



**MIGHTY MINDS**  
Educational Consultants

[www.mightyminds.com](http://www.mightyminds.com)



**SAMPLE**

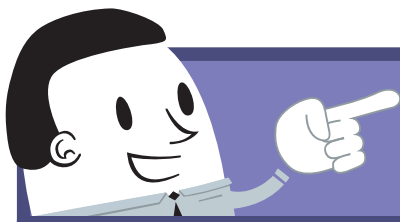


**Time**

**Numeracy**

- Around the World
- Time for a Trip
- Across Time

**Resource code: 27052136**



# Around the World

The length of a planet's day is measured according to how long it takes to complete a full rotation around the Sun. *On Earth, this time is 24 hours. However, during its rotation, there are different parts of the world facing the sun.*



Q1

The clocks below indicate what time it is in various countries compared to Greenwich. However, some times are missing. Record the times based on the analogue times and vice versa.

## Tip

Time differences are measured with reference to a place in London called Greenwich. Whatever time it is in Greenwich is called Greenwich Mean Time (GMT). Other country's time zones are therefore GMT plus or minus however many hours difference there are to Greenwich's time.



Amsterdam, Holland (+1GMT)



1 : 00 am

Auckland, New Zealand



12 : 00 noon

Azores, Portugal (-1GMT)



11 : 00 am

(GMT)



3 : 00 am

Bangkok, Thailand (+7GMT)



7 : 00 am

By

o, Egypt (+2GMT)



2 : 00 am

Caracas, Venezuela (-4.5GMT)



7 : 30pm the day before



New York, USA (-5GMT)



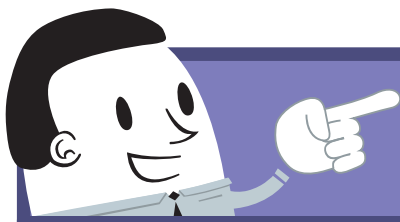
7 : 00pm the day before

Shanghai, China (+8GMT)



8 : 00 am

SAMPLE



# Around the World

**Q2** Using the clocks on the previous page, what is the time difference between the following cities?

a) Auckland, New Zealand and Bangkok, Thailand?

\_\_\_\_\_

b) Caracas, Venezuela and Kathmandu, Nepal?

\_\_\_\_\_

c) Apia, Samoa and Shanghai, China?

\_\_\_\_\_



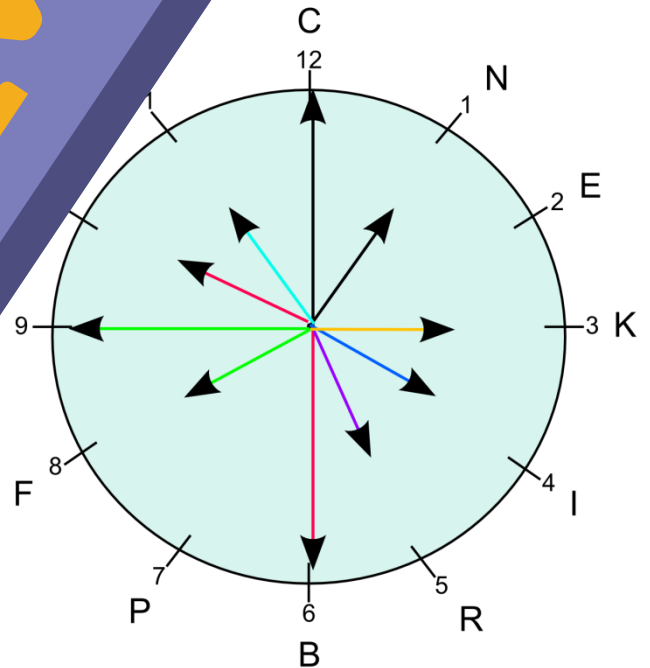
**Q3** Read the instructions to the following activity.

Instructions:

- Using the GMT + or – times from the previous page, draw the times for each place. Write the letters for the places listed if it is 3am in Greenwich.
- Draw these times on the clock face.
- Use the letter on the hour-hand to find the city at that specific time and use it to fill in the blank space it corresponds to. The letters are revealed.
- The first one has been done for you.

When it is 3am in Greenwich, what time is it in...

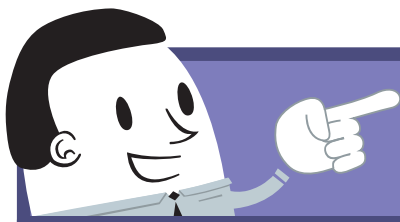
1. Brisbane
2. Caracas
3. Auckland
4. Apia



Who suggested the invention of daylight savings time?

1 J 2 M 3 N 4 AN 5 IN 6 7





# Time for a Trip

Tides occur in the ocean, sea and in large lakes. Tides are the pull of the Moon. Try out these questions to put your skills to the test.



Q1

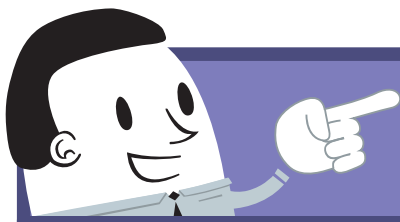
The tidal cycle has a high tide and a low tide, which occurs twice a day. Tom and his family need to be able to read the tidal table to drive on the beach. Note: Height is in metres, time is in 24-hour format.

Monday		Tuesday		Wednesday		Thursday		Friday		Saturday	
Time	Height	Time	Height	Time	Height	Time	Height	Time	Height	Time	Height
04:17	2.02	05:33	2.14	00:03	0.59	01:19	0.26	03:52	0.22	05:08	0.87
11:03	0.87	12:19	0.74	06:36	2.29	07:52	1.57	09:48	2.48	11:04	1.57
16:43	1.57	18:00	1.70	13:20	0.74	14:36	0.26	16:18	0.21	17:34	0.87
22:47	0.70	21:21	0.70	19:02	2.33	20:18	1.57	22:18	2.44	23:34	1.57

- a) How much time elapsed between the first and second high tide on Friday?  
\_\_\_\_\_
- b) How much time elapsed between the first and second high tide on Sunday?  
\_\_\_\_\_
- c) How much time elapsed between the first and second high tide on Wednesday?  
\_\_\_\_\_
- d) What is the lowest tide on Tuesday?  
\_\_\_\_\_
- e) What is the highest tide on Saturday?  
\_\_\_\_\_



