

A close-up photograph of several green fern fronds, showing the intricate, feathery structure of the leaves. The fronds are vibrant green and appear to have small droplets of water on their surfaces. The background is dark and out of focus, making the ferns stand out.

RICH MATHEMATICAL TASK BOOKLET

MEASUREMENT TIME

YEAR 0

Teacher Booklet



Bobbie and Jodie Hunter

Task 1

Make a timeline of the activities for the boy and the hamsters from when his father says, “ten minutes till bedtime.”

Make a timeline of the activities of the activities that you do from ten minutes before your bedtime.

Compare your timeline with your partner.

Teacher Notes

During the launch, read the book 10 Minutes till Bedtime or watch it read on <https://www.youtube.com/watch?v=uUYQcfs-EeA>

Ask students “when it is time for bed, what do adults tell you? Do you get a warning of how much time till bedtime?”. Have the students share their experiences of time that they are given to prepare for bed. Compare different time amounts the students are given using more than ten minutes and less than ten minutes.

During the connect use the number-lines to count forwards and backwards by minutes.

Have long strips of paper marked from ten minutes to zero minutes that the students can use to draw or record what was done during both countdowns.

Facilitate the students to notice what would be reasonable to achieve in ten minutes and what would not be reasonable.

Shareback

Select students to share who have been able to represent their timeline by developing a representation that shows counting backwards from ten.

Big Ideas

There are a range of attributes that we can measure including time.

Time duration for events can be compared using such ideas as longer, shorter, and equal as well as different measurements of time.

A clock is a circular number line - the hands move gradually around this number line.

On an analogue clock the hour hand shows the approximate time in the day and the minute hand shows a more exact time.

There are multiple ways to measure time and some units of time measurement are more appropriate than others within different contexts.

Time is displayed in different ways depending on the context.

Numbers that are used to measure time repeat themselves in a cycle.

Connect

Count backwards in minutes from 10 minutes to 3 minutes.
Count backwards in minutes from 15 minutes to 8 minutes.
Count backwards in minutes from 30 minutes to 18 minutes.

Suggested Learning Outcomes

Explore time by comparing durations of events.

Use the language of measurement to compare attributes.

Independent Tasks

- Draw the things that you do in the morning.
- Draw things you do at night-time.
- Make a timeline of things you do ten minutes before having dinner.
- Make a timeline of things you do ten minutes before going to school.

Curriculum Links

6 months
Connect days of the week to familiar events and daily routines (e.g., the class timetable).

- **First year**
Identify how the passing of time is measured in years, months, weeks, days, hours

Name and order the days of the week, and sequence events in a day using everyday language of time.

Tell the time to the hour using the language of 'o'clock'.

Mathematical Language

Evening, night, after, before, longer, shorter, equal, seconds, minutes, hours, time, measurement.



Anticipations

Solutions, Misconceptions

Task 2

Write and draw all the things that think you can do in one minute.

Teacher Notes

During the launch, have the students sit for a minute still and silent, when they think a minute has passed stand up. Then have them count back from 60 seconds to zero to try to match the length of a minute. Repeat as needed.

To launch the task, say “Mum says that you must be ready for lunch in one minute. You need to tidy up your toys and wash your hands. Is it possible for you to do that in a minute?”

Have timers, stop watches, and analogue clocks with a second’s hand. Also have timelines marked from 0 to 60 in tens for students to record their anticipation of what they think they can do in a minute, and what they do in a minute.

Facilitate the students to notice the length of a minute before they start anticipating and exploring what they can do in a minute. Introduce the concept that sixty seconds is the same as one minute.

Monitor for students using vocabulary which describes time needed as longer or shorter or equal.

Notice students who use a comparison between seconds and one minute and recognise that a minute is the same as 60 seconds.

Expect students to represent using the number-line and approximations of time.

Shareback

Select students to share who have made both unrealistic and realistic estimates of what they can do in a minute. Compare and ask students to share how their ideas have changed.

Big Ideas

There are a range of attributes that we can measure including time.

