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| Strand: Measurement | Topic: Time |
| Foundation Level: Level statementStudents are responding to and developing some everyday language associated with time, length, mass, area and volume. |
| Example learning outcomeStudents associate everyday language related to time to familiar events, times of the day or week. |
| Elaborations — To support investigations that emphasise thinking, reasoning and working mathematically |
| Students know: * everyday language that relates to time.
 | Students may:respond to a range of routine commands (e.g. ‘next’, ‘after’, ‘before’, ‘later’, ‘not now’, ‘start’, ‘finish’)participate in games, familiar activities or routines that require a response to directions involving time (e.g. stop, wait, next)use common language related to time in life situations (e.g. go to school in the morning, stay home at the weekend, go to bed at night)respond ‘yes’ or ‘no’ to ideas about time respond to notions of time related to ‘wait’, ‘soon’, ‘not now’ for anticipated events (e.g. swimming is soon, wait for bus or taxi)respond to notions of time related to the commencement of events (e.g. ‘now’, ‘it’s time’, ‘let’s go’, ‘ready, set, go’)respond to language related to the duration of events (e.g. ‘one more’, ‘keep going’, ‘nearly finished’) respond to notions of duration of time when using equipment, such as manual or electronic timers (e.g. for cooking or timing events)respond to language related to the completion of an event (e.g. ‘finished’, ‘all over’, ‘no more’, ‘stop’)participate in developing a sequence for familiar daily routines (e.g. swimming, therapy programs, shopping, community-based activities, morning tea or lunch routine, getting a taxi, arriving home, getting dressed) using photographs, drawings or iconic schedulesrespond to signals that indicate changes in routines, or commencement or completion of familiar events (e.g. the bell for the finish of work, start of lunch time; a siren for a fire drill; an alarm clock for finishing sleeping)recognise several parts of a familiar sequence as belonging to a significant familiar event (e.g. setting the table as part of the lunch routine)recognise significant changes in familiar routines or situations — such as night and day, going to school, going home — through a range of sensory observationsshow an awareness of the names of the days of the weekassociate ‘yesterday’ as a connection to past eventsassociate ‘tomorrow’ as a connection to future eventsassociate clocks and watches with telling the timeidentify specific, routine events on particular days using visuo-graphic prompts on timetables or calendarsparticipate in, or contribute to, roleplays, songs and games involving ideas related to timeshow an awareness of duration when participating in routine events, such as shopping or commuting (e.g. go to shop, choose items, pay for items, leave shop; get ready, go to the bus stop, wait for and catch a bus)participate in, notice or recognise the predictability of sequences of events in a range of environments (e.g. toileting at home, at school and in the community)show an awareness of different durations in a working day (e.g. work — morning tea; work — lunch; work — home). |

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| Level 1: Level statementStudents identify and distinguish between the attributes of length, mass, area and volume. They select an attribute to make comparisons between objects. They describe these comparisons using appropriate language. They use non-standard units when they estimate and measure length, mass, area and volume.Students are developing an awareness of time and its relevance to their everyday lives. They sequence familiar events and relate specific events to days of the week and months of the year. They use comparative language to describe the duration of events or activities. |
| Core learning outcome M 1.2Students sequence familiar events related to days and weeks, and directly compare the duration of events. |
| **Elaborations — To support investigations that emphasise thinking, reasoning and working mathematically** | **Core content** |
| Students know:names and sequence of days in a weekevents can be sequenced within a day and across a weekhow to sequence familiar eventsduration of an event is measured from the start time to the finish timehow to directly compare the duration of events. | Students may:use language related to particular points in timeidentify whether an event occurred before (earlier or in the past) or after (later) a designated point in time identify the different points in a time sequence and give reasons for decisionsorder events in a sequence according to time and give reasonsidentify the relationship between days and weeksrepresent the occurrence of events on weekly class calendars and identify the months within which these occur suggest reasons for the placement of events on calendarsinformally identify the duration between familiar events using non-standard units (e.g. number of sleeps) identify durations as being the time between the start and finishdescribe durations using comparative languagerelate ideas about duration to other familiar events that take more time or less time. | Units and conventionsnon-standard unitsunits* days, weeks, months

comparative language (e.g. later, earlier, more time, less time)class calendarsRelationshipspoints in time (e.g. home time, start time)times of day (e.g. morning) days and a weekduration* time between start and finish
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| Investigations should occur in a range of contexts. For example, students could investigate:daily routines, such as getting ready for schoolsequences related to past experiences, such as a holiday or a tripthe duration of various activities, such as lunch time, morning tea time, music lessons. |

