Lesson - Time: telling the time and durations

Year: Year 3

Hello, I am Otto! Time is all around us: when the school bell rings, when a film starts, how long a journey takes. In Year 3 you learn to read clocks to the nearest minute, to use Roman numerals, to tell the time on 12-hour and 24-hour clocks and to work out how long things take.

Starter activity

Look at the clock in your classroom. What time is it now? What time will it be in 20 minutes? Break time starts at 10:30 and lasts 15 minutes. When does it end? Say the times aloud, for example "half past ten" and "a quarter to eleven". Telling the time and working out durations are the two big ideas of this chapter.

Telling the time on an analogue clock

Definition: analogue clock

An **analogue clock** has a round face and two hands. The short hand is the **hour hand** and the long hand is the **minute hand**. The minute hand takes 60 minutes to go once round the clock. The hour hand takes 12 hours to go once round.



The clocks show 3 o’clock, half past 4 and a quarter to 8. At 7:45 the minute hand points to 9 and the hour hand is nearly at 8.

Key fact: the minute hand

- Each number on the clock face stands for 5 minutes: 1 is 5 minutes, 2 is 10 minutes, 3 is 15 minutes and so on.
- When the minute hand points to 12 it is **o’clock**. At 3 it is **quarter past**. At 6 it is **half past**. At 9 it is **quarter to**.
- Between the numbers, count the small marks one minute at a time.

Method: telling the time to the nearest minute

1. Look at the hour hand to find the hour. If it has not yet reached a number, use the number before it.

2. Look at the minute hand. Count in fives to the nearest number, then count on in ones.
3. Write the time as hours and minutes, for example 6:23, or say "twenty-three minutes past six".
4. If the minute hand is past the 6, you can also say "to the next hour": 6:50 is ten to seven.

Example 1

The hour hand is just past 5 and the minute hand points to 4 and then 3 small marks more. What is the time?

The hour is 5. The minute hand is at 4 (20 minutes) and 3 more marks: 20 + 3 = 23 minutes. The time is **5:23**, which we say as "twenty-three minutes past five".

Roman numerals on clocks

Definition: Roman numerals

Roman numerals use letters instead of digits. Some clocks and watches show the hours in Roman numerals.

1	2	3	4	5	6	7	8	9	10	11	12
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII

Rule: reading Roman numerals up to 12

- I is 1, V is 5 and X is 10.
- If a smaller letter comes **after** a bigger one, add: VI = 5 + 1 = 6, VIII = 5 + 3 = 8.
- If a smaller letter comes **before** a bigger one, subtract: IV = 5 − 1 = 4, IX = 10 − 1 = 9.

Example 2

A clock shows the numerals XI and VII. Which numbers are they?

XI = 10 + 1 = **11**. VII = 5 + 2 = **7**.

a.m., p.m. and the 24-hour clock

Definition: a.m. and p.m.

A day has 24 hours. The **12-hour clock** uses **a.m.** for times from midnight to noon, and **p.m.** for times from noon to midnight. 7:30 a.m. is in the morning and 7:30 p.m.

is in the evening. Midday is 12 noon, and midnight is 12 a.m.

Definition: 24-hour clock

The **24-hour clock** counts the hours from 00:00 (midnight) to 23:59. Times are written with four digits, such as 07:30 or 19:30. Digital clocks, train timetables and airports use the 24-hour clock.

Rule: changing between 12-hour and 24-hour time

- Morning times (a.m.) stay the same: 9:15 a.m. is 09:15.
- Afternoon and evening times (p.m.): add 12 to the hour. 3:30 p.m. is 15:30 and 8:45 p.m. is 20:45.
- 12 noon is 12:00 and midnight is 00:00.
- To go back, subtract 12 from the hour if it is 13 or more.

Example 3

Write 4:20 p.m. in 24-hour time and 21:05 as a 12-hour time.

4:20 p.m.: 4 + 12 = 16, so **16:20**. 21:05: 21 − 12 = 9, so **9:05 p.m.**

Watch out

Do not mix up 12 a.m. and 12 p.m. 12:00 p.m. is noon (midday) and 12:00 a.m. is midnight. In 24-hour time, 12:30 is half past noon and 00:30 is half past midnight. Also write the minutes with two digits: 7:05, not 7:5.

Seconds, minutes, hours, days

Key fact: units of time

- 60 seconds = 1 minute
- 60 minutes = 1 hour
- 24 hours = 1 day
- 7 days = 1 week
- 12 months = 1 year; 365 days in a year and 366 in a leap year (every 4 years)

Key fact: days in each month

- 30 days: April, June, September and November.
- 31 days: January, March, May, July, August, October and December.
- February has 28 days, or 29 days in a leap year.

A good way to remember the months with 30 days is the rhyme: "Thirty days has September, April, June and November. All the rest have thirty-one, except February alone."

Example 4

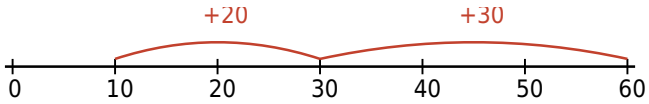
How many minutes are in 3 hours? How many seconds are in 2 minutes?

3 hours = 3 × 60 = **180 minutes**. 2 minutes = 2 × 60 = **120 seconds**.

Working out how long things take

Definition: duration

The **duration** of an event is how long it lasts, from its start time to its end time. We can find the duration using a **time number line**, jumping from the start to the next whole hour, then to the end time.



A number line for minutes in an hour: from 10 to 30 is a jump of 20 minutes, and from 30 to 60 a jump of 30 minutes.

Method: finding how long

1. Draw a number line and mark the start time and the end time.
2. Jump to the next hour, or the next multiple of 5 or 10 minutes.
3. Jump in whole hours if needed, then add the last jump to the end time.
4. Add up all the jumps to find the total duration.

Example 5

A film starts at 2:40 p.m. and ends at 4:15 p.m. How long is the film?

From 2:40 to 3:00 is 20 minutes. From 3:00 to 4:00 is 1 hour. From 4:00 to 4:15 is 15 minutes. In total: 1 hour + 20 + 15 = 1 hour 35 minutes. The film lasts **1 hour 35 minutes**.

Method: finding the end time

1. Start with the start time.
2. Add the hours first.
3. Add the minutes. If you pass the hour, count up to the hour and continue.

Example 6

Lunch starts at 11:50 and lasts 35 minutes. When does it end?

11:50 + 10 minutes = 12:00. There are 25 minutes left to add (35 − 10 = 25). 12:00 + 25 minutes = **12:25**.

Did you know?

The Ancient Egyptians used shadow clocks and water clocks. The first mechanical clocks appeared in Europe about 700 years ago. In the UK we put the clocks forward one hour in spring and back one hour in autumn so that we have more daylight in the evenings of summer.

Otto's tip

For duration questions, always draw a time number line. Jump to the next hour first. It turns a tricky subtraction into easy steps and you can check your answer by adding the jumps.