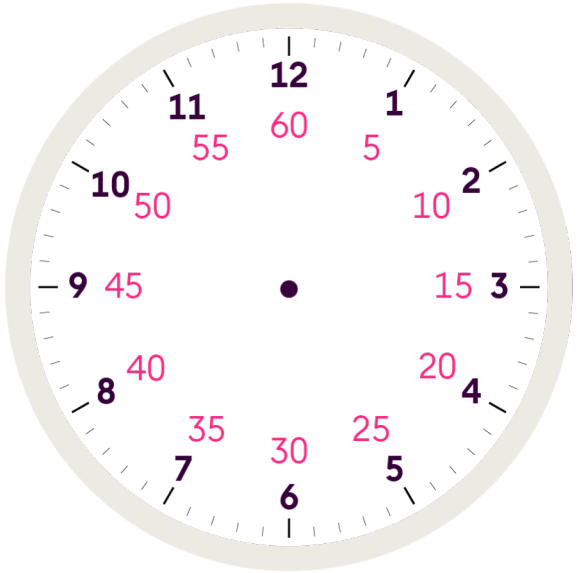
Calculating with time in football

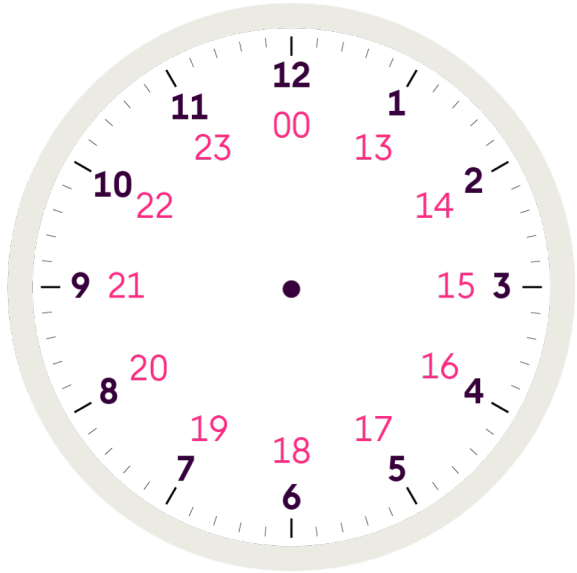
The Maths

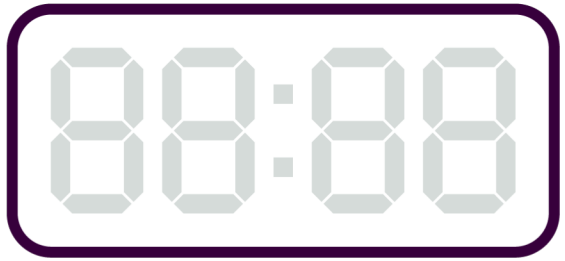
Maths resource

Upper KS2: Ages 9-11

Before you get started







Can you remember how to:

- count in 5s? E.g. 5, 10, 15…
- read the time on an analogue clock?
- read the time on a digital clock?
- read the time as a 24 hour clock?

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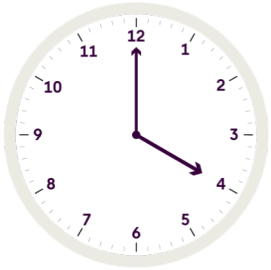
Before you get started

Types of clock

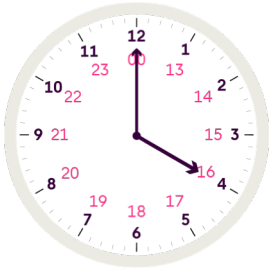
A digital clock

A **digital** clock or watch has a number display.



An analogue clock

An **analogue** clock or watch has hands to show 12 hour clock times. We use am for times before noon (midday) and pm for times after noon.



A 24-hour clock

For **24-hour clock times**, the hours are numbered in a day from 00:00 to 23:59. Times always have four figures. Four o'clock in the afternoon, or 4:00pm, is 16:00 in the 24-hour clock time.