SAMPLE



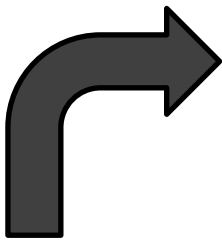
# Time for a Trip

Q1

Draw a diagram of the trip that is described below by Captain ... sailing ship which exports and imports many goods for you ... the day, date and time that the ship came across each ev



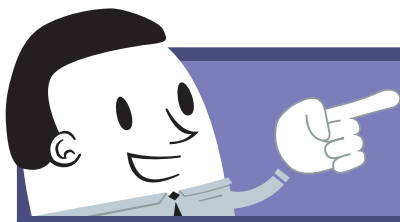
"Our journey started on Saturday 18<sup>th</sup> April at 6am. We sailed th ... 15 minutes when we were met by a large tidal wave. We strug ... ed down. After another 4 days, 13 hours and 48 minutes, we fin ... Oh, what a relief! It took us 3 and a half hours to unload every ... stayed and explored the town for 5 entire days before boardin ... 27 hours and 21 minutes to get home. It was much smoother sa



Saturday 18<sup>th</sup> April, ...  
HOME



SAMPLE



# Across Time

With flight technology, we are able to fly to some countries in the world in less than one day. Some people fly across different time zones and arrive 'more than one day' in a day.



Q1

Kate is a business woman who must travel to all the major cities in the world. With the clues below, fill in Kate's boarding passes. Her business trip, including her arrival day and times in each city, is as follows. The plane takes off exactly half an hour after the local time in each city.

City	New York	London	Paris	Tokyo	Singapore
Time Zone (GMT)	- 5	+ 0	+ 1	+ 9	+ 8

Business		
Flight	Date	Gate
GA289	14/5/15	21
Boarding Time	From	To
0620	Sydney	Hong Kong

Business		
Flight	Date	Gate
GA78	14/5/15	15
Boarding Time	From	To
2130	Hong Kong	Tokyo

Business		
Flight	Date	Gate
GA123	15/5/15	10
Boarding Time	From	To
10:25	Tokyo	New York

Business		
Flight	Date	Gate
GA456	16/5/15	10
Boarding Time	From	To
9:00	New York	Singapore



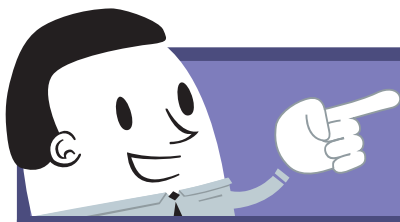
SAMPLE

... was exactly 35 minutes before Kate's flight on 14/5/15, 6:55am. Flight duration: 11 hours 30 minutes.

Kate left for Tokyo on the same day as her first flight. Boarding time was at 11:30pm according to her watch, which she had not changed since her flight from Sydney. Flight duration: 4 hours 25 minutes.

Took a flight at 10:25 (according to her Australian timed watch) the next morning. Flight time: 11 hours.

The next day, Kate got to the airport at 9pm local time, 2.75 hours before her boarding time, for her flight to New York. Flight duration: 7 hours 35 minutes.



# Across Time

## Business

Flight	Date	Gate	Seat
GA52	19/5/15	52	10D
Boarding Time	From	To	
1740	New York	Paris	Global Airlines

## Business

Flight	Date	Gate	Seat
GA178	21/5/15	33	4B
Boarding Time	From	To	
2215	Paris	Singapore	Global Airlines

## Business

Flight	Date	Gate	Seat
GA203	23/5/15	19	
Boarding Time	From	To	
1535	Singapore	Sydney	Global Airlines



SAMPLE

London  
11:55 GMT +0  
16/5/15

New York  
02:50 GMT -5  
18/5/15

Singapore  
19:35 GMT +8  
22/5/15

Paris  
09:25 GMT +1  
20/5/15

The  
b  
friend  
e was  
ing it was  
g over  
hours 50  
rived home in  
he 24<sup>th</sup> at 2:25am, 8  
minutes after her  
g time.



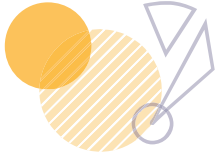
**SAMPLE**

2136



**MIGHTY MINDS**  
Educational Consultants





# Mighty Minds Lesson Installs

## 'Fundamentals' Lesson



Firstly, thank you for your support of Mighty Minds and our resources. We are proud to provide quality resources that are both educational and engaging, and we hope you enjoy using our works.

To assist you in using this resource, we have compiled some information for you.

### About this resource

This Mighty Minds 'Fundamentals' Lesson focuses on a specific skill (in this case, Maps and Plans) and presents this skill through a theme from the Australian Curriculum (in this case, Geography). This lesson is also targeted at a certain skill level (in this case, Year 5) and is designed for completing work that is suited to them.

### How to use this resource

Our 'Fundamentals' Lessons are split into two parts: a Teacher's Copy and a Student Workbook. Each contain different types of resources.

The student workbook contains:

- The main title page; and
- The blank student workbook pages.

The teacher resources contain:

- This set of instructions for how to use the resources;
- The Teacher's Copy of the lesson, which includes the lesson plan, the lesson content, and any resources needed to teach the lesson;
- The Item Description, which includes the lesson's aims, objectives, and learning outcomes, as well as extension ideas;
- The student model responses, which are provided as examples of student responses on the student worksheets to ensure that answers are clear and easy to understand;
- The teacher's copy of the student model responses, which are provided as examples of more detailed explanation of the model responses that you can use to help your students understand the answers or any questions they may have;
- Final notes and a feedback form.

We recommend that you print out the Student Workbook (the first set of pages) for the students. If students are unable to access the Student Workbook, you may also like to provide them with the student answer sheet.

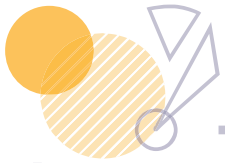


### Contacting us

We would love to hear from you. If you have any feedback or suggestions that if you email us with suggested changes to any lesson, we will be happy to consider them. We will send you the revised lesson – free of charge.

You can contact us by email at [resources@mightyminds.com.au](mailto:resources@mightyminds.com.au) and we'll get back to you as soon as we can.





