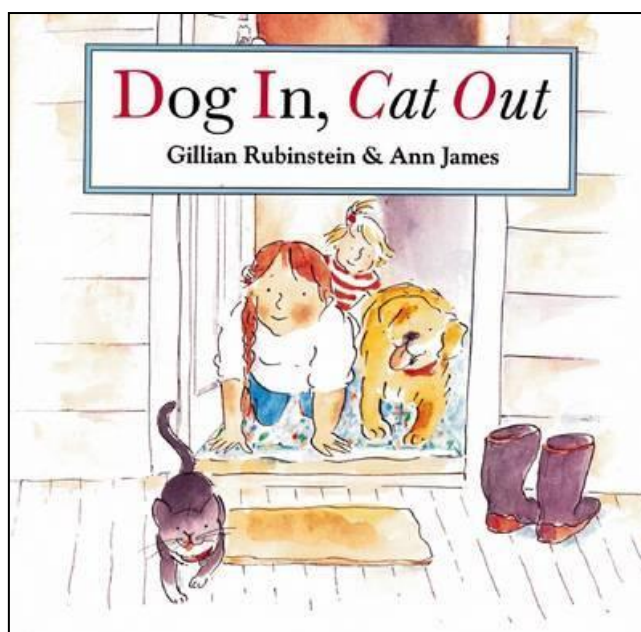


‘Dog In, Cat Out’:

Investigating Time

Based on the book ‘Dog In, Cat Out’
by Gillian Rubinstein and Ann James



**An AMSI Schools CHOOSEMATHS
Integrated Rich Task for Students in Years 1 and 2**

Teacher Booklet

This task was developed in consultation with the Stage 1 Team at Greta Public School (NSW, Australia).

‘Dog In, Cat Out’ references used with permission by the author and illustrator.

Grade 1 & 2 Outcomes: 'Time'

(Australian Curriculum, Mathematics)

- Tell time to the half-hour ([ACMMG020](#))
- Describe duration using months, weeks, days and hours ([ACMMG021](#))
- Tell time to the quarter-hour, using the language of 'past' and 'to' ([ACMMG039](#))
- Name and order months and seasons ([ACMMG040](#))
- Use a calendar to identify the date and determine the number of days in each month (ACMMG041)

Additional General Inquiry Questions (Cross Curricular):

Teachers might use these general inquiry questions as the focus of a unit of work across the curriculum, to follow on from the book study. They could be used to structure discussions with the class, or for group inquiry work together.

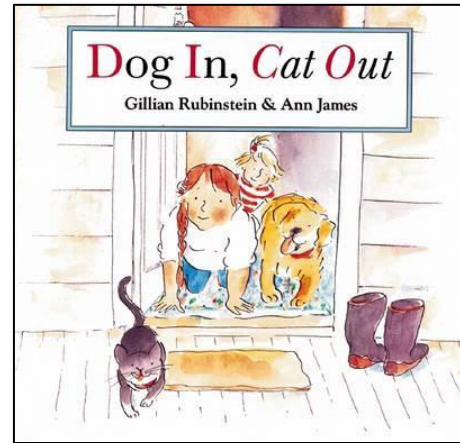
1. How are people connected to places? (family units, home styles, significance of belonging...)
2. What factors affect people's connections to places? (home, relatives and family, climate, where they were born, friends and community, work and school / education...)
3. Where do people live in Australia? (Do you think this is a home by the sea or in the country? Why? Where else do people live? City, suburbs, country, farms, towns, beach, desert, mountains, forest...)
4. How do you know that 'Dog In, Cat Out' is set in Australia?
5. What might 'Dog In, Cat Out' "look like" in another country? (Use an atlas and online image searches to 'travel' to another country – eg. China, Northern America or Canada, Germany, South America, Indonesia... How would people dress? What would housing be like? What would the weather be like? What animals or pets might they have coming and going? Recognise that in countries in the Northern Hemisphere, season are the opposite to that being experienced in Australia at that time.)
6. Use a calendar to select a day and time.
 - a. What season would it be?
7. Make your own calendar based on your family pets (cat & dog, chickens, farm animals...)

Grades 1 and 2 Task Grading Rubric: 'Investigating Time: Dog In, Cat Out'

Achievement Grade	Achievement Performance Description
A Comprehensively working mathematically at Grade 1 / 2 level	<ul style="list-style-type: none"> • Connects names, numerals and time measurements, and partitions amounts of time in various ways • Accurately orders and numerates time sequences forwards and backwards, precisely locating times on number lines (timelines), clocks and calendars • Uses materials to model time problems (such as matching, sequencing and unit conversion problems), giving and receiving directions for ordering unfamiliar events using new time sequences • Solves unfamiliar time ordering and planning problems and discusses the reasonableness of the answer • Explains direct and indirect comparisons of time using uniform informal and formal units, justifying representations and explaining patterns that have been created. • Tells time to the minute, reading time on analogue and digital clocks, observing the characteristics of times in both 'am' and 'pm' and identifying to a sound degree of accuracy the position of both the minute and the hour hand. • Name and order months and seasons, investigating the seasons used by Aboriginal people, comparing them to those used in Western society and recognising the connection to weather patterns. • Use calendars to locate specific information, such as finding a given date on a calendar and saying what day it is, identifying personally or culturally specific days and calculating lengths of time between calendar events.
B Thoroughly working mathematically at Grade 1 / 2 level	<ul style="list-style-type: none"> • Connects names, numerals and time measurements, and partitions amounts of time in various ways • Readily orders and numerates time sequences forwards and backwards, locating times on number lines (timelines), clocks and calendars • Uses materials to model simple time problems (such as matching and sequencing problems), giving and receiving directions for ordering unfamiliar events using new or familiar time sequences; solves unfamiliar problems and discussing the reasonableness of the answer • Explains direct comparisons of time using uniform informal and formal units, justifying representations and explaining patterns that have been created. • Tells time to the half-hour and quarter hour, reading time on analogue and digital clocks, observing the characteristics of half-hour and quarter hour times and identifying that the small hand is pointing 'just past the number' and the big hand is pointing 'to the 3', 'to the 6', 'to the 9' or 'to the 12' • Name and order months and seasons, recognising also that the seasons used by Aboriginal people differ to those used in Western society, and recognising the connection between seasons and weather patterns. • Use calendars to locate specific information, such as finding a given date on a calendar and saying what day it is, and identifying personally or culturally specific days
C Satisfactorily working mathematically at Grade 1 / 2 level	<ul style="list-style-type: none"> • Identifies names, numerals and time measurements, and partitions amounts of time in 24-hour, half hour and quarter hour increments • Readily orders and numerates time sequences forwards and backwards, locating times on number lines (timelines), clocks and calendars, • Uses materials to model simple time problems (such as matching and sequencing problems), receiving directions for ordering unfamiliar events using chronological sequences • Explains direct comparisons of time using informal and formal units, explaining patterns that have been created. • Tells time to the half-hour, reading time on analogue and digital clocks, observing the characteristics of half-hour times and identifying that the small hand is pointing 'halfway past the number' and the big hand is pointing 'to the 6', or 'to the 12'. • Describe duration of familiar events using months, weeks, days and hours, • Name and order months and seasons used in Western society and recognising the connection to weather patterns. • Use a calendar to identify the date and determine the number of days in each month and use calendars to locate some specific information such as finding a given date and day on a calendar.
D Working mathematically at a basic Grade 1 / 2 level, often with support	<ul style="list-style-type: none"> • Identifies names and some 'time' measurements, and partitions amounts of time in informal increments • Orders time sequences forwards and backwards, locating some times on number lines (timelines), clocks and calendars, • Uses materials to model simple time problems (such as sequencing problems) • Makes some comparisons of time using informal and formal units. • Tells time to the hour, identifying that the small hand is pointing 'to the number' and the big hand is pointing 'to the 12'. • Describe duration of familiar events using days and informal units. • Name seasons used in Western society and recognising the connection to weather patterns. • Locate some specific information such as finding a given date a calendar.
E Experiencing difficulty / working mathematically; working below Grade 1 / 2 level	<ul style="list-style-type: none"> • Partitions amounts of time in inconsistent informal increments • Unreliably orders time sequences forwards and backwards • Demonstrates difficulty with making comparisons of time using informal and formal units. • Demonstrates difficulty in telling time to the hour. • Describe duration of familiar events using inconsistent informal units. • Names some seasons used in Western society but experiences difficulty with making connection to weather patterns. • Experiences difficulty with locating specific information on a calendar.

Literature Reference:

Rubinstein, G. and James, A. (1991), *'Dog In, Cat Out'*. Omnibus Publishing / Scholastic Australia : Gosford, NSW, Australia.



Introduction

What is 'time' to children?

As adults, we know how time is measured; but it's much harder to describe what time is to the average 7 year old. The standard unit of time is the second, and these are organised into aggregated units (minutes, hours, days etc.).

But what of non-standard measures of time, and the fact that time can 'feel different' depending upon what we are doing? For example, when we are having fun with friends or family, time seems to 'fly'; but if we're in an examination or a doctor's waiting room, time seems to 'drag'. Normally, when introducing measurement to children we start with informal units of measure; with time, this is obviously much harder!

Time is different from most other 'measurement' attributes that we experience because it cannot be seen or heard or touched (Van de Walle et al. 2010). We can't 'see' time in the same way we can 'see' how tall someone is or how full something is. We can only 'feel' time as it goes past – and measure it on a device (a clock).

For this reason, time is a very abstract mathematical construct for children – and therefore their understanding needs to be anchored in concrete experiences drawn from the world around them.

Although 'Dog In, Cat Out' was written and illustrated for a preschool audience, the book and activities suggested in this unit are a useful way to help children at Grade 1 or 2 level gain an understanding of the concept of time and, significantly for mathematics, it's measurement and numeration.

Lesson One : ‘Dog In, Cat Out’

Learning Intention: *We are learning that events can take place at different times of the day.*

Australian Curriculum Links:

ACMMG007 - Compare and order the duration of events using the everyday language of time (*sequencing familiar events in time order*)

ACMMG021 - Describe duration using months, weeks, days and hours (*describing the duration of familiar situations*)

Resources needed:

- Picture Book: Rubinstein, G. and James, A. (1991), ‘*Dog In, Cat Out*’. Omnibus Publishing / Scholastic Australia : Gosford, NSW, Australia.
- Drawing paper or workbooks (per student)
- Coloured pencils or crayons.
- Outline Masters 1a, 1b and 1c (printed single copies, cut out as cards).

Lesson Sequence:

1. Read the storybook ‘*Dog In, Cat Out*’ by Gillian Rubinstein and Ann James to the class.

The book and its illustrations show us a day and night timeline in the life of a family, including their pet dog and cat.

At different times throughout the day, the dog and cat may be individually inside, outside or together as they share the day with their family.

The busy family consists of mum, dad and three young children.

As you read the book to the class, discuss the following with the children as you move through the book:

- What’s going on in this picture? What do you notice?
- When is this happening? How do you know?
- How do you think the cat and dog know what time of day it is? How would the family give them ‘clues’?
- Do you think the cat and dog know whether or not it’s time for them to come inside or go outside? How?
- Do you have animals / pets in your house that have the same experiences?

2. Students work with a partner.

Note that this activity is about **chronology** – not about telling the time using an analogue clock. Reading time properly using the hour and minute hands on an analogue clock will be introduced in Lessons 6 and 7.

Each pair of children is given a card with a time from the story (see Outline Master 1a – *Time in words*). Select a time format for each pair best suited to their level (whether time in words, time in digital am / pm format or time with an analogue clock face). ‘Time in words’ would be the best way to start for most Year 1 or 2 classes.

