

Timetables



How long does a journey take?

If you wish to find out how long a journey lasts, you need to know the **start time** and the **end time** of the journey.

e.g. Fred sets off on a journey. He leaves Epsom station on the train at 7:10 a.m.
His journey **starts** at **7:10 a.m.**

The train arrives at Waterloo station at 7:52 a.m. His journey **ends** at **7:52 a.m.**

How long was Fred's journey?

To find out how long Fred's journey was, we need to work out **how many minutes have passed** from the start of the journey to the end of the journey.

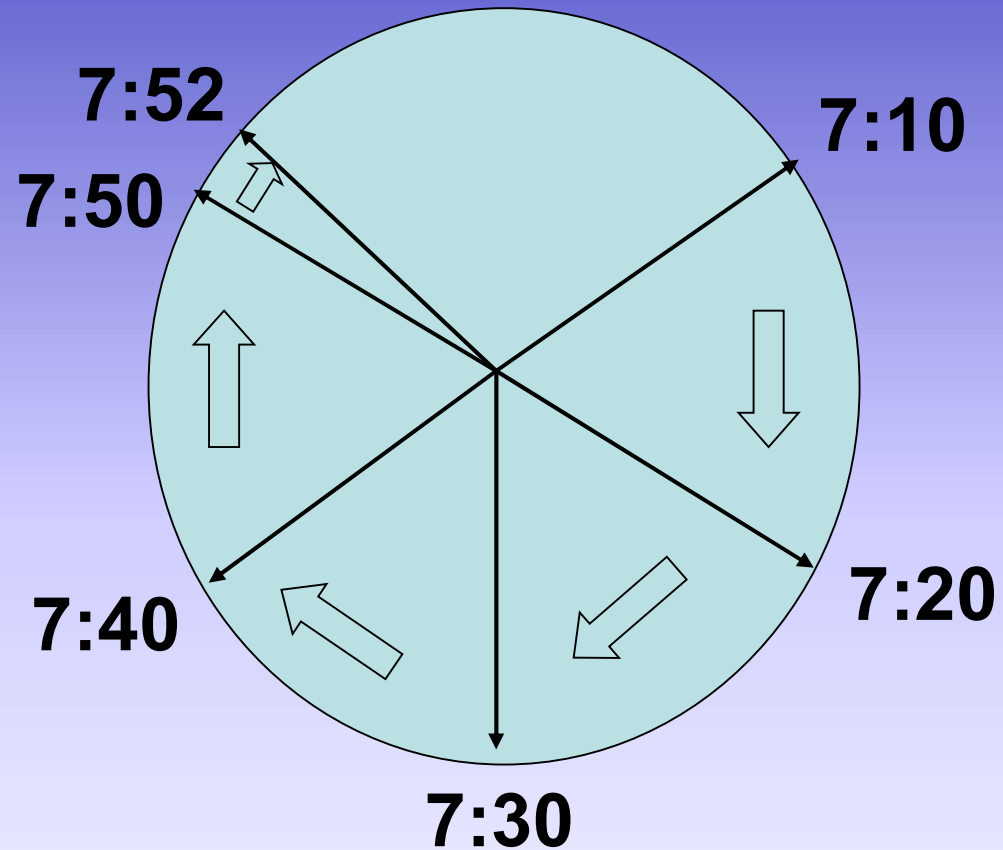
Fred's journey **started** at 7:10 a.m.

His journey **ended** at 7:52 a.m.

How many minutes do we have to **count on** from 7:10 to get to 7:52?

Count the minutes?

