Time and length

Lesson plan and teacher's notes · Grade 2 Mathematics · 2 periods of 40 minutes

School	(write school name)	**Teacher**	(write name)
Date	(date)	**Class**	Grade 2
Subject	Mathematics	**Enrolment**	Boys ___ Girls ___ Total ___
Time	80 minutes	**Topic**	Time and length

Learners read and show full hours and half hours on an analogue clock, experience and compare the duration of activities, measure length and width in metres, centimetres and millimetres, and meet perimeter through walking around a space. Two periods: the first covers the clock and duration, the second covers length and perimeter.

Specific outcomes

By the end of the lesson, learners should be able to:

1. Show and read o'clock and half past on an analogue clock
2. Tell the hour hand from the minute hand
3. Compare which daily routine takes longer or shorter
4. Measure objects in m, cm and mm and report them without decimals
5. Say what perimeter means

Prior knowledge

- Learners know days, weeks and months
- Learners can count to 100
- Learners can say morning and night

Teaching and learning materials

- Chalk and board
- A large analogue clock and small cardboard clock models for each group
- Work cards with clocks showing full and half hours
- Rattle, sand or water timer, string with a weight, water bottles
- Picture cards of daily routines
- 1 metre rulers or sticks, 30 cm rulers, measuring tape, string
- Objects to measure: books, desk, carton box

References

Ministry of Education (CDC) Grade 2 Mathematics syllabus and module; 25Schools learners' note: Time and length.

Lesson development

Stage and time	Teacher activities	Learner activities
P1 Hook and the clock 10 min	Ask: What time is it. How do you know. Hang a large clock. Ask learners what they see. Point to the hour hand, the short one, and the minute hand, the long one. Ask which moves faster. Give each group a clock model and ask them to show each hand. Discuss the number markings.	Name the parts of the clock and point to each hand.
P1 Full hours 12 min	Say: Sara woke up at 7 o'clock in the morning. How can we show this. Teach the rule: when the minute hand points to 12 we say o'clock. Set 7 o'clock together. Say that 7 o'clock in the morning is 07:00 hours and we must say morning or night. Call out times such as five o'clock in the morning for groups to show.	Set the clock models and read the time.
P1 Half hours 12 min	Say: Father goes to work at 07:30 hours. How can we show this. Explain that 30 minutes is half an hour. Teach the rule: when the minute hand points to 6 we say half past. Show it on the large clock. Ask where the hands point. Call out other times such as 05:30.	Set and read half hours on the clock models.
P1 Work cards 6 min	Give each group work cards with full hours and half hours. Move around and ask: Where is the minute hand pointing. Where is the hour hand.	Complete the work card.
P1 Duration 8 min	Ask: How can we know how long an event takes. Use a simple timer. Let some learners sing a short song while others empty water bottles, and count the bottles. Count claps or swings of a weighted string. Hold a game where two groups arrange sticks from shortest to longest before a sand timer finishes. Ask pairs who can stand on one leg longer.	Take part in the timing activities and say what takes longer.
P2 Comparing durations 7 min	Ask: Which takes longer, brushing teeth or bathing. Which takes less time, sweeping the classroom or weeding. Use blue cards for shorter and red or yellow cards for longer. Groups put picture cards of daily routines in order from shortest to longest.	Order routine cards and explain.

P2 Metres 10 min	Ask: Do you know the standard units used to measure length. Let learners feel a 1 metre ruler and check that sticks are 1 metre long. Ask them to estimate the length of the teacher's table, write the estimates and then measure by counting metre units. Tell them to give answers to the nearest metre in Grade 2.	Estimate and measure in metres and record.
P2 Centimetres and millimetres 15 min	Give out 30 cm rulers. Ask learners to count the small marks that make 1 cm. Tell them the small marks between are millimetres. Ask them to show 5 cm, 8 cm, 6 mm. Measure a book, desk and carton box. Say answers as 6 cm 5 mm, not 6.5 cm. For curved lines use a string on the ruler.	Measure objects and record in cm and mm.

Teacher's content notes

Read these before the lesson. They are what you need to know, not what to copy onto the board.

Telling time

The hour hand is short and shows hours; the minute hand is long and shows minutes. Minute hand at 12 means o'clock. Minute hand at 6 means half past, which is 30 minutes. A watch worn on the hand can be analogue or digital. Say whether the time is morning or night.

Duration

Learners experience duration with simple timers such as a rattle, sand or water timer, counted hand claps and swings of a pendulum. They compare daily routines as shorter or longer.

Length

Standard units are the metre, centimetre and millimetre. Estimate first, then measure. Grade 2 answers are given to the nearest metre, or as cm and mm such as 6 cm 5 mm, or as metres and centimetres such as 3 m 47 cm. Fractions begin in Grade 3 and decimals in Grade 4.

Perimeter

Perimeter is the total distance around a plane figure. Learners first find the distance around the classroom floor using non-standard units.

Questions to ask during the lesson

Question	Expected answer
The teacher hangs a large clock and shows the short hand. A boy says it shows the minutes. (a) What is the short hand called. (b) What does it show. (c) Which hand moves faster.	(a) The hour hand. (b) The hours. (c) The minute hand.