Before you get started

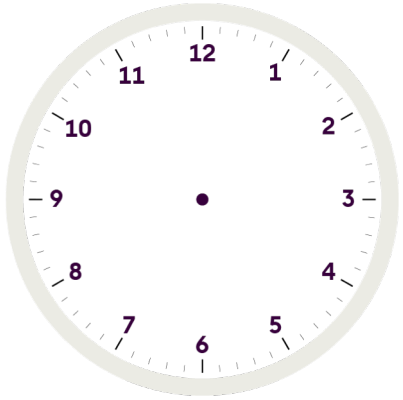
Can you join up the correct periods of time?

There are:

60 seconds in...	1 day
60 minutes in...	1 minute
24 hours in...	1 hour

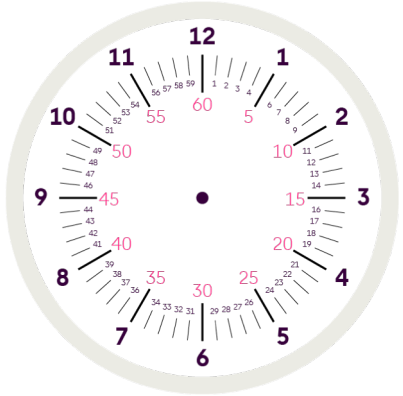
Analogue clock

Here is an analogue clock:



We can think of this as a straight number line:

And this clock has the minutes shown in increments of 5 minutes:



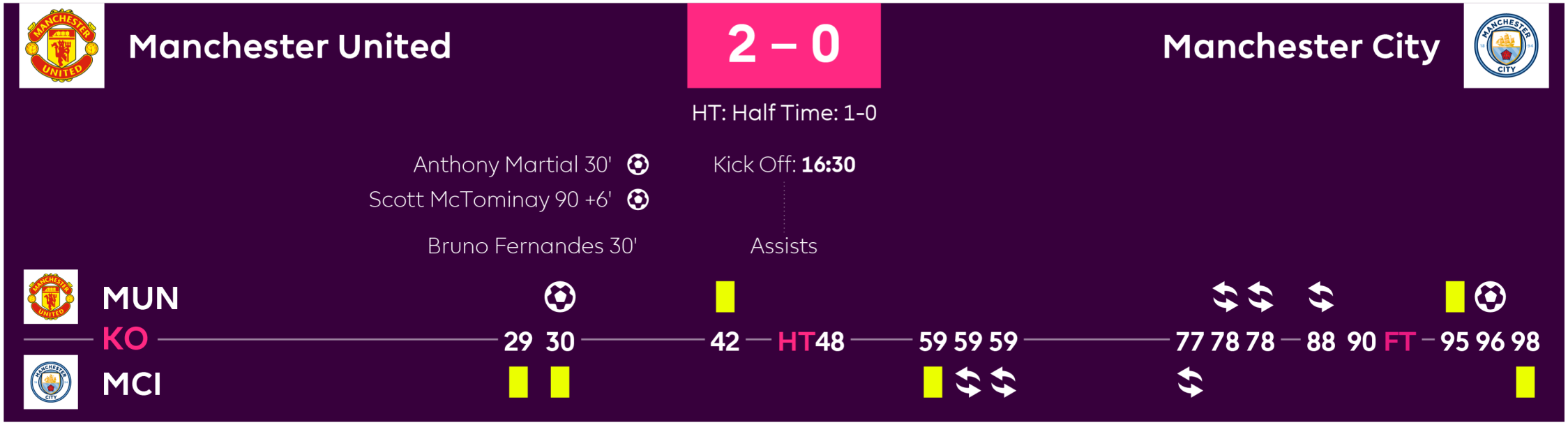
This is useful when we add or subtract minutes and it can help us to solve problems working out time.