# Time

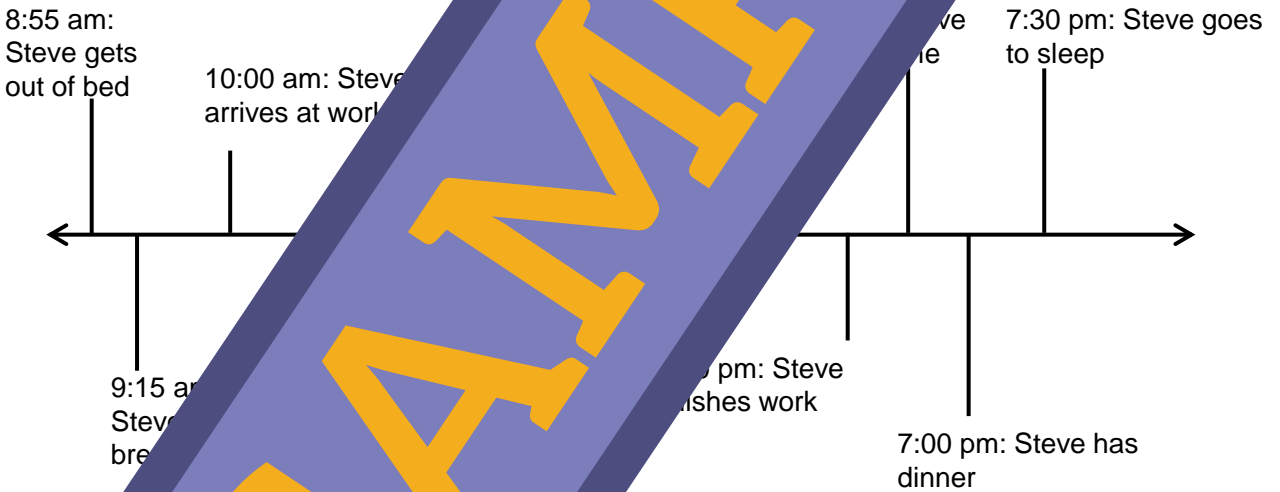
## Timelines



Timelines are a convenient way of expressing a large amount of information simply by a line on which dates or times, and key events are marked. The gaps between the dates indicating the length of time. Large gaps indicate long periods and small gaps represent small amounts of time. Sometimes a timeline is used when information becomes too clustered. By having a timeline, the clustered section of the first, the data can be expressed more clearly.

A timeline can be made from any series of events.

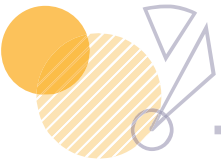
For example: Steve got out of bed at 8:55 am and went to work, arriving at 10:00 am. After working all day, he finished work at 6:30 pm. He was tired so he went to bed at 7:30 pm after dinner.



Because of the Earth's rotation, daytime in some parts of the world while in others it is nighttime. This is because the Earth is on the same time, because for some people that would be at dawn and for others it could be at midnight! This is why time zones exist. Time zones are basically regulated so that 'noon' occurs at the same time all over the world. Although there are cases around the world, where due to the Earth's rotation, the time is a little off. For this reason it is important to understand how to calculate time. GMT or Greenwich Mean Time is the time which all other time is based on. It is the time in England called Greenwich. At Greenwich the time is the same. As you advance east or west, hours must be added or subtracted from the GMT to get the time in a particular place. Australia for example is GMT+10. Meaning it is 10 hours ahead of the GMT + 10 hours.

***This teaching guide is continued on the next page...***





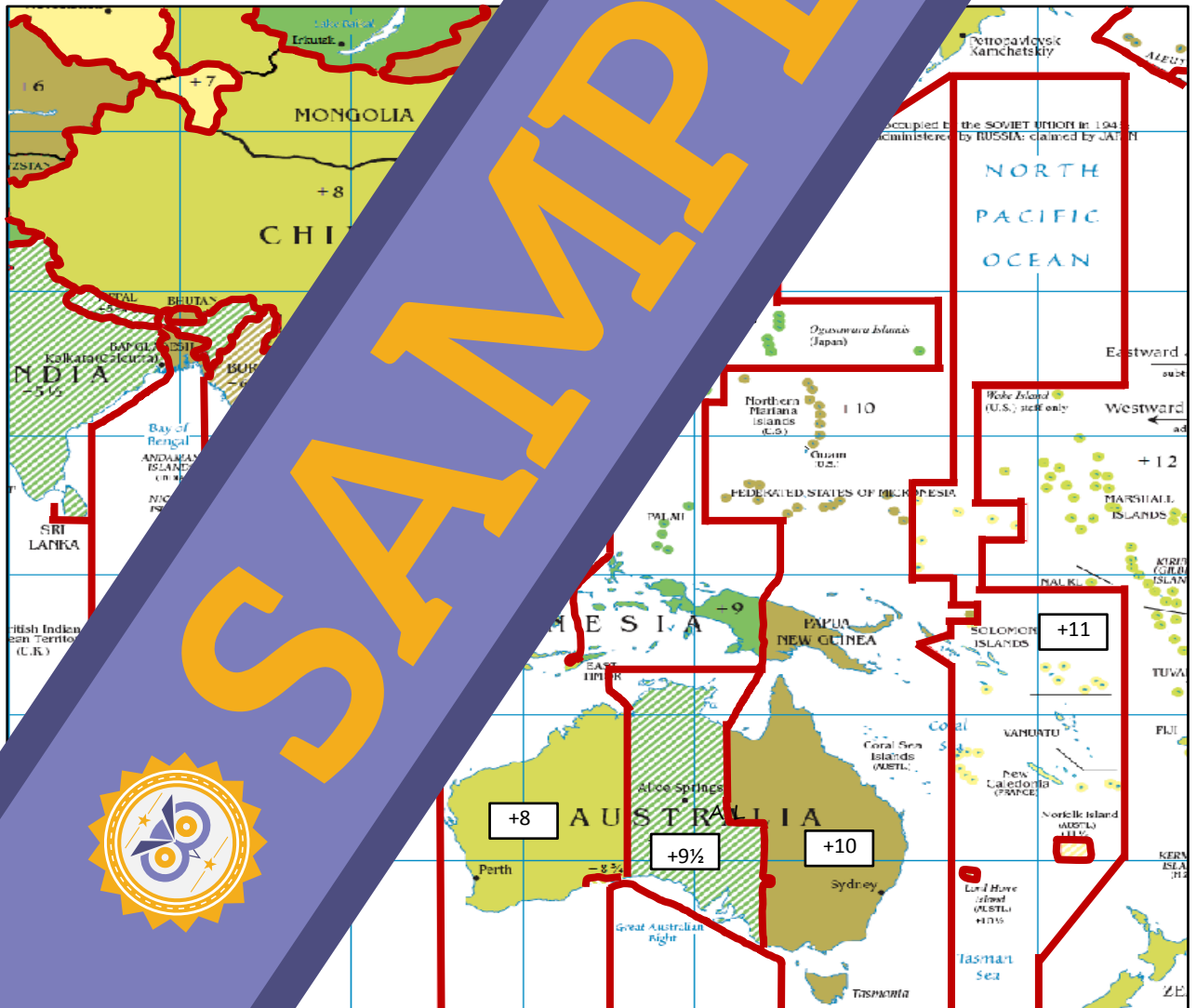
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When converting between times it is important to know the time difference. To know how many hours have been taken or added to GMT, you need to know the time zones and, if you know the time in one of those zones,

For example:

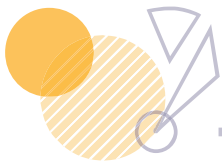
Hong Kong time is GMT + 8, and Tokyo is GMT + 9. If the time in Hong Kong was 6:00 pm, the time in Tokyo would be 6:00 pm.

An example of a map with time zones include



This teaching guide is continued on the next page...





...This teaching guide is continued from the previous page.

### 24 Hour Time

24 hour time is another way that time can be written, avoiding am or pm. It is a measure of how much time has passed since 0000h (midnight) or 0000h – in 24 hour time). At 1:00 pm, 12 hours have passed since 0000h (midnight) so it is 1300h. To convert another hour to arrive at 1:00pm. Therefore, 13 hours have passed since 0000h (midnight), making the 24 hour time 1300h. Only times after midday are converted to 24 hour time, as the am times will be the same. To convert times after midday, simply add whatever time it is in pm to 1200h (i.e. add 12 hours).

If it is 6:00 pm:  $6:00 + 12:00 = 1800h$

If it is 4:30 pm:  $4:30 + 12:00 = 1630h$

### Scientific Notation

There are some numbers and times that are too large or too small to express normally. Sometimes the numbers are too small to write down. A nanosecond is one billionth of a second. To express this, we use scientific notation. However, using scientific notation we can express very large numbers. For example, a Giga-second is one billion times larger than a second. This is inconvenient to write normally as 1000000000 seconds. This is inconvenient to write normally as 1.0 x 10<sup>9</sup> seconds. This is not only how we write very large numbers (like billions), but any other large or small numbers.

The 10 is important in scientific notation. 100 is the same as 10<sup>2</sup> or 10 x 10, which is why 100 has two zeros. For every space the decimal place is moved (backwards or forwards), the power of 10 has to be increased by one. 3000 would be 3 x 10<sup>3</sup>, where the decimal place has moved three spaces to the left.

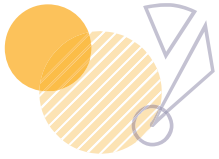
In the case of small numbers, the rule is still the same, only the power is negative. 0.000000001 has 9 digits after the zero (the decimal place has moved backwards 9 spaces), so the scientific notation is 1 x 10<sup>-9</sup>.

When writing from a large number that the power that ten is raised to is the number of zeros. When writing from a small number, the power will be negative.



SAMPLE





Item Description

Please note: any activity that is not completed during class time will be undertaken at a later date.



'Around the World', 'Time for a'

Activity Description:

- The first activity, Around the World, requires students to understand different time zones and be able to write present time in 12 hour and 24 hour format as well as write
- The second activity, Time for a tide, requires students to understand low and high tides and answer related questions. This activity sheet requires students to calculate the time difference between two locations in description.
- The third activity, Across Time Zones, requires students to calculate time differences between sets One and Two. It requires students to calculate time differences. In addition, students are required to draw a flow chart showing the time difference across the world.

Purpose of the activity

- To understand time differences in analogue, digital, 12- and 24-hour formats and calculate time

Key Learning Objectives

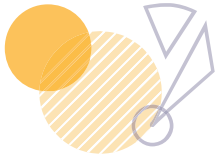
- Understanding and other symbols (α1)
- Use of tables or diagrams or maps or graphs (α6)
- Measurement (α53)
- Conversion from one form to another (α7)
- Writing/ arranging/ displaying (π20)
- Communicating items/ information (α52)
- Use of calculators (Φ16)
- Operating/ using equipment (α57)



Estimated time to take approximately one hour to complete – 20 minutes per

This Item Description is continued on the next page...





Item Description – continued

...This Item Description is continued from the previous page.

‘Around the World’, ‘Time for a Trip’



• **Teaching Notes:**

- Students should attempt to complete the activity with teacher help as needed.
- Students require a calculator for this activity.
- It is recommended students have extra paper to utilise any blank space on the activity page for different calculations.
- If students find ‘Around the World’ difficult, explain the concept of adding or subtracting a certain number of hours.
- ‘Time for a Trip’ may seem difficult as it involves more than 24 hours. Teachers should explain the concept of adding a certain number of days to their calculation.
- ‘Across Time’ requires students to understand hours and days. Remind students to read time zones and to be careful with these problems. Extra working paper would be a good idea to ensure accuracy when completing calculations.
- Homework/Extension
  - Teachers could assign a problem that spans across time zones and days to really test a students’ ability to solve a numerical problem.

• **Follow Up/Reflection:**

- Have students discuss the cities or cities seen in this activity?
- Which format do you prefer to read?
- How do you think the pages to having different time zones?
- Which format do you prefer to read?

SAMPLE





# Around the World

The length of a planet's day is measured according to how long it takes to complete a full rotation around the Sun. *On Earth, this time is 24 hours. In other planets, there are different parts of the world facing the sun.*



Q1

The clocks below indicate what time it is in various countries compared to Greenwich. However, some times are missing. Record the times based on the analogue times and vice versa.

## Tip

Time differences are measured with reference to a place in London called Greenwich. Whatever time it is in Greenwich is called Greenwich Mean Time (GMT). Other country's time zones are therefore GMT plus or minus however many hours difference there are to Greenwich's time.



Amsterdam, Holland (+1GMT)



1 : 00 am

Auckland, New Zealand



12 : 00 noon

Azores, Portugal (-1GMT)



11 : 00 am

(GMT)



3 : 00 am

Bangkok, Thailand (+7GMT)



7 : 00 am

By

o, Egypt (+2GMT)



2 : 00 am

Caracas, Venezuela (-4.5GMT)



7 : 30pm the day before



New York, USA (-5GMT)



7 : 00pm the day before

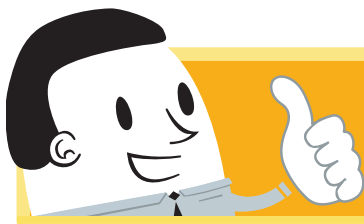
Shanghai, China (+8GMT)



8 : 00 am

m





# Around the World

Q2 Using the clocks on the previous page, what is the time difference?



a) Auckland, New Zealand and Bangkok, Thailand?