Time duration for events can be compared using such ideas as longer, shorter, and equal as well as different measurements of time.

A clock is a circular number line - the hands move gradually around this number line.

On an analogue clock the hour hand shows the approximate time in the day and the minute hand shows a more exact time.

There are multiple ways to measure time and some units of time measurement are more appropriate than others within different contexts.

Time is displayed in different ways depending on the context.

Numbers that are used to measure time repeat themselves in a cycle.

Connect

Could you do 20 jumping jacks in one minute?
Could you do 100 sit-ups in one minute?
Could you tidy up your toys and wash your hands in a second?
Why or why not?

Suggested Learning Outcomes

- Explore time by comparing durations of events.
- Use the language of measurement to compare attributes.
- Use the same standard unit repeatedly to measure attributes (iteration).

Independent Tasks

- Draw 5 things you can do in one second.
- Draw 5 things you can do that take one minute.
- Draw 5 things that take longer than one minute.

Curriculum Links

6 months
Connect days of the week to familiar events and daily routines (e.g., the class timetable).

● **First year**
Identify how the passing of time is measured in years, months, weeks, days, hours

Name and order the days of the week, and sequence events in a day using everyday language of time.

Tell the time to the hour using the language of 'o'clock'.

Mathematical Language

Seconds, minute, hour, time, measurement



Anticipations

Solutions, Misconceptions

Task 3

If you wake up at 5 o'clock in the morning, how many hours do you have before school starts at 9 o'clock?

If you wake up at 7 o'clock in the morning, how many hours do you have before school starts at 9 o'clock?

What about if you woke up one hour before school starts, what time would that be?

Teacher Notes

During the launch, use an analogue clock and show the students that each day and night are counted in groups of 12 hours. Revisit that sixty seconds make one minute and introduce idea that sixty minutes make one hour.

Have analogue clocks and number-lines marked 1 hour to 12 hours. These can be both circular and straight.

Facilitate the students to notice that there are 24 hours in a day and that the first 12 begin at midnight and the second 12 begin at midday. Also, that an analogue clock represents a circular timeline which can be represented on a timeline of either 12 hours or 24 hours.

Monitor for students using vocabulary to compare time.

Expect students to represent using a time line.

Shareback

Select students to share who are able to use the analogue clock and a number-line to justify their answer.

Connect

You wake at 5 o'clock and eat your breakfast at 8 o'clock.
Your sister wakes at 6 o'clock and eats breakfast at 8 o'clock.

Who had the longest time to wait to eat breakfast?

Who had the shortest time to wait to eat breakfast?

Big Ideas

There are a range of attributes that we can measure including time.

Time duration for events can be compared using such ideas as longer, shorter, and equal as well as different measurements of time.

A clock is a circular number line - the hands move gradually around this number line.

On an analogue clock the hour hand shows the approximate time in the day and the minute hand shows a more exact time.

There are multiple ways to measure time and some units of time measurement are more appropriate than others within different contexts.

Time is displayed in different ways depending on the context.

Numbers that are used to measure time repeat themselves in a cycle.

Suggested Learning Outcomes

Explore time by comparing durations of events.

Use the language of measurement to compare attributes.

Use the same standard unit repeatedly to measure attributes (iteration).

Independent Tasks

You go home from school at 3 o'clock.

Use the timeline to find out how many hours you have to wait to go home if it is 2 o'clock.

Use the timeline to find out how many hours you have to wait to go home if it is 1 o'clock.

Use the timeline to find out how many hours you have to wait to go home if it is 12 o'clock.

Use the timeline to find out how many hours you have been at home after school if it is 4 o'clock.

Use the timeline to find out how many hours you have been at home after school if it is 6 o'clock.

Curriculum Links

6 months

Connect days of the week to familiar events and daily routines (e.g., the class timetable).

First year

Identify how the passing of time is measured in years, months, weeks, days, hours

Name and order the days of the week, and sequence events in a day using everyday language of time.

Tell the time to the hour using the language of 'o'clock'.

