Summer Block 3

Time

Small steps

Step 1	Roman numerals to 12
Step 2	Tell the time to 5 minutes
Step 3	Tell the time to the minute
Step 4	Read time on a digital clock
Step 5	Use am and pm
Step 6	Years, months and days
Step 7	Days and hours
Step 8	Hours and minutes – use start and end times

Small steps

Step 9	Hours and minutes - use durations
Step 10	Minutes and seconds
Step 11	Units of time
Step 12	Solve problems with time

Roman numerals to 12

Notes and guidance

This small step introduces children to Roman numerals and the Roman number system. They focus only on Roman numerals for numbers 1 to 12, using the context of a clock face.

By the end of this step, children should understand that numbers in the Roman number system follow these principles: letters are not usually written four times (for example, 4 is written as IV, instead of IIII); if a lower value digit is written to the left of a higher value digit, it is subtracted (for example, IV = 5 – 1) and if it is written to the right, it is added (for example, VI = 5 + 1).

Children recap how to read and write "o'clock" and "half past" the hour. Give them the opportunity to create times using individual clocks with moveable hands.

Things to look out for

- Children may write 4 as IIII or 9 as VIIII.
- Children may add numerals, instead of interpreting the values based on their position, for example interpreting IX as 11, rather than 9
- When marking the hour hand on a clock to show half past 7, children may draw the hand pointing to 7, rather than halfway between 7 and 8

Key questions

- Where have you seen Roman numerals before?
- What is the same/different about representing the numbers 2 and 12 as Roman numerals?
- What is the same/different about writing 4 and 6 as Roman numerals?
- What are the rules of the Roman number system?
- Which is the hour/minute hand?
- Where will the minute hand be at _____ o'clock?
- Where will the minute hand be at half past _____?

Possible sentence stems

- The letter _____ represents the number _____
- On the hour, the minute hand points to _____
- At half past the hour, the minute hand points to _____

National Curriculum links

- Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks

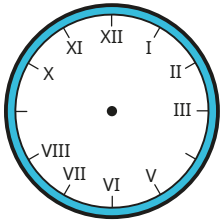
Roman numerals to 12

Key learning

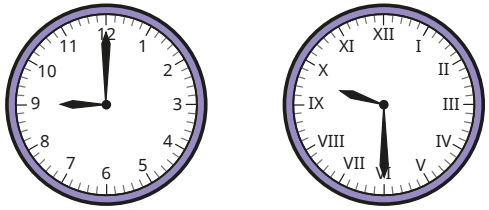
- Match the numbers to the Roman numerals.

1	2	3	4	5	6	10	12
III	V	XII	X	II	IV	I	VI

- Write Roman numerals to complete the clock face.



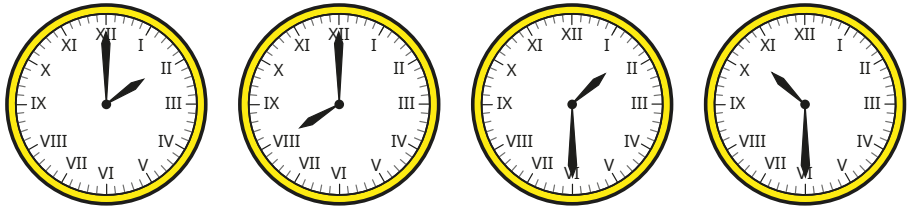
- Here are two clocks.



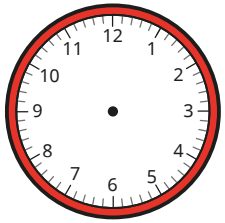
What is the same about the clocks?

What is different?

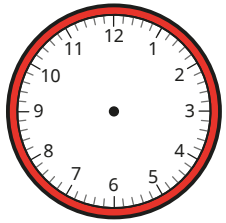
- Write the times shown on the clocks.



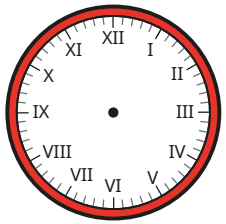
- Draw hands to show the time on each clock.



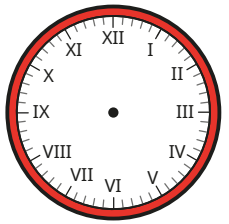
3 o'clock



half past 4



11 o'clock



half past 5

Compare answers with a partner.

Roman numerals to 12

Reasoning and problem solving

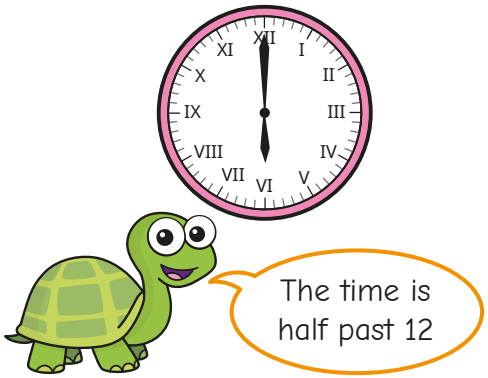
Amir writes the number 9 in Roman numerals.

VIIII

Explain Amir's mistake.

Write 9 in Roman numerals.

IX



Do you agree with Tiny?

Explain your answer.

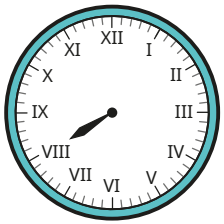
No

Tiny has mixed up the hour and minute hands.

Is Alex correct?

Explain your answer.

No



The clock has lost its minute hand.

What time could it be?

Explain your answer.

8 o'clock, because the hour hand is pointing at 8

Tell the time to 5 minutes

Notes and guidance

In this small step, children use analogue clocks to tell the time to 5 minutes, building on their learning in Year 2

To begin with, children recap how many minutes there are in an hour. With this knowledge, encourage them to identify why quarters of an hour are equal to 15 minutes and why the 12 intervals around a clock face are each equal to 5 minutes. Partitioning the clock vertically from 12 to 6 may visually support children to recognise whether a time is past or to the hour. As in the previous step, children can physically make times on analogue clocks with moveable hands.

Children may need to practise their 5 times-table to ensure that they can fluently tell the time to 5 minutes.

Things to look out for

- Children may not relate the numbers on the clock face to minutes. For example, when the minute hand is pointing to 4, they may say that it is 4 minutes past the hour.
- Children may confuse times past and times to the hour.
- If children are not secure in their 5 times-table, they may struggle to fluently identify the number of minutes past or to the hour.

Key questions

- Which is the minute/hour hand?
- Is the minute hand in the first half or second half of the hour?
- If the minute hand is pointing at _____, how many minutes is it past the hour?
- If the minute hand is pointing at _____, how many minutes is it to the hour?
- How else could you say 15 minutes past/to?
- Would you ever say 60 minutes past _____? Why/why not?

