RICH MATHEMATICAL TASK BOOKLET

MEASUREMENT TIME

YEAR 1

Teacher Booklet

Task 1

Make a timeline of a day.

Mark the times and write and draw things that you do at each time.

7 o'clock in the morning.

9 o'clock in the morning.

11 o'clock in the morning.

12 o'clock in the morning.

Teacher Notes

Before you launch the task, explore the clock face of an analogue clock with the students and ask them what they notice. Ask the students to make a circle and give each child a large numeral card (see copy masters). Ask the child with the 12 card to stand just inside the circle. Now ask the other children with the numeral cards to estimate and stand where they would be on the clock face. Discuss with them whether they are evenly spaced and why this is important. Repeat the activity giving different numeral cards to different children.

Have numeral cards from 1 to 12 for students to arrange (see copy masters). Have number-lines available for the students to use to copy for number sequence and formation support.

Facilitate the students to notice that the hours of the day are in sequence and that each hour uses the same amount of time.

Expect students to represent using a number-line representing the hours and which are evenly spaced.

For the independent task, have clock faces prepared without any markings on them. Have small numeral cards from 1 to 12 (see copy masters) available for the students to use. Have a sheet with circles on it.

Shareback

Select students to share who use a timeline to show the morning to lunch-time sequence and use an evenly spaced representation.

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 you woke up in the middle of the night, what time might it be?

If you woke up late in the morning, what time might it be?

Suggested Learning Outcomes

Explore time by recording events that happen at different times during the day.

Use the language of measurement to compare attributes.

Independent Tasks

Use the number cards to show where each hour would be on the clock face.

Check your clock face with a buddy and see whether you have the numbers in the same place.

Move the number cards until you both agree.

Draw and label the clock face to match your number cards.

Repeat the drawing until it looks like the clock.

Write or draw activities that you do at each hour.

Curriculum Links

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'.

Second year

Name and order the months and seasons, and describe the duration of familiar events using months, weeks, days, and hours

Tell the time to the hour and half-hour, using the language of 'past' and 'o'clock'

Mathematical Language

Morning, afternoon, day, after, before, hours, week, month, year, decade, time, measurement, timeline, midday, midnight, noon, analogue clock, digital clock, clockwise, anticlockwise

Anticipations

Solutions, Misconceptions

Task 2

Draw a timeline for each hour from midnight to midday.
Write or draw an activity for each hour.

Draw a timeline for each hour from midday to midnight.
Write or draw an activity for each hour.

Teacher Notes

During the launch, revisit the analogue clock face and discuss the two 12 hours blocks. Have students describe what they might be doing at different times of the day from 12 pm to 12 am or 12 am to 12 pm.

Have number-lines available for the students to use if needed.

Facilitate the students to notice that days and nights are split into 2 groups of 12 and altogether there are 24 hours in a day.

Expect the students to space their timelines out evenly across the 12 hours.

For the connect, have an analogue clock face available for students to use to compare with their own drawings of the clock face.

For the independent task, have clock faces which have the hours marked on them but are cut into halves and quarters.

Shareback

Select students to share who have spaced their timeline evenly and are able to explain using their timeline how they have represented each hour.

Connect

Redraw the timeline as a circular timeline.
What do you notice about your timeline and the analogue clock?

Big Ideas

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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 recording events that happen at different times during the day.

Use the language of measurement to compare attributes.

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

Independent Tasks

Put the clockfaces back together.

Draw a timeline of the clockface.

Now draw a circular timeline of the clockface.

What do you notice?

Curriculum Links

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'.

Second year

Name and order the months and seasons, and describe the duration of familiar events using months, weeks, days, and hours

Tell the time to the hour and half-hour, using the language of 'past' and 'o'clock'

Mathematical Language

Morning, afternoon, evening, night, day, after, before, longer, shorter, hours, time, measurement, timeline, midday, midnight, noon, analogue clock, digital clock, clockwise, anticlockwise.

