

Unit II: Time

Lesson 1: Months and years

→ pages 35–37

- 27th September
 - 21st April
 - 29th November
 - 7 days are 1 week, so counting forwards or backwards 7 days will take you to the same day in the following or previous week. You can add or subtract the number of days from the date unless the count goes over the end or start of a month.
- There are 351 days left in the year.
- Coloured red: Jan, Mar, May, July, Aug, Oct, Dec
Coloured yellow: Apr, Jun, Sept, Nov
Coloured blue: Feb
- The time it takes for Earth to travel once around the Sun is 1 year.
Earth takes $365\frac{1}{4}$ days to travel once around the Sun.
Most years have 365 days.
Leap years have 366 days.
Every year has 12 months.
- 29th November (or 30th November if you are counting this day as one of the days left).
333 days
- Circled: 2036, 2044
'No' circled. 2045 will not be a leap year as it is not a multiple of 4. Leap years usually occur every 4 years, when the year is a multiple of 4.

Reflect

It is true that there were 91 days in January, February and March in 2016 as this was a leap year. 31 days in January, 29 days in February and 31 days in March make 91 days. In 2017, there would have been 90 days as it was not a leap year, so February only had 28 days.

Lesson 2: Hours in a day

→ pages 38–40

- Children should have drawn hands on to clocks to show the appropriate times:
1 o'clock Wednesday → 1 o'clock Thursday
5 o'clock Friday → 5 o'clock Saturday
Third example completed to show any pair of times with a difference of 24 hours.
- In top circle (24 hours): A, D, E
In bottom circle (12 hours): B, C
- All intervals in bar diagrams labelled 24 hours.
2 days = 48 hours
3 days = 72 hours
1 week = 168 hours

- 12 squares shaded; $\frac{1}{2}$ of a day = 12 hours
6 squares shaded; $\frac{1}{4}$ of a day = 6 hours
8 squares shaded; $\frac{1}{3}$ of a day = 8 hours

- 22 hours
 - 2 hours

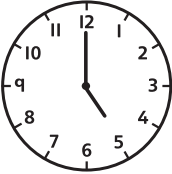
- Answer will vary. Check whether the child is realistic about timings and durations.

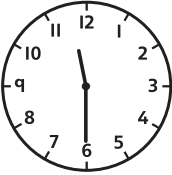
Reflect

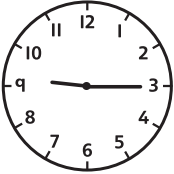
Look for an explanation that each day starts at midnight and ends at midnight 24 hours later. The day does not start and end with bedtime.

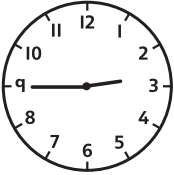
Lesson 3: Estimating time

→ pages 41–43

- 

5 o'clock
 - 

half past 11
- 

quarter past 9
 - 

quarter to 3

- Approximate times:
8 o'clock (minute hand drawn pointing to 12)
Half past 2 (minute hand drawn pointing to 6)
Quarter to 7 (minute hand drawn pointing to 9)
- Ticked: quarter to 12; twenty-five to 12; five to 12
- Emma is not right as the hour hand moves during the hour; so if it is half past the hour then the hour hand would point half-way between the two numbers. As the hour hand on the clock is more than half-way between 4 and 5, the time must be after half past 4 but before 5 o'clock.
- 30 minutes, 15 minutes, 45 minutes, 12 minutes
- It could be any time between 2 o'clock and quarter past 2 or between quarter to 3 and 3 o'clock.

Reflect

I know that it is half past the hour.
I know that it is between 5 o'clock and 6 o'clock.
I know that it is between 2 o'clock and half past 2.