Possible sentence stems

- The minute hand is pointing to the _____

  This means that the time is said as past/to.

- _____ × 5 = _____, so the time is _____ past/to _____

National Curriculum links

- Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks

Tell the time to 5 minutes

Key learning

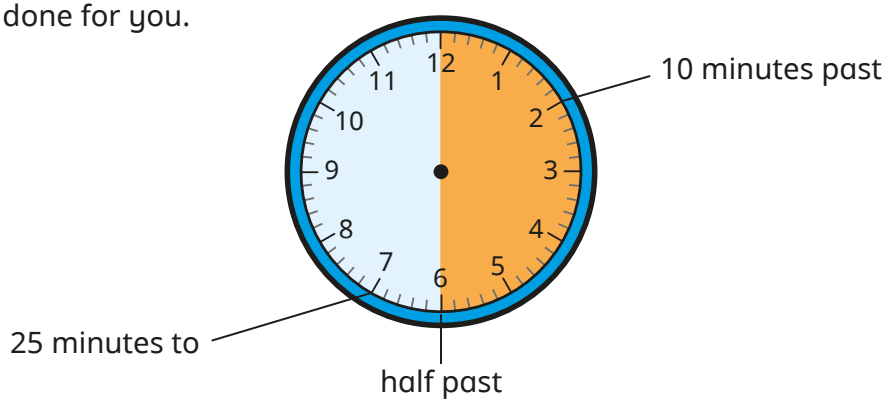
- Complete the sentences.

  There are _____ minutes in one hour.

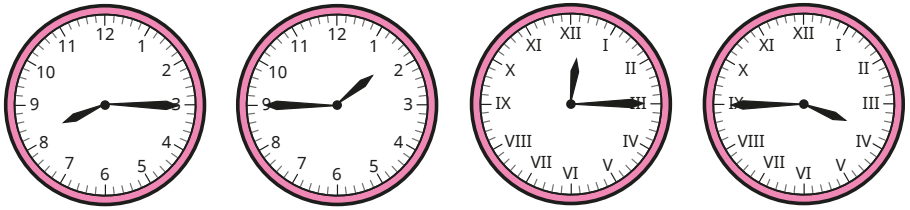
  There are _____ minutes in half an hour.

  There are _____ minutes in quarter of an hour.

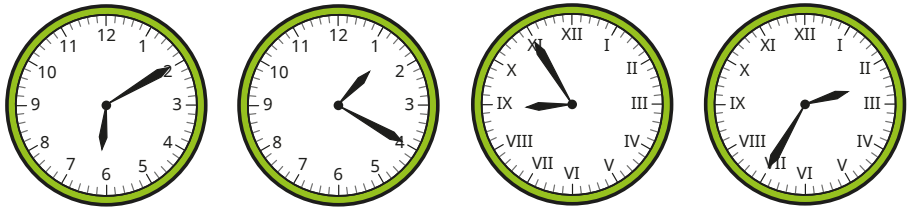
- Label the clock to show what time would be shown if the minute hand was pointing to each interval. Some have been done for you.



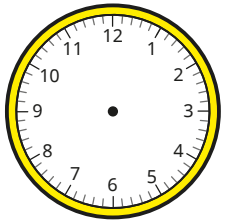
- What time is shown on each clock?



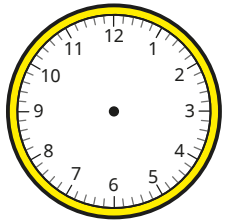
- What time is shown on each clock?



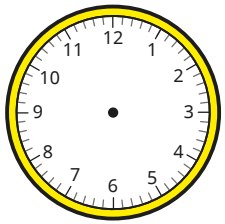
- Draw hands to show the time on each clock.



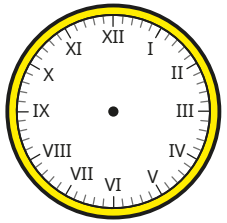
5 minutes past 5



20 minutes to 12



quarter to 6

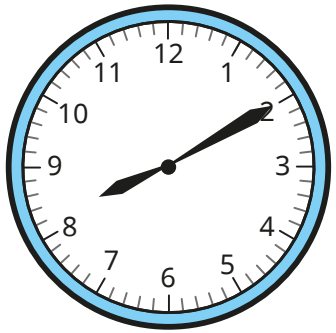


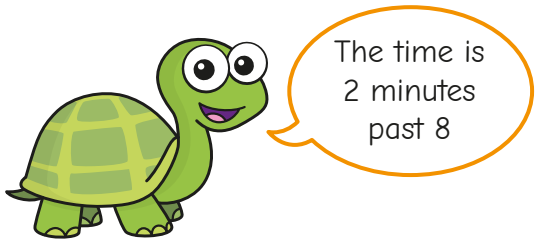
25 minutes past 10

Tell the time to 5 minutes

Reasoning and problem solving

Tiny is telling the time.



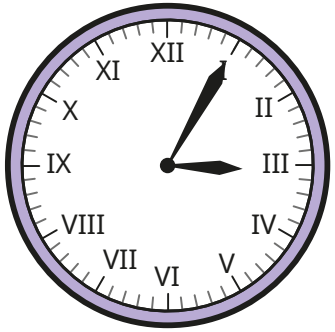


Do you agree with Tiny?

Explain your answer.

No

Teddy is telling the time.



Is Teddy correct?

Explain your answer.

Yes

There are 55 minutes until 4 o'clock.

Teddy should say it is 5 minutes past 3

Tell the time to the minute

Notes and guidance

In this small step, children build on their previous learning to tell the time to the nearest minute.

This is a good opportunity to reinforce the convention that if the minute hand is pointing before 6, we use the phrase "past the hour" and if it is pointing after 6, we use the phrase "to the hour". To find out how many minutes past/to the hour a time is, children should identify the 5-minute interval before, then count individual minutes after the multiple of 5. For example, to tell the time on an analogue clock showing 23 minutes past 4, children should recognise that this is $4 \times 5 = 20$, then $+ 3$

To support children when telling the time to the hour, a part-whole model can help them to see the number bond to 60

Things to look out for

- Children may count individual minutes until they reach the minute hand, instead of finding the 5-minute interval before the minute hand and counting on.
- When telling times that are "_____ minutes to the hour", there are several steps in the process, so children may make errors.

Key questions

- Which is the minute/hour hand?
- Would you say the time shown is "past the hour" or "to the hour"? Why?
- What do you add to _____ to reach 60?
- How many minutes is it past the hour/to the next hour?
- What method can you use to find the number of minutes past?

