Stage 6 Mathematics Life Skills

## MLS–N1 Review of number properties

### Overview

| MLS-N1 Review of number properties | Unit Duration |
| --- | --- |
| Number and Modelling focuses on the use of number properties and patterns to understand mathematics and its application to meaningful contexts. | This is a school-based decision |

| Subtopic focus | Outcomes |
| --- | --- |
| This subtopic reviews the basics of number and solving number problems. It also helps prepare students for the more advanced subtopic of mathematical modelling. The knowledge, understanding and skills and understanding in this subtopic builds on Life Skills Years 7–10 outcomes and content for Number and Algebra. | A student:* explores mathematical concepts, reasoning and language to solve problems MALS6-1
* engages with mathematical symbols, diagrams, graphs and tables to represent information accurately MALS6-2
* demonstrates understanding of number and patterns in a range of contexts MALS6-7
* solves problems using number and patterns in real-life situations MALS6-8
* engages with mathematical skills and techniques, including technology, to investigate, explain and organise information MALS6-13
* communicates mathematical ideas and relationships using a variety of strategies MALS6-14
 |
| Related Mathematics Standard outcomes | ****Related Numeracy CEC outcomes**** |
| MS11-1, MS11-2, MS11-6, MS11-9, MS11-10, MS1-12-1, MS1-12-2, MS1-12-6, MS1-12-9, MS1-12-10, MS2-12-1, MS2-12-2, MS2-12-6, MS2-12-9, MS2-12-10 | N6-1.1, N6-1.2, N6-1.3, N6-2.2, N6-3.1, N6-3.2 |

All outcomes referred to in this unit come from the [Stage 6 Mathematics Life Skills Syllabus](https://educationstandards.nsw.edu.au/wps/portal/nesa/11-12/stage-6-learning-areas/stage-6-mathematics/mathematics-life-skills-2017)
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### How to use this resource

The tasks in this resource are not designed to be used as a lesson sequence from start to finish. Teachers should explore the resource to determine whether each suggested task or sequence of tasks are best used as a lesson focus, a lesson sequence or as a lesson starter or finisher for distributed practice.

### Adjustments

Examples of adjustments can be found on the NESA website under [Adjustments](https://www.educationstandards.nsw.edu.au/wps/portal/nesa/11-12/Diversity-in-learning/stage-6-special-education/adjustments).

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| --- | --- |
| Student’s name | Adjustments |
| e.g. John Smith | Requires learning material to be printed on blue paper. |
|  |  |

* Sample unit of learning

| **Content****Students learn to:** | **Suggested teaching strategies and resources** | **Differentiation and modifications**  | **Date and initial** |
| --- | --- | --- | --- |
| N1.1 Basic number skills* recognise language related to number, for example:
* few
* more
* none
* all
* double
* third Literacy icon
 | Quantifying collections* Students play [minute to win it.](https://education.abc.net.au/HOME#!/media/3538721/maths-years-3-4-with-ms-kirszman-quantifying-collections) This activity explores how we can quantify collections without needing to count but by looking and thinking instead. The use of familiar structures to help quantify collections should also be explored, for example, dice patterns and ten-frames.
* Conversations during the activity should draw upon language related to number, such as, “I have 10 and 2 **more**” or, “I have 2 tens and a **few** **more**”
* Students play [handfuls – thinking multiplicatively](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-1-basic-number-skills/handfuls-thinking-multiplicatively?authuser=0). This extends on the ideas of [minute to win it](https://education.abc.net.au/HOME#!/media/3538721/maths-years-3-4-with-ms-kirszman-quantifying-collections) by exploring how to quantify a collection of Lego mini figurines without needing to count by using familiar structures, and then using multiplicative thinking to find the number of legs in the collection.
* Conversations during the activity should draw upon language related to number, such as, “I have 5 and 2 **more**,which I can rename as 7. I need to **double** 7 to find the number of legs, so 14.”
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| * count in different contexts, for example:
* count with coins
* recognise factors and multiples of numbers
 | Counting coins (adapted from Dan Meyer’s [coin counting](https://www.101qs.com/3199-coin-counting))* Show a collection of Australian coins. Teacher to frame the task:
* How much cash is that? How many coins are there?
* Students:
* Write a wrong answer for both questions.
* Write a best guess for both questions.
* Once students have estimated, with reasons, they will work together using number knowledge and structures to determine the exact amount of money.
* This task could be adapted for a small number of coins and further developed to include a very large group of coins. Teachers could use manipulatives such as coin templates to support students with this task. The class should explore a range of structures, including arrays and standard piles of coins.