Anticipations

Solutions, Misconceptions

Task 3

Make a number-line of the hour between 8 o'clock and 9 o'clock in the morning and write on your number-line the number that each mark represents.

What do you notice?

Teacher Notes

Before the launch, have the students complete a choral count in fives starting from zero and ending at 60.

During the launch, revisit the analogue clock face and using numeral cards have students place the cards where they would be on a clockface. As the students to discuss what they notice on an analogue clock face and ensure that they notice the marks between each hour (without telling them how many minutes there are in an hour).

Have an analogue clock available and pictures of empty clock faces with the five-minute marks between the hours marked for students to use (see copy masters).

Facilitate the students to notice that the minute hand indicates 60 minutes, but the hour hand indicates 12 hours and that you can count by fives to count the minutes in an hour.

For the independent task, have number-lines marked from 0 to 60 in 5-minute intervals

Shareback

Select students to share who have identified that there are 60 minutes in one hour and have drawn a timeline where the space is evenly represented to show this.

Big Ideas

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

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

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

Connect

Where would the minute hand be if it was showing a quarter of an hour? How many minutes past the hour is that?

Where would the minute hand be if it was showing a half of an hour? How many minutes past the hour 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

Write and draw on the number-line to show activities that you do between 7 am and 8 am.

Write and draw on the number-line to show activities that you do between 11 am and 12 pm.

Write and draw on the number-line to show activities that you do between 11 pm and 12 am.

Curriculum Links

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'.

Second year

Name and order the months and seasons, and describe the duration of familiar events using months, weeks, days, and hours

Tell the time to the hour and half-hour, using the language of 'past' and 'o'clock'

Mathematical Language

Morning, after, before, longer, shorter, seconds, minutes, hours, time, measurement, timeline, analogue clock, clockwise, anticlockwise, quarter hour, half an hour, three quarters of an hour.

Anticipations

Solutions, Misconceptions

Task 4

Make a timeline starting at 7.32 pm when Molly is told to get ready for bed.
Write and draw the different things that Molly did before her mother found her asleep at 7.51 pm.

Discuss with your group whether you think she could have completed all those things from when her mother told her to get ready for bed and when her mother found her asleep.

Teacher Notes

During the launch, have students count by fives, to 60 minutes. Ask them to count by fives and stop at when they reach a quarter of an hour, a half an hour, three quarters of an hour.

Read the book "In a Minute" or view the videoclip and discuss and list the activities Molly does before she falls asleep.
https://www.facebook.com/BlackburnPrimarySchool/videos/619200525639501/

Ask students to discuss things that they can do in one minute. Record their ideas (e.g., sitting down and standing up 20 times, 50 jumping jacks). Time the students for one minute and get them to test their estimate.

Facilitate the students to notice the way in which seconds repeat and minutes repeat in a pattern that is the same and similarly hours in a day and months in a year repeat in the same pattern.

Shareback

Select students to share who have recognised that their timeline is a representation of minutes between 7.32 pm and 7.51 pm and have marked the 5-minute marks but have identified that there are individual minutes between the marks.

Big Ideas

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Connect

What you can do in one second?

What you can do in 60 seconds?

Is 60 seconds the same as one minute?

What do you notice about how many seconds equal one minute and how many minutes equal one 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 could do in one second.

Write and draw things you could do in one minute.

Write and draw things you could do in one hour.

Curriculum Links

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'.

Second year

Name and order the months and seasons, and describe the duration of familiar events using months, weeks, days, and hours

Tell the time to the hour and half-hour, using the language of 'past' and 'o'clock'

Mathematical Language

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

Anticipations

Solutions, Misconceptions

Task 5

Make a timeline showing the days of the week.

Today is Tuesday. White Sunday is next Sunday.
How many days are there until White Sunday?

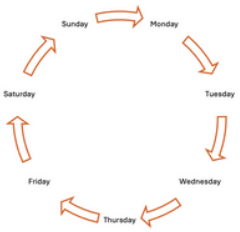
Today is Friday. In eleven days Sosia is having her birthday party. What day is her birthday party?