Lesson 4: Telling time to 5 minutes

→ pages 44–46

- 20 minutes past 10
10 minutes past 5
5 minutes past 7
25 minutes past 3
10 minutes to 4
20 minutes to 7
5 minutes to 9
25 minutes to 12
- Minute hand pointing to 9, hour hand between 10 and 11, but closer to 11.
 - Minute hand pointing to 5, hour hand between 10 and 11, but just before half-way.
 - Minute hand pointing to 8, hour hand between 2 and 3, but just after half-way.
 - Minute hand pointing to 2, hour hand between 6 and 7, but just after 6.
- Lexi has mixed up the minute hand and hour hand of the clock. The time is five to 2.
- Twenty minutes past 6
- Possible times: twenty minutes to 4; quarter to 4; ten minutes to 4; five minutes to 4
Explanations will vary, but children should recognise that the hour hand must be pointing between 3 and 4, since 3 and 4 add up to 7, so the time is between 3 o'clock and 4 o'clock. The minute hand points to a number that is more than 7 so it must be later than 25 minutes to 4.
 - Answers will vary. Ensure that children's clues work.

Reflect

Explanations will vary. For example: the hour hand is between 3 and 4 so it must be between 3 o'clock and 4 o'clock. The minute hand is pointing to the 7. This means it is 25 minutes to 4 because there are 5 five-minute intervals until the minute hand would reach the 12 to say 4 o'clock.

Lesson 5: Telling time to the minute (I)

→ pages 47–49

- Minute hand pointing to 9th interval
Minute hand pointing to 42nd interval
Minute hand pointing to 24th interval
Minute hand pointing to 53rd interval

- Minute hand pointing to the 13th interval, hour hand between 1 and 2 but closer to 1
 - Minute hand pointing to 8, hour hand over half-way between 8 and 9
 - Minute hand pointing to the 48th interval, hour hand between 7 and 8 but closer to 8
 - Minute hand pointing to 27th interval, hour hand almost half-way between 5 and 6
- 2nd clock on the left (26 minutes past 3) matched to 3rd clock on the right (26 minutes to 3)
3rd clock on the left (9 minutes to 2) matched to 4th clock on the right (9 minutes past 2)
4th clock on the left (22 minutes to 12) matched to 1st clock on the right (22 minutes past 12)
- Kate has correctly noticed that the long hand shows five minutes to the hour, but she has also seen that the short hand is after the 2, and thought that this meant it was five minutes to 2, not 3.
- She checks 7 times (12 minutes past 9, 20 minutes past 9, 28 minutes past 9, 24 minutes to 10, 16 minutes to 10, 8 minutes to 10 and 10 o'clock).

Reflect

Answers will vary. Children might explain that each small interval stands for 1 minute, and each large interval between marked numbers stands for 5 minutes. You can count in 5s and then 1s to work out the number of minutes past or to the hour.

Lesson 6: Telling time to the minute (2)

→ pages 50–52

- Minute hand pointing to 6, hour hand half-way between 8 and 9
 - Minute hand pointing to 3, hour hand quarter-way past 1
 - Minute hand pointing to 9, hour hand three-quarters of the way between 4 and 5
 - Minute hand pointing to 7th interval, hour just past 10
- 7:10
 - 3:25
 - 6:15 pm
 - 7:30 am
 - 4:09 pm
 - 11:55
 - 5:08
 - 9:40 am
 - 12:01 am
- 7:32 am or 7:32 pm
- On both clocks, the minute hand is drawn pointing to the 5 and the hour hand drawn pointing just under half-way between 4 and 5.
 - Both clocks look the same because analogue clocks do not show whether a time is am or pm.
- 1:23 am and 1:23 pm; 2:34 am and 2:34 pm; 3:45 pm (am is given); 4:56 am and 4:56 pm

7. Possible times: 12:07, 12:16, 12:25, 12:34, 12:43, 12:52, 11:08, 11:17, 11:26, 11:35, 11:44, 11:53, 10:09, 10:18, 10:27, 10:36, 10:45, 10:54, 9:01, 9:10, 8:02, 8:11, 8:20, 7:03, 7:12, 7:21, 7:30, 6:04, 6:13, 6:22, 6:31, 6:40, 5:05, 5:14, 5:23, 5:32, 5:41, 5:50, 4:06, 4:15, 4:24, 4:33, 4:42, 4:51, 3:07, 3:16, 3:25, 3:34, 3:43, 3:52, 2:08, 2:17, 2:26, 2:35, 2:44, 2:53, 1:09, 1:18, 1:27, 1:36, 1:45, 1:54

Reflect

From 12 midnight till 12 noon it is am because it is before midday. So 1:35 am is very early in the morning and it is still dark at this time.