**Extension:** Students could create their own videos for each other to generate a similar type of problem for their peers to solve.**Related topic:** MLS-F1 Decimals, percentages and money. It is suggested that this concept is explored with in the MLS-F1 unit of learning.  |  |  |
| * count in different contexts, for example:
* count down seconds to the start of an event
 | Counting down* Students to identify scenarios when counting down is appropriate e.g. rocket launching, New Year’s Eve, parents reprimanding children, official opening of an event, concert or show.

**Cross curriculum opportunity:** Stage 6 English Life Skills* Students to co-construct a short story for children, teens or young adults built around the context of a countdown.
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| * count in different contexts, for example:
* count time on the clock in five-minute intervals
* recognise factors and multiples of numbers
 | Counting time* Each student needs two pairs of laminated analogue and digital clock faces. Every lesson:
* Discuss the time the lesson will end and students are to represent it on one pair of laminated digital and analogue clocks.
* Discuss the time for some other daily event and students are to represent it on another pair of laminated digital and analogue clocks **e.g.** sunset, sunrise, school ends, footy game starts, dinner time, work shift starts. **Resource:** clock-faces.DOCX

**Related topic:** MLS-M1 Everyday measurement. It is suggested that this activity, or similar, be included in every lesson to provide regular distributed practice to students who need it.  |  |  |
| * use ordinal terms in everyday contexts, for example:
* ‘take the third street on the left’ Literacy icon
 | Giving directions using ordinal terms* Activity 1 – Students to direct a peer from one classroom to another in the school without using the names of the buildings. May use a map of the school to assist but the activity should be a concrete experience, with students walking from one to the other and recording the ordinal directions as they go.
* Activity 2 – Using a map or a mapping app, give the directions to a peer from one place to another without using any street names.
* Activity 3 – Design a treasure map and provide a set of instructions to locate the treasure. Give to a partner to solve using a starting point and directions that use ordinal terms only.

**Related topic:** MLS-P1 Using plans, maps and networks. It is suggested that this concept is explored within the MLS-P1 unit of learning.  |  |  |
| * use ordinal terms in everyday contexts, for example:
* ‘take the third street on the left’ Literacy icon
 | Using ordinal terms to collect data**Related topic:** MLS-S1 Statistics. It is suggested that this concept is explored within the MLS-S1 unit of learning when exploring the range of ways that data can be collected. For example, collecting information from every 2nd person or every 3rd person on the roll of a class. Students should collect some information of interest in this way from a sample of students using a physical roll, and choosing every 2nd, 3rd or 5th student.  |  |  |
| * recognise factors and multiples of numbers
 | Using (and cutting up) arrays to determine factors* Watch [dot card talk 2](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-1-basic-number-skills/dot-card-talk-2?authuser=0), then, provide 24 counters and arrange in as many arrays as possible, drawing and then ‘slicing’ the array to explore the factors before reorganising the counters into a different rectangle to explore different factors.
* This could be repeated for multiples such as 16, 36, 20. Students should draw visual representations in each case.