Together, **read each time out** and ask students to identify the event from the book which occurred at that time (eg. “The mum was having a snooze” or “The kids were playing in the yard”).

Make the time apparent for students rather than expecting them to read it. Note, however, that this activity will also allow the teacher to make a pre-assessment of students’ existing facility with telling time.

To prompt, ask students: “*When is this time – in the morning? The middle of the day? The afternoon? The evening or the night-time?*”

There is opportunity here to highlight the language used around time – informal language (morning, afternoon etc) and formal measurement language (am/pm, hours, minutes)

Each pair of students with matching times can then illustrate it together themselves. (The class may need to refer back to the story for this – there are small clocks showing the analogue time on the pages of the book).

When this is finished, as a whole class order the times and events which students have completed in chronological order, holding up their illustrated events.

3. Reflect.

Discuss events in chronological order that happen during a school day in the class.

How do teachers and students know what things to do, and when?

What things can help us to know when events should take place?

Lesson Two: What's on the Weekend?

Learning Intention: *We are learning that events can take place at different times of the day.*

Australian Curriculum Links:

ACMMG007 - Compare and order the duration of events using the everyday language of time (*sequencing familiar events in time order*)

ACMMG021 - Describe duration using months, weeks, days and hours (*describing the duration of familiar situations*)

Resources needed:

- Class copy of the book 'Dog In, Cat Out' by Gillian Rubinstein and Ann James
- A4 Paper booklets (5 or 6 pages each) for 'My Saturday' books
- Pencils, crayons
- Outline Master 2 – 'My Saturday Timeline' – copies per student

Lesson Sequence:

During this lesson students will think back to the text 'Dog In, Cat Out' by Gillian Rubinstein and Ann James and revisit some of the events which occurred. They will also consider events in their own day-to-day and use these to order events. Students will think about 'length of time' informally, using their own judgement criteria.

This lesson sequence may take place over two lessons, depending on time taken at Step 2.

1. Class Discussion – Order of Events.

Discuss - What events would take place if this book was written about you and your family? What are some common and some different events in different class members' families?

2. 'My Saturday Book'.

Ask students: 'What events happen at your place on a Saturday?' Discuss briefly with class and then have students record, using pictures, words or numbers, events that happen at their house on a Saturday. Use these to create their own book: '**My Saturday Book**'. (This could be done over two lessons, depending on time available).

3. Ordering Events. Discuss time in terms of one whole day – what does 'a long time' feel like? What does 'a short time' feel like?

Have students choose up to 4 events from their ‘Saturday Book’. Students write down ‘how long’ each of these events would take and try to explain why these events might take that amount of time (eg. “When I get dressed, this takes a long time. This is because I take a while to choose my clothes and sometimes I can’t find things and have to get mum to help. I also find tying my shoelaces hard. My mum tells me to hurry up.”). These explanations could be written or recorded on a voice recorder.

Use the ‘**My Saturday Timeline**’ (Outline Master 2) to place some or all of their Saturday events into an order (see below ‘Timeline for Mum’s Saturday’ as an example).

Enabling Prompts:

- “What is something you usually do on a Saturday (when you are not in school)?”
- “How is Saturday different to a school day?”
- “Is there something in the room that might help you?”
- “Go for a gallery walk to see how other students are completing the task, this might help you to make a start on your work”

Extending Prompts:

- “Is there a different way you can show your work?”
- “Could you order your events by how long they take?”
- What takes up the most time? What takes the least time?”

Display a variety of timelines and discuss how students in the class spend their time on Saturdays.

Timeline for ‘Mum’s Saturday’



4. Reflect.

Discuss with students the **order of events** they have placed on their timeline. How would they describe the amount of time taken for each event? What makes ‘a long time’? A ‘short time’? A ‘medium time’? How do we know?

What helps us know what to do next / How do we know ‘time’s up’ and we have to move to the next thing?

If Mum or Dad tell us, how do *they* know?

Lesson Three: Times of the Day

Learning Intention: *We are learning that events can take place at different times of the day.*

Australian Curriculum Links:

ACMMG007 - Compare and order the duration of events using the everyday language of time (*sequencing familiar events in time order*)

ACMMG021 - Describe duration using months, weeks, days and hours (*describing the duration of familiar situations*)

Resources needed:

- Outline Master 3a – copies per students (optional)
- Colour pictures from Page 10 – on board or screen
- Class copy of the book 'Dog In, Cat Out'
- Outline Master 3b – copies per student
- Coloured pencils and writing materials.

Lesson Sequence:

During this lesson students will think about parts of the day: morning, middle of the day ('midday'), afternoon, evening, night time. They will discuss some of the events that take place in each of these parts of the day.

These parts of the day are 'informal measurements' – that is, there's no universally agreed, formally measured time at which any of these parts of the day start or finished (other than 'midday'). Students will be introduced to times during the day (on the hour or half hour) using an analogue clock.

1. Class Stimulus Discussion

Use the coloured pictures featured below, along with Blackline Master 3a, to discuss these common events that occur during a child's day-to-day. Note that some of the events are 'one-offs' (eg. 'Going to bed') while others are repeated (eg. 'Learning with my class').

For each of the stimulus pictures, consider the following prompts with the group:

- Tell me about this picture.
- Tell me about each of this event – why do we do this each day?
- Which of these events do you do in the morning? Why?
- Which do you do first? Why?
- Which of these events do you do in the afternoon? Why?
- Which of these events do you do in the evening? Why?
- Which of these events happen more than once in your day? Why?



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2. Thinking about 'Time of Day'.

- Have a class discussion – What is 'morning'? 'Midday'? 'Afternoon'? 'Evening'? 'Night-time'? What things happen at each of these times? How do we know it's morning / midday / afternoon, etc.?
- **Depending on the experience of the group**, your students can then be lead into considering clock **times** for each activity – ie, at what time on the clock might each of these events occur? *Note that some students will not be ready for this until after Lessons 6 and 7.*

The class could refer back to the book 'Dog In, Cat Out' to assist – for example, what was the time (on an analogue clock face) when the family were having breakfast? Playing in the yard? Going to bed? Look at the clock faces for each of these events. This could be a good way of introducing some key times to the hour or half hour using an analogue clock.

- Have students look back at the stimulus events in Outline Master 3a (or the colour pictures above), and also consider other 'everyday events' that might not be included here (eg. feeding my dog, packing the dishwasher for dad, having a bath...). Use Outline Master 3b and have students record (draw or write) one 'everyday event' into each section of this handout and then record the time, to the hour (or half hour) by drawing the hands of the clock.

Enabling Prompts:

- ✓ Provide a moveable clock model.
- ✓ Display a series of times (to the hour) over the course of each of the morning, midday, afternoon, evening and night-time up the front of the classroom
- ✓ Ask: *“What were did some of the clock times in ‘Dog In, Cat Out’ look like in the morning / afternoon / evening / etc.?”*

Extending Prompts:

- ✓ Ask: *“Can you show me some ‘half-past’ times on your clocks?”*
- ✓ Ask: *“Can you think of two different events that could take place in the morning / at midday / in the afternoon / evening / at night-time?”*

3. Reflect.

Review some students’ responses to each part of the day:

“What are some ‘morning’ (‘midday’ / ‘afternoon’ / ‘evening’ / night-time’) everyday events?”

“What does the clock look like at this time? What time is this?”

Discuss what clocks do for us – that is, help us know what time different events should take place.

Discuss: *“Why is it important to do some events at the same time each day? What might happen if we didn’t do this?”*

Lesson Four: A Strip of Time

Learning Intentions: *We are learning that events can take place at different times of my life.*

We are realising that time can be shown using a diagram or picture, such as a 'timeline'.

Australian Curriculum Links:

ACMMG021 - Describe duration using months, weeks, days and hours (*describing the duration of familiar situations*)

Resources needed:

- Outside or corridor space (for the Stimulus Activity)
- 'Props' for Stimulus Activity (optional, just for fun)
- 30 cm strips of paper (or A4 paper cut longways into strips) – per student
- Outline Master 4 – 'Timeline for a 7 Year Old' (poster or on a screen at front)
- Piece of string (about 30 cm), wool, or pipe cleaner, with 12 beads tied at 2 cm intervals (for Reflection – see Part 3 below).

Lesson Sequence:

During this lesson students will think about longer periods of time and representations of this on a timeline. Students will consider important life events and look at length or distance (measured informally 'on the ground' or on a piece of paper) as a representation of time passing between events.

1. Stimulus Activity: 'A Teacher's Life'

The way you set up or introduce this activity will depend on your willingness to share key events in your life with your students!

Generally kids love learning about their teacher's life outside of school (and are fascinated to learn that we weren't always teachers, and that they don't keep us in the cupboard each night ready to come out again for the next teaching day)!

However, if you're not comfortable, make it up or use a fictional 'friend' to illustrate these events.

For the sake of this explanation, let's assume your name (or your 'friend's' name) is 'Ms Smith'.

Using the length of the classroom, or some outside corridor or yard space, give a distance between two points that represents 'Ms Smith's life' from birth 'till today. Note that you *don't* need to specify your current age!

Choose two students – one to be ‘Newborn Ms Smith’ and another to be ‘Today Ms Smith’. Have these students stand at the start of your ‘timeline’ and the end, respectively. To add a bit of fun, you might want to use props – eg, give Newborn Ms Smith a baby rattle and Today Ms Smith some glasses, or similar.

Select several events from your life (eg. starting school, going to University, taking a trip overseas, getting married, having children, buying your current pet... you choose!).

For each of these events, ask the class: *“If this distance shows my life from the start to the finish, where do you think [this event] happened in my life?”*

Have a chat about where students would place the event on your ‘teacher’s life timeline’, and then show them approximately where the event occurred (eg. if you are 30 and you travelled to Japan when you were 15, stand this ‘Travelled to Japan’ student halfway along your timeline!). Again, with a bit of pre-lesson preparation, using props can be a way of adding some fun to this activity!

This activity will generate some laughs, some curiosity around where events ‘belong’ in your life, and have students thinking about representations of longer lengths of time on a chronological representative timeline.

2. Lifetime Strips.

Ref: Burns, M. (1978) *‘This book is about time’*. Toronto, Canada: Little, Brown and Company.

- Give each student a strip of paper 30 cm long (A4 paper cut longways into 4 pieces will do nicely). Explain that this is their ‘lifetime strip’ - it represents all the time in their life to date. One end marks when they were born. The other is right now (the present).
- Place these marks, labelled as numbers where you think they belong:
 1. Last week;
 2. Your last birthday;
 3. Five years ago;
 4. When you were in Kindergarten / Prep / Foundation;
 5. Your first Christmas (or other significant cultural event).
- Have students compare their strips with others, particularly someone of a different age.
- Hold a whole class discussion to share some of the events on students’ own chronologies (‘Lifetime Strips’). *How long do these events take? How do we know? How could we measure it? How could we show each year that goes past on a timeline?*

- Show students the graphic on Outline Master 4. Ask students what they notice about the graphic: *“Tell me about the pictures. What do you notice? What else does the picture graphic have on it? What are the spaces for?”* (and, if necessary) *“Why do you think the spaces between each year are the same?”*

3. Reflect

Reinforce the point that ‘big events’ can take place over long periods of time, such as a lifetime.

Referring again to Outline Master 4 (‘Timeline for a 7 Year Old’), explain that sometimes we can show time as if it were a line. This helps us work out when events have occur, or should occur – such as remembering to have a birthday party each year!

Ask: *“Could we have a timeline for smaller amounts of time?”*
“Could we have a timeline for just a day? How could we break it up?”