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

Teacher Notes

Have cards with the days of the week for the students to sort and order into timelines (see copy masters) of the days of the week.
Also have calendar pages available.

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.



Expect students to represent using timelines evenly spaced with the days across the week.

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

Big Ideas

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Shareback

Select students to use the timeline showing the days of the week to explain and justify their reasoning.

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?
Explore multiple calendar months to generalise if this is always true.
What other patterns do students notice?

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

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'.

Second year

Name and order the months and seasons, and describe the duration of familiar events using months, weeks, days, and hours

Tell the time to the hour and half-hour, using the language of 'past' and 'o'clock'

Mathematical Language

Day, tomorrow, yesterday, after, before, week, timeline.

Anticipations

Solutions, Misconceptions

Task 6

Make a timeline of the months of the year.

School starts on the 1st of February.
School holidays start on the last day of April.
How many months between the start of school and the April holidays?
How many weeks between the start of school and the April holidays?

It is the beginning of December, and my birthday is in six months.
What month is my birthday?

It is the beginning of June, and my birthday was eleven months ago.
What month was my birthday?

Teacher Notes

Before the launch, use the cards for the days of the week (see copy masters) and have children say them in a sequence including starting from different days of the week.

To launch the task, introduce cards with the months of the year (see copy masters)and ask the students to put these into order.

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. Highlight the way in which we need to count through the beginning and end of the year,

Expect students to represent using a timeline which is evenly spread to represent the same length for each month.

For the independent task, have days of the weeks available if needed.

Shareback

Select students to share who use a timeline or calendar to prove and justify their answer.

Big Ideas

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Connect

Do we always have to start at January and end at December or can we start at different places on the calendar?
Is that the same for days of 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).

Independent Tasks

Make a timeline showing the days of the week beginning from Sunday.

Today is Wednesday and swimming starts in five days time.
What day does swimming start?

Today is Tuesday and there is going to be seven days of rain.
What day will it stop raining?

Today is Monday and your whanau are visiting in 13 days time.
What day will they visit?

Write and draw different things that you do on the days on your timeline.

Curriculum Links

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'.

Second year

Name and order the months and seasons, and describe the duration of familiar events using months, weeks, days, and hours

Tell the time to the hour and half-hour, using the language of 'past' and 'o'clock'

Mathematical Language

Week, month, year, timeline.

Anticipations

Solutions, Misconceptions

Task 7

Lelei went to Samoa to visit family and left on the 3rd of September.
She was in Samoa for 12 days.
What day and date did she arrive back in New Zealand?

If Lelei had stayed in Samoa for three months, what month would she have returned to New Zealand?

Teacher Notes

Before you launch the task, ask the students to put the months of the year in order.

When you launch the task, ensure the students realise that in this case, we won't count the day of departure or day of return as part of the holiday.

Have calendar pages ready for the students to use.

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. Highlight the way in which we need to count through the beginning and end of the year,

Notice students who use a pattern to work out possibilities.

For the independent task have calendars available for the students.
Available online https://www.timeanddate.com/calendar/create.html

Shareback

Select students to share who are able to use the calendar to explain and show their response across days and months.

Connect

On what day does a week start?
On what day of the week does a month start?
Can these start at different times?
What do you notice?

Big Ideas

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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

If it is May and Simon is going away in August. How many months until he leaves?

If it is October and Etta's birthday was 7 months ago. What month was her birthday?

If it is November and your cousin is coming to stay in February. How long until they visit?

Make a timeline of the months of the year and write and draw events that happen in each month.

Curriculum Links

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'.

Second year

Name and order the months and seasons, and describe the duration of familiar events using months, weeks, days, and hours

Tell the time to the hour and half-hour, using the language of 'past' and 'o'clock'

Mathematical Language

Month, year, timeline.