**Related games:** [Multiplication toss](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-1-basic-number-skills/multiplication-toss?authuser=0), [multiple madness](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-1-basic-number-skills/multiples-madness-fives?authuser=0), [factors fun](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-1-basic-number-skills/factors-fun?authuser=0). **Resource:** games-for-distributed-practice.DOCX**Related topic:** MLS-M2 Measuring 2D and 3D shapes. It is suggested that this concept is explicitly linked and revisited within the MLS-M2 unit of learning. For example, recognise the relationship between length and width and the number of grid squares in the rows and columns of a square or rectangle.  |  |  |
| * recognise language related to number, for example:
* few
* more
* none
* all
* double
* third Literacy icon
* recognise factors and multiples of numbers
 | Exploring equivalent number representationsStudents can play this game like memory or concentration: * Using the [youcubed math cards](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-1-basic-number-skills/youcubed-math-cards?authuser=0), you are aiming to match cards with the same value shown through different representations.
* Lay all the cards down on a table and then take turns to pick them up, looking for a match.
* For example 9 fours can be shown with an area model, a set of objects such as dominoes, and the number sentence (equation), as well as the product, 36. When players match the cards they should explain how they know that the different cards are equivalent in value.

Exploring number visuals* Students to watch [youcubed number visuals](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-1-basic-number-skills/youcubed-number-visuals?authuser=0), then, explore all the things they notice and wonder about how each number is represented. Students to use the [number visuals (3-5)](https://www.youcubed.org/resources/number-visuals-k-12/) and coloured markers or pencils to illustrate as many relationships as they can between the different number representations. Facilitate a number talk to collate students’ ideas.
* Watch <https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-1-basic-number-skills/same-and-different> Use the visual from [math for love](http://www.mathforlove.com/) to explore and discuss the representations of each number.

**Related games:** [number busting](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-2-place-value/number-busting?authuser=0) |  |  |
| * recognise language related to number, for example:
* few
* more
* none
* all
* double
* third Literacy icon
* recognise factors and multiples of numbers
 | Partitioning using place value parts* Teachers may like to view and recreate the main activity in, [Partitioning numbers using place value parts](https://education.abc.net.au/HOME#!/media/3538689/maths-years-3-4-with-ms-kirszman-partitioning-numbers-using-place-value-parts). This explores place value, and both standard and non-standard partitioning.
* Explore the renaming of numbers in their place value parts as well as standard and non-standard partitioning for the number 42 e.g. As 4 tens and 2 ones, 3 tens and 12 ones,…, 0 tens and 42 ones. Use a table to display the solution and explore the patterns within it. The clip finishes by wondering, “What about for 52? Or 82? Or 142?” how many standard and non-standard ways are there for partitioning each of these numbers. Have students investigate different numbers and explore the patterns.

**Related games:** [Which one doesn’t belong?](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-1-basic-number-skills/which-one-doesnt-belong?authuser=0)**Resource:** games-for-distributed-practice.DOCX  |  |  |
| N1.2 Place value* compare and order numbers Critical and creative thinking icon
 | Ordering numbers* Students play [Order! Order!](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-1-basic-number-skills/order-order-1?authuser=0) To play the game, students:
* roll four 10-sided dice (0-9) and create and record a 2-digit number.
* repeat until you have 4 different 2-digit numbers.
* order them from smallest to largest, and largest to smallest in the fewest moves possible, moving adjacent cards only.
* Students play [Order Order 2](https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-2/contexts-for-practise/order-order-2) (as above, with 4 digit numbers)

Stack of seven* Students play a stack of seven in pairs. To play the game, students:
* Construct a table with seven rows and one column (the stack of seven).
* Write a 3 digit number in the top box. Write a smaller 3 digit number in the bottom box.
* Write a number in the middle box that is anywhere between the two numbers.
* Continue to take it in turns to write numbers between the numbers until all boxes are full.
* Choose 2 adjacent boxes to start a new stack of seven.
* The game requires students to use place value to identify numbers between each pair.

