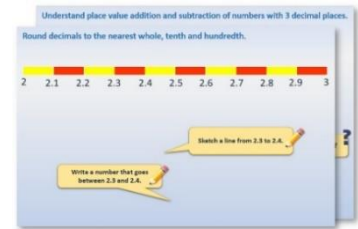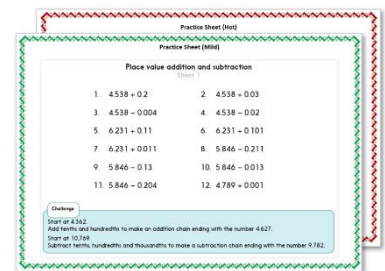# Week 11, Day 5
Calculate time intervals using the 24-hour clock.
Each day covers one maths topic. It should take you about 1 hour or just a little more.
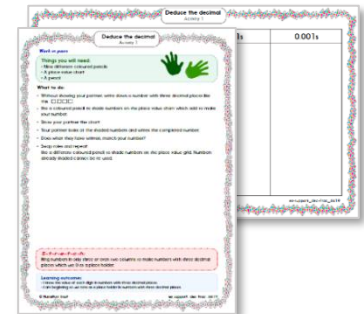
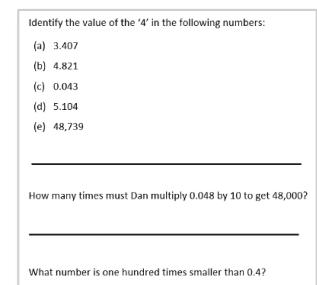1. Start by carefully reading through the **Learning Reminders**.

2. Tackle the questions on the **Practice Sheet**.
   There might be a choice of either Mild (easier) or
   Hot (harder)!
   Check the answers.

3. Finding it tricky? That's OK… have a go with a
   grown-up at **A Bit Stuck?**

4. Have I mastered the topic? A few questions to
   Check your understanding.
   Fold the page to hide the answers!

Learning Reminders
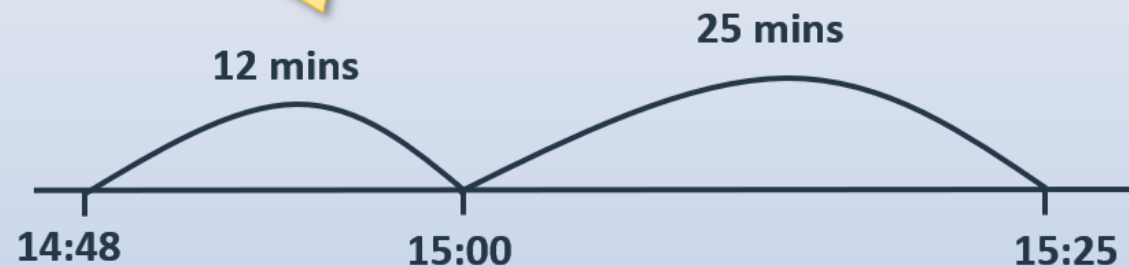
Calculate time intervals using the 24-hour clock.

The 14:48 to Birmingham New Street is running approximately 37 minutes late as a result of sheep on the line near Worcester.

We can count on to find the new departure time.

Remember
37 = 12 + 25
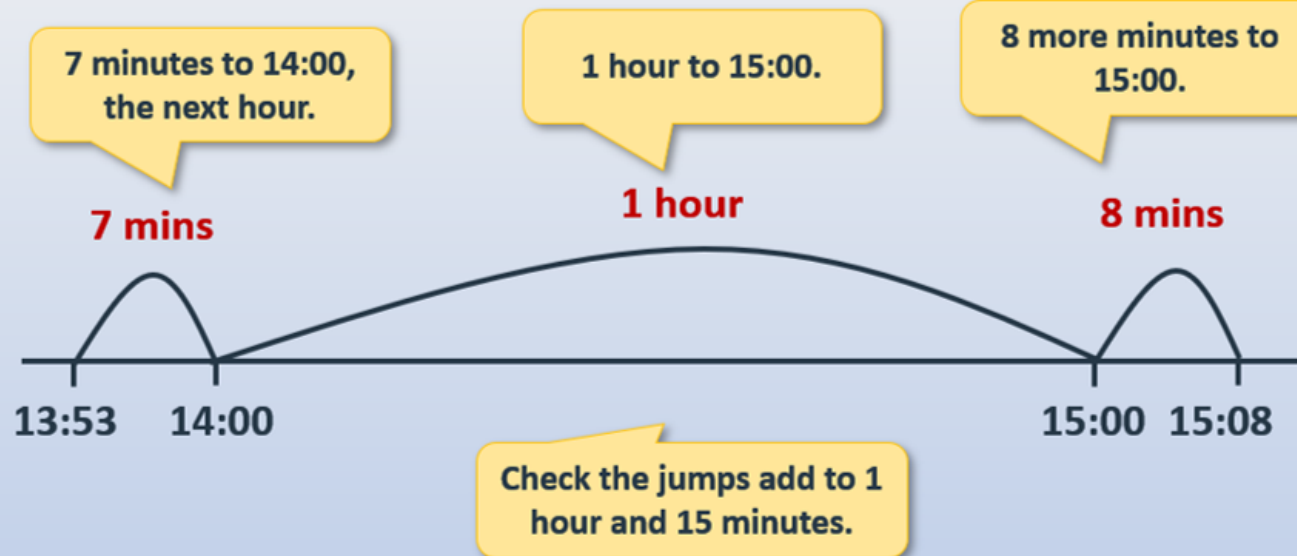
12 minutes to the next hour.

25 more minutes to 15:25.

25 mins

12 mins

14:48   15:00   15:25

Start with the original time.

Learning Reminders

Calculate time intervals using the 24-hour clock.

The 13:53 to Penzance is running approximately 1 hour and 15 minutes late as a result of stormy weather conditions causing flooding.

What time should the train now arrive?

7 minutes to 14:00, the next hour.

1 hour to 15:00.

8 more minutes to 15:00.

7 mins

1 hour

8 mins

13:53   14:00

15:00 15:08

Check the jumps add to 1 hour and 15 minutes.

Practice Sheet Mild
Find a time later

	Departure time	Journey time	Arrival time
1	13:34	18 mins	
2	09:50	23 mins	
3	10:51	45 mins	
4	16:38	27 mins	
5	14:42	35 mins	
6	12:27	15 mins	
7	18:49	25 mins	
8	20:56	34 mins	

Challenge

9	09:25	1 hour 10 mins	
10	10:17	2 hours 23 mins	

Practice Sheet Hot
Chigley Line

Timetables A and B are different options for a morning railway service on the Chigley Line.

	Timetable A	Timetable B
Depart from **Chigley Town**	07:15	07:05
Arrive at **Chigley Parkway**	07:19	07:09
Depart from **Chigley Parkway**	07:22	07:16
Arrive at **Trumpton**	07:57	07:53
Depart from **Trumpton**	08:00	08:00
Arrive at **Two Towns Junction**	08:09	08:09
Depart from **Two Towns Junction**	08:12	08:16
Arrive at **Camberwick Green**	08:25	08:29

1. How long does it take to travel from Chigley Parkway to Trumpton, using:
   a) Timetable A   b) Timetable B?

2. How long does it take to travel from Trumpton to Two Towns Junction, using:
   a) Timetable A   b) Timetable B?

3. How long does it take to travel from Trumpton to Camberwick Green using:
   a) Timetable A   b) Timetable B?

4. How long does it take to travel from Chigley Town to Trumpton, using:
   a) Timetable A   b) Timetable B?

5. How long does it take to travel from Chigley Parkway to Two Towns junction, using:
   a) Timetable A   b) Timetable B?

6. How long does it take to travel the whole distance from Chigley Town to Camberwick Green, using:
   a) Timetable A   b) Timetable B?

7. What is the same and what is different about the two timetables?

Challenge

Olga lives in Trumpton. She starts work at 08.30 in Camberwick Green.
She has a 4-minute walk from the station.
Which timetable would be better for her? Why?

Practice Sheet Answers

Find a time later (mild)

	Departure time	Journey time	Arrival time
1	13:34	18 mins	13:52
2	09:50	23 mins	10:13
3	10:51	45 mins	11:36
4	16:38	27 mins	17:05
5	14:42	35 mins	15:17
6	12:27	15 mins	12:42
7	18:49	25 mins	19:14
8	20:56	34 mins	21:30

Challenge

9	09:25	1 hour 10 mins	10:35
10	10:17	2 hours 23 mins	12:40

Practice Sheets Answers Continued

Chigley line (hot)

1. How long does it take to travel from Chigley Parkway to Trumpton, using:
   a) Timetable A 35 mins   b) Timetable B? 37 mins

2. How long does it take to travel from Trumpton to Two Towns Junction, using:
   a) Timetable A 9 mins   b) Timetable B? 9 mins

3. How long does it take to travel from Trumpton to Camberwick Green using:
   a) Timetable A 25 mins   b) Timetable B? 29 mins