Anticipations

Solutions, Misconceptions

Task 8

Christmas day is on the 25th of December. A song about Christmas is the "Twelve Days of Christmas".

Make a timeline to show the date and day of the first gift in the song when the last gift (the twelfth) is given the day before Christmas Day.

Write and draw each gift on the timeline.

Teacher Notes

Have a calendar available for the students to use.

Facilitate the students to notice how dates are referred to as first, second, third for each day and also attend to the order of the months.

For the independent task, have a calendar available.

Shareback

Select students to share who can explain a pattern for counting back for 12 days starting from the 24th of December.

Connect

If it was 12 weeks instead of 12 days, what date and month would the week start?
If it was 12 months instead of 12 days? What date and month would be the start?

Big Ideas

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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

Leah's Mum went away for work on the 31st of July and was away for three days.
What date did she get home?

Arlo's whanau went on holiday on the 8th April and were away for 12 days.
What did they get home?

It is the 19th of November, Tali had her birthday 5 days ago.
What date is her birthday?

It is the 28th of January, Georgia just returned from visiting the beach for 14 days.
What date did she go to the beach?

Curriculum Links

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'.

Second year

Name and order the months and seasons, and describe the duration of familiar events using months, weeks, days, and hours

Tell the time to the hour and half-hour, using the language of 'past' and 'o'clock'

Mathematical Language

Day, tomorrow, yesterday, after, before, week, timeline.

Anticipations

Solutions, Misconceptions

Task 9

Ayla took exactly 30 seconds to do three things.
What might the three things have been?

Ayla took exactly 59 seconds to do three things.
What might the three things have been?

Ayla took exactly one minute to do three things.
What might the three things have been?

Ayla took exactly half an hour to do three things.
What might the three things have been?

Teacher Notes

To launch the task, ask the students to sit with their eyes closed and put their hands on their head when they think 30 seconds has passed. Call out the time when it is 30 second. Repeat for 60 seconds and reinforce this is the same as one minute.

Facilitate the students to notice that for time there are relationships between seconds and minutes but it is different for hours.

For the independent task, have the task below and a December calendar month available.

Shareback

Select students to share for each timeframe who have given a range of possible activities within the time. Use a stopwatch and get the students to test their prediction before they make the next prediction.

Connect

What is the pattern between seconds, minutes, and hours?
What is the pattern between days, weeks, months, years?

Big Ideas

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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

Today is the 1st of December.

Make a timeline and write and draw the activities that you and your whanau will do over the next 12 days.

Curriculum Links

First year

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

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

Second year

Name and order the months and seasons, and describe the duration of familiar events using months, weeks, days, and hours

Tell the time to the hour and half-hour, using the language of 'past' and 'o'clock'

Mathematical Language

Longer, shorter, equal, seconds, minutes, hours, half an hour.

Anticipations

Solutions, Misconceptions

Task 10

Jennie says that if the time has an 8 in it, it must be 8 o'clock in the morning.

Jamie agrees with her, and she says she has a way of proving it. What might she say?

Georgia disagrees with her, and she says she can give lots of times it might also be.
What times might Georgia be thinking of?
Draw the different times on an analogue clock.

Teacher Notes

Facilitate the students to notice the pattern of numbers used to describe seconds, minutes, and hours.

Provide students with outlines of an analogue clock with hour times and markings for five-minute intervals.

Shareback

Select students to share who have recorded the times on the analogue clock or model for them how to record the time.

Big Ideas

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Connect

What do we know about other “time numbers”? If there is a 37 in the time, what could that be telling us? 37 o’clock, 37 hours, 37 minutes, 37 seconds?

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

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'.

Second year

Name and order the months and seasons, and describe the duration of familiar events using months, weeks, days, and hours

Tell the time to the hour and half-hour, using the language of ‘past’ and 'o'clock'

Mathematical Language

Seconds, minutes, hours, analogue clock.

Anticipations

Solutions, Misconceptions

Assessment Task 1 - Measurement - Time - Year 1

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.