A girl wakes up at 5 o'clock in the morning and her brother goes to school at half past seven. (a) Where does the minute hand point at 5 o'clock. (b) Where does it point at half past seven. (c) What time is shown as 07:30 hours.	(a) At 12. (b) At 6. (c) Half past seven.
In a game two groups arrange sticks from the shortest to the longest before the sand timer finishes. One group arranges 8 sticks and the other arranges 5. (a) Which group wins. (b) What unit could we use to measure a stick. (c) What is duration.	(a) The group with 8 sticks. (b) Centimetres. (c) How long something takes.

Worked examples for the board

Showing half past seven

Step 1: Put the minute hand on 6. Step 2: Put the hour hand half way between 7 and 8. Step 3: Say half past seven, or 07:30 hours. Step 4: Say that 30 minutes is half an hour.

Measuring a book

Step 1: Estimate the length of the book. Step 2: Put the 0 of the ruler at one edge. Step 3: Read where the other edge is, for example 21 cm. Step 4: Add the small marks in mm if needed and say 21 cm 5 mm.

Board plan

Draw a clock with the hour hand and minute hand labelled. Write o'clock: minute hand at 12, and half past: minute hand at 6. Write m, cm and mm in a column with an object for each.

Minute hand points to	We say
12	O'clock
6	Half past

The finished board: reading the clock

Mistakes to expect

Learners often think	Put it right
The long hand shows hours.	The short hand shows the hours and the long hand shows the minutes. Let learners move each hand and see which moves faster.
Half past seven means the hour hand is on 7.	At half past seven the hour hand is half way between 7 and 8. Show it on the large clock.
6 cm 5 mm can be written 6.5 cm.	In Grade 2 write 6 cm 5 mm. Fractions begin in Grade 3 and decimals in Grade 4.

Differentiation

Learners who struggle

Teach o'clock first and half past on another day. Let learners move the clock model hands with you before they work alone. Use only metres in the first measuring lesson.

Learners who finish early

Ask learners to find the perimeter of a small flat object such as a book cover using bottle tops. Ask them to measure two objects and say which is longer and by how many centimetres.

Hearing or visual impairment

For learners with a visual impairment, use a tactile clock model and a large raised ruler, and let them feel the hands. For learners with a hearing impairment, face them, show the hands on the model and write the times on the board.

No projector, no printing

Make clocks from cardboard with split-pin hands or draw clocks on the board. Use a stick cut to one metre, string for a tape measure, and a sand timer made from a bottle. Use hand claps and counting for duration.

If time is short

Keep o'clock and half past, one duration game, and measuring in centimetres. Move metres, millimetres and perimeter to the next lesson.

Evaluation

Question or task	A correct answer shows
Sara wakes up at 7 o'clock in the morning and her father leaves for work at half past seven. The teacher asks learners to show these on a clock. (a) Where is the minute hand at 7 o'clock. (b) Where is the minute hand at half past seven. (c) Which time is earlier.	(a) At 12. (b) At 6. (c) 7 o'clock. Learners set the clock models correctly.
A learner measures a book with a 30 cm ruler and finds it is 21 cm and 5 mm long. The teacher asks how to report it in Grade 2. (a) Write the length. (b) Which unit is smaller, cm or mm. (c) Which takes longer, sweeping the classroom or taking off shoes.	(a) 21 cm 5 mm. (b) mm. (c) Sweeping the classroom.

Homework

At home look at a clock. (a) Draw the clock showing 8 o'clock. (b) Measure a spoon with a ruler and write its length. (c) Say which takes longer, bathing or brushing teeth.

Extra practice with answers

Question	Answer
1. Mulenga wakes up at 6 o'clock in the morning. His teacher asks him to show it on a clock model. (a) Where does he put the minute hand. (b) Where does he put the hour hand. (c) Should he say morning or night.	(a) At 12. (b) At 6. (c) Morning.

2. Brenda's mother goes to the market at half past nine. The teacher asks the class to draw the hands. (a) Where is the minute hand. (b) Is the hour hand on 9 or between 9 and 10. (c) Say the time in words.	(a) At 6. (b) Between 9 and 10. (c) Half past nine.
3. The class measures the length of the teacher's table with a metre stick. Four sticks fit exactly. (a) What is the length. (b) Which unit did they use. (c) Which is smaller, a centimetre or a metre.	(a) 4 metres. (b) Metres. (c) A centimetre.
4. A boy measures a pencil with a 30 cm ruler and finds it is 15 cm and 3 mm. A girl wants to walk around the school garden to find the distance around. (a) How should he write the pencil length. (b) What is the distance around a shape called. (c) What should she mark first.	(a) 15 cm 3 mm. (b) Perimeter. (c) The place where she starts.

Answers to the learners' check-yourself questions

1. Which hand of the clock is the short one.
   The hour hand.
2. Where does the minute hand point when it is half past.
   At 6.
3. What do we call how long something takes.
   Duration.
4. Name one unit of length.
   Metre, centimetre or millimetre.
5. Father leaves for work at 07:30 hours every morning. Chanda wants to show this on her clock model. (a) Where does the minute hand point. (b) What do we say for this time. (c) Between which two numbers is the hour hand.
   (a) At 6. (b) Half past seven. (c) Between 7 and 8.
6. In class Bupe and Mwila each measure a desk with a 30 cm ruler. Bupe says 6 cm 5 mm and Mwila says 6.5 cm. (a) Who wrote it the way we use in Grade 2. (b) Which unit is smaller, cm or mm. (c) Which takes longer, sweeping the classroom or taking off shoes.
   (a) Bupe. (b) mm. (c) Sweeping the classroom.

Teacher's reflection

What went well:

What I will change next time:

Learners who need follow-up: