Subject:	Mathematics
Content strand:	Measurement
Grade Level:	Six (6)
Lesson Duration:	1 Hour
Specific Objectives:	At the end of the lesson, the pupils should be able to:

a. Express time in both 12-hr and 24-hr format;

b. Use the 24-hour clock in problem situations.

Prerequisite Knowledge:	Students should be familiar with reading and using a 12-hour clock.
Key Vocabulary:	Time conversion, clock, 12 - hours, 24 – hours, hours, minutes,
Skills:	Problem solving, working in groups, time conversion.
Materials:	Models of 24-hour clock
	Routine Activity Handout
	Testing Your Reading Skills Worksheet
	Got the Time? Worksheet
	24 – Hour Time Riddle

Content Summary:	The 24 - hour clock, or military time, has been used for decades in the medical field as a concise method of demonstrating time, in which the day runs from midnight to midnight and is divided into 24 hours.
	Military time operates around a 24-hour clock that starts at 12 a.m. (0000) and goes to 11 p.m. (2300). It does not have notations for "a.m." and "p.m."
	Times are presented in four-number increments -- two digits referring to hours and two digits referring to minutes.

To complete the format, add 12 to times from 1 p.m. to 11 p.m., and add zeroes when needed to complete the four-number format. For example, 1 p.m. is 1300 and 6 p.m. is 1800.

Teaching/Learning Activity:

Engage and Explain:

In groups, the 'Routine Activity' handout will be presented to the students to state the possible time of the day these activities can occur, using the 24 hour clock, as shown below:

Routine Activity

Let students state the possible time of the day these activities can occur, using a 24 hour clock

wake up | get up | have a shower | comb your hair | get dressed

have breakfast | brush your teeth | go to school | have classes | have lunch

go back home | do your homework | have dinner | watch TV | go to bed

(See resource document page 5)

Guided Questions for discussion:

- There are 24 hours in a day. Why do we not have a 24 o'clock?
- Why military time is universal across the globe and to share strategies for converting from military time to standard time, or vice versa.
- Investigate, discuss and explain uses of the 24-hr clock.
- Identify situations where the 24 – hour clock is used in the society.
- Make comparison with the regular 12 - hour clock.
- What type of activity would you do at 18:00?

- What types of activities would you not do at 23:00?
- What could be done between 9:00 and 13:00? How much time has elapsed?

Explore:

Activity 1:

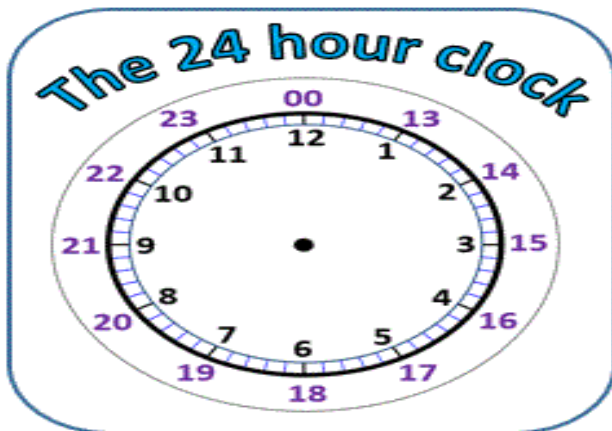Look at the time on this digital clock below

We can tell it is evening, but how do we know what the hour is?

Discuss within your groups and share your response with your class.

Activity 2:

In groups, using a model of a 24 – hour clock as shown below or similar, students will complete the 'Testing your Reading Skills" worksheet:

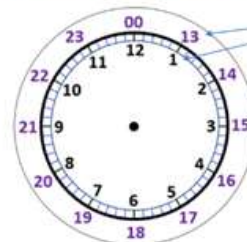Worksheet – Testing your Reading Skills
The 24 – Hour Clock

In your groups, convert these times into 24 hour clock times.

The 24 hour clock does not have am and pm times.

To change an am time to a 24 hour time, you don't need to do anything unless it is 12am in which case the hour changes to 00. Add a zero before a single digit hour.

To change a pm time to a 24 hour time, just add 12 to the hour, unless it is 12pm. If the hour is 12pm then it does not change.

1:00pm becomes 13:00 in 24 hour time.

Examples

9:05am is 09:05	9:05pm is 21:05
7:27am is 07:27	7:27pm is 19:27
12:10am is 00:10	12:10pm is 12:10

12 hour	24 hour
4:25 am	
9:20 am	
2:55 am	
11:35 am	
1:07 am	
12:42 am	
6:13 am	

12 hour	24 hour
4:25 pm	
9:20 pm	
2:55 pm	
11:35 pm	
1:07 pm	
12:42 pm	
6:13 pm	

(See resource document page 4 and page 7 respectively).

Guided questions for discussion:

- What did you notice about the a.m. times?
- What did you observed about the p.m. times?
- Can you develop a rule for converting both a.m. and p.m. times to 24-hour clock times?

Elaborate:

Activity 1:

Look at the opening hours for this shop.

Discuss within your groups and answer the following questions. Be ready to share your responses with your classmates.

- What time does the shop closes during the week?
- What about Saturday and Sunday?
- For how long does the shop operates from Monday to Friday, Saturdays and Sundays?

Activity 2:

Pizza delivery boy Ambrose's boss wants him to fill in a timetable so that he knows how long each journey takes.

- The pizza parlour clock reads quarter past four for the start time but the boss gives Ambrose a phone that reads 16:15.
- Ambrose makes four deliveries, counting on and filling in part of the timetable. Will he get to all four places before the pizzas get cold?

Complete the given task in your groups and share your responses with your classmates.

- Complete his timetable and work out if he managed to deliver all the pizzas in time.

Activity 3:

Create their own timetable for a day out including start and finish times and durations.

Evaluate:

- Students will complete the 24– Hour Time Riddle worksheet **(See resource document page 9).**

24 – Hour Time Riddle

In your groups, use the clues to find the correct clock from the 8 possibilities:

Challenge A

- I am between 8:00 and 14:30.
- I am less than 20 minutes away from the next hour.
- I am not a pm time yet, but I shall be one in the next two hours.
- My hour is one away from a multiple of 3.

What time am I? _____

A	B	C	D
9:25am	7:32pm	10:42am	5:17pm

E	F	G	H
11:54am	1:47pm	7:19pm	3:29pm

Challenge B

- I am between 13:30 and 19:30.
- I am less than 15 minutes away from being a half-past time.
- I am closer to 19:00 than to 15:00.
- In 5 hour's time, I shall still be a pm time.

What time am I? _____

- You have just accepted a position as a cashier at a 24 – hour fast food restaurant.

The schedules you have been given for the shifts include:

> **0730 – 1600 Day Shift**
>
> **1530 – 2400 Evening Shift**
>
> **2330 – 0800 Night Shift**

If you are assigned to the evening shift what time will you begin your shift and when will your shift end?

What time might you take your "lunch hour"?

Extension:

- Students will complete the Got the Time? worksheet
  (See resource document page 12 & 13)
- Students will complete the Planning Complex Journeys worksheet
  (See resource document page 14)

Evaluation (Teacher):

Were students able to:

	0% - 50%	51% - 80%	81% - 100%
Express time in both 12-hr and 24-hr format			
Use the 24-hour clock in problem situations			
Demonstrated problem solving skills			
Work collaboratively			

MINISTRY OF EDUCATION, YOUTH & INFORMATION
Every Child Can Learn, Every Child Must Learn

Comments:

Areas of strengths:

_____

Areas of weaknesses

_____

Actions to be taken

_____