Australian stadium seating capacities* Students to use place value to order and read seating capacities of Australian sports stadiums. **Resource:** seating-capacities.DOCX

World city populations* Students to use place value to order and read world city populations. **Resource:** city-populations.DOCX

**Related place value games:** * [101 and you’re out!](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-2-place-value/101-and-youre-out?authuser=0)
* [Hit it!](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-2-place-value/hit-it?authuser=0)
* [dicey addition](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-3-number-problems/dicey-addition?authuser=0)
 |  |  |
| * identify which digit is in a given place value for a number, for example:
* identify how many hundreds there are in 523
* match place value to the digits of an integer
* recognise, read and record numbers and interpret numerical information in various contexts, for example:
* numbers of a bus route
* the number of a train platform Personal and social capability icon
* compare and order numbers Critical and creative thinking icon
 | Using the place value system to create numbers* Students will be issued with a number of different word cards and given a series of challenges for each set of cards. Challenges might include: Using all the cards,
* form the largest number,
* form the smallest number and
* form as many numbers as possible, ordering them from smallest to largest
* For each example, write the number in digits using the place value template and practice saying the number. Teachers may like to view the lesson [our place value system](https://education.abc.net.au/HOME#!/media/3538785/maths-years-3-4-with-ms-kirszman-our-place-value-system) to consider how to structure the activities to students.

**Resources:** * words-to-numbers.DOCX
* place-value-table-poster-template.DOCX

Representations of numbers* Students will be issued with a number of activity cards, each with two truths and one lie. In each case, students will need to work together to prove, using representations, that each statement is either true or false.
* Teachers may like to view the lesson [partitioning numbers using efficient strategies](https://education.abc.net.au/HOME#!/media/3538657/maths-years-3-4-with-ms-kirszman-partitioning-numbers-using-efficient-strategies) to consider how to model and introduce the activities to students.

**Resources:** * two-truths-one-lie.DOCX
* MAB-representations-template.DOCX
 |  |  |
| N1.3 Number problems* use a number sentence to solve a given problem Critical and creative thinking icon
* solve number problems and explain the strategies used Literacy icon
 | Number talks Teachers could facilitate regular number talks through the unit of learning for various problems. The number talks focus on students using different strategies and explaining the strategies used. For examples of number talks, see:* [let’s talk 1](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-3-number-problems/lets-talk-1-stage-3) (until 10:00)
* [let’s generali](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-3-number-problems/lets-generalise-1-stage-3?authuser=0)[[let’s investigate 1](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-3-number-problems/lets-generalise-1-stage-3?authuser=0)](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-3-number-problems/lets-investigate-1-stage-3?authuser=0) [(until 6:51)](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-3-number-problems/lets-generalise-1-stage-3?authuser=0)
* [[let’s explore 1](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-3-number-problems/lets-generalise-1-stage-3?authuser=0)](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-3-number-problems/lets-explore-1-stage-3?authuser=0)[se 1](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-3-number-problems/lets-generalise-1-stage-3?authuser=0)
* [let’s talk 2](https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-3/targeted-teaching/lets-talk-2-s3) and
* [let’s investigate 2](https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-3/targeted-teaching/lets-investigate-2-s3).

**Please note:** The above videos are teacher resources only. It is suggested that you recreate these types of learning experiences for students in a similar way. **Related number games**: * [dicey addition](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-3-number-problems/dicey-addition?authuser=0)
* multo (see games-for-distributed-practice.DOCX)
 |  |  |
| * recognise decimals and percentages in everyday contexts, for example:
* a 30% off sale
* purchasing 1.5 kg of pumpkin Personal and social capability icon
 | Recognising decimals and percentages at the shops* Students to go shopping online at a supermarket and take screenshots of 10 specials, highlighting the percentages and decimals they find in each case.
* Conversations might include whether something is more, less or equal to 50% off or half price. There may be opportunities to think about and discuss what the price could be if it was exactly half price and then imagine a little bit more or less, for example, for 40% or 60% off.