Possible sentence stems

- _____ × 5 = _____

  _____ + _____ = _____, so the clock is showing _____ minutes past/to _____
- _____ + _____ = 60

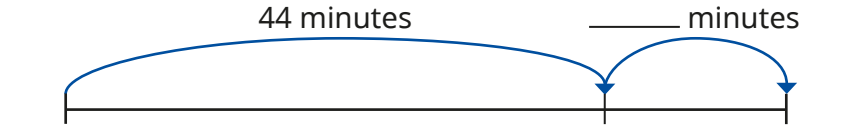
National Curriculum links

- Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight

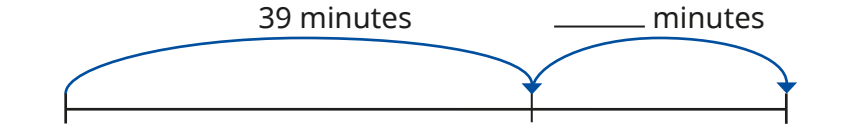
Tell the time to the minute

Key learning

- Complete the number lines and sentences.

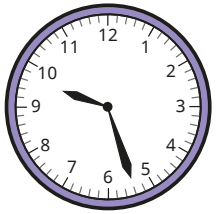


44 minutes past 3 is the same as _____ minutes to 4



39 minutes past 3 is the same as _____ minutes to 4

- Max is working out what time it is.



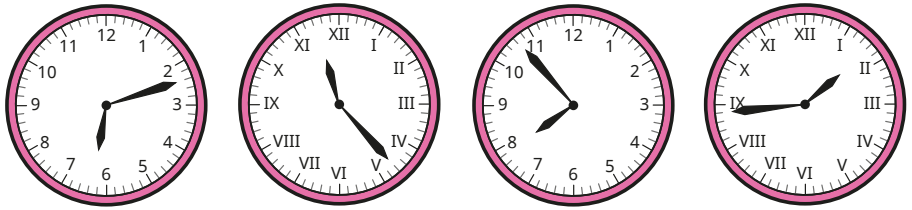
5 × 5 = 25

25 + 2 = 27

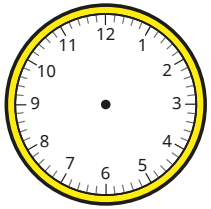
So the time is 27 minutes past 9

Use Max's method to work out the times shown.

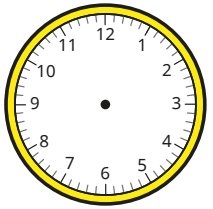
- Write the times shown on each clock.



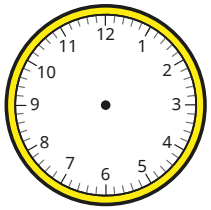
- Draw the hands on the clocks to show the times.



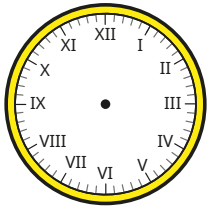
8 minutes past 12



4 minutes to 4



17 minutes past 5

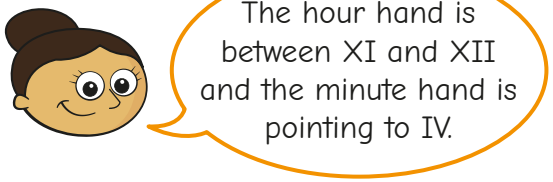


2 minutes to 9

Tell the time to the minute

Reasoning and problem solving

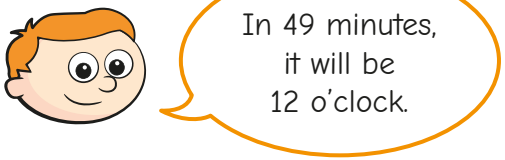
Dora is telling the time using an analogue clock.



What time is it?

20 minutes past 11

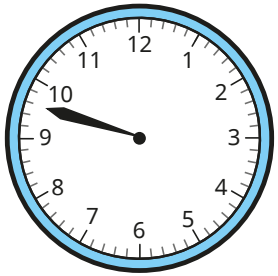
Ron is telling the time.



What time is it?

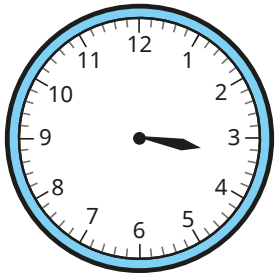
11 minutes past 11

The clock has lost its hour hand.



What time could it be?

The clock has lost its minute hand.



What time could it be?

Compare answers with a partner.

approximately 12 minutes to any hour

any time between quarter past 3 and half past 3

Read time on a digital clock

Notes and guidance

This small step is the first time that children are formally introduced to the 12-hour digital clock, but they may already have experience of this from outside school.

Children continue to use the phrases "_____ minutes past/to" the hour to tell the time on a digital clock. This step is important because it highlights the convention that we say "20 minutes to 4" to describe the time displayed on a digital clock as "3:40", not "40 minutes past 3". This builds on the learning from the previous step where children converted times past the hour to times to the hour.

Ensure children record the time using a colon, not a decimal point, as this could lead to confusion in later learning when they look at decimals.

Things to look out for

- Children may write times with a decimal point, rather than using a colon to separate hours and minutes.
- Children may rely on reading times exactly as they appear, rather than converting them, for example saying "two forty-seven" rather than "thirteen minutes to three".
- Children may think there are 100 minutes in an hour and hence think 50 minutes past 3 is 50 minutes to 4

Key questions

- Where have you seen a digital clock before?
- What is the same/different about analogue and digital clocks?
- How could you show the time _____ on a digital clock?
- What do you add to _____ to make 60?
- Is the time _____ past the hour or to the hour?
- How do you know when to describe a time as past or to the hour?

Possible sentence stems

- _____ minutes past _____ is the same as _____ minutes to _____
- 60 – _____ = _____, so the time is _____ to _____

National Curriculum links

- Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight

Read time on a digital clock

Key learning

- What is the same about the clocks? What is different?

11:10

- Match the analogue clocks to the digital clocks.

2:00

4:30

11:25

6:45

- Complete the times shown on each clock.

6:20

_____ minutes past 6

6:23

_____ minutes past _____

3:40

_____ minutes past _____

_____ minutes to _____

3:50

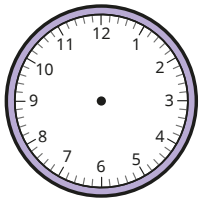
_____ minutes past _____

_____ minutes to _____

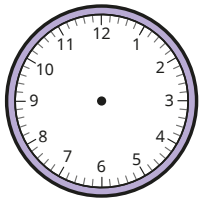
Which is the best way to describe the time on each clock?

- Draw hands on the clocks to show each time.

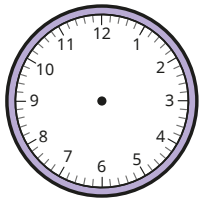
9:25



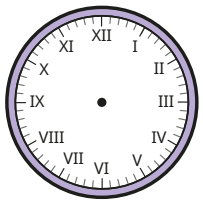
1:00



5:40



8:55



Read time on a digital clock

Reasoning and problem solving

Annie and Tommy are telling the time.