Glossary of football terms

In football we use timelines to highlight when key match events took place.

Key

KO = kick off HT = half time FT = full time ⚽ = goal ▮ = yellow card ⇄ = substitution



Counting up

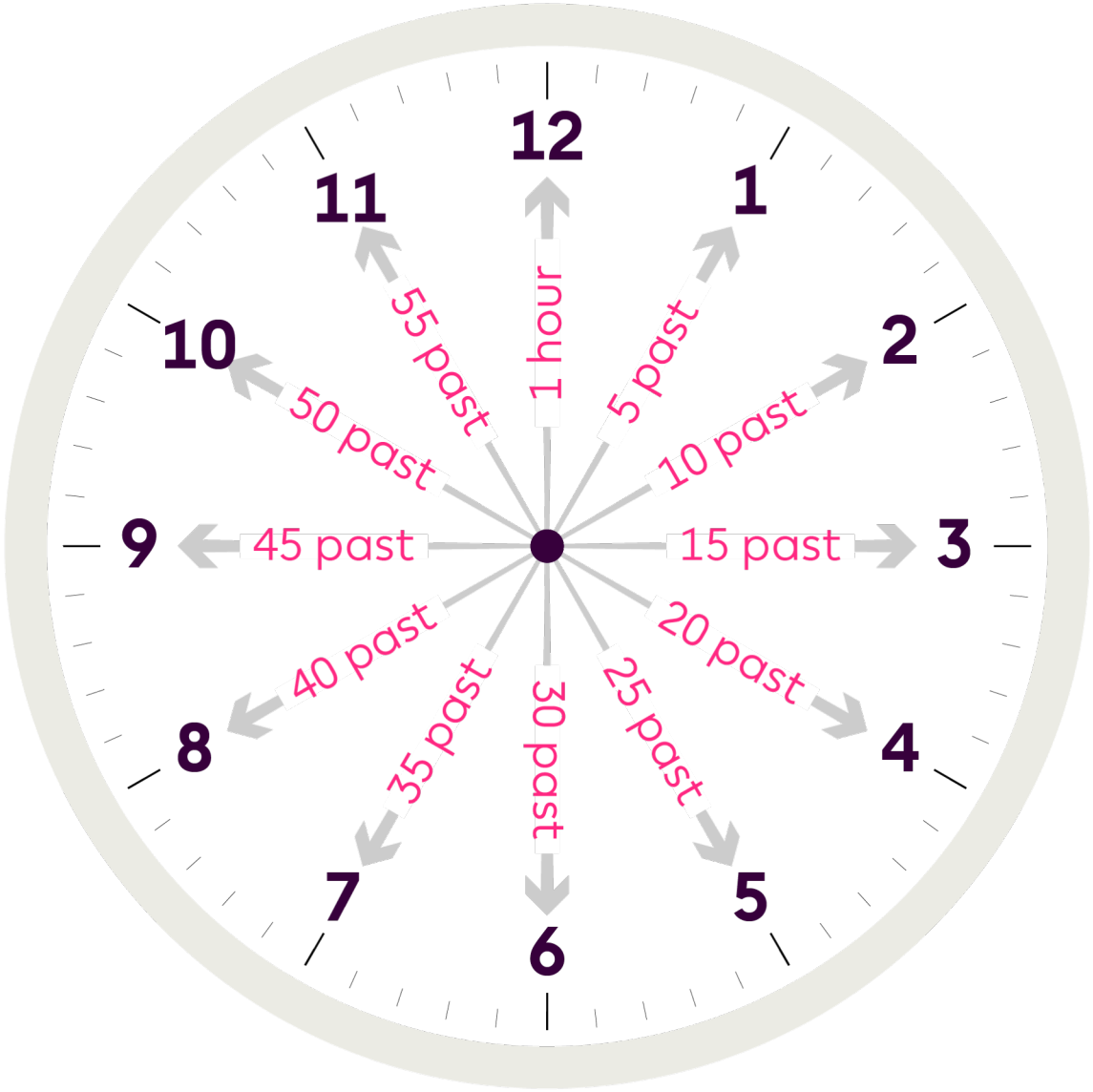
Calculating with time in football

Counting up

When the minute hand points to **4**, that means it is **20 minutes past** the hour.

When we reach **60**, it is **one hour**.

5	10	15	20	25	30	35	40	45	50	55	60
1	2	3	4	5	6	7	8	9	10	11	12



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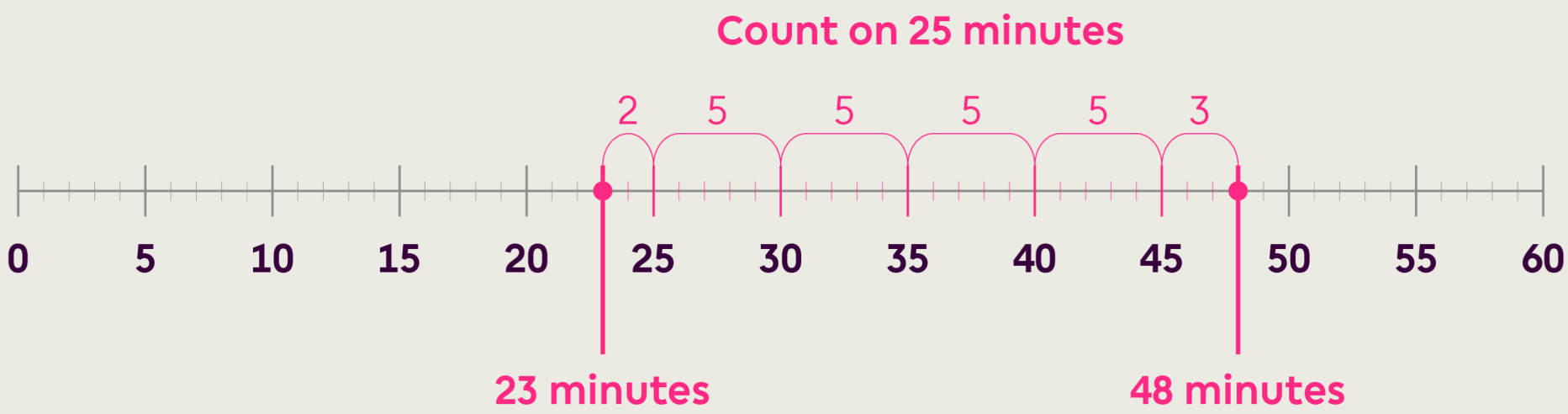
Adding minutes to under 60 minutes

We can use the timeline to help us add minutes.

For example: 23 minutes and 25 minutes would give a total of 48 minutes. We can count on 25 on the number line from 23.