**Related topic:** MLS-F1 Decimals, percentages and money. It is suggested that this concept is explicitly linked or revisited within the MLS-F1 unit of learning.  |  |  |
| * use addition, subtraction, multiplication and division in everyday contexts, for example:
* if I have $10 and want to buy two loaves of bread that each cost $4.50, do I have enough money? Personal and social capability icon
* solve number problems and explain the strategies used Literacy icon
 | Recognising decimals and percentages at the shops* Students can go shopping online at a supermarket with a budget of $10 for each of the following sections: Fruit and vegetables, bakery, dairy and confectionary. Students to take screenshots of at least 2 combinations of at least 2 items they could buy with the $10 and find the totals and how much change they would receive from the $10 in each case. Students should show representations of what the change could look like. Students could complete a similar task with a different budget of $20 or $50, for example.
* Students to solve number problems, calculating and representing change, or determining whether they have enough money for a purchase.

**Resource:** a-page-of-problems.DOCX **Related topic:** MLS-F1 Decimals, percentages and money. It is suggested that this concept is explicitly linked or revisited within the MLS-F1 unit of learning. |  |  |
| * recognise fractions in everyday contexts, for example:
* add ¼ cup sugar to the cake mix Personal and social capability icon
 | Recognising fractions in cooking* Students will need access to cooking tools such as a set of measuring cups.
* Students to read through a number of recipes, focusing on the number of cups, teaspoons or tablespoons in each. Students to choose the appropriate measuring device, highlighting and naming the fraction.
* Explore the relationship between the ¼ cup and the 1 cup by filling the ¼ cup with water and pouring it into the 1 cup. Similarly, explore the relationships between the ½ cup and 1 cup, and the ¼ cup and ½ cup.
* Activity – The missing 1 cup. Investigate alternative ways to create 1 cup of flour if the 1 cup has gone missing.

**Related fraction games and activities:** * [colour in fractions 1](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-3-number-problems/colour-in-fractions?authuser=0)
* [imagining fractions 1](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-3-number-problems/imagining-fractions-1?authuser=0)
 |  |  |
| * recognise fractions in everyday contexts, for example:
* add ¼ cup sugar to the cake mix Personal and social capability icon
* recognise decimals and percentages in everyday contexts, for example:
* a 30% off sale
* purchasing 1.5 kg of pumpkin Personal and social capability icon
* use addition, subtraction, multiplication and division in everyday contexts, for example:
* if I have $10 and want to buy two loaves of bread that each cost $4.50, do I have enough money? Personal and social capability icon
 | Investigation: How can mathematics be used to prepare a meal?* With the help of your teacher, choose a simple recipe to cook for a group of friends.
* Highlight the recipe to show all the quantities required and match these to measuring devices you will need.
* Adjust the recipe for the number of people you are preparing the meal for. Record all of this in a table to display the information.
* Go shopping online to find all of the ingredients and record the costs associated with each item. Record any sales or specials, highlighting the percentages and decimals in the items.
* Plan out a weekly food plan that covers nutritional requirements and a budget.

**Cross curriculum opportunity:** Stage 6 Food Technology Life Skills |  |  |
| * complete number sentences involving one or more operations by calculating missing values, for example:
* , and relate to everyday contexts
 | Completing number sentences* Students to use manipulatives (counters, or everyday items) to represent a variety of expressions and their solutions.
* Students could discuss, describe and/or write down real-life scenarios that might represent the problem.
* Students may like to record the representations as drawings using mini whiteboards.**Resource:** a-page-of-equations.DOCX