Show students the ‘1 day timeline’ made earlier from string (or pipe cleaner) and beads, eg:



Image: AMSI Schools, 2018.

Point out that each bead represents an even amount of time, just like the spaces on the Timeline diagram (which represent one year).

What if we wanted to use this to show more than just one day? Could we twist the string or pipe cleaner into a circle – like this – so we can keep going around again, once time is up?



Image: AMSI Schools, 2018.

Hmmm...

Have students ponder this until the next lesson!

Lesson Five: How Long is a Minute?

Learning Intentions: *We are learning that there are different **units** of time.*

Australian Curriculum Links:

ACMMG021 - Describe duration using months, weeks, days and hours (*describing the duration of familiar situations*)

Resources needed:

- Online or large digital timer – on electronic board
- Student workbooks or blank paper
- Pencils, crayons, writing materials

Lesson Sequence:

During this lesson students will be familiarised with the units of measure we use for time including:

- Second
- Minute
- Hour
- Day
- Week
- Month
- Year

1. Brainstorm

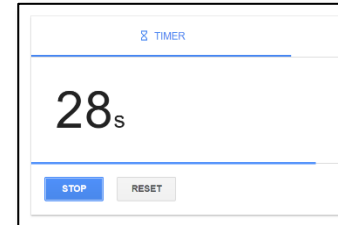
Brainstorm with students what they already know about 'Time'. Record these on the board. Circle or highlight any words contributed that refer to units of time (eg. "minute", "day", "year" etc.)

2. 'Time Trials'.

- To support students with their understandings of time duration, ask them to close their eyes and stand up when they think 'a minute' has passed. Tell them this is a 'Time Trial'.
- Identify students who were accurate (or close to accurate) in their timing. What strategies did they use? 'Bounce and pounce' these strategies, ie, 'bounce' questions around the close-to-accurate students (*"What did you do to decide on 'one minute'?"*, *"And what did you do?"*...), and then 'pounce' on student responses that involved counting as a strategy (*"Ahhh! Amelia used counting, by going "one and two and three and four..." in her head! Good thinking!"*; *"Ooh! You counted to 60! Why was that? Amit, that's a really good strategy!"*)

- Similar counting strategies could be “One-cat-dog, two-cat-dog, three-cat-dog...”, or “One Wagga Wagga, Two Wagga Wagga, Three Wagga Wagga...”).
- Discuss why we might count to **60** when counting a minute, and in doing so introduce the language of ‘**1 second**’.

- *How long is ‘1 second’?* Have a chat about why simply counting “1, 2, 3, 4...” would be too fast. Demonstrate and practice counting in time with seconds with different paced hand claps, using an online timer (eg. Google search ‘timer’).



- Ask students to close their eyes again and think of the strategies that were discussed. Repeat the Time Trial, and this time encourage them to use a strategy they haven’t used before to increase their level of accuracy in determining the duration of a minute. This task may be repeated to ensure students gain an understanding of the duration of a second, and then a minute.
- Finally, discuss what would need to happen for us to achieve an accurate Time Trial that went for an hour: “What strategy could we use to have an accurate Time Trial that was an hour long?” Again, ‘bounce and pounce’ until students arrive at the conclusion (with prompting) that we would need to count **60** lots of 1 minute, each of which would be 60 seconds (counting using our chosen ‘1 second’ counting strategy).
- To illustrate, start the timer on the board at one hour and show students that this would take quite a ‘long time’ if we were to count it out with our eyes closed!

3. Recording and Observing Informal Measurement of Time.

- Using workbooks or blank pages, ask students how they might write down or record their understanding of each of a second, a minute and an hour. They might use pictures, a word sentence (eg. explaining their strategy), a number sentence or a diagram (some students may remember the use of timelines in the previous lesson!).

Enabling Prompts:

“Is there something in the room that might help you?”

“Go for a ‘gallery walk’ to see how other students are completing the task, this might help you to make a start on your work.”

“What is something that takes a second to do? A minute? An hour? Longer than an hour?”

Extending:

“Tell me everything you know about a second. A minute/ An hour.”

“Is there a different / and additional way you can show your work?”

- Once students have recorded their work, conduct a **gallery walk** in order to expose students to different ways of recording and representing.

AMSI Schools Teaching Tip:

'Gallery Walks'

How do we conduct ourselves in an art gallery?

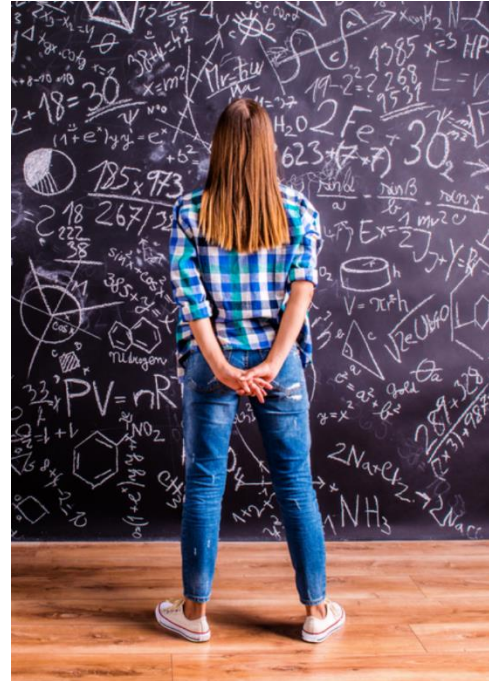
For the most part, we wander around in silence, observing the work and ideas of others. We may wonder about works or form judgements in our heads, but if we're polite we keep those thoughts to ourselves. Perhaps we share our observations later with a friend or interested peer.

A 'gallery walk' is a common strategy used by teachers to encourage children to consider the work and ideas of their peers in silence, constructing their own meaning from what they see or observe but without casting judgement or making comment.

In a classroom 'Gallery Walk', students are asked to stop work and leave their books or work in progress in full view on their desk. They stand behind the desk and place their hands behind their back. Then, for a timed minute (or so), they wander around observing their peers' work in silence, hands remaining behind backs.

Just as when we visit an art gallery, the objective here is to **actively observe the work of others, and to think about how our peers have represented their ideas.**

Upon return to their desks, have students share what they have seen in the works of others using "I noticed..." or "I saw..." language - and *without reference to other students' names.*



4. Reflect.

Upon return to their desks, have students share what they have seen in the works of others using "I noticed..." or "I saw..." language and *without reference to other students' names.*

Lesson Six: One-Handed Clock

Learning Intentions: *We are learning that clocks help us measure time.
We are learning to tell the time in different ways.*

Australian Curriculum Links:

ACMMG020 - Tell time to the half-hour (*Reading time on analogue and digital clocks and observing the characteristics of half-hour times*)

Resources needed:

- Online or large digital timer – on electronic board
- Student workbooks or blank paper
- Pencils, crayons, writing materials
- Safety scissors (per student)
- Printout of Outline Master 5 (preferably onto stiff card) – per student.

Lesson Sequence:

During this lesson students will begin to become familiar with the way an analogue clock measures time.

Students may not appreciate that the **hour hand** is the most important hand on an analogue clock, because it is smaller than the minute hand. However, we are able to approximate the time without the minute hand. The minute hand simply adds extra precision.

1. Activate.

Give children a pen and paper and simply ask them to draw a clock.

Enabling:

“Is there something in the room that might help you?”

Students provided with a circle to create their clock face on.

Extending:

“Can you draw any other type of clock you have seen?”

“Write down everything you know about telling the time.”

Discuss the clocks with individual children asking them to tell some things about their clocks and what time their clock is showing.

Now, look back at the looped string-and-beads from several lessons ago:

“What do we notice about the ‘circle timeline’ and the pictures of clocks drawn in the class?”



2. The One-Handed Clock (Explicit Teaching).

- Show students the following picture:



Image sourced from Creative Commons - no attribution required.
Downloaded 16.01.2018.

- Use the suggested explanation:

This is a photo of an old clock on the wall of St Vitus' cathedral in Prague.

It was made with only one hand, yet it shows the time reasonably well.

The numbers of the clock are written in special numbers called 'Roman Numerals', so they look different to numbers we see on most clocks. However, we can count the numbers around from '1'. How many numbers are shown on the clock? (Let's count them).

Is this the same as most clock faces we see?

Look at where the point of the arrow is. We can tell that this photo was taken just after 11 o'clock. How?

- Use the classroom clock to highlight to students that the hour hand moves slowly between numerals over the course of **an hour**. Check for understanding by asking various students what the time would be if the small hand on the clock were pointing at the '3', '6', '8' etc.? Reinforce the length of an hour by referring back to their 'Time Trials' in Lesson 5.

3. The One-Handed Clock (Activity)

In this activity, students make a ‘one handed’ clock just like the St Vitus’ clock.

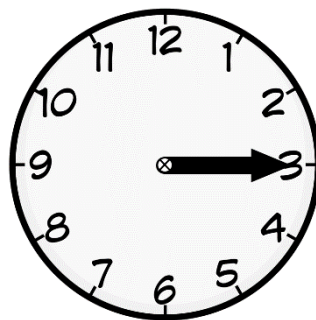
Note: The minute hand only provides additional accuracy, which is not needed at this stage. The focus is clearly on the hour and using ‘time’ language appropriate for students at this level – that is, on the hour and the half hour.

Provide students with a copy of Outline Master 5 – the ‘My One Handed Clock’ image (preferably printed on card). Students need to cut out the hour hand (only) and use a split pin to attach it to the centre of the clock-face, as in the pictures below.

Students follow the teacher’s directions with their own clocks. These directions emphasise the correct direction of turn (*only* ‘clockwise’ and *never* ‘anti-clockwise’), **especially highlighting the transition from 12 o’clock to 1 o’clock.**

Establishing times on the hour:

“Move your hour hand so that it points to the number 3. This shows 3 o’clock.” :



“Move your hour hand so that it points to the number 4. This shows 4 o’clock.”

“Move your hour hand so that it points to the number 5. This shows 5 o’clock.”

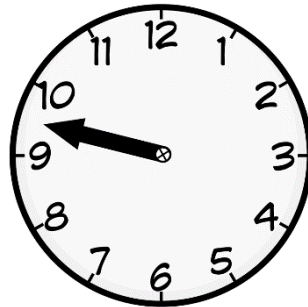
“Show me 6 o’clock... 7 o’clock...”

“Show me 12 o’clock. What do you think will happen now?” (If the hour hand keeps turning the same way, it will show 1 o’clock).

Students then follow directions to show various times on their own clocks.

Establishing times on the half hour:

“Position the hour hand of your clock halfway between 9 and 10. What time would this be?”



Acceptable answers for the position shown in the image include: *“After 9 o’clock and before 10 o’clock”, or “Between 9 o’clock and 10 o’clock”, or “Nearly 10 o’clock”.*

Some students might suggest ‘half past 9’, and the teacher could ask them to adjust the hour hand so that it was *more precisely* or *more exactly* half way between 9 and 10.

This will link the language of ‘half past’ with the ‘half way’ position of an hour hand.

However, the emphasis in this activity is on describing all positions of the hour hand, not just the exact half-way point.

- *Show me a time between 3 o’clock and 4 o’clock.*
- *Show me a time that is just before 3 o’clock.*
- *Show me a time that is just after 3 o’clock.*
- *Show me a time that is exactly half way between 2 and 3 o’clock? This is called half past 2.*

Note: *Ensure students keep their clocks for use in Lesson 7!*

Enabling: Students work with a partner to create their clocks. Demonstrate ‘on the hour’ and ‘half past’ times using a selected number on the clock (eg. *“Where is half way between 7 and 8 o’clock?”*). Then have students show the same with a different number (eg. *“Can you show me 9 o’clock? Can you show me half-past 9?”*). Repeat scaffolding until they have the idea.