Lesson 7: Telling time to the minute (3)

→ pages 53–55

- Hour hand half-way between 3 and 4
 - Hour hand between 6 and 7 but closer to 6
 - Hour hand just under half-way between 8 and 9
 - Hour hand three-quarters of the way between 1 and 2
 - Hour hand just over half-way between 9 and 10
 - Hour hand a quarter of the way between 1 and 2
- 04:52 b) 17:09
 - 03:52 18:09
 - 02:52 19:09
 - 01:52 20:09
 - 00:52 21:09
- 20:00 is the 24-hour clock equivalent of 8 pm or 8 o'clock in the evening.
- Minute hand pointing to the 12th interval, hour hand pointing to just after 5
 - Minute hand pointing to 8, hour hand pointing just after half-way between 11 and 12
- 19:05, 19:14, 19:23, 19:32, 19:41, 19:50, 19:46, 19:55
- Answers will vary. Ensure that times and am/pm match the 24-hour time; for example, 03:40 and twenty minutes to 4 am (or 3:40 am).
Latest time is 23:44 (16 minutes to midnight or 11:44 pm)
Earliest time is 00:01 (1 minute after midnight or 12:01 am)

Reflect

An explanation that the hour is more than 12, so it is a 24-hour clock time. In the 24-hour clock, times after 12:00 are pm, so this time is in the evening: 6:58 pm.

Lesson 8: Finding the duration

→ pages 56–58

- 38 minutes (clock shaded from 07:12 to 07:50; +38 minutes on number line)
 - 43 minutes (first clock shaded from 11:45 to 12:00 and second clock from 12:00 to 12:28; +15 minutes and +28 minutes on number line)
 - 46 minutes (first clock shaded from 13:38 to 14:00 and second clock from 14:00 to 14:24; +22 minutes and +24 minutes on number line)
- Durations written into the table:
21 minutes
31 minutes
41 minutes
51 minutes
 - The answers get 10 minutes greater each time because the start time minutes are the same and the end time minutes are 10 minutes more each time.
- The tanker takes 91 minutes to fill up with milk.
- False. Max has not taken into account that the duration is over an hour, so he would need to add another 60 minutes to 35. This makes it 95 minutes.
- 150 minutes
- Possible answers: start 13:01, end 13:53; start 13:02, end 13:54; start 13:03, end 13:55; start 13:04, end 13:56; start 13:05, end 13:57; start 13:06, end 13:58; start 13:07, end 13:59

Reflect

Children's questions will vary. Ensure that the end time is after the start time, unless the question crosses over midnight.

Lesson 9: Comparing duration

→ pages 59–61

- 26 minutes (clocks shaded from 18:09 to 18:35)
 - 25 minutes (clocks shaded from 18:52 to 19:17)
Alex practises for the longer time on Monday.
- Lee's dad parks for 63 minutes. He should pay £1 as he did not park over 65 minutes.
- Bus B is quicker. Bus A and B leave 10 minutes apart, but they do not arrive 10 minutes apart. If Bus B were to arrive 10 minutes later, it would arrive at 10:33. As it arrives 6 minutes before this time, I know it is 6 minutes faster than Bus A.
 - Bus C is quicker. Buses C and D leave 10 minutes apart, but they do not arrive 10 minutes apart. If Bus D were to arrive 10 minutes later, it would arrive at 11:22. As it arrives 3 minutes after this time, I know it is 3 minutes slower than Bus C.

4. 1 hour 9 minutes is longer. 1 hour = 60 minutes, so 1 hour 9 minutes = 69 minutes. 69 minutes is a longer time than 63 minutes.
5. Answers will vary: activities must total 110 minutes or less; for example, the science experiment and school library visit would take $60 + 35$ minutes = 95 minutes so could be done before home time.
Exact time: science experiment, school library visit, spelling test (60 minutes + 35 minutes + 15 minutes = 110 minutes).