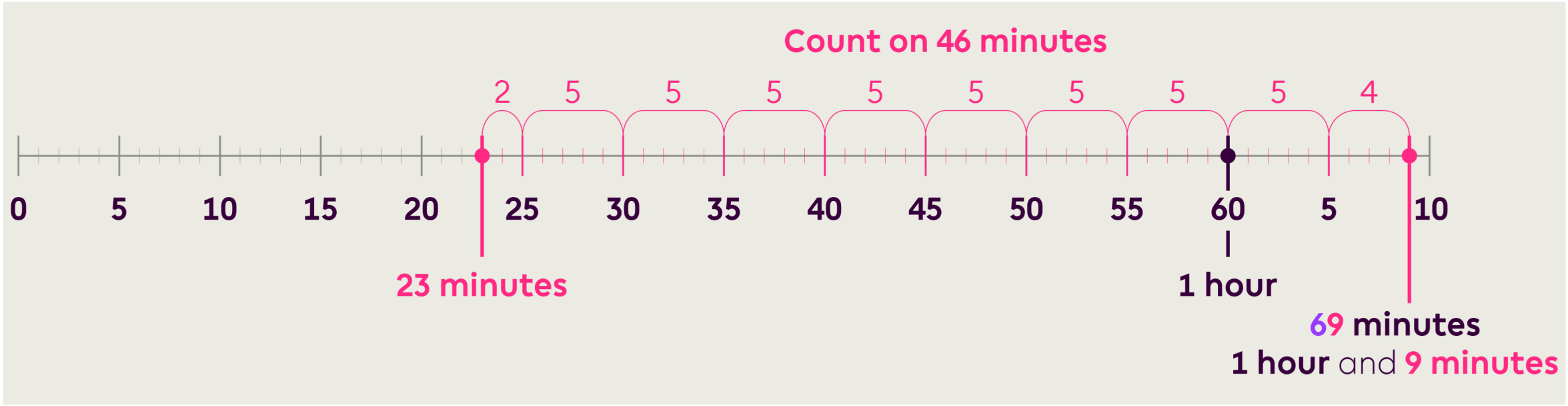
Adding minutes to over 60 minutes

We need to be careful if the total adds up to more than **60**:

23 minutes and 46 minutes = **69** minutes.
This is **1 hour** (**60 minutes**) and **9 minutes**

$$\begin{array}{r} 23 \\ +\ 46 \\ \hline \end{array}$$

69 = **60** + **9**



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Adding and subtracting mixed units of time

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Adding mixed units of time

To add mixed units of times (e.g. hours and minutes) together, it is easiest to **first convert them all to the same**.

For example:

A player played in one match for **38 minutes**, in a second match for **1 hr 15 mins** and in a third match for **1 hr 30 mins**.

What is the total time he played?

To work out the total, we need to convert the hours and minutes to minutes.

Step 1: convert the hours and minutes to minutes.

1 hr = 60 minutes so:

- **1 hr 15 mins** is 60 +15 = **75 mins**
- **1 hr 30 mins** is 60 + 30 = **90 mins**

Step 2: add the minutes together.

- **38** + **75** + **90** = 203 minutes

Adding mixed units of time

So now we can add **38**, **75** and **90** mins which gives us a total of **203 mins.**

Remember there are 60 minutes in 1 hour!

How many groups of 60 are in **203**?

- 60+60+60 = 180 mins so that is **3 hrs**.
- Count up from 180 to 203 and we have another **23 mins**
- So the total time played is **3 hours and 23 minutes**

Subtracting mixed units of time

Remember to do the same for subtraction

For example:

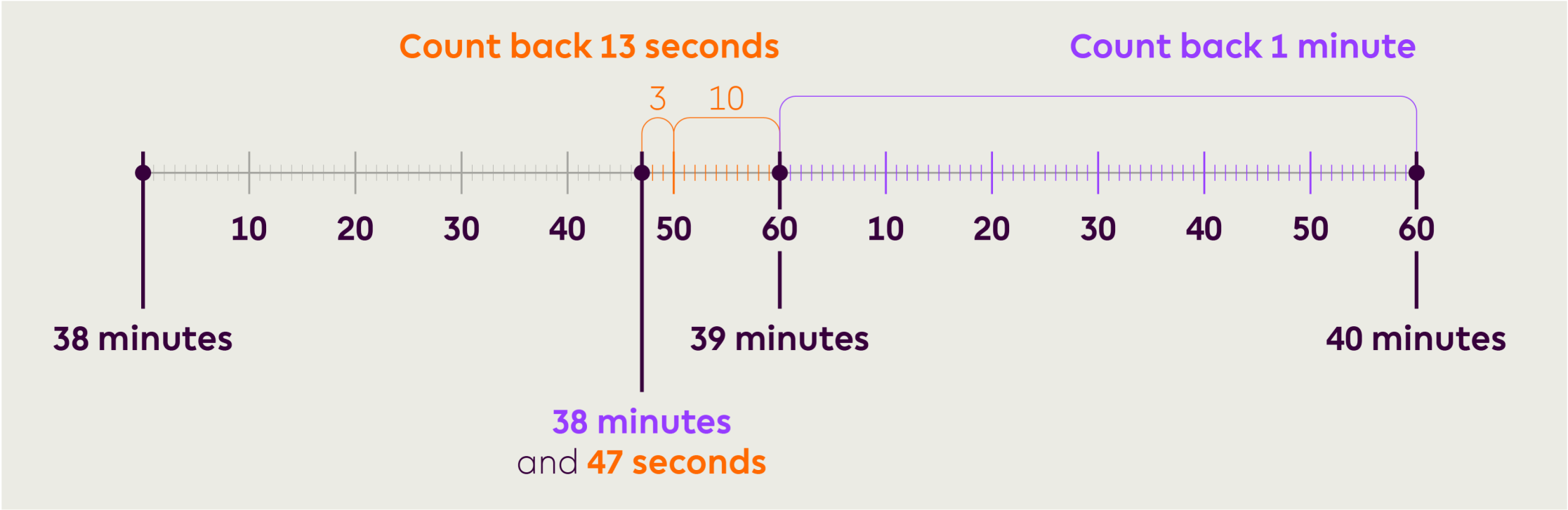
A team took two corners 73 seconds apart - if the second one was taken on 40 minutes, when was the first one taken?