Extending: Students who quickly grasp the ‘half-past’ times could try to represent ‘quarter past’ and ‘quarter to’ times using their single handed clock.

4. Reflection.

- Discuss what else a clock face resembles / looks like (possible answers might include ‘a dial’; ‘a circle’; ‘a spinner’; ‘a face’...) Jump on the answer ‘face’ if given by students. Explain that we do refer to a clock like this as having ‘a face’. What else do students notice about clock faces (‘they have numbers’; ‘they have hands’; ‘they’re round’...). If desired, show students pictures of other analogue clock faces to find similarities and differences (eg. they’re not always ‘round’!).
- Introduce the term ‘**analogue**’ to refer to the type of clock that has a face and hands.
- Discuss with class:

“What do we know about how clocks tell time?”

“What does the smaller hand on a clock tell us? Think back to our lesson today.”

“How much time goes by when the smaller hand moves between two numbers on an analogue clock?”

“Why might only having a small hand (for the hours) a bit tricky sometimes?”

Have a class discussion on this, ready for the next lesson.

As an extension, teachers may like to show students a sundial, which shows the time using only an ‘hour hand’, that is, the dial’s shadow.

Lesson Seven: ‘Just a Minute!’ – Introducing the minute hand and ‘half-past’

Learning Intentions: *We are learning that clocks help us measure time.
We are learning to tell the time in different ways.*

Australian Curriculum Links:

ACMMG020 - Tell time to the half-hour (*Reading time on analogue and digital clocks and observing the characteristics of half-hour times*)

Resources needed:

- Larger single copy printouts of Outline Masters 6a and 6b, displayed at front of room.
- Online analogue clock (eg. <http://www.teacherled.com/resources/clockspin/clockspinload.html> - Flash Player needed on your computer) – on electronic board; OR
- Large geared analogue clock (eg. and old alarm clock or large faced classroom clock
- Single copy print out of Outline Master 7 (cut out)
- Outside playground space (and fine weather)
- Large ‘playground’ chalk

Lesson Sequence:

In this lesson students learn about using the large or ‘minute’ hand in conjunction with the hour hand on an analogue clock to discern times at half past each hour as well as on the hour. They will learn the language of ‘half past’ the hour and then consider the number of minutes within one hour. From here, students are introduced to describing ‘half past’ times as ‘something-thirty’ times (eg. because ‘6:30’ is 30 minutes after ‘6 o’clock’). Finally, they learn the terms ‘a.m.’ and ‘p.m.’ to identify times of the day either side of midday (morning and afternoon / evening).

1. Activate – Matching activity

- Use Outline Master 6 (a) to refresh students’ understanding of telling the time to the half hour using only the hour hand. A simple game can be played in teams by calling out a time (from the right hand side) and having students try to match the analogue clock time with the called out time.
- The game can then be repeated with the minute hand added in. At the end of the game, ask students, “*What do we notice about the position of the larger (minute) hand when the small (hour) hand is **on** the number (ie, pointing straight at the number)? What do you notice about the minute hand when the hour hand is halfway between two numbers?*”

2. Explicit teaching – The Minute Hand

Use a large geared analogue clock (such as a typical classroom clock) OR an online analogue clock display (eg. <http://www.teacherled.com/resources/clockspin/clockspinload.html> (*Flash Player needed on your computer*) for this activity.

- Starting at a time on the hour, ask students to **observe what happens** when we move the large hand down to the 6 on the clock (the large hand moves to halfway between the initial hour and the next).
- **Think back** to Lesson Five – can we remember how many minutes are in an hour? How many seconds in a minute? What do we notice?
- **Discuss** – if we were to have exactly half the minutes in an hour, how many minutes would this be? ('Bounce and pounce' until you find the correct answer. If necessary, show students using sets of 10 or on a hundreds chart that 30 is half of 60).
- **Remind students** of the concept of half – eg, 'If I have half a pizza, what would the slice look like? What about half a cake?' (Note that these two objects are circular, like a clock face). *'Now, lets have a look at a clock face. If I divided it in half, what would it look like? Can anyone draw me a line showing the clock face divided into halves?'*
- **Discuss** the concept of 30 minutes (and the 30 minute mark on the clock – ie, in the position of the '6') being *half* of a whole hour. This is why we call times with the minute hand on the 6 '*half-past*' something. Note where the hour hand is – also *halfway* between two hours.
- **Take a segue-way** here; ask students, '*What are different ways of saying 'Hello'?*' There will be a range of responses: '*Hi*', '*Giddy*', '*How are you?*'... Make it clear that there are different ways of saying the same thing (in this case, greeting someone). Then, explain that just like there's different ways of saying 'Hello', there are different ways of saying times. For example, 'Half past 2' can also be said and written as '2 thirty' (2:30), because 'half past' an hour is when 30 minutes have gone by and the minute hand is on the 6.
- **Emphasise** that the minute hand measures minutes, NOT hours – and so we're looking at the small increments on a clock face. Each number on a clock is exactly 5 minutes apart. Count by fives (using the clock face for reference), showing that the distance in minutes between the 12 at the top and the 6 at the bottom is *exactly 30 minutes*.
- Finally, **chat about 'am' and 'pm'**, explaining that the initials 'a.m.' (or 'am') refer to 'in the morning' (ie, before midday, 12:00 noon) and the initials 'p.m.' (or 'pm') refer to 'in the afternoon' (students can remember this by recalling the mnemonic "*p.m. is past midday*").

- (Teachers may wish to mention that ‘a.m.’ stands for the the latin ‘ante meridiem’, and p.m. stands for ‘post meridiem’ – literally, ‘before midday’ and ‘after midday’.
- Explain that some very early ‘am’ times (from 12:00 am ‘till sunrise) can still be dark, as they are so early in the morning the sun has not even come up!
- Check for understanding by quizzing the group about some times: ‘*When would 2:00 pm be – morning or afternoon?*’; ‘*When would 5:30 am be – morning or afternoon?*’; ‘*Would 7:00 in the evening be ‘am’ or ‘pm’?*’, and so on.

3. ‘Human Clock Face’ Outdoor Game.

- Print off a single copy of Outline Master 7, and cut out each sign (multiple copies if you wish to run several ‘clockfaces’ at once).
- Find a space in the playground where there is either a large circle drawn (between 8 and 15 metres across), OR draw a large circle on the ground in chalk, or mark out a circle with 12 cones. Mark in the 12, 3, 6 and 9 on the circle, followed by all the other numbers (as per a clock face), and mark the centre of the circle as a dot. About 10 metres diameter is a good size for this game.
- Students work in fours, and take turns. One student stands on the outside of the circle, positioned at the ‘12’ – this student is the ‘timer’. The other two students stand on the centre of the circle, back to back. One is the ‘minute hand’ and the other is the ‘hour hand’. A fourth student stands anywhere outside the circle – this student is the ‘am / pm’ student.
- Someone (eg. the teacher) calls out a time either on the hour or half past the hour, and then state whether it is morning, midday, afternoon, evening or night, for example, “*2:30 in the afternoon!*”; “*4 o’clock in the morning!*” or “*Half past eight at night!*”.
- The ‘timer’ immediately begins running around the clock face, from 12 and back to 12. In that time:
 - (a) the ‘hour hand’ student must position themselves correctly on the clock face (either on or halfway between the hour);
 - (b) the ‘minute hand’ student must position themselves correctly on the hour or half past the hour (ie, on the 12 or the 6); and
 - (c) the ‘am/pm’ student must stand in the centre of the clock holding up the correct ‘am’ or ‘pm’ sign.
- The objective is to keep the timer as ‘timer’, and for each student to try to become the ‘hour hand’. However, if someone gets it wrong, they become timer and everyone else moves to a new position:
 - The ‘am/pm’ student moves ‘up’ to ‘minute hand’;
 - The ‘minute hand’ student moves ‘up’ to ‘hour hand’
 - Whoever was either not correct OR didn’t make it to position before the time completed his/her lap of the clock, is ‘out’ and moves into the ‘timer’ position (and everyone ‘above’ them moves up).

- Student teams of 4 can take turns playing the game whilst others observe, or, the teacher may wish to run several clock faces at once (teams of 5, so one student can call out times. In the latter instance, ensure the time caller is able to select appropriate times to call or provide them with a list of times to call).

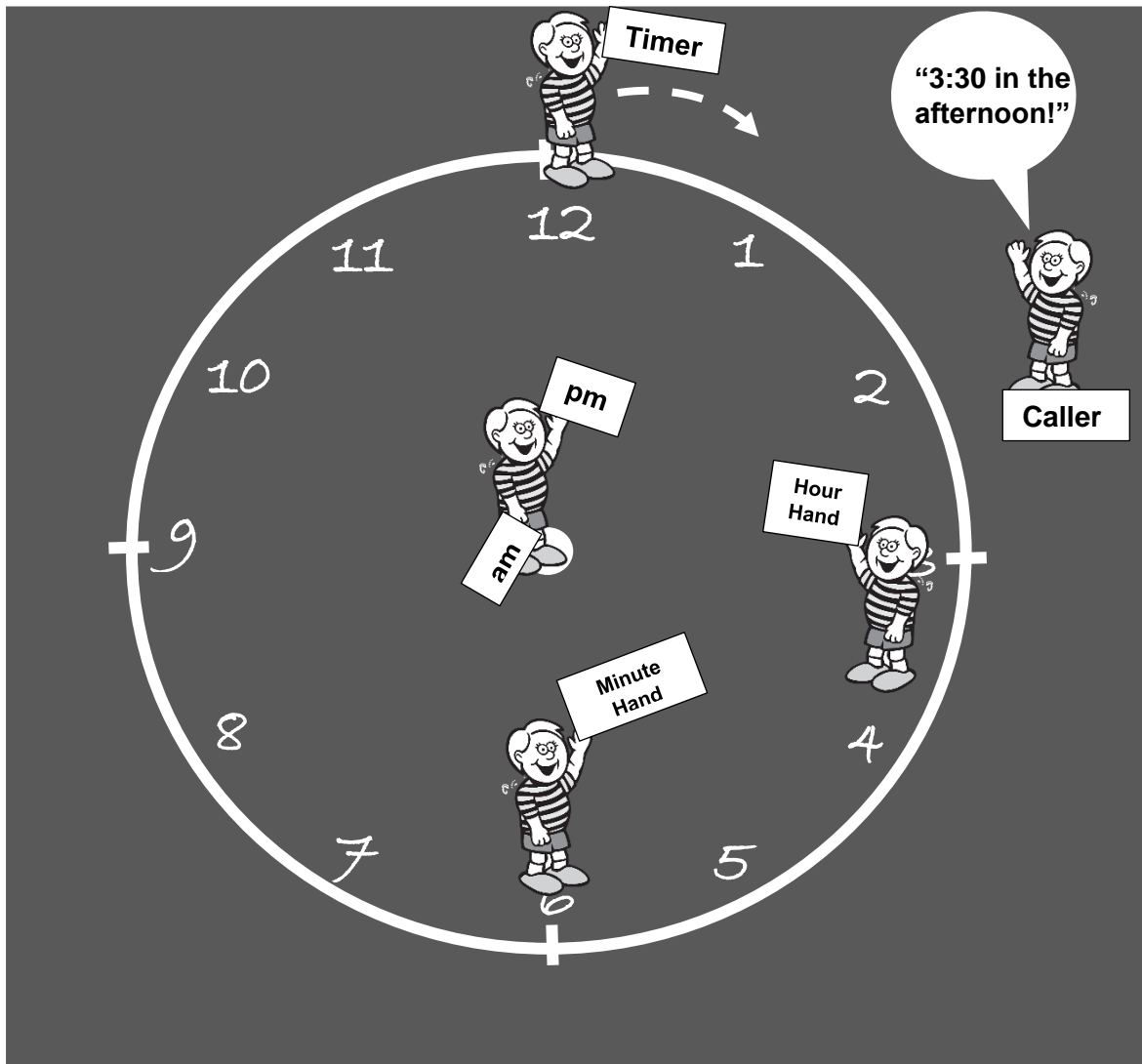


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4. Reflection.