Auckland is 5 hours ahead

b) Caracas, Venezuela and Kathmandu, Nepal?

Nepal is 10.25 hours (10 hours 15 minutes) ahead

c) Apia, Samoa and Shanghai, China?

Shanghai is 19 hours ahead

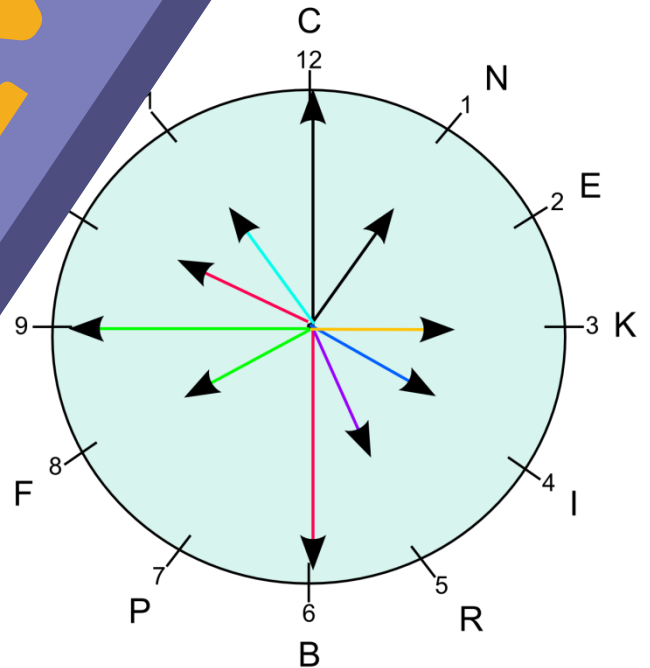
Q3 Read the instructions to the following activity.

Instructions:

- Using the GMT + or – times from the previous page, draw the times for the places listed if it is 3am in Greenwich.
- Draw these times on the clock face.
- Use the letter on the hour-hand to find the place name at that specific time and use it to fill in the blank space it corresponds to. The place names are revealed.
- The first one has been done for you.

When it is 3am in Greenwich, what time is it in...

- Brisbane
- Caracas
- London
- Paris



Who suggested the invention of daylight savings time?

N J A M I N    F R A N K L I N  
 1    2    3    4    5    6    7



## Around the World

### Question One:

Students were required to fill in the missing analogue times on the clocks for each different city. The clocks should look like the diagram

Amsterdam, Holland (+1GMT)



1 : 00 am

Apia, Samoa (-12GMT)



1 : 00 noon

Azores, Portugal (-1GMT)



11 : 00 pm the day before

Bangkok, Thailand (+7GMT)



7 : 00 am

Brisbane, Australia (+10GMT)



10 : 00 am

Caracas, Venezuela (-4.5GMT)



7 : 30pm the day before

Kathmandu, Nepal (-5GMT)



10 : 00pm the day before

Shanghai, China (+8GMT)



8 : 00 am



*This answer guide is continued on the next page...*





# TEACHER'S ANSWERS

...This answer guide is continued from the previous page.

## Question Two:

Based on the GMT times provided in Question One, students were asked to calculate the time differences between the cities in the question.

- a) Difference between Auckland (+12) and Bangkok (+7) is 5 hours 15 minutes
- b) Difference between Karakas (-4.5) and Nepal (+5.5) is 10 hours 15 minutes ahead
- c) Difference between Apia (-11) and Shanghai (+8) is 19 hours

## Question Three:

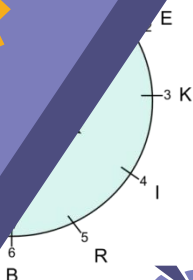
In this activity, students were required to solve problems about time differences. Students needed to know the GMT times for Caracas, Apia, Kathmandu, Cairo, Auckland and Shanghai. They should have recognised that they needed to use Question One to answer these questions correctly.

The times for each are as follows:

- Brisbane (+10GMT)
- Caracas (-4.5GMT)
- Apia (-11GMT)
- Kathmandu (+5.5GMT)
- Cairo (+2GMT)
- Auckland (+12GMT)
- Shanghai (+8GMT)

Students were asked to write the letter that had filled in the blank. Students should have found the answer to the invention of daylight savings time.

Students were asked to answer the question:





# Time for a Trip

Tides occur in the ocean, sea and in large lakes. Tides are caused by the pull of the Moon. Try out these questions to put your skills to the test.



Q1

The tidal cycle has a high tide and a low tide, which occurs twice a day. Tom and his family need to be able to read the tidal table to drive on the beach. Note: Height is in metres, time is in 24-hour format.

Monday		Tuesday		Wednesday		Thursday		Friday		Saturday	
Time	Height	Time	Height	Time	Height	Time	Height	Time	Height	Time	Height
04:17	2.02	05:33	2.14	00:03	0.59	01:19	0.26	03:52	0.22	05:08	0.87
11:03	0.87	12:19	0.74	06:36	2.29	07:52	2.52	09:48	2.48	11:04	2.02
16:43	1.57	18:00	1.70	13:20	0.70	14:36	0.26	16:18	0.21	17:34	0.87
22:47	0.70	21:21	0.70	19:02	2.33	20:18	2.33	22:18	2.44	23:34	2.02

a) How much time elapsed between the first and second high tide on Friday?

6 hours 11 minutes

b) How much time elapsed between the first and second high tide on Sunday?

18 hours 26 minutes

c) How much time elapsed between the first and second high tide on Wednesday?

12 hours

d) What is the lowest tide on Saturday?

e) What is the highest tide on Sunday?

test?



SAMPLE



# Time for a Trip

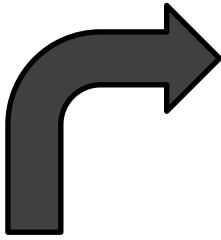
Q1

Draw a diagram of the trip that is described below by Captain ... sailing ship which exports and imports many goods for you ... the day, date and time that the ship came across each ev...