4. How long does it take to travel from Chigley Town to Trumpton, using:
   a) Timetable A 42 mins   b) Timetable B? 48 mins

5. How long does it take to travel from Chigley Parkway to Two Towns junction, using:
   a) Timetable A 47 mins   b) Timetable B? 53 mins

6. How long does it take to travel the whole distance from Chigley Town to Camberwick Green, using:
   a) Timetable A 1 hour 10 mins   b) Timetable B? 1 hour 24 mins

7. What is the same and what is different about the two timetables?
   Same: Time it takes to get from Chigley Town to Chigley Parkway, 4 minutes.
                Both trains depart from Trumpton at the same time, 08:00.
                Both trains take 9 minutes to get from Trumpton to Two Towns Junction arriving at 08:09.
                Both trains take 13 minutes to get from Two Towns Junction to Camberwick Green.

   Different: Trains on Timetable B spend longer waiting at each station between arrival and departure.
                Train from Chigley Parkway is 2 minutes slower on timetable B than on timetable A to Trumpton.

Challenge

Olga lives in Trumpton. She starts work at 08.30 in Camberwick Green. She has a 4-minute walk from the station.
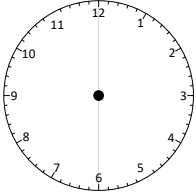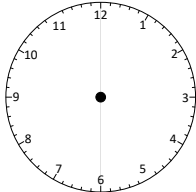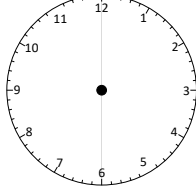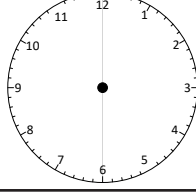Which timetable would be better for her? A
Why? Although a train leaves at 8:00am on both timetables if she used timetable B she would be late for work as it arrives at 8:29am and then only has one minute to complete a four minute walk.

A Bit Stuck?
Converting times

Can you convert between analogue, 12-hour digital and 24-hour digital clocks?
Write in the missing times in each format.

Analogue clock	Digital 12-hour format	Digital 24-hour format
	10:15 am	
	8:45 am	08:45
	2:35 pm	
		13:20
	10:40 pm	

Challenge

Can you arrange the 8 times in order throughout the day?

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A Bit Stuck?
Answers

Converting times

Analogue clock	Digital 12-hour format	Digital 24-hour format
	10:15 am	*10:15*
	8:45 am	*08:45*
	9:05 am	*09:05*
	2:35 pm	*14:35*
	1:20 pm	*13:20*
	10:40 pm	*22:40*

Challenge

The order of times is: 8:45am, 9:05am, 10:15am, 1:20pm, 2:35pm, 10:40pm.

Check your understanding
Questions

True or false?

- 13:40 is twenty to two in the afternoon.
- Midnight is 00:00
- Midday is 12:00 on the 24-hour clock
- 19:15 is quarter past 7 in the morning.
- 1 hour after 15:00 is six o'clock pm.

Calculate how long it is between…

- 13:40 and five to 5 in the afternoon
- Quarter to midday and 17:23
- Five past midnight and ten to midday

If each bus is 40 minutes late, write its new arrival time.

(i) No. 31 bus due at 12:55
(ii) No. 22 bus due at 13:04
(iii) No. 15 bus due at 14:44

The number 4A bus arrived 27 minutes late at 00:14. What time was it due?

Problem solving and reasoning
Answers

True or false?

- 13:40 is twenty to two in the afternoon. True.
- Midnight is 00:00 True.
- Midday is 12:00 on the 24-hour clock True.
- 19:15 is quarter past 7 in the morning. False - it is in the evening.
- 1 hour after 15:00 is six o'clock pm. False - it is four o'clock pm.

_____

Calculate how long it is between…

- 13:40 and five to 5 in the afternoon 3 hours 15 minutes.
- Quarter to midday and 17:23 5 hours and 38 minutes.
- Five past midnight and ten to midday 11 hours and 45 minutes.

An ENL jotting can help with these calculations, which are probably best-solved by **counting up** from the earlier to the later time.

_____

If each bus is 40 minutes late, write its new arrival time.

(i) No. 31 bus due at 12:55 13:35

(ii) No. 22 bus due at 13:04 13:44

(iii) No. 15 bus due at 14:44 15:24

Answers of 12:95 and 14:84 for (i) and (iii) respectively suggest child had added the minutes but forgotten that there are only 60mins in an hour.

The number 4A bus arrived 27 minutes late at 00:14. What time was it due? 23:47.