73 seconds = **1 minute** and **13 seconds**

40 minutes → **Take away 1 minute**
40 min - 1 min = 39 min → **Take away 13 seconds**
60 sec - 13 sec = 47 sec → Why isn't the answer **39 minutes** and **47 seconds**? Move on to check your answer.

Using a number line for subtraction

You could also use a number line to count back:



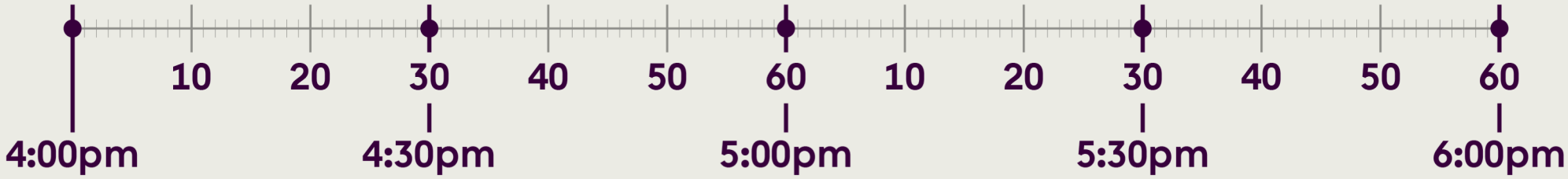
Calculations involving times of the day

Calculating with time in football

Calculations involving times of the day

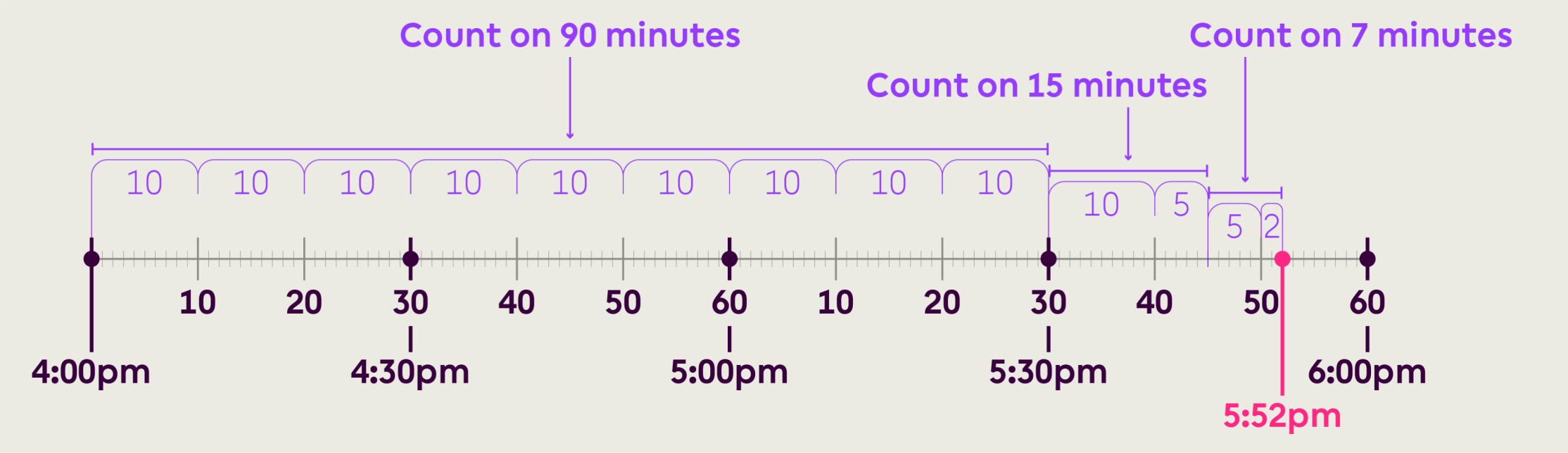
Example of using a timeline to solve problems with different times of the day.

A match is 90 minutes. There is a 15 minute half time break and 7 minutes added time at the end. If it starts at 4:00pm, what time does it finish?

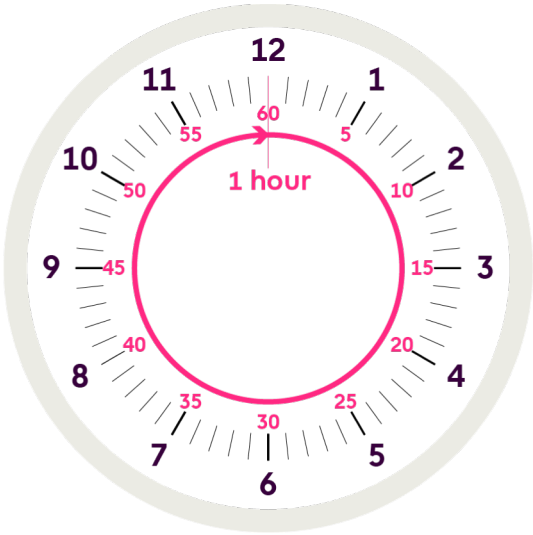
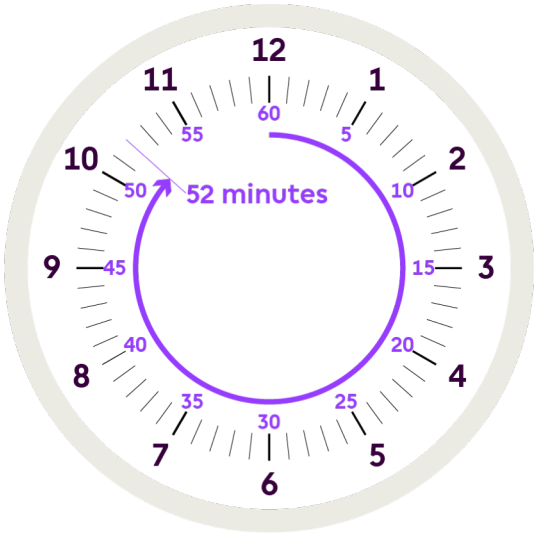


Calculations involving times of the day

Lets try adding this up on a timeline and try looking at it on the clock.



Calculations involving times of the day

Another way to complete this problem would be to add up all the times.

- **90 minutes** + **15 minutes** +**7 minutes** = **112 minutes**
- **112 minutes** = **1 hour** (60 minutes) and **52 minutes**
- Count on from 4 pm: **1 hour** takes you to 5:00pm and **52 minutes** would end at **5:52pm**