Who is correct?

Explain your answer.

Tommy

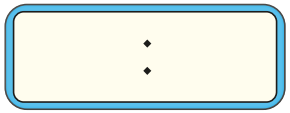
Brett records the time 4 minutes past 7 on a digital clock.

Explain Brett's mistake.

Write the correct time.

Brett has not recorded the 0 as a placeholder before the 4

7:04



On a digital clock, how many times will 9 be shown between 1:00 and 2:00?

On a digital clock, how many times will have a 5 in them between 1:00 and 2:00?

Explain the difference.

6

15

Use am and pm

Notes and guidance

In this small step, children's understanding of time is developed further, as they are introduced to the terms "am" and "pm" to describe times before 12 noon and after 12 noon respectively. Notice that at 12 noon and 12 midnight, am and pm are not used.

Discussing familiar daily activities, such as getting out of bed and going to bed, will help children to understand the concept. Support them to recognise that the 24 hours in a day are split into 12 hours before noon and 12 hours after noon. They will see that the difference between how times before and after noon are recorded is only shown by am and pm and otherwise the times look the same.

Children use both analogue clocks and digital clocks that show am and pm. The 24-hour clock is not covered until Year 4

Things to look out for

- Children may confuse am and pm, for example thinking 1 am should be 1 pm, because it is late.
- Children may need support to understand that times occur twice each day.
- Children may not be familiar with the terms "noon" and "midnight".

Key questions

- What time does a new day start?
- What time of the day does _____ happen?
- Could _____ take place at an am time and a pm time?
- Is _____ am/pm earlier or later than _____ am/pm?
- How do you know whether a time is in the morning or in the afternoon?
- What is the same/different about 6 am on an analogue clock and a digital clock?

Possible sentence stems

- _____ takes place in the morning/afternoon.
- 12 o'clock is either called _____ or _____

National Curriculum links

- Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight

Use am and pm

Key learning

- Use your class timetable to complete the sentences.
  - Maths takes place in the _____
  - _____ takes place in the morning.
  - _____ takes place in the afternoon.
  - Home time takes place in the _____

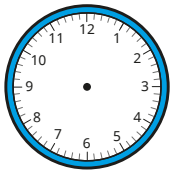
- Sort the events into the table to show the time of day that they are likely to happen.

wake up	leave school	eat breakfast
after-school club	break time	go to bed

Morning (am)	Afternoon (pm)

Compare answers with a partner.

- Dani starts school at 10 minutes past 9 in the morning.
  - Write this time using am or pm.
  - Show this time on both clocks.



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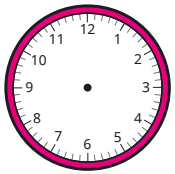
- Rosie plays netball at 20 minutes past 4 in the afternoon.
  - Write this time using am or pm.
  - Show this time on both clocks.



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- Which is the earliest time in each list?

10:34 am	8:56 am	5:12 am	11:00 am
8:49 pm	1:15 pm	6:05 pm	12:40 pm
6:31 pm	2:00 am	12:27 pm	5:45 am

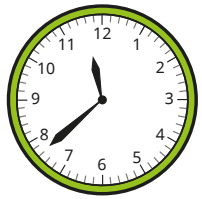
- Which is the latest time in each list?

4:51 pm	9:11 pm	3:20 pm	11:42 pm
10:18 am	11:33 am	7:54 am	9:10 am
10:59 am	6:30 pm	3:32 pm	8:14 am

Use am and pm

Reasoning and problem solving

Esther arrives at the station at this time in the morning.



The timetable shows the times the trains leave.

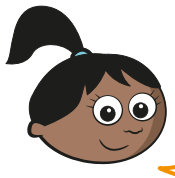
10:56 am	11:26 am	12:10 pm	12:43 pm

Which trains have already left?

Which is the first train that Esther could get?

10:56 am, 11:26 am

12:10 pm



12:46 pm is later than 6:32 pm, because 12 is greater than 6

Do you agree with Sam?

Explain your answer.

No

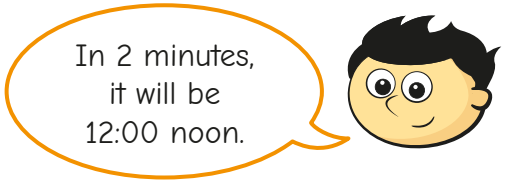
Tiny records the sunset and sunrise over two days.

Sunrise	Sunset
6:22 pm	6:09 am
6:20 pm	6:10 am

What mistake has Tiny made?

Tiny has mixed up am and pm.

The sun rises in the morning (am) and sets in the evening (pm).



Do you agree with Jack?

Explain your answer.

No

The time will be 12 midnight.

Years, months and days

Notes and guidance

In this small step, children develop their understanding of days, weeks, months and years.

Children explore years by using calendars to investigate the number of days in each month. Rhymes or songs could help them to remember the number of days in each month, as will regular revisiting during the school year when the months change. They are also introduced to the concept of leap years and how these differ from non-leap years.

Whole class discussions could involve ordering children's birthdays or festivals, starting with the earliest. Discuss the differences between a calendar year and the school year.

By the end of this step, children should know the number of days in a week, and days and months in a year.

Things to look out for

- Children may mix up the number of days in leap years and non-leap years.
- Children may think that there are exactly 4 weeks in a month.
- Children may need to revisit the number of days in each month regularly before these facts are secure.

Key questions

- Which month comes before _____?
- Which month comes after _____?
- In which month is your birthday?
- Which month changes when there is a leap year?
- How often is there a leap year?
- How many _____ are there in a _____?

Possible sentence stems

- There are _____ days in a week, so there are _____ × _____ = _____ days in _____ weeks.
- There are _____ months in a year.
- There are _____ days in a non-leap year/leap year.

National Curriculum links

- Know the number of seconds in a minute and the number of days in each month, year and leap year

Years, months and days

Key learning

- Complete the sentences.

  There are _____ days in a week.

  There are _____ months in a year.

  There are _____ days in a non-leap year.

  There are _____ days in a leap year.

  Leap years happen every _____ years.

- Use a calendar to help you answer the question.

  How many days are in each month in a normal calendar year?

January	May	September
February	June	October
March	July	November
April	August	December

  What do you notice?

- Record five people's birthdays in the table.

Name	Date

  Order the dates from earliest to latest in the year.

- Here is part of a calendar from 2021

July						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

  - What day of the week was 9 July?
  - The summer holidays started on 23 July.
    What day did the summer holidays start?
  - How many Mondays were there in July 2021?
  - What was the date on the last Wednesday in July 2021?
  - What day of the week was 30 June?

- Write <, > or = to complete the statements.