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| Level 2: Level statementStudents use non-standard and some standard units to estimate, measure and order length, mass, area and volume. They understand that the larger the unit, the fewer required to measure an object, and that standard units provide consistency when measuring.Students measure and compare durations of events and link these to familiar activities. They read hour and half-hour displays on analogue clocks and any time on digital displays. They use calendars to locate and sequence events that are of significance to them over a year. |
| Core learning outcome: M 2.2Students use a calendar to locate and sequence events, read and interpret key times on 12-hour displays, and measure and compare durations of time. |
| Elaborations — To support investigations that emphasise thinking, reasoning and working mathematically | **Core content** |
| Students know:conventions for, and purposes of, calendarshow to read a calendar to locate eventshow to sequence events by timeunits of timeways of measuring and comparing durations 12-hour displays represent the points in time and the passing of time structure of a 12-hour display how to read and interpret key times on analogue displaysrelationships between different units of time. | Students may:explain the purposes of monthly and yearly calendars list possible uses for calendarsidentify the time units used within calendars and explain the relationships between theseidentify significant reference points on a calendar (e.g. the digits that denote the year)explain the use of numbers on the calendar (selection, positioning and pattern on the calendar grid) and the relationship between the numbers on the calendar and the days and datesinterpret abbreviations to identify and describe the day and date of eventslocate dates of recurring meaningful events (e.g. weekly music lessons, fortnightly shopping trips)list or represent events, such as personal sequences of events, for a particular week or month in different waysidentify and describe different displays of timeidentify and describe the movement of the hands of a clock and how each hand assists in reading timeexplain 5-minute intervals used on analogue clocksexplain the relationship between the use of 12-hour displays on analogue clocks and 24 hours in a dayread and represent ‘o’clock’ and ‘half past’ on analogue clocksread and record digital time as it relates to daily eventsmatch and represent o’clock and half past on analogue and digital clocksidentify and interpret common and colloquial expressions related to time (e.g. ‘be there in a sec’)explain the need for, and use of, larger and smaller units of timemonitor the passing of time using a range of instruments and describe the relationship between representations on instruments and the units of time estimate, measure and record time using small standard units compare and classify the duration of events as being ‘more than’, ‘less than’, or ‘about the same as’ an identified standard unit or multiples of small standard units (e.g. 1 minute or 5 minutes)develop referents for a range of standard units and give reasons for choices. | Units and conventionsunits* seconds (s)
* minutes (min)
* hours (h)
	+ half hour, quarter hour
* years (yr)

12-hour displays* analogue (o’clock, half hour, 5-minute interval markings)
* digital (all times)

seasons calendars* abbreviations for days (e.g. Mon)
* months in words

representations (e.g. 9:30, nine-thirty)Relationships days and monthsweeks and a yearmonths and a yearanalogue and digital displaysduration* estimation of seconds, minutes
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| Investigations should occur in a range of contexts. For example, students could investigate:the use of calendars in historical and current contextsthe construction of calendars to show recurring and incidental school and class events and celebrations over a month or a yearthe design of calendars to show weather or sports seasonscontemporary and historical clocks, such as water clocks, sun dials, digital clocksdurations of events or tasks.  |