"Our journey started on Saturday 18<sup>th</sup> April at 6am. We sailed the ... 15 minutes when we were met by a large tidal wave. We struggl ... ed down. After another 4 days, 13 hours and 48 minutes, we fin ... Oh, what a relief! It took us 3 and a half hours to unload every ... stayed and explored the town for 5 entire days before boardin ... 27 hours and 21 minutes to get home. It was much smoother sa ...

+ 4 days 22 hours 15 minutes



Thursday 2<sup>nd</sup> April

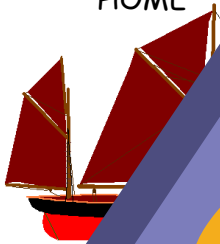


es

+ 4 days 13 hours 48 minutes



Saturday 18<sup>th</sup> April, HOME



Monday 27<sup>th</sup> April, 6:38pm

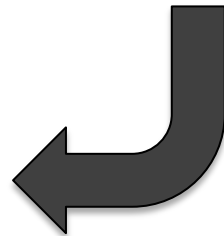


Satur

Monday 27<sup>th</sup> April, 10:08 pm



+ 3.5 hours



SAMPLE



## Time For a Trip

### Question One:

Students were required to read a table detailing the times that tides occur during a week and how high or low each tide reached in 24-hour time format.

a) Students were asked to find how much time had elapsed between the first high tide.

Students were required to find that the first low tide on Friday was at 8:19am. The time difference between the first high tide on Friday was at 8:19am. The time difference was calculated by first finding the difference in hours: 8am – 6am = 2 hours, and the difference in minutes: 19 – 8 minutes = 11 minutes. Therefore the time difference was 2 hours 11 minutes.

b) Students were asked to find how much time had elapsed between the first high tide and the second high tide on Sunday.

Students were required to read that the first high tide on Sunday was at 3:52am and the second high tide was at 12:14pm. The time difference was calculated the difference in hours: 22<sup>nd</sup> hour – 3<sup>rd</sup> hour = 19 hours, and the difference in minutes was 14 – 52 = -34 minutes. Therefore the time difference was 18 hours 26 minutes.

c) Students were asked how much time had elapsed between the first high tide and the second high tide on Wednesday.

Students were required to read that the first high tide on Wednesday was at 6:36am and the second high tide was at 7:50pm. The time difference was calculated the difference in hours: 19 – 6 = 13 hours, and the minute difference was 50 – 36 = 14 minutes. Therefore the total time difference was 13 hours – 34 minutes = 12 hours 56 minutes.

d) Students were asked to find the earliest high tide of the week.

Students were required to read that the earliest high tide, which was Monday.

e) Students were asked to find the earliest low tide of the week.

Students were required to read that the earliest low tide occurred, which was at 10:47pm on Monday.

f) Students were asked to find the latest low tide of the week.

Students were required to read that the latest low tide, which was on Monday.

Students were required to read that the latest low tide occurred.

Students were required to read that the latest low tide occurred, which was at 10:47pm on Monday.



*This answer guide is continued on the next page...*





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## Question Two:

Students were required to calculate at what day, date and time they reached the island from the written passage given to them in the question. They had to give their answer in AM/PM format, i.e. 12 hour format.

The first travel time students were given was sailing from the island on Saturday 18<sup>th</sup> April, 6am. Below is just one way to work out the answer.

6am + 22 hours 15 minutes = 4am (the next day) (the next day is a national day involved after the hour calculation, they actually arrived on the 18<sup>th</sup> + 5 = 23<sup>rd</sup>, and Saturday + 5 days = Thursday. Therefore, the day when they met the tidal wave was on Thursday 23<sup>rd</sup> April.

The time it took the ship to reach the island was 13 hours and 48 minutes from struggling with the storm + 4 days 13 hours 48 minutes.

Minutes = 48 + 35 = 83 = 1 hour 23 minutes. Hour calculation: 13 + 1 = 14 hours. From 4:15am + 14 hours = 8:15pm. To find the date, add 4 days to the 23<sup>rd</sup> = 27<sup>th</sup> and 4 days from Thursday = Monday. Therefore, they reached the island on Monday 27<sup>th</sup> April, 6:38pm.

After reaching the island they stayed in town for 3 hours and 30 minutes, i.e. 3 hours 30 minutes before they went about town. 6:38pm + 3 hours 30 minutes = 10:08pm. Therefore, the answer is Monday 27<sup>th</sup> April, 10:08pm.

They stayed in town for 17 hours and 21 minutes before they reached their home. 10:08pm + 17 hours 21 minutes = 4:29am. Therefore, students had to add 11 days 17 hours and 21 minutes to get to the next home again.

10:08pm + 11 days 17 hours 21 minutes = 4:29am (the next day) and 29 minutes. Therefore, 1 day needed to be added to get to the next day. 4:29am + 12 days = 16:29pm. Therefore, 12 days from Monday is Saturday. Therefore, the day when they reached the island was Saturday 9<sup>th</sup> May, 3:29pm.

Therefore, the day when they reached the island was Saturday 9<sup>th</sup> May, 3:29pm, however the diagram which was given to students in the model



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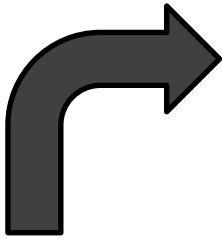


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The model response for Question Two is as follows:

Thursday 23<sup>rd</sup> April 4:15am

+ 4 days 22 hours 15 minutes



... days  
... hours  
... minutes

Saturday 18<sup>th</sup> April, 6am

HOME



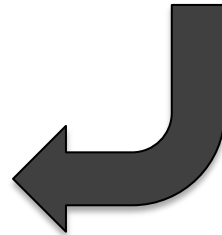
...<sup>th</sup> April, 6:38pm



Saturday 9<sup>h</sup> May, 3:2

... 08 pm

+ 6 days  
17 hours  
21 minut



+ 3.5 hours



...er essentially for the question to be deemed correct, all times and  
...e correct.







# Across Time

With flight technology, we are able to fly to some countries in the world in less than one day. Some people fly across different time zones and arrive 'more than one day' in a day.



Q1

Kate is a business woman who must travel to all the major cities in the world. With the clues below, fill in Kate's boarding passes. Her business trip, including her arrival day and times in each city, is as follows. The plane takes off exactly half an hour after the boarding time.

City	New York	London	Paris	Tokyo	Singapore
Time Zone (GMT)	- 5	+ 0	+ 1	+ 9	+ 8

Business		
Flight	Date	Gate
GA289	14/5/15	21
Boarding Time	From	To
0620	Sydney	Hong Kong

Business		
Flight	Date	Gate
GA78	14/5/15	15
Boarding Time	From	To
2130	Hong Kong	Tokyo

Business		
Flight	Date	Gate
GA123	15/5/15	10
Boarding Time	From	To
10:25	Tokyo	New York

Business		
Flight	Date	Gate
GA456	16/5/15	10
Boarding Time	From	To
9:00	New York	Singapore



SAMPLE

... was exactly 35 minutes before Kate's flight on 14 May, 6:55am. Flight duration: 10 hours 35 minutes.

Kate left for Tokyo on the same day as her first flight. Boarding time was at 11:30pm according to her watch, which she had not changed since her flight from Sydney. Flight duration: 4 hours 25 minutes.

Took a flight at 10:25 (according to her Australian timed watch) the next morning. Flight time: 11 hours.

The next day, Kate got to the airport at 9pm local time, 2.75 hours before her boarding time, for her flight to New York. Flight duration: 7 hours 35 minutes.





# Across Time

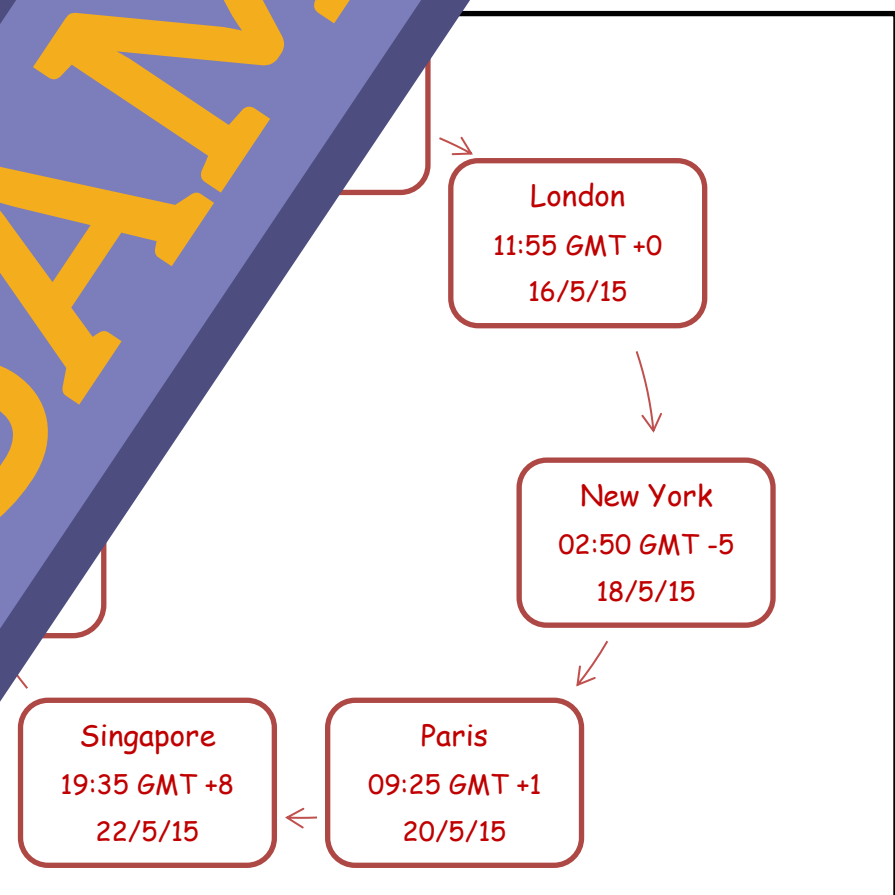
Business			
Flight	Date	Gate	Seat
GA52	19/5/15	52	10D
Boarding Time	From	To	
1740	New York	Paris	Global Airlines

Business			
Flight	Date	Gate	Seat
GA178	21/5/15	33	4B
Boarding Time	From	To	
2215	Paris	Singapore	Global Airlines

Business			
Flight	Date	Gate	Seat
GA203	23/5/15	19	
Boarding Time	From	To	
1535	Singapore	Sydney	Global Airlines

The boy's friend was surprised when it was over 8 hours 50 minutes. She arrived home in Sydney on the 24<sup>th</sup> at 2:25am, 8 minutes after her boarding time.

SAMPLE



## Across Time

### Question One:

Students were required to fill in Kate's blank boarding passes for each leg of her journey. The clue provided the boarding time for the first boarding pass. A table of time zones relevant to the question was provided to help solve the time zone problems. In addition, the tip box provided them an additional clue to help solve the problems. After the boarding time to calculate the correct times.

i) Sydney to Hong Kong: Boarding time was entered as 6:55am on 14 April 2015. Flight duration: 7.5 hours. Students had to calculate 35 minutes prior to the boarding time which meant that her boarding time was at 6:20am on 14 April 2015.

ii) Hong Kong to Tokyo: Kate left for Tokyo on 15 April 2015. Boarding time was at 11:30pm according to her watch. Flight duration: 4 hours. Her flight from Sydney. Students were told that she left Sydney at 11:30pm GMT +10. Students had to convert 11:30pm GMT +10 to GMT +8 which meant they had to subtract 2 hours. Therefore her boarding time was at 9:30pm on 14 April 2015.

iii) Tokyo to London: She left Tokyo on 17 May 2015 (on her Australian timed watch) the next morning. Flight time: 11 hours. Kate left on the 16<sup>th</sup> of May. Students had to convert 10:25 GMT +10 to GMT +9, i.e. subtract 1 hour. Therefore her boarding time was at 9:25 in Tokyo on 17/5/15.

iv) London to Melbourne: She left Melbourne airport at 9pm local time, 2.75 hours before her boarding time. Flight duration: 7 hours 35 minutes. The next day she arrived in London at 9pm. Students had to calculate 9pm + 2.75 hours to get Kate's boarding time at 11:45am on 17 May 2015. Therefore, Kate's boarding time was at 11:45am on 17 May 2015.

v) Melbourne to Sydney: She ended up boarding at 7pm local time, 1.33 hours late. Flight duration: 2 hours 55 minutes. She arrived in Sydney at 10:40am on the 18<sup>th</sup> therefore, her leaving the next day means she was 1.33 hours than expected, therefore her original boarding time was at 10:40am - 1.33 hours = 9:07am. She was 20 minutes (20 minutes is a third of an hour), which meant she was boarding at 9:07am + 20 minutes = 9:27am on 17 May 2015.

vi) Sydney to Singapore: She left Sydney on 21 May 2015. On the 21<sup>st</sup>, Kate called her friend in Singapore at the time she was boarding. Her friend told her it was only 5:15 in the morning over there. Flight time: 13 hours 50 minutes.

Therefore, Kate was boarding at 5:15am GMT +10 on 21<sup>st</sup>, as told by the clue. Students then had to convert 5:15am GMT +10 to GMT +8 which meant they had to subtract 2 hours. Therefore, Kate was boarding at 10:15pm or 22:15 in Sydney on 20 May 2015.

This answer guide is continued on the next page...



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vii) Singapore to Sydney: Kate finally arrived home in Sydney 8 hours 50 minutes after her boarding time in Singapore. Students had to calculate the time 8 hours 50 minutes after 6:45 to GMT +8 (time in Singapore).  $2:25 - 8 \text{ hours } 50 \text{ minutes} = 3:35\text{pm} = 1535$ .

In the last part of this question, students were asked to calculate Kate's entire business trip with her arrival times written in the table below.

The calculations are as follows:

i) Sydney to Hong Kong

6:20am boarding time + 35 minutes before take off = 6:55am  
 $6:20\text{am} + 8 \text{ hours } 5 \text{ minutes} = 12:25\text{pm}$ . To convert it to GMT +8, add 8 hours to the time in Hong Kong is 12:25 on 14<sup>th</sup> May 2015.

ii) Hong Kong to Tokyo

9:30pm boarding time + 25 minutes before take off = 9:55pm  
 $9:30\text{pm} + 4 \text{ hours } 55 \text{ minutes} = 2:25\text{am}$ , add 1 hour, therefore arrival time is 15:25, 15/5/15

iii) Tokyo to London

She took a flight from Tokyo to London on 15<sup>th</sup> May. 12:25am boarding time + 30 minutes before take off = 1:55am  
 $12:25\text{am} + 3 \text{ hours } 30 \text{ minutes} = 20:25$ . To convert to GMT +0, subtract 8 hours to the time in London on 16<sup>th</sup> May.

iv) London to Sydney

Kate flew from London to Sydney on 17<sup>th</sup>. 11:45pm boarding time + 30 minutes before take off = 12:15am  
 $11:45\text{pm} + 8 \text{ hours } 5 \text{ minutes} = 7:50$ . To convert to GMT +8, add 8 hours to the time in Sydney before arrival time is 2:50 on the 18<sup>th</sup>.

v) Sydney to Singapore

She flew from Sydney to Singapore on the 19<sup>th</sup>. 7pm boarding time + 30 minutes before take off = 7:30pm  
 $7\text{pm} + 14 \text{ hours } 25 \text{ minutes} = 19:55$ . To convert to GMT +8, add 8 hours to the time in Singapore. 19:55 on 20<sup>th</sup> May.

vi) Singapore to Sydney

She flew from Singapore to Sydney on the 22<sup>nd</sup>. 22:15 boarding time + 30 minutes before take off + 13 hours flight duration = 11:45am  
 $22:15 + 14 \text{ hours } 20 \text{ minutes} = 12:35$ . To convert to GMT +8, add 8 hours to the time in Sydney. 12:35 on 22<sup>nd</sup>.

vii) Sydney to Singapore

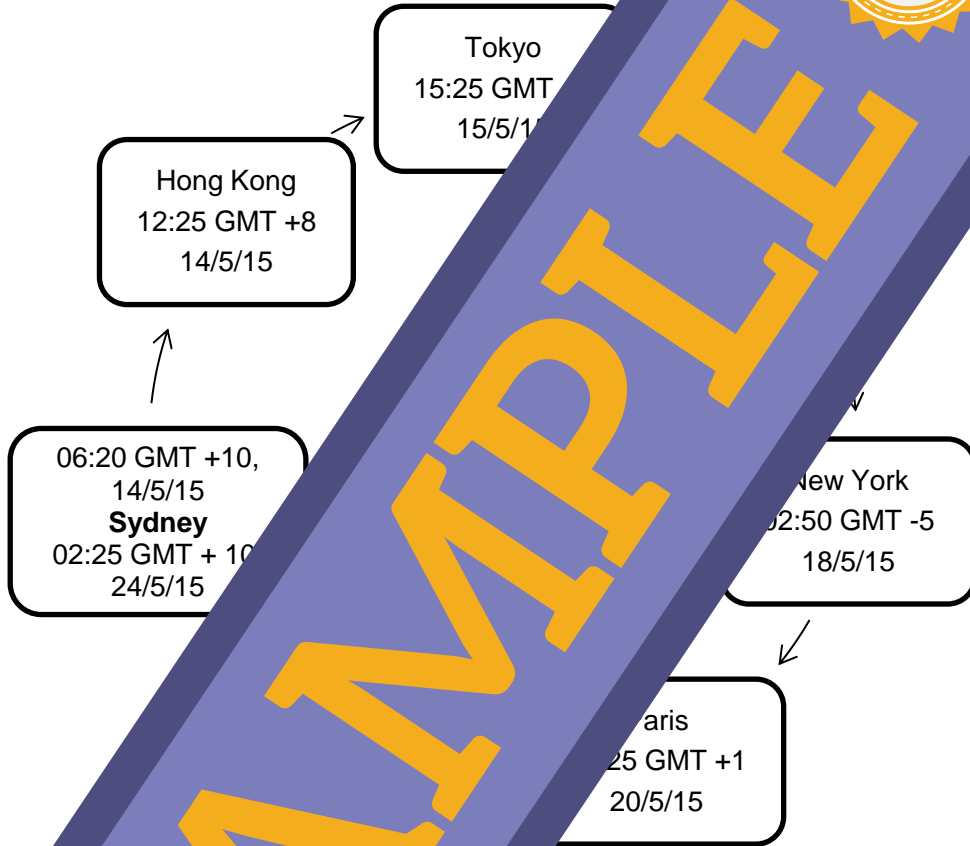
She flew from Sydney to Singapore on the 24<sup>th</sup>. Students that the arrival date and time is 24<sup>th</sup> May at 15:35.

This answer guide is continued on the next page...



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Students should have drawn the following flow chart based on the





# End of Learning

Please

If you feel there are any issues with this booklet for you to use in your class, you may contact us via email or phone. We offer a variety of activities (whole worksheets, half worksheets, and worksheets) for

Alternative activities for the entire worksheet to be used at a later date.

**SAMPLE**