6 days ◯ 1 week

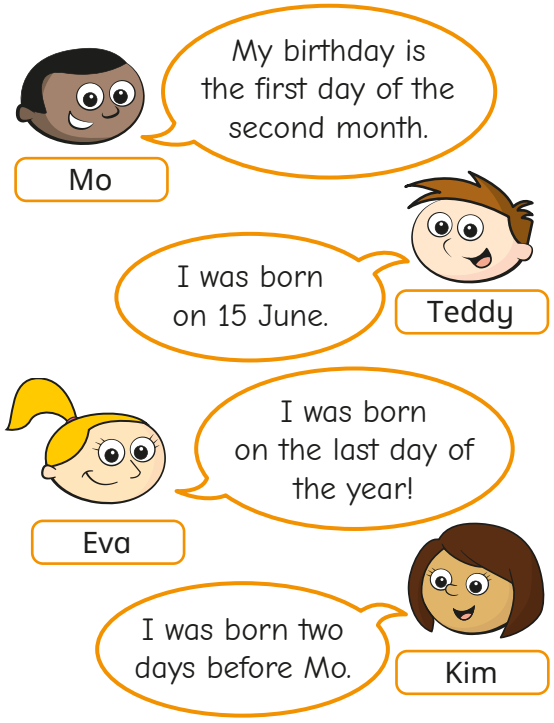
6 weeks ◯ 1 month

12 months ◯ 1 year

Years, months and days

Reasoning and problem solving

Four children describe their birthdays.



Work out the children's birthdays.

Write them in order, starting with the earliest in the year.

Kim: 30 January

Mo: 1 February

Teddy: 15 June

Eva: 31 December

Here is a page from a calendar.

Mon	Tues	Wed	Thur	Fri	Sat	Sun
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Which months could it be showing?

If you also know that there are no school holidays in the month, which months could it be now?

January, March, May, July, August, October, December

Is the statement always true, sometimes true or never true?

There are exactly 365 days in a year.

Explain your answer.

sometimes true

Days and hours

Notes and guidance

In this small step, children continue to develop their understanding of days, weeks, months and years, looking at the key relationships of 1 week = 7 days and 1 day = 24 hours.

Children explore the difference between the number of days in a school week and the number of days in an actual week. They use related number facts, repeated addition or informal multiplication of 2-digit numbers by a 1-digit number to work out how many hours there are in a given number of days or the number of days in a given number of weeks. Using real calendars, children consider how the number of school days in a month may change depending on what day of the week the month starts and on school holidays.

Things to look out for

- Calculation errors may occur, and as children do not yet know the 7 times-table, they will need support to model any calculations with weeks and days.
- Children may think that there are exactly 4 weeks in a month.
- Children may need to revisit the number of days in each month regularly before these facts are secure.

Key questions

- How many days are there in one week?
- How many days are spent at school in one week?
- How many days are not spent at school in one week?
- How many hours are there in one day?
  How can you use this fact to work out how many hours there are in _____ days?
- How many hours do you spend at school in a day/week?

Possible sentence stems

- There are _____ hours in a day, so there are _____ × _____ = _____ hours in _____ days.
- There are _____ days in a week.

National Curriculum links

- Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight
- Know the number of seconds in a minute and the number of days in each month, year and leap year

Days and hours

Key learning

- Complete the sentences.

  There are _____ days in a week.

  There are _____ days in a school week.

  There are _____ hours in a day.

- Here is part of a calendar from 2021

December						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

  - How many days in this month are at the weekend?
  - How many days in this month are weekdays?

- Complete the sentences.

  There are _____ hours in a day.

  There are _____ hours in two days.

  There are _____ hours in half a day.

- Write <, > or = to complete the statements.

  days in a month ◯ hours in a day

  hours in a day ◯ months in a year

  months in two years ◯ hours in a day

- Use the fact to work out the missing numbers.

  1 week = 7 days

  - _____ week = 14 days
  - _____ weeks = 84 days
  - 4 weeks = _____ days
  - 16 weeks = _____ days

- Use the fact to work out the missing numbers.

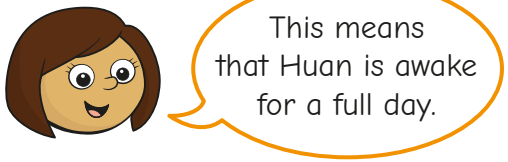
  1 day = 24 hours

  - _____ days = 48 hours
  - 10 days = _____ hours
  - 4 days = _____ hours
  - 14 days = _____ hours

Days and hours

Reasoning and problem solving

Huan gets up at 7 o'clock in the morning and goes to bed at 7 o'clock at night.



Explain Kim's mistake.

How long is Huan awake for?

12 hours

Is the statement always true, sometimes true or never true?

> Children go to school 5 days a week, so they go to school 20 days in one month.

Explain your answer.

sometimes true

Dexter and Jo go to school for 6 hours a day.

Dexter

We will spend 180 hours at school in September.

We will spend less than 180 hours at school in September.

Jo

Who is correct?

Explain your answer.

Jo

Hours and minutes – use start and end times

Notes and guidance

In this small step, children find durations of time between given start and end times.

Give children opportunities to practically work out durations of time under an hour using clocks with moveable hands. To help secure their understanding of both representations, children need to work out the durations using both analogue and 12-hour digital clocks.

Children explore using a number line showing start and end times. Encourage them to use different methods of finding durations that cross over hours, including moving hands around an analogue clock and using bonds to find the number of minutes until the next hour.

A recap of how many minutes there are in one hour, and the number bonds to 60, may be needed.

Things to look out for

- Children may think that an event that ends at a later time must have a longer duration.
- Children may attempt to calculate duration using column subtraction, taking away the start time from the end time, which will lead to problems when hours are crossed.

Key questions

- How many minutes are there in one hour?
- What times should the number line start and end at?
- How many minutes are there to the next hour?
- How can you find the total duration of the event?
- Do you find it easier to work out duration using an analogue clock or a digital clock?

Possible sentence stems

- The number bond to 60 of _____ is _____
- From _____ to _____ o'clock is _____ minutes.

  From _____ o'clock to _____ is _____ minutes.

  The total time taken is _____ minutes.

National Curriculum links

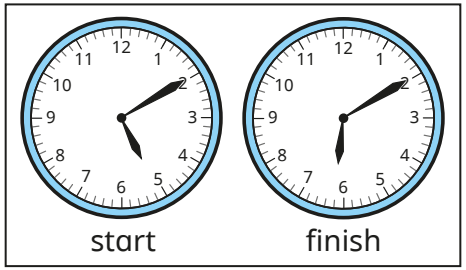
- Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- Compare durations of events

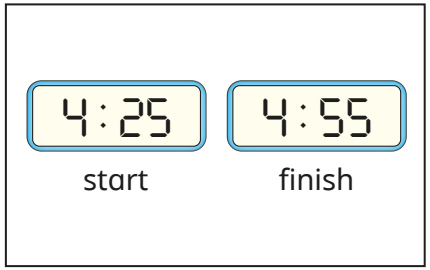
Hours and minutes – use start and end times

Key learning

- The clocks show the start and finish times of some activities.

  Work out the duration of each activity.





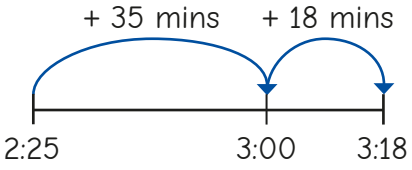
- Complete the table.

Programme	Start time	Finish time	Duration
Pals	6:30 am	7:30 am	
Dennis the Scientist	3:15 pm	6:15 pm	
The Football Show	1:00 pm	3:00 pm	
An Adventure	10:40 am	12:40 pm	

- Write **is shorter than**, **is longer than** or **is the same as** to compare the durations.
  - 2:00 pm–6:00 pm _____ 8:00 am–11:00 am.
  - 5:30 pm–7:30pm _____ 4:15 am–7:15 am.
  - 10:30 am–12:30 pm _____ 11:40 pm–1:40 am.

- Alex played football from 2:25 to 3:18

  She uses a number line to work out how long she played football.

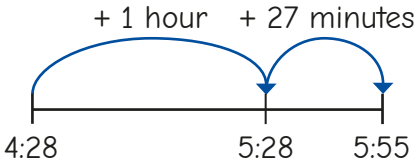


  Use Alex's method to find the durations in minutes.
  - 10:48 to 11:35
  - 7:15 to 8:24
  - 9:50 to 10:23

- Amir started watching a TV programme at 4:28 pm.

  The programme finished at 5:55 pm.

  Amir uses a number line to work out how long he watched TV for.



  Use Amir's method to find the durations.
  - 11:37 am to 12:51 pm
  - 5:12 am to 6:49 am
  - 1:56 pm to 3:17 pm
  - 11:56 pm to 1:08 am

Hours and minutes – use start and end times

Reasoning and problem solving

Scott gets on a bus at 3:23 pm.

He gets off the bus at 4:24 pm.

How long was his bus journey?

Compare methods with a partner.

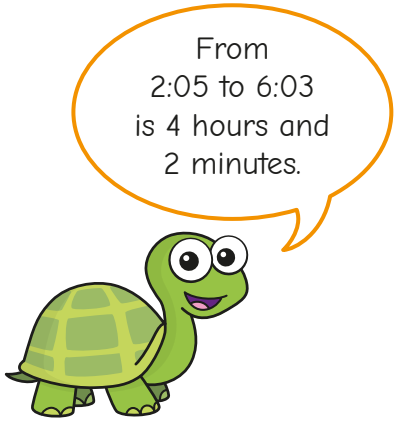
1 hour and 1 minute

A car park charges £2 for every 30 minutes of parking.

Mr Trent parks his car in the car park from 1:22 pm to 3:52 pm.

How much does he pay for parking?

£10

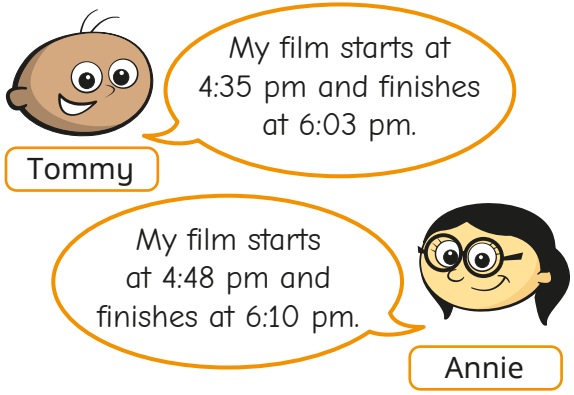


Do you agree with Tiny?

Explain your answer.

No

Tommy and Annie are watching different films at the cinema.



How long was each film?

Whose film was longer?

Tommy: 1 hour and 28 minutes

Annie: 1 hour and 22 minutes

Tommy's

Hours and minutes – use durations

Notes and guidance

Building on the previous step, children use a given duration to count forward to find an end time, or count back to find a start time. Times are given using both analogue and digital clocks to reinforce children's familiarity with both forms.

Start with durations of minutes only, before moving on to examples that involve hours and minutes. Children can use clocks with moveable hands to count forwards or backwards with time. A number line is an important representation to support children when counting on or back to find start and end times. A part-whole model could support them to partition longer durations of time.

Things to look out for

- Children may need support if an hour boundary is crossed.
- Children may count the time in the wrong direction.
- Children may try to use formal methods of addition and subtraction which will give incorrect answers if they work in 100s rather than 60s.

Key questions

- Why is it important to be able to work out how long something lasts?
- How many minutes are there in one hour?
- How can you partition the duration? Is there more than one way?
- How do you know whether to move the minute hand clockwise or anticlockwise?
- Are you being asked to find the start or end time of the activity?
- What strategy can you use to find the start/end time?
- What time does the number line start/end at?

Possible sentence stems

- To work out the start time, I need to _____ minutes from _____
- To work out the end time, I need to _____ hours and _____ minutes to _____

National Curriculum links

- Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- Compare durations of events

Hours and minutes – use durations

Key learning

- Break time starts at 10:25 am.

  It lasts for 20 minutes.

  What time does break time finish?

- After-school club finishes at 4:45 pm.

  It lasts for 30 minutes.

  What time does after-school club start?

- A rugby match lasts 80 minutes.

  How long is this in hours and minutes?

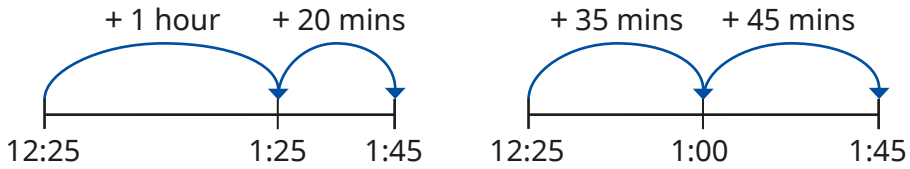
  The match kicks off at 5:00 pm.

  What time does the match finish?

- A train journey lasts 1 hour and 20 minutes.

  The train leaves at 12:25 pm.

  The number lines show two ways to work out the arrival time.



  How do the methods work? Is there a different way?

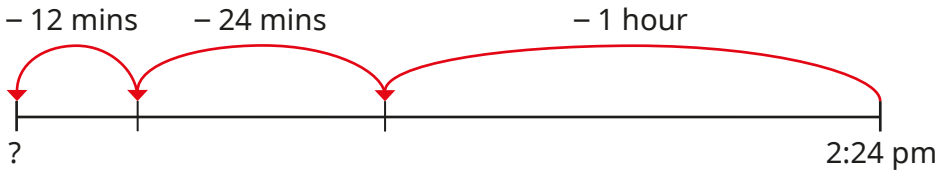
- Work out the arrival times of trains A and B.

Train	Train leaves	Duration
A	4:43 pm	1 hour and 15 minutes
B	5:16 pm	55 minutes

- A film is 1 hour and 36 minutes long.

  It finishes at 2:24 pm.

  Use the number line to work out what time the film starts.



  Another film is 2 hours and 17 minutes long.

  It finishes at 3:08 pm.

  What time does it start?

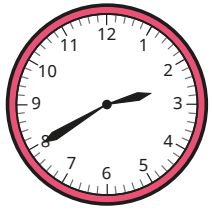
Hours and minutes – use durations

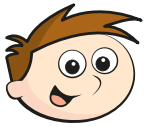
Reasoning and problem solving

Here is the time now.

School ends in 45 minutes.

What time will it be?





School ends at 5 minutes to 2

Teddy

School ends at 25 minutes past 3

Max

School ends at 2:85

Whitney

Who do you agree with?

Explain your answer.

Max

Nijah is going on holiday.

Her plane will take off at 3:48 pm.

She needs to be at the airport $2\frac{1}{2}$ hours before take-off.

What is the latest time she can arrive at the airport?

The flight lasts for 3 hours and 14 minutes.

What time will she arrive at her destination?

1:18 pm

7:02 pm

A TV programme lasts 59 minutes.

It starts at 3:15 pm.

What time will it finish?

Compare methods with a partner.

4:14 pm

Minutes and seconds

Notes and guidance

In this small step, children extend their understanding of the units of time to include minutes and seconds.

Children could use a stopwatch to compare counting 10 seconds, 30 seconds or 1 minute in their head with the actual timed duration. Additionally, they could use a stopwatch to find the length of time it takes in seconds to complete different tasks, for example run across the hall/playground, do ten star jumps, write their name and so on.

This small step helps children to recognise that there are 60 seconds in 1 minute and to use this to write durations of time in different ways. They can use various calculation strategies to work out how many seconds there are in several minutes.

Things to look out for

- Children may think that there are 100 seconds in a minute, which is similar to the base 10 number system or their experience of 100 pence in a pound.
- Children may confuse the positions of minutes and seconds on a stopwatch.
- Children may confuse hours, minutes and seconds.

Key questions

- How many seconds are there in one minute?
- What can you use to measure time in seconds accurately?
- What activity takes 10 seconds/30 seconds/1 minute?
- Which task took the longest/shortest time to complete?
- How can you change a length of time in seconds into minutes and seconds?

Possible sentence stems

- There are _____ seconds in a minute.
- _____ minutes and _____ seconds = _____ × 60 + _____ seconds
  = _____ seconds

National Curriculum links

- Know the number of seconds in a minute and the number of days in each month, year and leap year
- Compare durations of events
- Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight

Minutes and seconds

Key learning

- Use a stopwatch to record how many seconds it takes to do each activity.

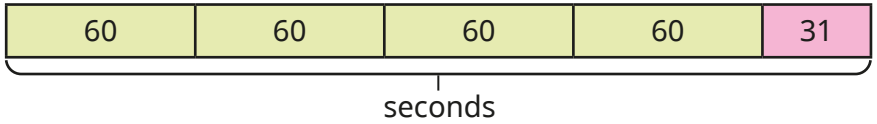
1 lap around the playground	10 star jumps
write your name backwards	

- Complete the statements.
  - ____ seconds = 1 minute
  - ____ seconds = 2 minutes
  - ____ seconds = $\frac{1}{2}$ minute
  - 240 seconds = ____ minutes
  - ____ seconds = 6 minutes
  - 600 seconds = ____ minutes

- Match the times in words to the times shown on the stopwatches.

one hundred and fifty seconds	00:02:05
two minutes and five seconds	00:01:50
two minutes and fifty seconds	00:02:50
one hundred and ten seconds	00:02:30

- Aisha draws a bar model to help her convert 4 minutes and 31 seconds into seconds.



$4 \times 60 = 240$
$240 + 31 = 271$ seconds
4 minutes and 31 seconds = 271 seconds

Use Aisha's method to complete the statements.
  - 3 minutes and 19 seconds = ____ seconds
  - 7 minutes and 42 seconds = ____ seconds

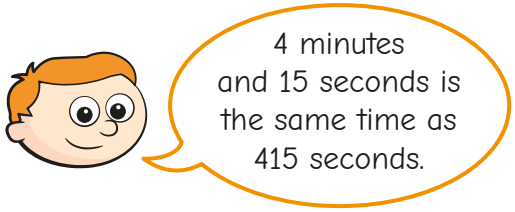
- Complete the statements.
  - 5 minutes and ____ seconds = 324 seconds
  - ____ minutes and ____ seconds = 499 seconds

- Write <, > or = to compare the times.

1 minute and 15 seconds	◯	80 seconds
2 minutes	◯	200 seconds
2 minutes and 35 seconds	◯	155 seconds

Minutes and seconds

Reasoning and problem solving



What mistake has Ron made?

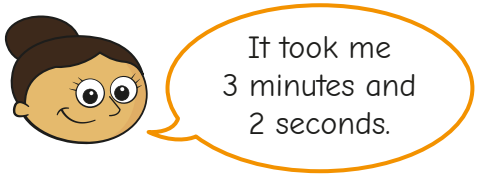
How many seconds are there in 4 minutes and 15 seconds?

Ron thinks that there are 100 seconds in a minute.

255 seconds

Dora times herself running around the playground.

Her stopwatch looks like this.



Do you agree with Dora?

No

1 minute and 20 seconds < ☐ seconds < 100 seconds

What could the missing number be?

Complete the sentences.

It must be _____

It could be _____

It cannot be _____

Compare answers with a partner.

between 81 and 99 seconds

multiple possible answers, e.g. 90 seconds

multiple possible answers, e.g. 79 seconds

Units of time

Notes and guidance

In this small step, children extend their understanding of when to use different units of time and compare lengths of time written using different units.

Children consider how long familiar activities take to complete, and this can be supported by completing practical activities and measuring with a stopwatch or other timer. An activity such as "Put your hand up when you think (1 minute/40 seconds) has passed" can be very useful to gauge children's estimation skills when working with time. Children should explore whether it would be more appropriate to measure the time taken to complete a task in seconds, minutes or hours.

By the end of this step, children should have developed a realistic sense of how long it takes to complete a familiar task.

Things to look out for

- Children may find it difficult to choose the correct units for different events/activities.
- When estimating, children often count seconds in their head too quickly.
- Children may compare numbers without reference to the units, for example thinking 30 seconds is longer than 20 minutes because 30 > 20

Key questions

- How long would it take to _____?
- What activity takes 10 seconds/30 seconds/1 minute/over an hour?
- Which task took the longest/shortest time to complete?
- What might you measure in seconds/minutes/hours? Why?
- How can you put times in different units in order of size?
- Which is longer, 5 minutes or 200 seconds?

