**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 1 | STRAND: Measurement & Geometry | **SUB-STRAND:** **Time 1** | **WORKING MATHEMATICALLY:** **MA3-1WM** |
| OUTCOMES: MA3-13MG | | Uses 24-hour time and am and pm notation in real-life situations, and constructs timelines | | |
| **CONTENT:** | | **Compare 12- and 24-hour time systems and convert between them.**   * Tell the time accurately using 24-hour time, eg '2330 is the same as 11:30 pm' * Describe circumstances in which 24-hour time is used, eg transport, armed forces, digital technologies * Convert between 24-hour time given using am or pm notation * Compare the local times in various time zones in Australia, including during daylight saving | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | * ***Quiz-*** Students given points for answering questions on time * Students given a 24-hour time, record am/pm time in workbook. Points given for each correct answer. | | |
| WARM UP / DRILL | | * ***Around The World*** * ***What’s the time Mr Wolf?*** | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | It takes 3 hours to wash every window on a building. There are 30 windows. How many minutes does it take to wash each window? | | |
| QUALITY TEACHING ELEMENTS | | **INTELLECTUAL QUALITY** | **QUALITY LEARNING ENVIRONMENT** | SIGNIFICANCE |
| * Deep knowledge * Deep understanding * Problematic knowledge * Higher-order thinking * Metalanguage * Substantive communication | * Explicit quality criteria * Engagement * High expectations * Social support * Students’ self-regulation * Student direction | * Background knowledge * Cultural knowledge * Knowledge integration * Inclusivity * Connectedness * Narrative |
| RESOURCES | | ***Stop the Clock*** - <http://resources.woodlands-junior.kent.sch.uk/maths/measures.htm>  IWB Notebook on time: <http://www.tesaustralia.com/teaching-resource/Telling-the-time-7000007/>  Game Cards downloadable from ***tesaustralia*** | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| * ***Language:*** Students should be able to communicate using the following language: 12-hour time, 24-hour time, time zone, daylight saving, local time, hour, minute, second, am (notation), pm (notation). * ***Explicit Mathematical Teaching***   Australia is divided into three time zones. Time in Queensland, New South Wales, Victoria, and Tasmania is Eastern Standard Time (EST); time in South Australia, and the Northern Territory is half an hour behind EST; and time in Western Australia is two hours behind EST. The terms ‘am’ and ‘pm’ are used only for the digital form of time recording and not with the ‘o’clock’ terminology. The abbreviation am stands for the Latin words ‘ante meridiem’ which means ‘before midday’. The abbreviation pm stands for ‘post meridiem’ which means ‘after midday’. Midday and midnight need not be expressed in am or pm form.‘12 noon’ or ‘12 midday’ and ‘12 midnight’ should be used, even though 12:00 pm and 12:00 am are sometimes seen. It is important to note that there are many different ways of recording dates, including abbreviated forms. Different notations for dates are used in different countries, i.e. 8th  December 2002 is recorded as 8.12.02 in Australia but as 12.8.02 in America. Telling the time accurately using 24-hour time eg ‘2330 is the same as 11:30 pm’ Explain where 24-hour time is used e.g. transport, armed forces, digital clock display, etc. | LEARNING SEQUENCERemediationS2 or Early S3 | * Have students make a clock face with the twelve-hour markings shown in the inner circle and the twenty-four markings on an outer circle. Use this to convert between am/pm notation and 24-hour time. |
| LEARNING SEQUENCES3 | * ***Ignition Activity***   Have students make a clock face with the twelve-hour markings shown in the inner circle and the twenty-four markings on an outer circle. Use this to convert between am/pm notation and 24-hour time.  Introduce 24-hour time. Discuss with students where it is used, why this form of time might be useful and who uses it. Ask students to show 24-hour time on a time line and record a.m. and p.m.   * ***Matching Times***   In pairs, students are given two blank cards. They record the time in am or pm notation on one card and 24-hour time on the other. The teacher collects the cards, shuffles them and redistributes the cards to the class. Each student has to find their partner by asking other students questions to identify the matching time. Students can only answer ‘yes’ or ‘no’. Possible questions include: ❚ do you have an o’clock time? ❚ is your time ten minutes after 7:15 am? ❚ is your time 2130 in 24-hour time? Students then group themselves into am and pm times. Each group then orders its cards.   * ***Investigation: Time Zones***   Students research different time zones in Australia where their relatives or friends live. Students use atlases to sort states, towns or cities into time zones. The teacher poses the question:  ‘What time would it be in Perth at the moment?’ The activity should be extended to include daylight-saving times.  Possible questions include:  ❚ why does Australia have different time zones?  ❚ where could you find out about different time zones?   * *Students use the Internet to research different time zones. Record information on world time zone work sheet.* |
| LEARNING SEQUENCEExtensionEarly S4 | Solve problems involving duration, including using 12-hour and 24-hour time within a single time  zone (ACMMG199)   * add and subtract time mentally using bridging strategies, eg from 2:45 to 3:00 is 15 minutes and from 3:00 to 5:00 is 2 hours, so the time from 2:45 until 5:00 is 15 minutes + 2 hours = 2 hours 15 minutes * solve a variety of problems involving duration, including where times are expressed in 12- hour and 24-hour notation, that require the use of mixed units (years, months, days, hours and/or minutes) |
| **EVALUATION & REFLECTION** |  |

* All assessment tasks should be written in **red** and planning should be based around developing the skills to complete that task.
* Assessment rubrics or marking scale should be considered.