Look back at the book, 'Dog In, Cat Out'.

Can we find any examples of clocks showing 'half past' times? Which are these? Where is the minute hand? What times of the days are they – 'a.m.' or 'p.m.'? How do you know?

Discuss these with the class.

Lesson Eight: Digital Time Formats

Learning Intentions: *We are learning that clocks help us measure time.
We are learning to tell the time in different ways.*

Australian Curriculum Links:

ACMMG020 - Tell time to the half-hour (*Reading time on analogue and digital clocks and observing the characteristics of half-hour times*)

Resources needed:

- Online stopwatch
- Larger classroom analogue clock or online analogue clock
- Online digital clock, eg. <https://www.online-stopwatch.com/online-digital-clock/>
- Outline Masters 1b and 1c, cut up into cards (sets for matching game/s)
- Outline Master 8 – ‘Time Bingo’ – 1 x questions card for teacher; per student copies of ‘Bingo’ player sheets for students

Lesson Sequence:

In this lesson students learn about using a digital format to tell time on the hour and the half hour.

It should be noted that this is the first time most students will have encountered decimal notation when using numbers – that is, digits on the right hand of a decimal point (or colon, as is the convention for digital formats) representing a fraction of the unit (in the case of time, the number of minutes within a whole hour.)

1. Activate – ‘Speed Alphabet’

Use an online stopwatch up on the smartboard or data projector (or a large computer screen) to time how quickly students can recite their way through the whole alphabet (a Google search of ‘online timer’ results in a browser based version which suits fine).

Results will vary, but a typical time recorded on the stopwatch for this might be around 5 seconds. For example, the time might be:

5:74

Discuss what the ‘5’ represents, and explain that the ‘.74’ represents ‘hundredths of a second’ – that is, 1 second broken up into 100 tiny moments.

[Fun Fact: We call these ‘hundredths’ of a second ‘centiseconds’. There are 100 centiseconds in a second.]

Have fun and see who records the smallest time.

2. Explicit Teaching – Matching Analogue to Digital Times

- Look at the classroom analogue clock (or bring one in if there isn’t one usually in the room). Now, use an online clock in 12-hour time format (eg. <https://www.online-stopwatch.com/online-digital-clock/>) to look at the digital version. What do students notice about the first digit on the digital time, and the position of the hour hand on the analogue clock? Eg.

10:55:12 am

- ‘Bounce and Pounce’ – How many minutes are there in one hour? → explain then that the 2 digit number that follows the hour digit/s in a digital time format (that is, the two digits *after* the first colon) show the number of minutes after to ‘on the hour’ time.
- ‘Bounce and Pounce’ – How many seconds are there in one minute?
- (**Extension:** How is this different to the number of ‘centiseconds’ in a second?)
- In the format above, the last set of digits represents the number of seconds after the last minute. (*Note: we won’t really worry about digital times showing seconds as well here, however, it is useful if students have seen it before*).

3. Games & Activities – Matching Digital Times with Analogue Times

- Use Outline Masters 1(b) and 1(c), cut up into cards, to match the digital time formats to the analogue times. A game of memory can be played here, after the teacher has ensured students are matching correctly between digital and analogue times.
- Alternatively Outline Master 8 provides a game of ‘Time Bingo’ – See Outline Master 8 for instructions and working pages.

4. Reflection.

Reflect back with students through discussion and questioning – ‘What does “Half Past 5” look like in digital time?’, ‘What does “4 o’clock” look like on an analogue clock?’, etc.

Reinforce the ‘__:15’ for ‘Quarter Past’ times, the ‘__:30’ for Half Past times, the ‘__:45’ for ‘Quarter To’ times and the ‘__:00’ for ‘On the Hour’ times.

Lesson Nine: Days of the Week

Learning Intentions: *We are learning the days of the week.
We are learning to identify events that occur on particular days.*

Australian Curriculum Links:

ACMMG021 - Describe duration using months, weeks, days and hours.

Resources needed:

- Outline Master 9a – ‘Days of the Week Snap Game’ – sets per pair of students
- Outline Master 9b – ‘Events in My Week’ – A3 sized printout per student.

1. Warm-Up - Days of the Week Snap

Use the cards in **Outline Master 9a** to print ‘Snap’ cards for the class:

- Share the cards out face down.
- Take turns to turn over a card and add it to a pile in the middle.
- Say ‘snap’ if **the two cards are days which are next to each other in the week**, like Saturday and Sunday.
- Whoever says ‘snap’ first picks up the whole pile and puts them on the bottom of their own.
- If you turn over a holiday card then you must both say **‘holiday’** instead.
- Whoever says it first picks up the pile.

Enabling:

Limit the number of cards to just a few consecutive days, or to Monday to Friday.

Extending:

Design your own game using the ‘Days of the Week’

2. Problem Solving Task – ‘What Happens on a Monday?’

Have students make a list of events from their life that are common things that might happen only ONCE during the week. For example, ‘Netball / Football training’; ‘School Assembly’; ‘Netball / Footy Match’; ‘Art Lesson’; ‘Pizza Night’; ‘Library Visit’; ‘Church / Mosque’; ‘Canteen Day’...

Write another list of events that happen daily or several times a week, eg. ‘Go to school’, ‘Eat breakfast’, ‘Play with friends’, ‘Maths lesson’, etc.

Write these events – at least 5 of each – into two columns as per the following:

<i>Once-a-Week Activities</i>	<i>More-Than-Once-a-Week Activities</i>
eg. Netball training	eg. Maths lesson

Now, students use **Outline Master 9b ('Events in My Week' Activity)** to show activities and events from their lists that occur throughout their week, selecting the days on which these events occur.

For added fun, they may wish to draw or stick on a picture that reminds them of this activity.

3. Reflection.

Chat and share with students what their experiences are during each week.

Why do we do certain activities / hold certain events on particular days of the week?

What are the *reasons* for this?

Prompt students to consider things like work and school commitments; need for physical activity; spending regular family time; religious and cultural reasons; need for regularly doing something to build up skill / knowledge; etc.

Draw out common and differing experiences – eg. some parents / family members working on 'weekends', differences in sporting, cultural and religious commitments, etc.

Emphasise the ways in which 'days of the week' help us organise our time and the things we do with family, friends, school, sport, community, work...

Highlight the language here: "weekend" days are literally "week ends" – the end of each (traditional) working week.

Lesson Ten: Make a Calendar: Learning the Months

Learning Intentions: *We are learning the months of the year.
We are learning to identify seasonal events that occur in particular months.*

Australian Curriculum Links:

ACMMG021 - Describe duration using months, weeks, days and hours.
ACMMG040 - Name and order months and seasons
ACMMG041- Use a calendar to identify the date and determine the number of days in each month

Resources needed:

- A basketball and a tennis ball (see 'Warm Up Discussion')
- An old calendar to separate into months and distribute amongst the class (eg. previous year's calendar)
- Outline Master 10 ('Days in a Month') – cut out

Teacher Background:

"The Ancient Egyptians are said to have made the first calendar of 12 months, each consisting of 30 days, comprising a year. They added 5 days at the end of the year to try to match up with the solar year. This is because the phases of the Earth's moon do not match up with the orbit of the Earth around the Sun.

By making all their months an even 30 days, they abandoned trying to match up with lunar (moon) cycles and concentrated instead on matching up with the solar (Sun) year.

The Egyptians recognized that this calendar didn't quite align with an actual year.... and eventually, the Greek rulers of Egypt added the concept of a leap year, adding a day every 4 years.

The Romans reinforced this concept when they later ruled Egypt."

See <http://www.calendar-origins.com/egyptian-calendar.html>.

1. Warm-Up Discussion – 'What is a Month?'

Familiarise students with the months of the year and explain how (a) our year is based on the amount of time it takes the Earth to journey around the Sun, and (b) that we break that time up into 12 roughly even amounts of time – around about 30 days. This is because ancient scholars studying the stars used mathematics to work out this time taken – called the Earth's 'solar orbit' – and then worked on the problem of dividing time into 'equal groups' of days based on the solar orbit.

Teachers may illustrate this with a basketball and a tennis ball, showing the way the Earth orbits the Sun in a full solar 'year'.

Spend an additional few minutes with whole-year calendar out the front, running through and reciting the months in the year, to familiarise students with their order if necessary.

2. Collaborative Activity – ‘Making a Month’ Calendar Jigsaw

- Organise students into 12 groups (eg. 2 or 3 students) OR allocate 12 months between available students
- See **Outline Master 10a and 10b**: Students are given the numbers 1-31, days of the week and a month. They then work as a team to ‘make a month’, having been given a particular month (or months) of the year from an old calendar (for reference for the number of days).
- Ensure students are given the current year’s start date and day – eg. if it’s **Friday 1st** June, ensure they place ‘1’ on the top ‘Friday’ square of their monthly calendar.
- Having had all groups complete their allocations of days and dates, on the floor of the classroom put together the current year’s calendar, month by month) January through to December).
- This activity investigates patterns in the months:
 - *How do we know the layout of the month is correct?*
 - *What day would the next month start on?*
 - *What patterns can you see?*
 - *What does a calendar need to have?*
 - *What are the essential features of a calendar?*

Enabling:

Sit with the student to ensure they can follow the sequence.

“Is there something in the room that might help you?”

“Go for a gallery walk to see how other students are completing the task, this might help you to make a start on your work”

Extending: *“Can you prove that you are correct? How?”*

“What day is it if the day after tomorrow is Saturday?” (and similar questions).

3. Reflection

Have a class discussion and question students:

- *‘How many months of the year are there?’;*
- *‘Do all the months have the same number of days?’;*
- *‘What is the smallest number of days that a month has? Which month is this?’*
 (Explanation here that every 4 years, called a ‘Leap Year’, February has an extra day to make up some extra time missed as the Earth orbits the sun over time);
- *‘What is the largest number of days some months have? Which months are these?’;*
- *‘Approximately how many weeks are in each month? Is this exactly right (that is, are there exactly that many weeks in each month? Explain your answer/s’.*

Lesson Eleven – What’s in a Year?

Australian Curriculum Links:

ACMMG021 - Describe duration using months, weeks, days and hours.

ACMMG040 - Name and order months and seasons

ACMMG041- Use a calendar to identify the date and determine the number of days in each month

Resources needed:

- Access to YouTube, with sound and vision on interactive whiteboard or projected computer: Either ‘Kids TV123 Months of the Year Song’ (<https://www.youtube.com/watch?v=5enDRrWyXaw>) OR ‘The Singing Walrus Months of the Year Song’ (<https://www.youtube.com/watch?v=Fe9bnYRzFvk>).
- Outline Master 11, ‘How Old Will I Be?’ – printed in A3 for whole class.

Lesson Sequence

This lesson refreshes students’ memorisation of the 12 months of the year, and then introduces ‘counting forward’ and ‘counting back’ problems using a (year based) timeline and based on the current calendar year. Students use counting-by-ones and counting-by-tens strategies to calculate their ages in certain years in the future and also what the calendar year will be at certain decadal time distances in the future.

