar story or describes a process)
• speaks audibly and clearly to a familiar audience (e.g. own class)
• uses some extended sentences
• organises key ideas in logical sequence
• provides some supporting details
• expresses causal relationships (e.g. "when the egg cracked, the chicken came out")
• provides simple justifications (e.g. "I chose cherries because they are red.")
• uses some varying intonation or volume for emphasis
• regulates pace with pausing

Vocabulary

• uses some precise vocabulary from learning areas
• uses connectives to sequence ideas (e.g. "first", "then", "next", "finally") (see Grammar)
• uses vocabulary to express cause and effect (e.g. "The excursion was cancelled because it rained.")
• uses some modal language to influence or persuade (e.g. "should", "will") (see Grammar)

Crafting ideas

• creates spoken texts for a range of purposes across learning areas (e.g. explains how the mathematics problem was solved)
• uses complex sentence constructions including relative clauses (e.g. "The boy who drew the picture got a prize.") (see Grammar)
• adjusts register according to purpose and audience
• elaborates on ideas using a short sequence of sentences
• incorporates learnt content into spoken text
• sequences ideas and events appropriately
• uses mainly correct grammatical constructions (e.g. pronoun references; noun-verb agreement)
• varies volume and intonation to suit purpose and audience
• plans and delivers spoken presentations using appropriate structure and language
• includes video and audio enhancements to spoken texts, where appropriate (e.g. includes slides or pictures in a spoken presentation)

Vocabulary

• experiments with vocabulary drawn from a variety of sources
• uses adverbials to give more precise meaning to verbs (e.g. talking loudly) (see Grammar)
• uses a range of vocabulary to indicate connections (e.g. consequences)
• uses conditional vocabulary to expand upon ideas (e.g. "If Goldilocks ate all the porridge the bears would be hungry.")

Crafting ideas

• creates detailed spoken texts on a broad range of learning area topics
• includes details and elaborations to expand ideas
• uses connectives to signal a change in relationship (e.g. "however", "although", "on the other hand") or to show causal relationships (e.g. "due to", "since") (see Grammar)
• uses a range of expressions to introduce an alternative point of view (e.g. "in my opinion", "he did not agree with")
• rehearses spoken text to accommodate time and technology
• controls tone, volume, pitch and pace to suit content and audience

- uses technologies or audio and visual features to enhance spoken text (e.g. videos a spoken presentation with music, sound effect enhancements)

Vocabulary

- uses a broader range of more complex noun groups/phrases to expand description (e.g. "protective, outer covering")
- selects more specific and precise words to replace general words (e.g. uses "difficult" or "challenging" for "hard")
- uses some rhetorical devices (e.g. "don't you agree?")

Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3P01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
- draw conclusions and make choices when completing tasks and explain the reasons for choices made
- draw conclusions and make choices when completing tasks, using observation and prior knowledge to provide reasons and construct arguments for choices made
- draw conclusions and make choices when completing tasks, using discipline knowledge to provide reasons and evaluate arguments for choices made

Snapshot – Evaluate actions and outcomes

Critical and Creative Thinking: Analysing: Evaluate actions and outcomes

Content description

AC9M3P01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
- evaluate whether they have accomplished what they set out to achieve, including using a given set of criteria to support decisions
- evaluate the outcome of a task by explaining ideas, conclusions and actions, including using a given set of criteria to support decisions
- evaluate the effectiveness of a course of action or the outcome of a task, including using a given or co-developed set of criteria to support decisions

Snapshot – Draw conclusions and provide reasons

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

Content description

AC9M3P01

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
- draw conclusions and make choices when completing tasks and explain the reasons for choices made
- draw conclusions and make choices when completing tasks, using observation and prior knowledge to provide reasons and construct arguments for choices made
- draw conclusions and make choices when completing tasks, using discipline knowledge to provide reasons and evaluate arguments for choices made

Snapshot – Understanding chance

Numeracy: Statistics and probability: Understanding chance

Content description

AC9M3P01

Learning progression extract

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

Describing chance

- describes everyday occurrences that involve chance (e.g. chance of it raining tomorrow, choosing a name from a hat, making it to the grand final)
- makes predictions on the likelihood of simple, everyday occurrences as to it will or won't, might

or might not happen, based on experiences (e.g. "the plant will die if we don't water it", "next year I will be … years old"; "my tower might not fall down if I add one more brick but it won't reach the roof", "we might see a pelican at the lake")

Comparing chance

• describes and orders the likelihood of events in non-quantitative terms such as certain, likely, highly likely, unlikely, impossible (e.g. "if there are more blue than red marbles in a bag, blue is more likely to be selected"; "I am certain that I won't win the competition because I didn't enter")
• records outcomes of chance experiments in tables and charts
• demonstrates that outcomes of chance experiments may differ from expected results (e.g. we will not get the same results every time we roll a dice)
• draws conclusions that recognise variation in results of chance experiments (e.g. you rolled a lot of sixes this game, I hope I get more sixes next time)