**Related games:** [factors fun](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-1-basic-number-skills/factors-fun?authuser=0)**Resource:** games-for-distributed-practice.DOCX |  |  |
| * recognise and use the correct order of operations for a multi-step equation, for example:
* complete the multiplication first in the equation 4 + 2 x 5 Critical and creative thinking icon
 | Solving problems using number knowledge about order of operations* Students to explore a number of representations of quantities and write an appropriate equation for it.
* Students provided with a variety of equations requiring order of operations. Represent the equations using visuals to demonstrate how the order of operations is appropriate.
* Teacher can model the language, “4 plus 2 fives” to help students. 2 fives means an array with 2 rows of five in each row. 4 plus 2 fives means 2 rows of five and 4 more.”
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| * choose the best operation to solve a word problem, for example:
* choose to calculate 5 x 10 rather than 10+10+10+10+10 to answer the question, 'If I buy 5 packs of toilet paper and each pack has 10 toilet rolls in it, how many rolls of toilet paper would I have?' Critical and creative thinking icon
* use a number sentence to solve a given problem Critical and creative thinking icon
 | Solving word problems using number knowledge* Students to explore a number of word problems and consider the best way to represent it and best operation to solve it. **Resource:** a-page-of-word-problems.docx
 |  |  |
| * use a calculator to solve number problems, for example:
* how many cans of soft drink will I have if there are 6 cans in a carton and I buy 3 cartons? If I am having a party with 20 people, will there be enough soft drink for everyone to drink 1 can? Critical and creative thinking icon  Information and communication technology capability icon Personal and social capability icon
* use a number sentence to solve a given problem Critical and creative thinking icon
* solve number problems and explain the strategies used Literacy icon
 | Solving problems using a calculator* **Activity**: Watch the video clip [broken calculator](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/n1-3-number-problems/broken-calculator?authuser=0)
* This task poses the problem of certain keys being broken on a calculator and considering an equivalent way to enter the problem without using the broken keys.
* Ask students to demonstrate how many different ways they can come up with the answer 33 on the broken calculator in the video.

**Extension:** Students to set their own challenge for a peer by choosing a target number and blocking out some of the useful buttons on the calculator. Word problems* Pose a number of word problems for students to solve. Ask students to consider all of the strategies they know to solve the problems and add the use of a calculator as another strategy. Discuss when it would be most appropriate to use a calculator and when it would be more useful to use a mental strategy.
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### Evaluation