Some scaffolding and assistance will be necessary to provide differentiated instruction for students who have struggled with counting and simple place value concepts; further challenges are available for students requiring further extension.

1. Warm-Up – Sing a Song (Months of the Year).

Review the 12 months of the year in order.

Use a song to do this (see <https://www.youtube.com/watch?v=5enDRrWyXaw> or <https://www.youtube.com/watch?v=Fe9bnYRzFvk> – pick one of these to sing through a few times with children).

2. Problem Solving – How Old Will I Be?

Use **Outline Master 11** (*‘How Old Will I Be?’*) to introduce students to a year timeline. Print this out in A3 size for all students to work on.

Teachers may wish to project this resource onto the board out front and complete the current year (eg. ‘2019’) on the timeline together. Teachers can then model filling in students’ current age, that is, the age they are turning in the current calendar year (student records may assist with this!).

Discuss and complete ‘Next year’ and ‘Last year’ on students’ sheets. *How did we work this out?* (counting forward one; counting back one).

Have students work through the problem prompts on the sheet themselves. Model counting forward and back on the number line; work through each problem one at a time and discuss strategies.

Teachers can scaffold and support this by assisting students with strategies – eg. counting on by tens; counting back the number of years of my ‘this year’s’ birthday to find the year of birth (eg. students turning 6 in 2019 were born in 2013, etc).

Set the ‘Challenge’ questions only for students who work through the timeline problems successfully first.

Once students are finished, they may like to draw a picture of themselves when they are 25. *“Do you know anyone who’s 25? What do they do?” “What year will this be?”* in the space provided.

Enabling:

Sit with the student to ensure they can follow the sequence.
“Is there something in the room that might help you?”

Extending: See Challenge questions.

3. Reflection

Share students’ responses in a plenary session on the floor (including illustrations of what students will be doing when they’re 25 years old!).

In particular, discuss the strategies used by students to solve the ‘age’ and ‘year’ problems in this task. Model these student strategies with the whole class using a projected copy of the task at the front of the room.

If teachers are willing (and brave!), finish by working with the class on the same tasks for the teacher – eg. What year was the teacher born? How old will the teacher be in 10 years? ... etc.

Lesson Twelve: The Seasons

Australian Curriculum Links:

ACMMG021 - Describe duration using months, weeks, days and hours.

ACMMG040 - Name and order months and seasons

ACMMG041- Use a calendar to identify the date and determine the number of days in each month

Resources needed:

- Outline Master 12 – ‘European Seasons in Australia’ – projected on Interactive Smartboard
- Whiteboard and markers
- Interactive whiteboard and / or data projector, with sound, and the following links:
 - <http://www.abc.net.au/btn/story/s4761972.htm>
 - <http://www.bom.gov.au/iwk/>
 - <https://www.csiro.au/en/Research/Environment/Land-management/Indigenous/Indigenous-calendars>
- World globe

Lesson Sequence

This lesson uses a range of online and interactive resources to examine and compare traditional ‘European’ descriptions of the four seasons with those described by Indigenous Australians in various parts of climatically diverse Australian continent.

Students start by considering the events of the original text ‘Dog In, Cat Out’ within the context of seasons and to think about events in their own lives that occur in different seasons.

The lesson then examines seasonal calendars – both European and Indigenous – and considers how Aboriginal seasonal descriptions would be useful in different parts of Australia – especially Northern Australia - where the seasons less reflect European seasonal changes.

1. Warm Up – Re-read ‘Dog In, Cat Out’

Re-read the book ‘Dog In, Cat Out’ by Gillian Rubinstein and Anne James.

Discuss with students what season they think this book is set in. Ask for and discuss evidence of this in the text and the illustrations.

What are the different seasons we usually have in Australia? How would the family’s activities and events in ‘Dog In, Cat Out’ be different in a different season (eg. Winter?). What is difference between Summer, Autumn, Winter and Spring where we live?

‘Which is your favourite season? Why?’ → Share thoughts with the class.

2. Explicit Teaching and Interactive Resource Session –

European Seasons, Indigenous Australian Seasons

Discuss the seasons most of us are familiar with: Summer, Autumn, Winter and Spring. Use Outline Master 12 to discuss and complete features of these 4 seasons, including the months to which they belong. *Note especially that Summer lasts across the December / January change of calendar year.*

What are some things that happen in our families and communities in each of these seasons? Make 4 lists on the whiteboard (Summer, Autumn, Winter and Spring) – eg. Summer – go to the beach, Christmas Time play cricket, wear shorts and T-shirts; Autumn – rake leaves in the yard, put blankets on the bed, start wearing jumpers...

Rural communities may also have students who are able to associate seasons with events in the agricultural cycle, such as Summer harvest, Spring plantings or lambing etc. – discuss these.

Teacher background Information: Australian Indigenous Seasons Knowledge

Australia's Indigenous cultures had completely different seasons to those we use from the European seasonal calendar. Each season was described and designed around local weather conditions and therefore Indigenous Australian seasonal calendars varied greatly across the continent, given the huge variation in climatic regions.

A variety of Indigenous seasonal calendars are described on the Bureau of Meteorology 'Indigenous Weather Knowledge' website - <http://www.bom.gov.au/iwk/>, so Australian teachers can select a region closest to their school's location and explore the specific seasons in this area.

Watch the short ABC 'Behind the News' story on Aboriginal Seasons:

<http://www.abc.net.au/btn/story/s4761972.htm>

Discuss what some of the 'clues' are that Aboriginal people use to recognise new or different seasons.

Use the Indigenous seasonal calendars are described on the Bureau of Meteorology 'Indigenous Weather Knowledge' website - <http://www.bom.gov.au/iwk/>, to explore Aboriginal seasons in the area closest to where your School is located in Australia.

Finally, use the online and Interactive Indigenous calendars available at the CSIRO to explore local Aboriginal seasonal descriptions and events in the Northern parts of Australia:

<https://www.csiro.au/en/Research/Environment/Land-management/Indigenous/Indigenous-calendars>

As you interact with these resources with students (you may do this as a whole class, or have students use iPads or computers to explore the calendars themselves), discuss why these calendars would be especially useful for Aboriginal people relying on traditional bush foods and resources.

3. Reflection.

Look again at Outline Master 12 as a class.

Describe the weather patterns shown in the pictures in this diagram.

Does the weather shown in these months always look like these pictures where you live?

If time, discuss how seasonal weather patterns are different in other locations (a) in Australia, and (b) around the world (eg. the Northern Hemisphere countries, compared with Southern Hemisphere countries like Australia).

Outline Masters

Outline Master 1a

Time Cards (Lesson 1, Lesson 8): *Time in Words*

<p>7 o'clock in the morning</p>	<p>Quarter past 2 in the afternoon</p>
<p>8 o'clock in the morning</p>	<p>4 o'clock in the afternoon</p>
<p>Half past 8 in the morning</p>	<p>6 o'clock in the evening</p>
<p>35 minutes past 8 in the morning</p>	<p>5 minutes past 6 in the evening</p>
<p>Half past 10 in the morning</p>	<p>Half past 7 in the evening</p>
<p>12 o'clock in the middle of the day</p>	<p>10 o'clock at night</p>
<p>2 o'clock in the afternoon</p>	<p>Half past 11 at night</p>

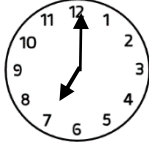
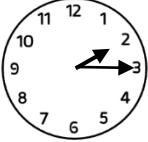
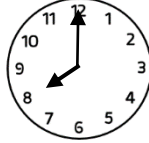
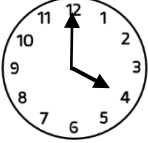
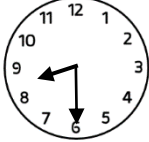
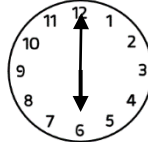
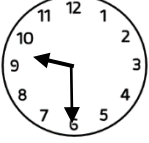
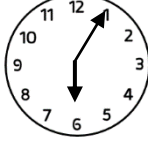
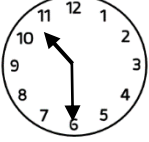
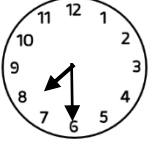
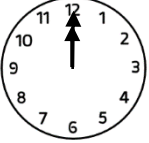
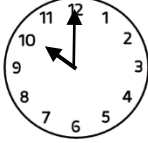
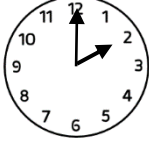
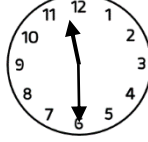
Outline Master 1b

Time Cards (Lessons 1 and 8): *Time in Digital Format*

7:00 am	2:15 pm
8:00 am	4:00 pm
8:30 am	6:00 pm
8:35 am	6:05 pm
10:30 am	7:30 pm
12:00 noon	10:00 pm
2:00 pm	11:30 pm

Outline Master 1c

Time Cards (Lessos 1 and 8): *Time in Analogue Format*

 in the morning	 in the afternoon
 in the morning	 in the afternoon
 in the morning	 in the evening
 in the morning	 in the evening
 in the morning	 in the evening
 middle of the day	 at night
 in the afternoon	 at night

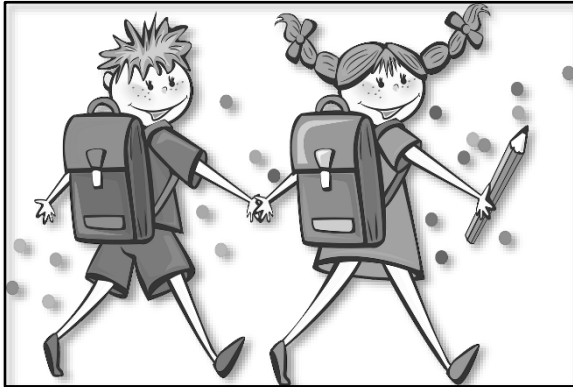
Outline Master 2:

Timeline for my 'Saturday Book'

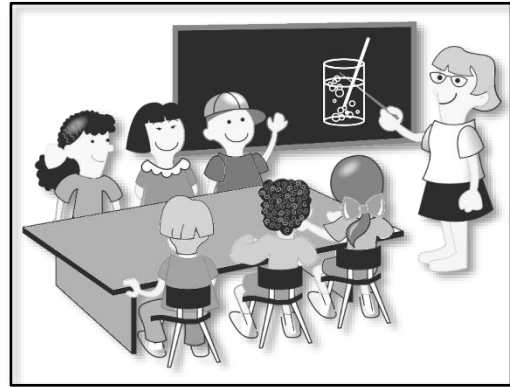


_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

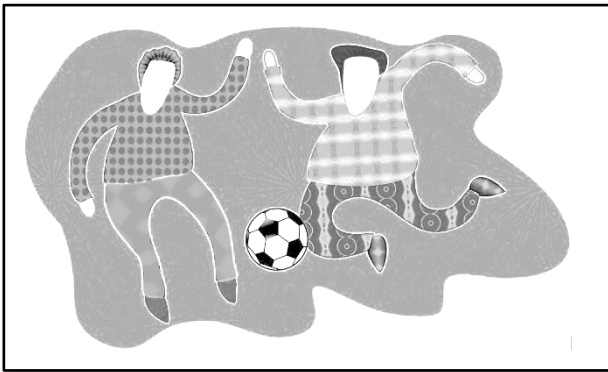
Outline Master 3a: Events in My Day (Stimulus)