Time taken =
42 minutes



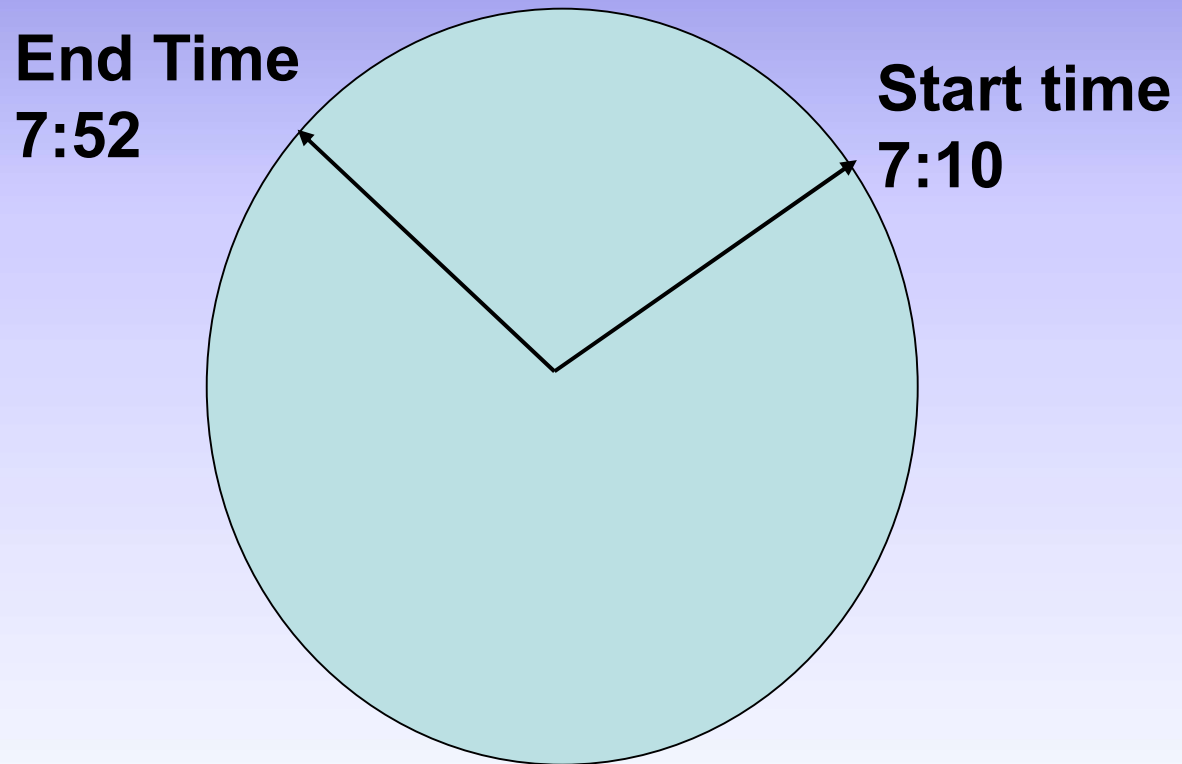
We have counted on **42** minutes from the **start** of Fred's journey to the **end** of Fred's journey.

Count the minutes?

We could also calculate Fred's journey time, by taking the start time, **10**, from the end time, **52**.

$$7:52 - 7:10 =$$

42 minutes



Work out how long these journeys take.

Station	Departure time
Leatherhead	07:10
Epsom	07:15
Wimbledon	07:30
Clapham Junction	07:40
Waterloo	07:50

How long does it take to get from Leatherhead to Epsom?

How long does it take to get from Wimbledon to Waterloo?

How long does it take to get from Epsom to Waterloo?

What if the hours are different?

Its not too difficult to calculate the length of a journey if we only have to compare the minutes. But what if the hours are different as well?