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### Glossary

| Term | Description |
| --- | --- |
| array | An array is an ordered collection of objects or numbers. Rectangular arrays are commonly used to build number sense. |
| common factor | A common factor (or common divisor) of a set of numbers is a factor of each element of that set.For example, 6 is a common factor of 24, 54 and 66.  |
| counting number | The counting numbers are the non-negative integers, that is, one of the numbers 0, 1, 2, 3, …Sometimes it is taken to mean only a positive integer.A natural number is a positive integer or counting number. The natural numbers are 1, 2, 3, … |
| counting on | Counting a collection, or reciting a sequence of number words, from a point beyond the beginning of the sequence.For example, when a child has counted that there are 6 objects in a collection and is then asked 'How many?' after several more are added, the child might count on from 6 saying '7, 8, 9, ...' to reach the total. This is considered a more sophisticated strategy than counting the whole collection from 1. |
| decimal | A decimal is a numeral in the decimal number system.For example, the decimal expansion of  is 6.75. The integer part is 6 and the fractional part is 0.75.A decimal is terminating if the fractional part has only finitely many decimal digits. It is non-terminating if it has infinitely many digits. Non-terminating decimals may be recurring, that is, contain a pattern of digits that repeats indefinitely after a certain number of places. It is common practice to indicate the repeating part of a recurring decimal by using dots or lines as superscripts. For example, 0.3161616… could be written as  or . |
| difference | A difference is the result of subtracting one number or algebraic quantity from another. |
| equation | An equation is a statement that asserts that two numbers or algebraic expressions are equal in value. An equation must include an equals sign. For example, 3 + 14 = 11 + 6. |
| estimate | An approximate judgment or calculation of an amount of something |
| even number | A whole number is even if it is divisible by 2. |
| factor | In general, a number is a factor (or divisor) of another if it divides into the number with no remainder. For example, 4 is a factor of 12 because  or because 12÷4=3 |
| fraction | The fraction  where  is a non-negative integer and  is a positive integer, was historically obtained by dividing a unit length into  equal parts and taking  of these parts. For example,  refers to 3 of 5 equal parts of the whole, taken together.In the fraction  the number  is the numerator and the number  is the denominator.It is a proper fraction if the numerator is less than the denominator and an improper fraction otherwise. |
| highest common factor | The highest common factor (HCF), greatest common factor (GCF) or greatest common divisor (GCD) of a given set of natural numbers is the common divisor of the set that is greater than each of the other common divisors.For example, 1, 2, 3 and 6 are the common factors of 24, 54 and 66 and 6 is the greatest common divisor. |
| multiplication | Multiplicative situations are problems or contexts that involve multiplication (or division). Calculating the number of seats in a theatre that has 30 rows of 24 seats, finding equivalent fractions, and working with ratios and percentages are all multiplicative situations. |
| number line | A number line gives a pictorial representation of real numbers. |
| numeral | A figure or symbol used to represent a number. For example, –3,0, 45, IX. |
| odd number | An odd number is an integer that is not divisible by 2. |
| operation | The process of combining numbers or expressions. In the primary years operations include addition, subtraction, multiplication and division. In later years operations include substitution and differentiation. |
| order of operations | A convention for simplifying expressions that stipulates that multiplication and division are performed before addition and subtraction and in order from left to right. For example, in 5 – 6 ÷ 2 + 7, the division is performed first and the expression becomes 5 – 3 + 7 = 9. If the convention is ignored and the operations are performed in order, the incorrect result, 6.5, is obtained. |
| partitioning | Dividing a quantity into parts. In the early years it commonly refers to the ability to think about numbers as made up of two parts, for example, 10 is 8 and 2. In later years it refers to dividing both continuous and discrete quantities into equal parts. |
| percentage | A percentage is a fraction whose denominator is 100.For example, 6 percent (written as 6%) is the percentage whose value is .Similarly, 40 as a percentage of 250 is . |
| place value | The value of a digit as determined by its position in a number relative to the ones (or units) place. For integers the ones place is occupied by the rightmost digit in the number.For example, in the number 2594.6 the 4 denotes 4 ones, the 9 denotes 90 ones or 9 tens, the 5 denotes 500 ones or 5 hundreds, the 2 denotes 2000 ones or 2 thousands, and the 6 denotes  of a one or 6 tenths. |
| prime number | A prime number is a natural number greater than 1 that has no factor other than 1 and itself. |
| product | A product is the result of multiplying together two or more numbers. For example, 36 is the product of 9 and 4.  |
| ratio | A ratio is a quotient or proportion of two numbers. It is often used as a measure of the relative size of two objects. For example, the ratio of concentrate to water in cordial is 1:4. |
| subitising | Recognising the number of objects in a collection without consciously counting. |
| sum | A sum is the result of adding together two or more numbers. |
| whole number | A whole number is a non-negative integer, that is, one of the numbers 0, 1, 2, 3, …Sometimes it is taken to mean only a positive integer, or any integer. |

### Supplementary resources

* [Mathematics Life Skills Google site](https://sites.google.com/education.nsw.gov.au/mathematics-life-skills/) – A Google site of the games, activities and resources included in this unit of learning.
* Number games and activities for distributed practice (Microsoft Word document) – A list of games and activities that could be used within this unit or across various units of learning to support distributed practice.
* [The anatomy of place value](https://teams.microsoft.com/l/meetup-join/19%3Ameeting_NWY4NzFhMjItYzAwMy00NDU0LWFlMTktOWVmMjE4MjBmMGE3%40thread.v2/0?context=%7b%22Tid%22%3a%22c6198395-22e6-4778-9809-ac8dcfd76901%22%2c%22Oid%22%3a%2229e42a3e-37aa-4c05-9d1d-3eba57fba164%22%2c%22IsBroadcastMeeting%22%3atrue%7d) – Teacher Professional Learning video to explore place value (watch from 18:40 – 29:00)
* [Becoming mathematicians: How numbers and fractions work](https://myplsso.education.nsw.gov.au/mylearning/catalogue/index?menu=Home#/detail?page=1&pageSize=10&openSessionsOnly=false&search=how%20numbers%20and%20fractions%20work&details=%2Fmylearning%2Fcatalogue%2Fdetails%2Fbbc120cb-01e8-ea11-af8b-0003ff14bf67) – Teacher professional learning video with an accompanying resource to examine some components of number sense, from kindergarten through to high school.