Mathematical Language

Morning, hours, time, measurement

Anticipations

Solutions, Misconceptions

Task 4

You start playing with your Lego at 1 o'clock in the afternoon and played with it for 2 hours. What is the time now?

You went to school at 9 o'clock and have been in class for 3 hours. What is the time now?

You went home from school at 3 o'clock and have been at home for 5 hours. What is the time now?

Teacher Notes

During the launch, revisit the analogue clock and its representation as both a circular number-line and as a linear number-line.

Have analogue clocks and number-lines marked 1 hour to 12 hours. These can be both circular and straight.

Facilitate the students to notice that they need to identify the hour on the number-line by touching the segment (not the number before or after) and count forward and that each segment on the number-line or analogue clock represents one hour and that the number at the end of that segment is the completed time.

Expect students to represent using a range of different ways including symbols and the number-line.

Shareback

Select students to share who are able to use the analogue clock and a number-line to justify their answer.

Big Ideas

There are a range of attributes that we can measure including time.

Time duration for events can be compared using such ideas as longer, shorter, and equal as well as different measurements of time.

A clock is a circular number line - the hands move gradually around this number line.

On an analogue clock the hour hand shows the approximate time in the day and the minute hand shows a more exact time.

There are multiple ways to measure time and some units of time measurement are more appropriate than others within different contexts.

Time is displayed in different ways depending on the context.

Numbers that are used to measure time repeat themselves in a cycle.

Connect

Put these in order from the shortest time to the longest time and explain why.

Day, minute, week, second, month, hour.

Suggested Learning Outcomes

Explore time by comparing durations of events.

Use the language of measurement to compare attributes.

Use the same standard unit repeatedly to measure attributes (iteration).

Independent Tasks

Write and draw things you do:

- In the morning
- In the evening
- At school
- On Saturdays

What do you notice?

Curriculum Links

6 months

Connect days of the week to familiar events and daily routines (e.g., the class timetable).

First year

Identify how the passing of time is measured in years, months, weeks, days, hours

Name and order the days of the week, and sequence events in a day using everyday language of time.

Tell the time to the hour using the language of 'o'clock'.

Mathematical Language

Morning, afternoon, evening, night, day, after, before, minutes, hours, week, time, measurement

Anticipations

Solutions, Misconceptions

Task 5

Today is Tuesday. Nikita is having a birthday party on Saturday.

How many days are there until her birthday?

In seven days Sosia is having her birthday party. Today is Friday. What day is her birthday party?

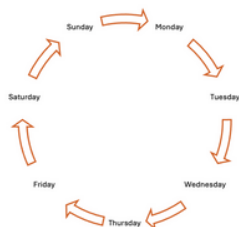
In two days on Saturday Timoti will have his birthday party. What day is it today?

Teacher Notes

During the launch, have the students sort the names of the week starting from Wednesday, then Saturday, then Monday. Show them on a timeline across 2 weeks and have them say the days of the week in order.

Have cards with the days of the week for the students to sort and order into timelines. Have the students use them to work through each problem. Discuss and relaunch after each problem.

Facilitate the students to notice that there is a circular sequence to the days of the week and whatever day the week starts you finish the day before but most often the calendar week starts with Monday.



Monitor for students using vocabulary before and after.

Notice students who use the days of the week in the correct order and are able to start again after seven days.

For the connect, have a calendar available for students to access.

For the independent task, give students a set of cards (see copy masters) with the days of the week on them for them to sort.

Big Ideas

There are a range of attributes that we can measure including time.

Time duration for events can be compared using such ideas as longer, shorter, and equal as well as different measurements of time.

A clock is a circular number line - the hands move gradually around this number line.

On an analogue clock the hour hand shows the approximate time in the day and the minute hand shows a more exact time.

There are multiple ways to measure time and some units of time measurement are more appropriate than others within different contexts.

Time is displayed in different ways depending on the context.

Numbers that are used to measure time repeat themselves in a cycle.

Shareback

Select students to share who can explain and justify their reasoning using the days of the week and a timeline.