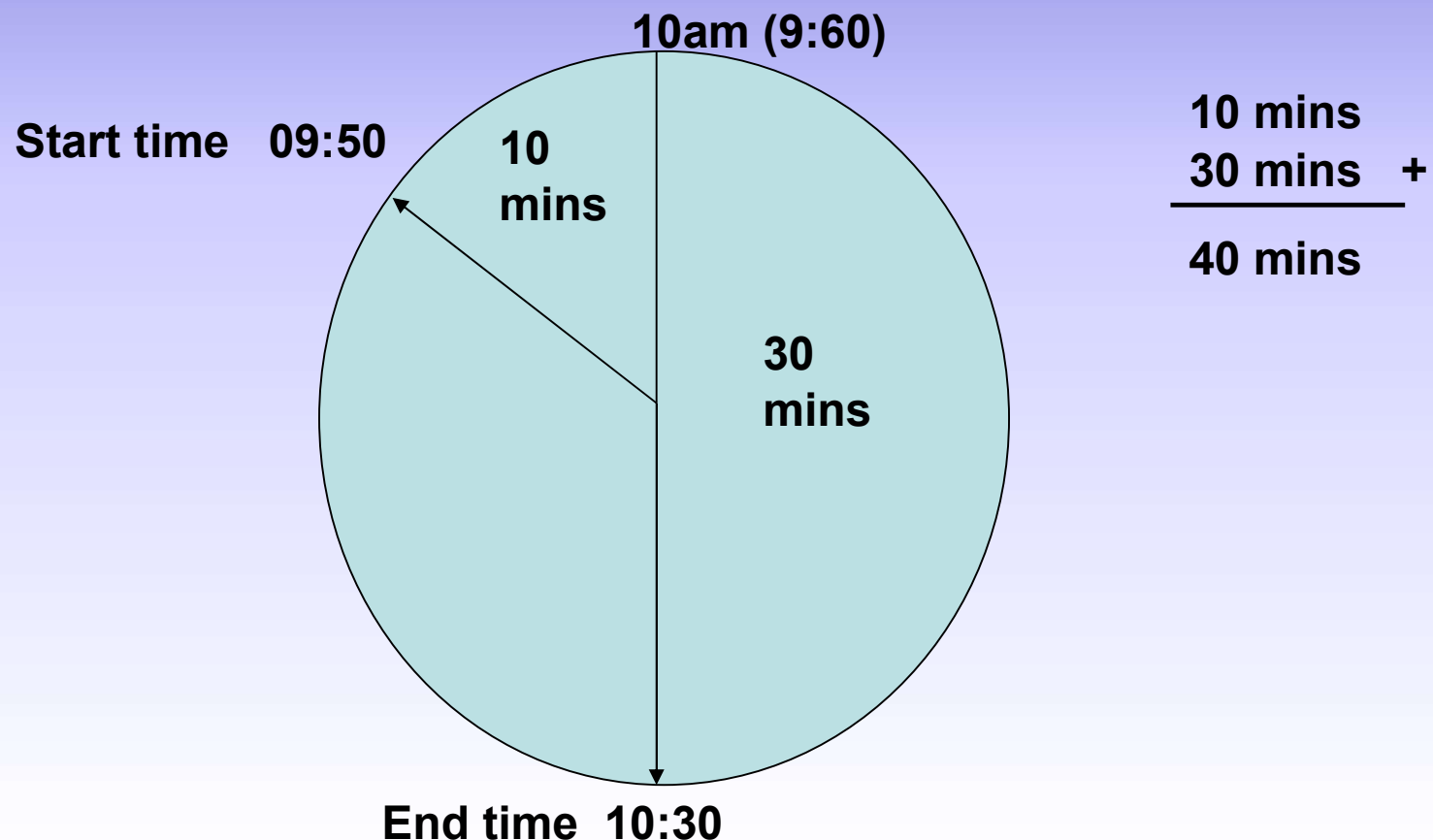
Fred sets off on another journey and **leaves** Dorking station on the train at **9:50 a.m.**

The train **arrives** at Waterloo station at **10:30 a.m.**

What if the hours are different?

To find out the length of the journey, we can simply count on the number of minutes from **9:50am to 10:00am...**

....and then count on from **10:00am to 10:30am.**



What if the hours are different?

Start time **9:50 a.m.**

End time **10:30 a.m.**

This calculation can be shown in writing below.

$$\begin{array}{l} 9:50\text{am} \longrightarrow 10:00\text{am} = 10 \text{ minutes} \\ 10:00\text{am} \longrightarrow 10:30\text{am} = 30 \text{ minutes} \quad + \\ \hline 40 \text{ minutes} \end{array}$$

Work out how long these journeys take.

Station	Departure time
Leatherhead	07:50
Epsom	07:55
Wimbledon	08:15
Clapham Junction	08:25
Waterloo	08:35

How long does it take to get from Leatherhead to Wimbledon?