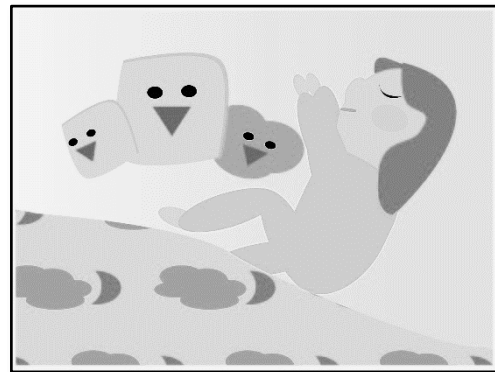
Arriving at school



Learning with my class



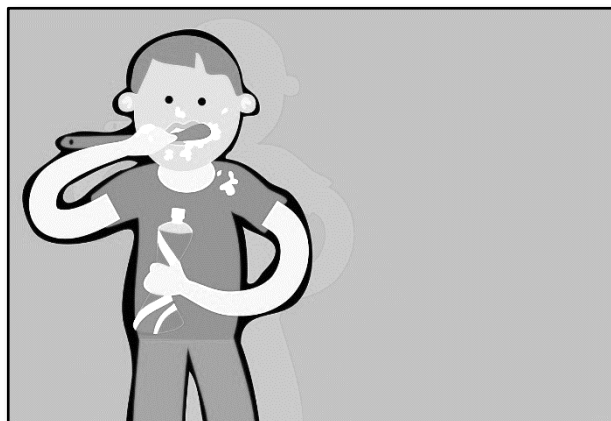
Playing games outside



Going to bed



Eating a meal



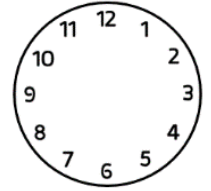
Cleaning my teeth

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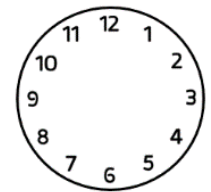
Outline Master 3b:

Events in My Day

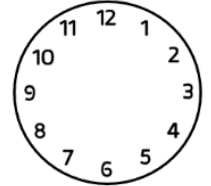
Morning



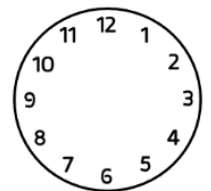
Middle of the Day ('Midday')



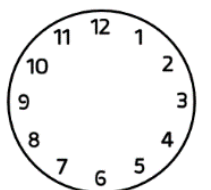
Afternoon



Evening

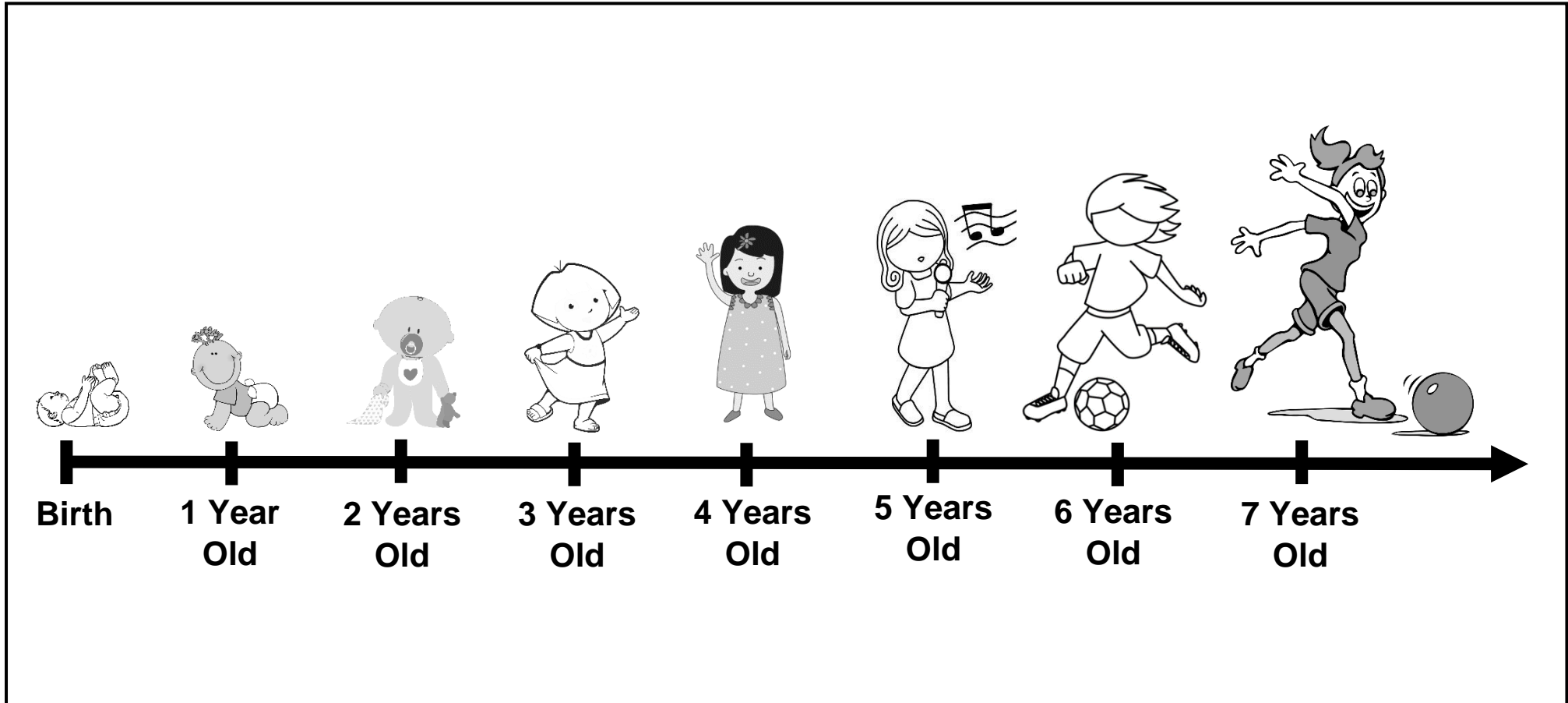


Night-time



Outline Master 4:

Timeline for a 7 Year Old



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Outline Master 5: My One-Handed Clock

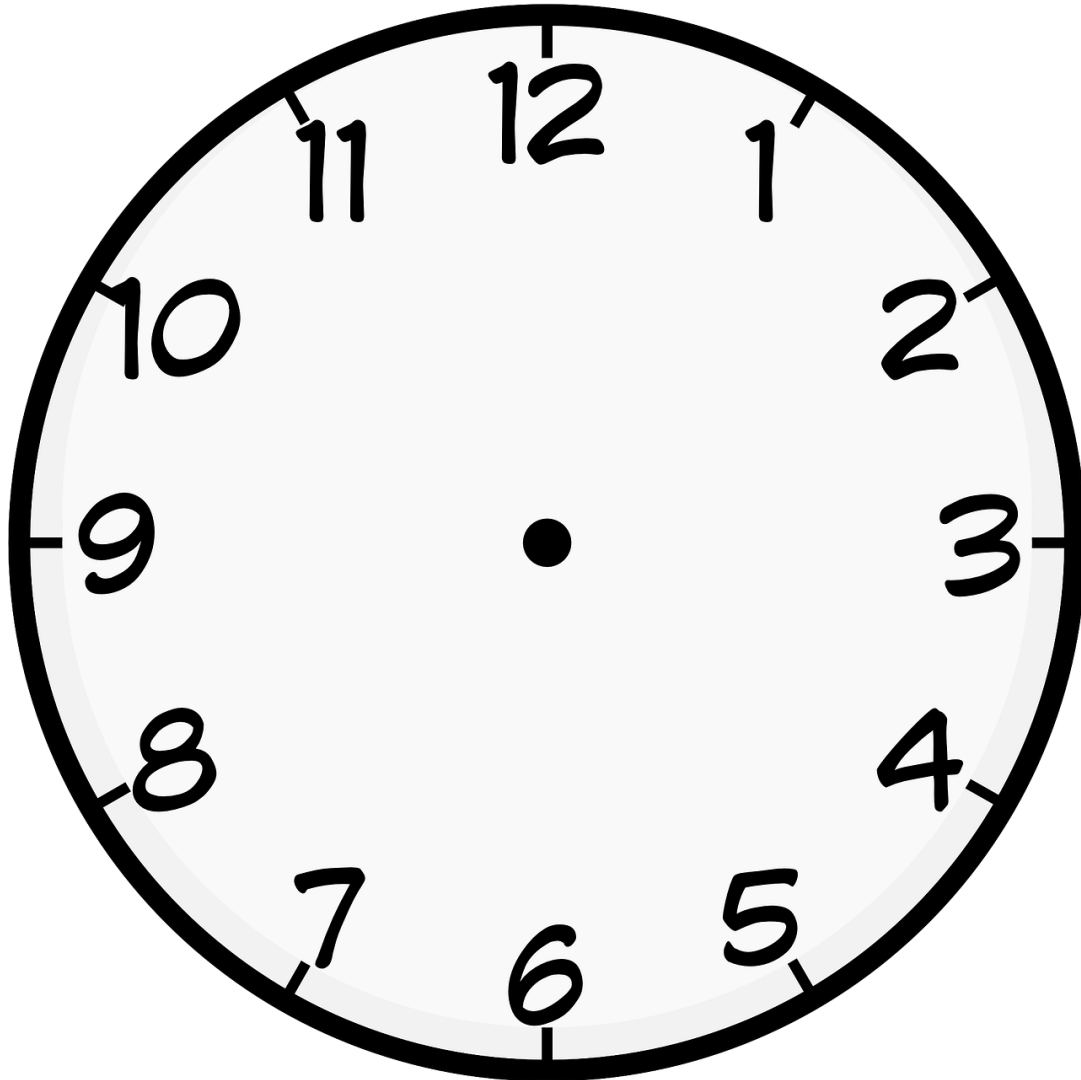



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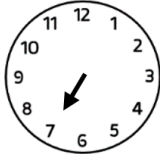
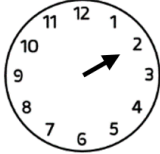
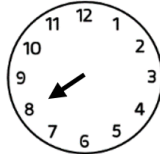
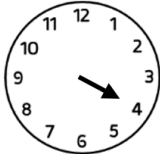
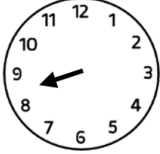
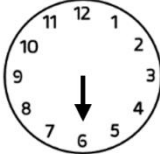
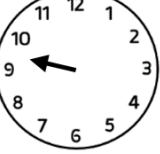
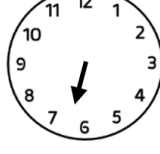
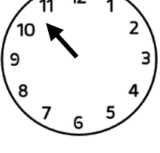
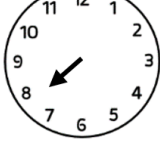
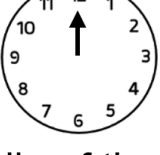
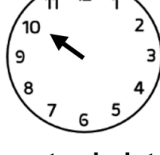
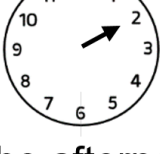
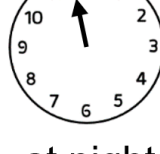



Cut me out 



Outline Master 6a:


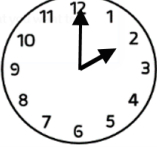




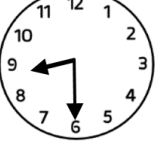
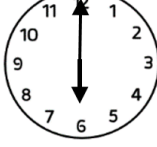
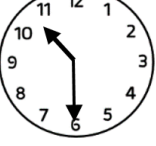

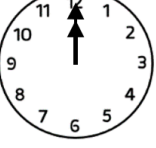
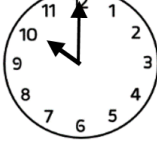
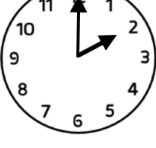
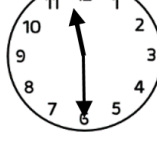
**Matching Activity - *Time in Analogue
Format (Hour Hand Only)***

 in the morning	 in the afternoon	7:00 am
 in the morning	 in the afternoon	2:00 pm
 in the morning	 in the evening	8:00 am
 in the morning	 in the evening	4:00 pm
 in the morning	 in the evening	8:30 am
 middle of the day	 at night	6:00 pm
 in the afternoon	 at night	9:30 am
		6:30 pm
		10:30 am
		7:30 pm
		12:00 noon (12:00 pm)
		10:00 pm
		2:00 pm
		11:30 pm


Fold back

Outline Master 6b:

**Matching Activity - *Time in Analogue
Format (Hour and Minute Hand)***

 in the morning	 in the afternoon
 in the morning	 in the afternoon
 in the morning	 in the evening
 in the morning	 in the evening
 in the morning	 in the evening
 middle of the day	 at night
 in the afternoon	 at night

7:00 am

2:00 pm

8:00 am

4:00 pm

8:30 am

6:00 pm

9:30 am

6:30 pm

10:30 am

7:30 pm

12:00 noon
(12:00 pm)

10:00 pm

2:00 pm

11:30 pm

← Fold back

Outline Master 7: 'Human Clock Face' Outdoor Game

**Hour
Hand**

**Minute
Hand**

a.m.

p.m.