Connect

If the first day of the month is Monday, what day is the eighth day of the month?

What do you notice on the calendar about the 1st day of the month and the 8th day of the month? Why does that happen?

Suggested Learning Outcomes

Explore time by comparing durations of events.

Use the language of measurement to compare attributes.

Use the same standard unit repeatedly to measure attributes (iteration).

Independent Tasks

Sort the cards into the order of the days of the week.

If today is Monday, what day is it tomorrow? What day was yesterday?

If today is Friday, what day is it tomorrow? What day was yesterday?

If today is Sunday, what day is it tomorrow? What day was yesterday?

Write and draw different things that you do on different days of the week.

Curriculum Links

6 months

Connect days of the week to familiar events and daily routines (e.g., the class timetable).

First year

Identify how the passing of time is measured in years, months, weeks, days, hours

Name and order the days of the week, and sequence events in a day using everyday language of time.

Tell the time to the hour using the language of 'o'clock'.

Mathematical Language

Day, tomorrow, yesterday, after, before, week, time, measurement

Anticipations

Solutions, Misconceptions

Task 6

If school starts in February and holidays are in April. How many months are there from when school starts until the holidays?

My birthday is in six months. If this month is January, what month is my birthday?

I had my birthday three months ago. If it is November, what month was my birthday?

Teacher Notes

During the launch, use the cards with the months of the year for the students to sort and order into a timeline of the months of the year.

Have cards with the months of the year for the students to use while solving the problems. Discuss and relaunch after each problem.

Facilitate the students to notice that there is a pattern to the months of the year and that there are 12 months in the year.

Expect students to represent using a timeline which is evenly spread to represent the same length months.

For the independent task, provide number-lines to support the students if needed.

Shareback

Select students to share who are able to use a timeline showing the months of the year to explain and justify their response.

Connect

It is November, what month is it in four months?

Discuss and reiterate the pattern of 12 months in a year that repeat.

Big Ideas

There are a range of attributes that we can measure including time.

Time duration for events can be compared using such ideas as longer, shorter, and equal as well as different measurements of time.

A clock is a circular number line - the hands move gradually around this number line.

On an analogue clock the hour hand shows the approximate time in the day and the minute hand shows a more exact time.

There are multiple ways to measure time and some units of time measurement are more appropriate than others within different contexts.

Time is displayed in different ways depending on the context.

Numbers that are used to measure time repeat themselves in a cycle.

Suggested Learning Outcomes

Explore time by comparing durations of events.

Use the language of measurement to compare attributes.

Use the same standard unit repeatedly to measure attributes (iteration).

Independent Tasks

Count backwards in minutes from 10 minutes to 3 minutes. Record the minutes.

Count backwards from 15 minutes to 8 minutes. Record the minutes.

Count backwards from 30 minutes to 18 minutes. Record the minutes.

Curriculum Links

6 months

Connect days of the week to familiar events and daily routines (e.g., the class timetable).

First year

Identify how the passing of time is measured in years, months, weeks, days, hours

Name and order the days of the week, and sequence events in a day using everyday language of time.

Tell the time to the hour using the language of 'o'clock'.

Mathematical Language

After, before, longer, shorter, month, time, measurement

Anticipations

Solutions, Misconceptions

Task 7

Draw a timeline and record four things you do before you come to school.

Look at the timeline your buddy drew and compare which activities took the longest time and the shortest time.

Which activities took the same amount of time?

Teacher Notes

During the launch, model drawing a timeline of four things you do (the teacher) before coming to school. Include an activity that takes seconds, an activity that takes a minute, and an activity that is longer. Draw the students' attention to how they need to represent these different time periods on a timeline.

Facilitate the students to notice that names for time indicate different lengths and that there are more appropriate terms used for different lengths of time (e.g., seconds compared to minutes and minutes compared to hours)

Expect students to represent using a timeline that indicates different lengths which show a shorter or longer spell of time.

Shareback

Select students to share who are able to show timelines which illustrate relative lengths of time each activity has taken in comparison to the other activities.