Possible sentence stems

- To measure the time taken to _____, I would use seconds/minutes/hours.
- I know that _____ is longer/shorter than _____ because ...

National Curriculum links

- Know the number of seconds in a minute and the number of days in each month, year and leap year
- Compare durations of events
- Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight

Units of time

Key learning

- Complete the sentences using the most likely unit of time.

  seconds | minutes | hours

  - It takes 20 _____ to walk 1 mile.
  - It takes 5 _____ to write my name.
  - It takes 4 _____ to drive from London to Leeds.

- Complete the sentences using the most likely unit of time.

  seconds | minutes | hours

  - It will take 5 _____ to wash the dishes.
  - It will take 30 _____ to blow up a balloon.
  - It will take 20 _____ to get to school.

- Write <, > or = to compare the times.

  10 seconds ◯ 10 minutes ◯ 10 hours

  1 hour ◯ 1 minute ◯ 50 seconds

- What numbers could go in the spaces?
  - _____ seconds < _____ minutes < 1 hour
  - 600 seconds < _____ minutes < _____ hours

- Choose the correct word for each sentence.

  longer | shorter

  - Filling a bucket with water will take a _____ amount of time than a filling a bath with water.
  - The 100-metre sprint record is _____ than the 400-metre record.
  - In summer, days are lighter for a _____ amount of time compared to winter.

- Complete the table to describe how long it takes you to complete each activity.

  Record the time in seconds, minutes or hours.

Activity	Duration
brushing teeth	
eating lunch	
a night's sleep	
maths lesson	
writing your name	

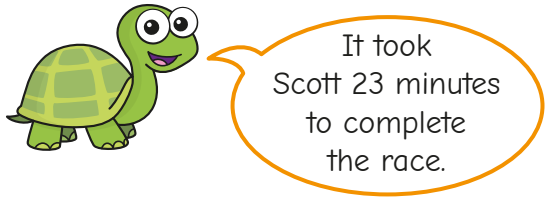
Compare answers with a partner.

Units of time

Reasoning and problem solving

Scott takes part in the 50-metre race on Sports Day.

Here is his time.



Do you agree with Tiny?

Explain your answer.

No

Put the times in order, starting with the shortest.

80 seconds

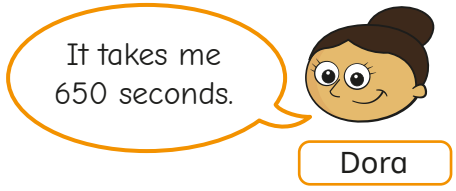
95 seconds

6 minutes

2 minutes

80 seconds,
95 seconds,
2 minutes,
6 minutes

Mo and Dora time how long it takes them to get to school.



Who spends longer travelling to school?

How much longer?

How did you work it out?

Dora

2 minutes and 20 seconds

Solve problems with time

Notes and guidance

In this small step, children solve problems that draw upon many of the different aspects that they have explored throughout the block. This step offers a good opportunity to recap key learning points from the block and questions can be tailored to any areas of difficulty that may have arisen.

Remind children of the number of seconds in a minute, minutes in an hour, hours in a day, days in a week and days in different months. In particular, explore the idea that the shorter the time, the faster it is, meaning that in a race it is the shorter time that wins.

Encourage children to discuss the strategy or representation that they use to solve each problem, in order to help them find the most efficient way to solve problems involving time.

Things to look out for

- Children may mix up units and misremember conversions.
- Children may look at the values and assume that a greater number (slower time) beats a lower number (faster time).
- Children may find it hard to compare times given in multiple units.

Key questions

- How many _____ are there in a _____?
- Which of these times is the quickest/slowest?
- How can you order these times from slowest to fastest?
- Which months have 31 days?

Possible sentence stems

- There are _____ seconds in _____ minutes.
- There are _____ hours in _____ days.
- There are _____ days in _____ weeks.

National Curriculum links

- Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- Know the number of seconds in a minute and the number of days in each month, year and leap year
- Compare durations of events
- Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight

Solve problems with time

Key learning

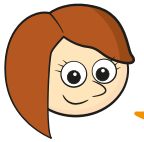
- 

  Do you agree with Amir?

- Tommy and Rosie time themselves running a lap of the playground.

  Tommy completes the lap in 86 seconds.

  Rosie completes the lap in 95 seconds.

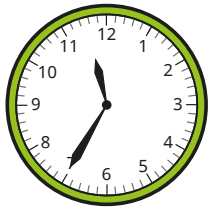
  Do you agree with Rosie?

  Explain your answer.

- Order the times from shortest to longest.

9 minutes	310 seconds	500 seconds
quarter of an hour	5 and a half minutes	

- Annie looks at this clock before she starts watching a film.

  She looks at the digital clock when the film finishes.

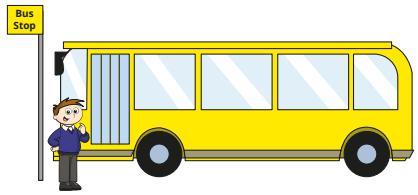
  How long did the film last?

- Teddy gets on a bus.

  He travels on the bus for 55 minutes.

  He gets off at 12:45 pm.

  What time did he get on the bus?

- Mrs Lee parks her car for 240 minutes.

  How much does she spend on parking?

Car parking

£1 for the first 3 hours

Then 50p per hour

Solve problems with time

Reasoning and problem solving

Brett, Jack and Sam all swim 25 m.

- Brett completes the swim in 39 seconds.
- Jack takes 15 seconds longer.
- Sam is 18 seconds faster than Jack.

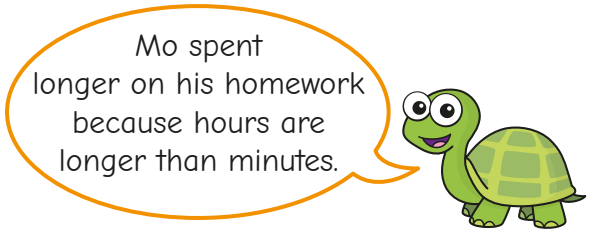
How long do the three children spend swimming in total?

Give your answer in minutes and seconds.

2 minutes and 9 seconds

Mo spends 1 hour and 3 minutes completing his homework.

Eva spends 72 minutes completing her homework.



Do you agree with Tiny?

Explain your answer.

No

It is the 27th day of the month.

In 7 days' time, it will be the 3rd day of the month.

What month could it be?

Explain your answer.

any month with 31 days

Kim starts watching a 2-hour film at 11:45 am.

Teddy finishes watching a 3-hour film at 4:30 pm.

For how long were Kim and Teddy watching a film at the same time?

15 minutes