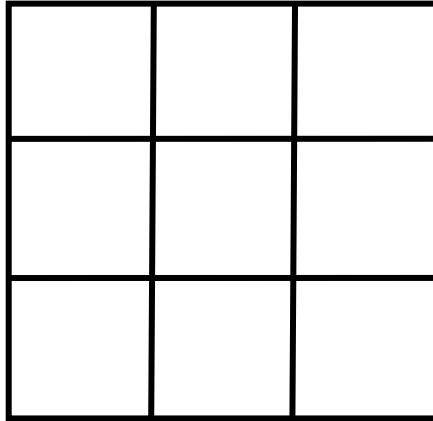
timer

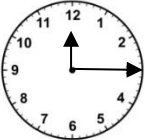


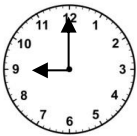
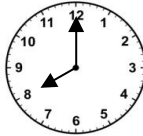


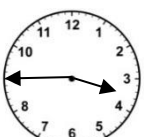

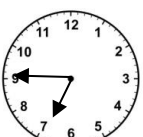



caller

Outline Master 9: 'Time Bingo'

Name: _____

Pick any 9 (nine) numbers between 1 and 20 and place them randomly in these boxes, without repeating them:



1)  pm	7) 	14)  am
2)  am	8)  pm	15) 
3) 2:30pm	9) 	16) 12:30 am
4)  am	10)  midnight	17)  pm
5) 10:00 pm	11) 12:00 noon	18) 
6) 1:00 am	12) 6:45 am	19) 
	13) 	20) 4:15 pm

Outline Master 8 (cont'd): 'Time Bingo' - Answers

Instructions:

Once students have placed 9 random numbers (between 1 and 20) in their 3 x 3 grid (with no repeated numbers), teachers read each of the following times out, picked at random, and crossing each one already called off as they go.

Students need to match the times called with what they have on their answer sheet. If they have a called time's corresponding number in their grid, they may cross this out.

The winner in the class is the student (or pair) who has all of their 9 numbers crossed off, and who calls out "Time Bingo!"

Teachers should check that the numbers that have been called out (on their crossed-off list) correspond with the numbers crossed off on the professed winners' grid.

1) A quarter past 12 in the afternoon	7) 20 minutes past 12 in the afternoon	14) 5 o'clock in the morning
2) 9 o'clock in the morning	8) 8 o'clock in the evening	15) Half past 4 in the afternoon
3) Half past 2 in the afternoon	9) Quarter to 11 in the morning	16) Half past 12 at night time (very early morning)
4) A quarter to 4 in the morning	10) 12 o'clock at night time	17) A quarter to 7 in the morning
5) 10 o'clock in the evening	11) 12 o'clock in the middle of the day	18) 2 o'clock in the afternoon
6) 1 o'clock in the morning	12) A quarter to 7 in the morning	19) Half past 8 in the evening
	13) 11 o'clock in the morning	20) A quarter past 4 in the afternoon

Outline Master 9a: Days of the Week ‘Snap’ Game

Monday	Tuesday
Wednesday	Thursday
Friday	Saturday
Sunday	Holiday

Outline Master 9b: 'Events in My Week' Activity

Name: _____

Things I do on a Monday are...	
Things I do on a Tuesday are...	
Things I do on a Wednesday are...	
Things I do on a Thursday are...	
Things I do on a Friday are...	
Things I do on a Saturday are...	
Things I do on a Sunday are...	

Outline Master 10a: 'Days in a Month'

Print in A3

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Outline Master 10b: 'Days in a Month'

Print in A3

Month: _____

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday

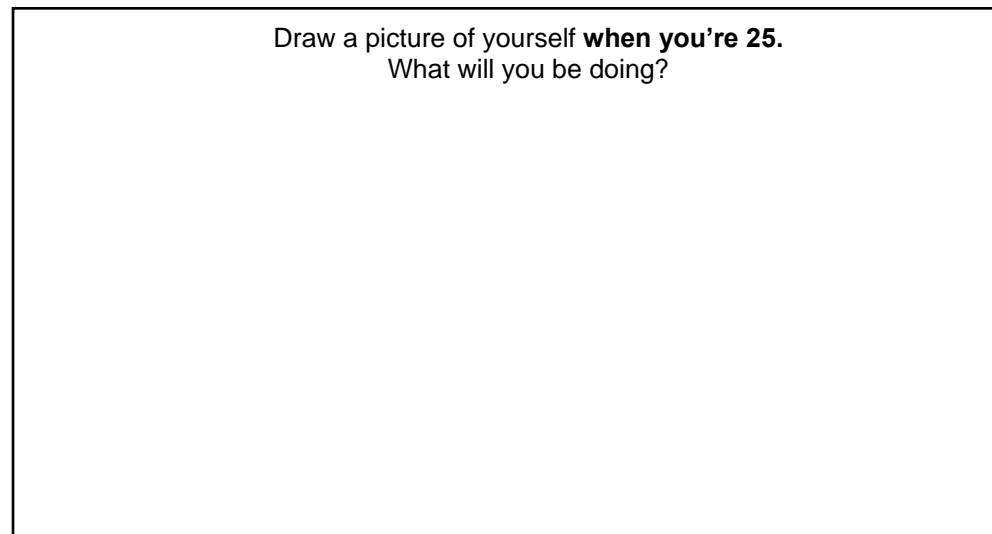
Outline Master 11: 'How Old Will I Be...?'

This year is _____

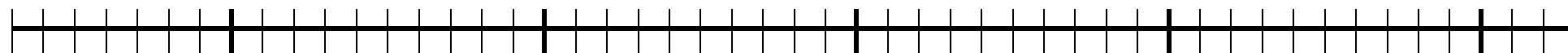
Next year will be _____

Last year was _____

Draw a picture of yourself **when you're 25.**
 What will you be doing?



This year I'm turning
 _____ years old.



This year is

In 10 years it will be

 and I will be
 _____ years old.

In 20 years it will be

 and I will be
 _____ years old.

In 30 years it will be

 and I will be
 _____ years old.

In 40 years it will be

 and I will be
 _____ years old.

Challenges!

I was born in the year _____

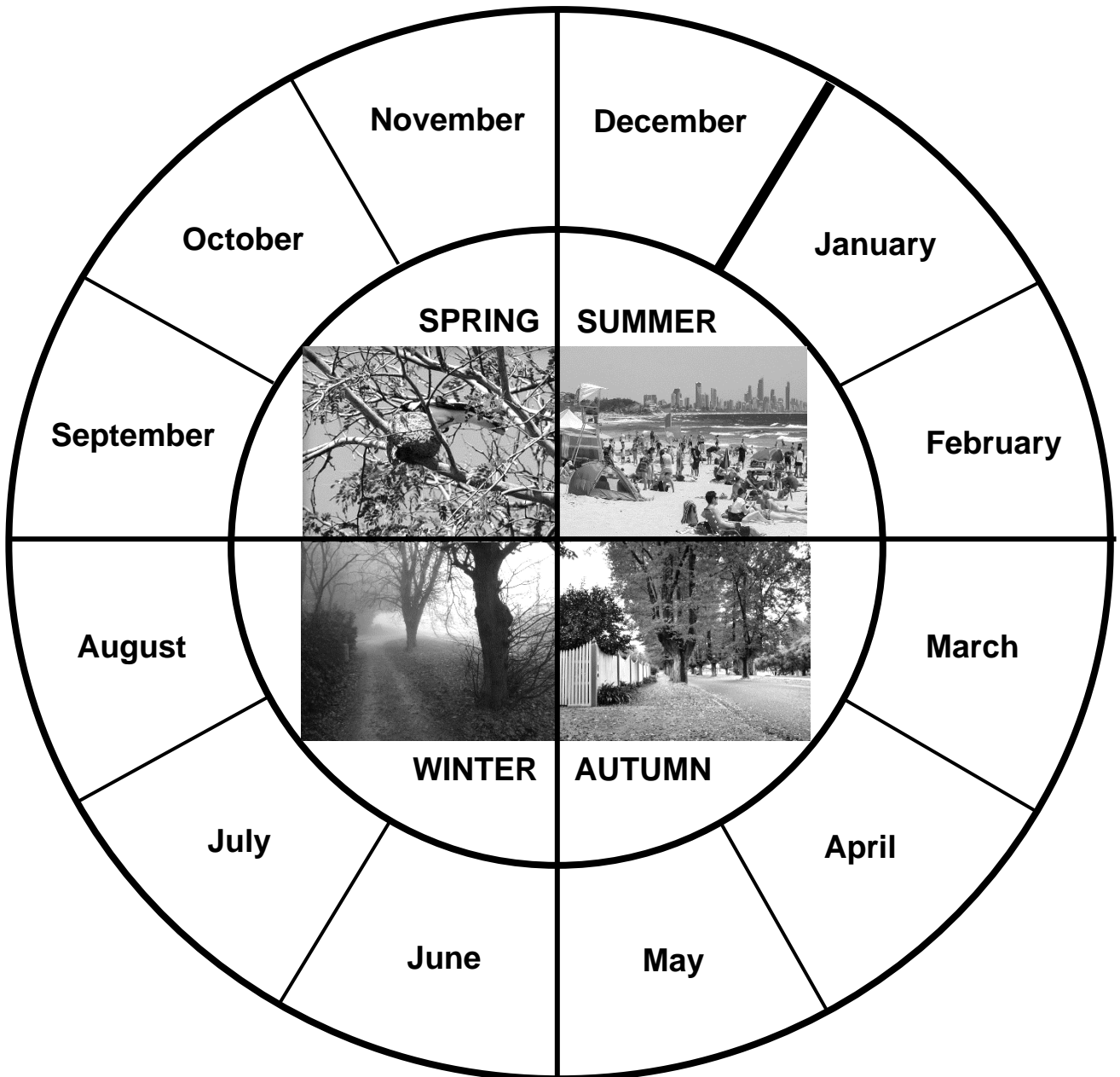
In the year **2050** I will be turning: _____

When I turn **10**, the year will be _____

In the year **2020** I will be turning : _____

When I turn **30**, the year will be _____

Outline Master 12: 'European' Seasons in Australia



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