Connect

Why does the timeline show seconds as the shortest, minutes as longer and hours as a lot longer?

Big Ideas

There are a range of attributes that we can measure including time.

Time duration for events can be compared using such ideas as longer, shorter, and equal as well as different measurements of time.

A clock is a circular number line - the hands move gradually around this number line.

On an analogue clock the hour hand shows the approximate time in the day and the minute hand shows a more exact time.

There are multiple ways to measure time and some units of time measurement are more appropriate than others within different contexts.

Time is displayed in different ways depending on the context.

Numbers that are used to measure time repeat themselves in a cycle.

Suggested Learning Outcomes

Explore time by comparing durations of events.

Use the language of measurement to compare attributes.

Use the same standard unit repeatedly to measure attributes (iteration).

Independent Tasks

Write and draw activities that take seconds.

Write and draw activities that take minutes.

Write and draw activities that take hours.

Curriculum Links

6 months

Connect days of the week to familiar events and daily routines (e.g., the class timetable).

First year

Identify how the passing of time is measured in years, months, weeks, days, hours

Name and order the days of the week, and sequence events in a day using everyday language of time.

Tell the time to the hour using the language of 'o'clock'.

Mathematical Language

Morning, day, after, before, longer, shorter, equal, seconds, minutes, hours, time, measurement, timeline.

Anticipations

Solutions, Misconceptions

Task 8

Draw a timeline showing 4 things that happen before midday and 4 things that happen after midday.

Make sure that you show on the timeline their order and how long each thing takes.

Teacher Notes

Before the launch, introduce the four seasons, summer, autumn, spring, and winter. Ask students to share things they know about each season.

During the launch, discuss with the students some things they do in the morning and some things they do in the afternoon. Compare lengths of time needed for the different activities they do at the different time and model representing these on a number-line

Facilitate the students to notice the different names used interchangeably between the different periods of the day and night.

Monitor for students using vocabulary which indicates that they recognise the different periods of the day and night.

Expect students to represent using number-lines.

Shareback

Select students to share who are able to show timelines which illustrate relative lengths of time each activity has taken in comparison to the other activities.

Connect

When does morning finish and afternoon begin?
When is midday and midnight?

Big Ideas

There are a range of attributes that we can measure including time.

Time duration for events can be compared using such ideas as longer, shorter, and equal as well as different measurements of time.

A clock is a circular number line - the hands move gradually around this number line.

On an analogue clock the hour hand shows the approximate time in the day and the minute hand shows a more exact time.

There are multiple ways to measure time and some units of time measurement are more appropriate than others within different contexts.

Time is displayed in different ways depending on the context.

Numbers that are used to measure time repeat themselves in a cycle.

Suggested Learning Outcomes

Explore time by comparing durations of events.

Use the language of measurement to compare attributes.

Use the same standard unit repeatedly to measure attributes (iteration).

Curriculum Links

6 months

Connect days of the week to familiar events and daily routines (e.g., the class timetable).

First year

Identify how the passing of time is measured in years, months, weeks, days, hours

Name and order the days of the week, and sequence events in a day using everyday language of time.

Tell the time to the hour using the language of 'o'clock'.

Independent Tasks

Write and draw things that you only do in summer.

Write and draw things that you only do in winter.

What do you notice? Record your thinking.

Mathematical Language

Morning, afternoon, evening, night, day, after, before, longer, shorter, equal, seconds, minutes, hours, time, measurement, timeline, midday, midnight, noon

Anticipations

Solutions, Misconceptions

Task 9

On the weekend you went to bed later than your usual bedtime of 8 o'clock.

What time might you have gone to bed?

Record on a timeline.

On the weekend you went to bed earlier than your usual bedtime of 8 o'clock.

What time might you have gone to bed?

Record on a timeline.

On the weekend you had dinner later than your usual time of 6 o'clock.

What time might you have had dinner?

Record on a timeline.

On the weekend you had dinner earlier than your usual time of 6 o'clock.

What time might you have had dinner?

Record on a timeline.