Reflect

Adventure film = 105 minutes; space film = 100 minutes.
Adventure film is longer.

Children could also use the fact that they start 10 minutes apart, but do not finish 10 minutes apart. If the space film was the same length as the adventure film it would finish at 17:10; however, it finishes at 17:05 so it must be shorter.

Lesson 10: Finding start and end times

→ pages 62–64

1. I will get into the fair at 1:38 pm. (Clock to show 1:38.)
2. a) First clock to show 2:32; second clock to show 2:51
End time, 2:51 pm
b) First clock to show 3:03; second clock to show 3:52
Start time, 3:03 pm
3. 2:53 pm
Answers will vary. A possible explanation is: count back 2 minutes to 3:00 and then count back 7 minutes to 2:53.
- 4.

	Start time	Queue length (duration)	End time
Bouncy castle	1:16 pm	22 minutes	1:38 pm
Big dipper	2:12 pm	25 minutes	2:37 pm
Go karts	3:48 pm	26 minutes	4:14 pm
Runaway train	4:42 pm	24 minutes	5:06 pm

5. Mo has forgotten that there are only 60 minutes in an hour, so 65 minutes is the same as 1 hour and 5 minutes. Therefore, his poster will be ready an hour and 5 minutes later than 5 minutes past 4, which is 10 minutes past 5.
6. a) It could have started at 2:21, 2:22, 2:23 or 2:24.
b) It ends at 1:34 pm.
An efficient method is to add on 2 hours and adjust by taking off 1 minute.

Reflect

The lesson ends at 7:40 pm.

Explanations will vary. Some children will see that 55 minutes is just 5 minutes less than 1 hour and so will add 1 hour and adjust by subtracting 5 minutes. Some children will add on 15 minutes to make 7 pm and then add on 40 minutes to make 7:40 pm.

Lesson 11: Measuring time in seconds

→ pages 65–67

1. a) Line drawn to 45 seconds
b) Line drawn to 40 seconds
c) Line drawn to 35 seconds
d) Line drawn to 55 seconds
- 2.

Activity	Time in minutes	Time in seconds
Bouncing a ball	$\frac{1}{2}$ a minute	30 seconds
Running on the spot	2 minutes	120 seconds
Skipping	$1\frac{1}{2}$ minutes	90 seconds
Star jumps	1 minute	60 seconds

3. It takes Ebo 40 seconds.
4. Jamie's stopwatch shows 17 seconds because 1 minute equals 60 seconds and $60 - 43 = 17$ seconds. Max's stopwatch shows 36 seconds because 1 minute equals 60 seconds and $60 - 24 = 36$ seconds.
5. Answers will vary. How accurate were the children at estimating 1 minute?

Reflect

Children should show an understanding that 1 second is a specific measurement of time (for example, the time it takes to say '1 elephant'.) Bella could count to 60 elephants to give her a better estimate of 1 minute.

End of unit check

→ pages 68–70

My journal

1. a) I know that the time is 25 minutes to 3 because ...

Explanations will vary. Children should be able to explain that they know the time because the minute hand is pointing to 7 (or the 35th interval), which means 25 minutes to the hour, and the hour hand is just over half-way between 2 and 3.

- b) I know that the time is 17 minutes past 8 because ...

Explanations will vary. Children should be able to explain that they know the time because the minute hand is pointing to the 17th interval, which means 17 minutes past the hour, and the hour hand is pointing to 8.

- c) I know that the time is 9 minutes to 5 because ...

Explanations will vary. Children should be able to explain that they know the time because the minute hand is pointing to the 51st interval, which means 9 minutes to the hour, and the hour hand is pointing to 5.

2. Answers will vary. Check that children have drawn the hands on their clocks correctly and have used a variety of ways to write their times, using the 24 hour clock and/or using am and pm. Ensure that they choose an appropriate time for the activity that they have chosen to record.

Power play

Children will end on the clock showing 4 minutes to 7.