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| Level 3: Level statementStudents use equivalent forms of standard units to compare, order and measure. They select appropriate standard units to estimate and measure length, mass, area and volume. They further develop their estimation skills by identifying and using a set of personal measurement referents.Students interpret and use calendars, simple timetables and diaries to plan and record events in their daily lives. They know and use conventions related to reading and recording time. They calculate the duration of events. |
| Core learning outcome: M 3.2Students read, record and calculate with 12-hour time, and interpret calendars and simple timetables related to daily activities. |
| **Elaborations — To support investigations that emphasise thinking, reasoning and working mathematically** | **Core content** |
| Students know:how 12-hour time relates to analogue and digital clockshow to read digital and analogue representations of 12-hour timeconventions for recording 12-hour analogue and digital timerelationships between different units of timemental computation strategies and computation methods for calculating time conventions for, and purposes of, calendarsconventions for, and purposes of, simple timetables and timelines for daily activitieshow to interpret simple timetables and timelines for daily activities. | Students may:explain the use of a.m. and p.m. as it relates to 12-hour time and the relationship between hours and daysread and interpret different time displays, such as those on digital and analogue clocks, on electronic equipment (e.g. microwave ovens), and in printed program guides timetables and appointment diariesidentify and describe the relationships between minutes and an hour, seconds and a minute, and fractions of hoursrecord time using conventions (e.g. 9:30)estimate durations of second(s), minute(s) and half hour using personal referentsmeasure and calculate short durations in seconds, minutes and hours using relationships between units of timerecord sequences of activities using 12-hour timeexplain the purposes of calendars, timetables and timelinesuse patterns within a calendar grid, units of time (e.g. a fortnight), and abbreviations to locate days and dates within and across monthsidentify and describe the characteristics of a leap yearinterpret timetables to determine the order of activities (e.g. library lessons, lunch time)record days, dates and times for specific events on a calendar or timetable. | Units and conventionsunits* fortnight
* leap year

12-hour displays (analogue and digital)* quarter past, quarter to
* five-minute intervals

timelines timetables (e.g. school, bus, train)diaries (e.g. personal, school, class)calendars * abbreviations for days (e.g. M for Monday), months (e.g. Feb for February)

conventions * dates (e.g. dd/mm/yy)
* ante meridiem (a.m.)
* post meridiem (p.m.)

Relationships digital and analogue timeseconds and a minuteminutes and an hour minutes and parts of hours (quarter, half)hours and daysdurationpersonal referent (for seconds, minutes, half hour) |
| Investigations should occur in a range of contexts. For example, students could investigate:the scheduling and duration of television programs to plan viewingtravel times for different modes of transport tide times to plan a surfing or fishing excursiona timetable for daily activities at a school camp.  |

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| Level 4: Level statement Students investigate ways to determine areas, volumes and lengths of boundaries and describe the relationships between the dimensions in general terms. They select and use the appropriate standard units when estimating and measuring. Students use personal timetables, diaries, timelines and calendars to plan and organise events or activities of significance to them. They use 24-hour and 12-hour time. |
| Core learning outcome: M 4.2Students read, record and calculate with 24-hour time and develop timetables and calendars to plan and organise events or activities. |
| **Elaborations — To support investigations that emphasise thinking, reasoning and working mathematically** | **Core content** |
| Students know:how 12-hour time relates to 24-hour timehow to read digital and analogue representations of 24-hour timeconventions for recording 24-hour timemental computation strategies and computation methods for calculating with 24-hour timehow to make durations of time manageable for calculations how to develop timetables and calendarshow to plan and organise events or activities using calendars and timetables. | Students may:interpret timetables and match 12-hour representations to 24-hour time (e.g. 5:30 a.m. written as 0530 or 5:55 p.m. written as 1755)explain the relationship between ante meridiem (a.m.), post meridiem (p.m.) and 24-hour timesestimate and calculate the duration of events involving combinations of hours and minutes renaming mixed units as required (e.g. 2 h 35 min = 155 min)estimate and calculate duration of events renaming mixed units as requiredidentify and explain factors impacting on a travel plan (e.g. transition times)record start and finish times electronically or manually using 24-hour timeshow the relationships between different time units (days, weeks and months, years, decades and centuries)use conventions for ease of interpretation create a timeline taking into account scale and proportion use a calendar to communicate forthcoming or past events in days, weeks and months, and to identify start and finish dates of particular programs use a timetable or timeline to communicate past or future events.  | Units and conventionsunits* decade
* century (e.g. 21st century is 2001-2100)