Teacher Notes

Before you launch the task, ask the students to name the four seasons and things that they do in each season. Record this and add to your mathematics wall.

Facilitate the students to notice the use of the words later and earlier.

Monitor for students using vocabulary which indicates that they recognise the terms later and earlier and their relative application.

For the independent task, you will need the task below.

Big Ideas

There are a range of attributes that we can measure including time.

Time duration for events can be compared using such ideas as longer, shorter, and equal as well as different measurements of time.

A clock is a circular number line - the hands move gradually around this number line.

On an analogue clock the hour hand shows the approximate time in the day and the minute hand shows a more exact time.

There are multiple ways to measure time and some units of time measurement are more appropriate than others within different contexts.

Time is displayed in different ways depending on the context.

Numbers that are used to measure time repeat themselves in a cycle.

Shareback

Select students to share who are able to anticipate times which are later and earlier than the named times and record these on a timeline. Use an analogue clock to model showing the times that the students have recorded.

Connect

On the weekend you got up later than your usual time.

What time did you get up?

What else did you do later than you usually do during the week?

Suggested Learning Outcomes

Explore time by comparing durations of events.

Use the language of measurement to compare attributes.

Use the same standard unit repeatedly to measure attributes (iteration).

Curriculum Links

6 months

Connect days of the week to familiar events and daily routines (e.g., the class timetable).

First year

Identify how the passing of time is measured in years, months, weeks, days, hours

Name and order the days of the week, and sequence events in a day using everyday language of time.

Tell the time to the hour using the language of 'o'clock'.

Mathematical Language

Afternoon, evening, night, day, after, before, longer, shorter, hours, time, measurement, timeline.

Independent Tasks

Write and draw to make a timeline of your day from the time you wake up until you go to bed.

Anticipations

Solutions, Misconceptions

Task 10

Look at our timeline of birthdays.

Find someone who has a birthday in the month before yours.

Find someone who has a birthday three months before yours.

Find someone who has a birthday a month after yours.

Find someone who has a birthday three months after yours.

Teacher Notes

Before you launch the task, create a timeline that represents the months of the year.

Record each students' birthday on the timeline.

Facilitate the students to notice that there are 12 months in a year and that these are cyclic and so they can count back across the months as well as forward across the months in a cycle (e.g., January, December, November or forward from December to January).

Shareback

Select students who can use the number-line representing the months in the year to explain and justify how they found birthdays before and after their own birthday.

Big Ideas

There are a range of attributes that we can measure including time.

Time duration for events can be compared using such ideas as longer, shorter, and equal as well as different measurements of time.

A clock is a circular number line - the hands move gradually around this number line.

On an analogue clock the hour hand shows the approximate time in the day and the minute hand shows a more exact time.

There are multiple ways to measure time and some units of time measurement are more appropriate than others within different contexts.

Time is displayed in different ways depending on the context.

Numbers that are used to measure time repeat themselves in a cycle.

Connect

If your birthday is in January and someone has a birthday one month before yours, what month is that?

What if your birthday is in November and someone has a birthday three months after yours, what month is that?

Suggested Learning Outcomes

Explore time by comparing durations of events.

Use the language of measurement to compare attributes.

Use the same standard unit repeatedly to measure attributes (iteration).

Independent Tasks

Complete the following assessment task (attached at the end of the document) as the independent activity:

Assessment Task 1: Birthday timeline

Curriculum Links

6 months

Connect days of the week to familiar events and daily routines (e.g., the class timetable).

First year

Identify how the passing of time is measured in years, months, weeks, days, hours

Name and order the days of the week, and sequence events in a day using everyday language of time.

Tell the time to the hour using the language of 'o'clock'.

Mathematical Language

After, before, longer, shorter, month, year, time, measurement, timeline.

Anticipations

Solutions, Misconceptions

Assessment Task 1 - Measurement - Time - Year 0

Choose a day of the week.

Someone in your class is having a birthday in 4 days' time.

What day will this be?

Show how you worked this out.

Now make a timeline to plan out the activities that will happen during the day of their birthday.