Fairness

• identifies all possible outcomes of one-step experiments and records outcomes in tables and charts
• explains why outcomes of chance experiments may differ from expected results (e.g. "just because there are 6 6 6 numbers on a dice doesn't mean you are going to roll a 6 6 6 every 6 6 6 rolls, you may not roll a 6 6 6 in the entire game")
• explains the difference between the notion of equal likelihood of possible outcomes and those that are not equally likely   (e.g. explains the use of phrases such as fifty-fifty when there are 2 2 2 outcomes and when 2 2 2 events occurring are equally likely as opposed to head and tail are more likely than 2 2 2 heads or 2 2 2 tails)
• identifies unfair elements in games that affect the chances of winning (e.g. having an unequal number of turns; weighted dice)
• explains that the outcomes of chance events are either "certain to happen", "certain not to happen" or lie somewhere in between and knows that impossible events are events that are "certain not to happen"
• identifies events where the chance of one event occurring will not affect the occurrence of the other (e.g. if a coin is tossed and heads have come up 7 7 7 times in a row, it is still equally likely that the next toss will be either a head or a tail)

AC9M3P02

conduct repeated ; identify and describe possible outcomes, record the results, recognise and discuss the

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Elaborations

• identifying the possible outcomes of a chance experiment, creating a tally chart to record results, carrying out a few and tallying the results for each trial; responding to the questions: "How did your results vary for each trial?" and "How do the results vary across the class?"
• conducting repeated of such as tossing a coin, throwing a dice, drawing a coloured or numbered ball from a bag, using a coloured spinner with equal , and identifying the in the number of heads/fives/reds between
• discussing how the process of conducting repeated is crucial in the training of artificial intelligence applications like recommendation systems; for example, if they were building a recommendation system for an online shopping website, they could conduct repeated experiments by tracking user interactions over time

Students learn to:

conduct repeated chance experiments; identify and describe possible outcomes, re recognise and discuss the variation

(AC9M3P02)

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

• Consider alternatives

Statistics and probability

• Understanding chance

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

Statistics and probability

• Understanding chance

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3P02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify the main parts of a concept or problem and describe how these relate to each other
• identify and prioritise significant elements and relationships within a concept or problem
• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Consider alternatives

Critical and Creative Thinking: Generating: Consider alternatives

Content description

AC9M3P02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• consider alternatives and explore different or creative ways to approach a task or problem
• consider alternatives by comparing different or creative ways to approach a task, issue or problem and recommend a preferred option
• consider alternatives by challenging or creatively adjusting existing ideas in situations where current approaches do not work and recommend a preferred option

Snapshot – Understanding chance

Numeracy: Statistics and probability: Understanding chance

Content description

AC9M3P02

Learning progression extract

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

Comparing chance

• describes and orders the likelihood of events in non-quantitative terms such as certain, likely, highly likely, unlikely, impossible (e.g. "if there are more blue than red marbles in a bag, blue is more likely to be selected"; "I am certain that I won't win the competition because I didn't enter")
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• demonstrates that outcomes of chance experiments may differ from expected results (e.g. we will not get the same results every time we roll a dice)

• draws conclusions that recognise variation in results of chance experiments (e.g. you rolled a lot of sixes this game, I hope I get more sixes next time)

Fairness

• identifies all possible outcomes of one-step experiments and records outcomes in tables and charts
• explains why outcomes of chance experiments may differ from expected results (e.g. "just because there are 6 6 6 numbers on a dice doesn't mean you are going to roll a 6 6 6 every 6 6 6 rolls, you may not roll a 6 6 6 in the entire game")
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• identifies unfair elements in games that affect the chances of winning (e.g. having an unequal number of turns; weighted dice)
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Probabilities

• expresses the theoretical probability of an event as the number of ways an event can happen out of the total number of possibilities
• identifies a range of chance events that have a probability from $0 - 1$ $0 - 1$ $0 - 1$ (e.g. you have zero probability of rolling a 7 7 7 with one roll of a standard 6 6 6 -sided dice; the probability that tomorrow is Wednesday given today is Tuesday is one)
• describes probabilities as fractions of one (e.g. the probability of an even number when rolling a dice is 3 6 $\frac{3}{6}$ 6 3 ■)
• expresses probabilities as fractions, decimals, percentages and ratios recognising that all probabilities lie on a measurement scale of zero to one (e.g. uses numerical representations such as 75 75 7 5 % chance of rain or 4 4 4 out 5 5 5 people liked the story; explains why you can't have a probability less than zero)

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3P02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
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• identify and prioritise significant elements and relationships within a concept or problem
• identify the relevant and significant aspects of a concept or problem, understanding that approaches may change depending on the subject or learning area

Snapshot – Identify, process and evaluate information

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

Content description

AC9M3P02

Continuum extract

The following continuum extract shows the alignment of the continuum with this content.
• identify and explore relevant information from a range of sources, including visual information and digital sources
• identify and explain similarities and differences in selected information
• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources
• condense and combine selected information related to the topic of study
• identify and examine relevant information and opinion from a range of sources, including visual information and digital sources

• compare information and opinion that can be verified against claims based on personal preference

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

AC9M3P02

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Snapshot – Identify, process and evaluate information

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

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• compare information and opinion that can be verified against claims based on personal preference

Snapshot – Interpret concepts and problems

Critical and Creative Thinking: Analysing: Interpret concepts and problems

Content description

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Snapshot – Understanding chance

Numeracy: Statistics and probability: Understanding chance

Content description

AC9M3P02

Learning progression extract

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

Describing chance

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Fairness
• identifies all possible outcomes of one-step experiments and records outcomes in tables and charts
• explains why outcomes of chance experiments may differ from expected results (e.g. "just because there are 6 6 6 numbers on a dice doesn't mean you are going to roll a 6 6 6 every 6 6 6 rolls, you may not roll a 6 6 6 in the entire game")
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