24-hour time personal timetables, diaries (electronic or manual)timelinescalendarsRelationships days, weeks, months and yearshour and minutes (e.g. 90 minutes = 1½ hours)decade and century24-hour time and 12-hour timeduration* time calculations
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| **Investigations should occur in a range of contexts. For example, students could investigate:**a program for a school campplanning a class project over a term or semester with a culminating eventpictorial representations of timelines related to historical explorations or discoveries various ways in which time is measured and recorded by different professions or occupations.  |

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| Level 5: Level statementStudents identify and describe links between their own generalised methods and formulae used to calculate areas, volumes and lengths of boundaries. Students solve realistic time-management problems and plan and manage use of time. They understand and consider the impact of different time zones within Australia. |
| Core learning outcome: M 5.2Students interpret and solve realistic problems related to time management and time zones within Australia. |
| **Elaborations — To support investigations that emphasise thinking, reasoning and working mathematically** | **Core content** |
| Students know:time zones within Australiadifferent ways to manage time factors impacting on time managementhow to identify, interpret and solve realistic problems involving time management how to identify, interpret and solve realistic problems involving time zones within Australia | Students may:interpret problems related to time zones and time managementidentify the different time zones within Australia and explain reasons for these differencesestimate and calculate time differences between various locations record duration of time using various representations of time unitsidentify factors that impact on time management, such as the length of tasks, meal times, time required for travel and transfercalculate time usage and record timetables of more than one-week duration using various representations of time units modify timetables to make optimal use of time and give reasons for decisions with reference to time zones, including daylight saving times interpret and explain decimal representations of time unitsjustify decisions related to time management.  | Units and conventionsAustralian time zones* Eastern Standard Time (EST)
* Central Standard Time (CST)
* Western Standard Time (WST)
* daylight saving time

timetablesRelationshipsdecimal representations of time units (e.g. 2.25 hours = 2 hours 15 minutes)duration* time calculations

timetables of more than one week duration |
| Investigations should occur in a range of contexts. For example, students could investigate:a range of local and national timetables, both electronic and print, to develop travel or communication plansadvertised contract plans taking into account time available, rate of usage and factors impacting on usage, such as budget, time and number of usersthe impact of different time zones within Australia on business, health or personal situations personal time management.  |

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| Level 6: Level statementStudents explore and explain relationships within triangles. They select and use formulae to solve problems related to area, volume and length. Students use a variety of timetables to plan, monitor, manage and record the use of time. They justify their decisions by identifying implications and consequences. They understand and consider the impact of different time zones within the world. |
| Core learning outcome: M 6.2\*Students analyse and use a variety of timetables to justify time management decisions, and interpret and solve realistic problems involving international time zones. |
| **Elaborations — To support investigations that emphasise thinking, reasoning and working mathematically** | **Core content** |
| Students know:how to analyse and use a variety of timetableshow to justify time management decisions international time zoneshow to identify, interpret and solve realistic problems involving international time zonesrelationships between time zones and longitude. | Students may:analyse timetables in relation to time management issuesaccess and analyse a range of relevant timetables both electronic and print calculate time usage and record timetables using appropriate time units allocate additional time in response to factors that influence time management decisions justify decisions related to time management compare international times with Australian time zones to synchronise global events explain that 15º of longitude equates to one hour of time difference across the surface of the earthestimate and calculate time differences between different locations  | Units and conventionsinternational time zones* Greenwich Mean Time (GMT) or Universal Time Coordinates (UTC)
* International Date Line

timetablesRelationshipstime zones and longitude synchronisation of eventsduration* time calculations
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| **Investigations should occur in a range of contexts. For example, students could investigate:*** international travel itineraries
* global communication link-ups
* schedules for television coverage of live overseas events
* personal time management.
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\* This outcome may be demonstrated in association with S 6.2