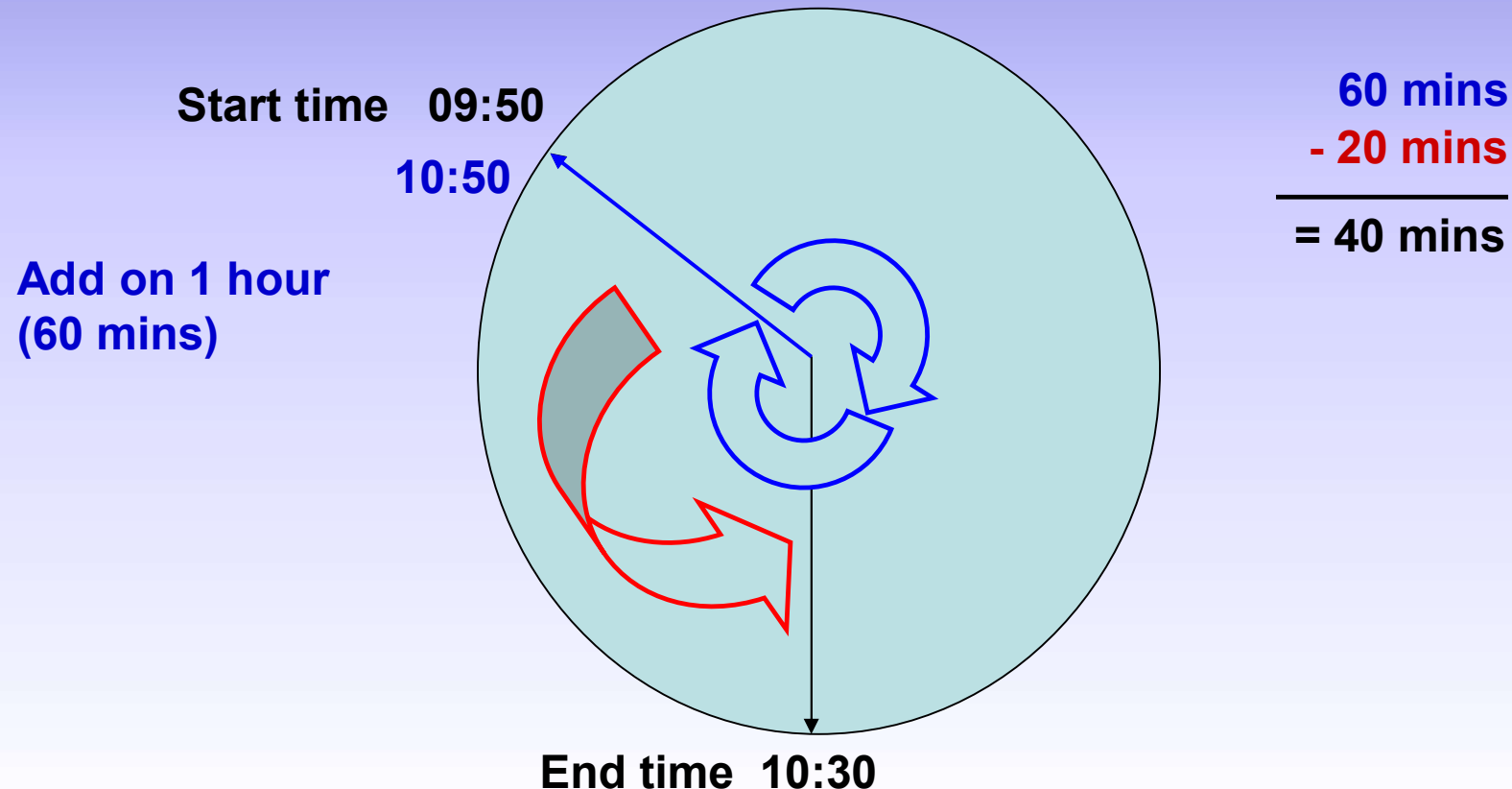
How long does it take to get from Epsom to Waterloo?

How long does it take to get from Leatherhead to Waterloo?

Another way of solving the problem?

Another way of calculating the duration of Fred's second journey is to count on a whole hour, **9:50am to 10:50am..**

....and then adjust the minutes back to the **end time 10:30am.**



Another way to calculate the duration of a journey?

This can be set out in writing as follows:

$$\begin{array}{rcl} 9:50\text{am} \longrightarrow 10:50\text{am} & = & 1 \text{ hour (which is 60 minutes)} \\ \text{(Adjust) } 10:50\text{am} \longrightarrow 10:30\text{am} & = & 20 \text{ minutes} \quad - \\ & & \hline & & 40 \text{ minutes} \end{array}$$

Journeys over one hour

If the journey takes more than an hour, then to calculate the length of the journey, you **count on whole hours** from the start time.

You can then, either:

1. **add on minutes** to arrive at the end time (as in the first method), or
2. **subtract minutes** to arrive at the end time.

Journeys over one hour

Adding minutes

e.g. I travel from London Euston to Manchester Piccadilly station. My train leaves at 08:30, and arrives in Manchester at 11:40.

I count on whole hours from 08:30.

09:30... 10:30... 11:30

I've counted on **3 hours**.

I then count on another **10 minutes** to take me to 11:40.

Therefore my total journey time is **3 hours 10 mins**.

Journeys over one hour

Taking off minutes

e.g. I travel from London kings Cross to York. My train leaves at 07:50, and arrives in York at 10:30.

I count on whole hours from 07:50.

8:50... 09:50... 10:50

I've counted on **3 hours**.

To get to the arrival time, I then count back **20 minutes** to take me back to 10:30.

Therefore my total journey time is **2 hours 40 mins**.

Work out how long these journeys take.

Station	Departure time
London	07:35
Milton Keynes	08:05
Coventry	08:30
Crewe	09:25
Manchester	10:15

How long does it take to get from London to Coventry?

How long does it take to get from London to Crewe?

How long does it take to get from London to Manchester?