

## Activity Sheets

### Freight Schedules Activity Sheet 1

It's vital to transport goods from place to place but on land most of this happens by road. Freight trains can reduce the number of lorries on our roads. This is good for congestion and can also lower the carbon emissions from transport. However, new freight services need to fit in with existing passenger timetables.

**Your challenge:**  
Complete the passenger timetable and identify when you could add freight services.

#### Network Map

Trains can only overtake one another on the double track between stations B and D, including at stations B, C and D.



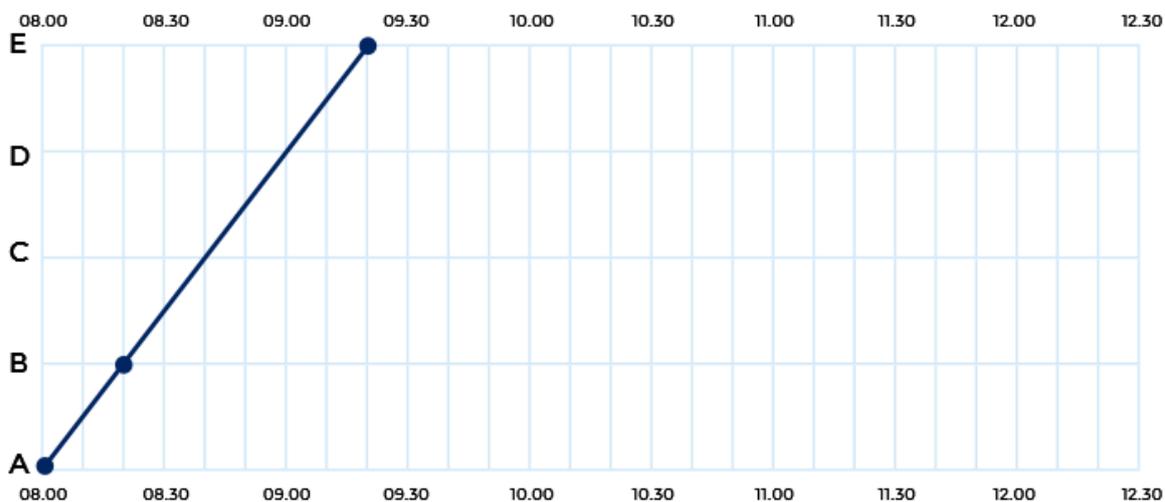
#### Network Timetable

- The timetable includes stopping and express services.
- All trains travel at the same speed between A – B and D – E.

Service	Express	Stopping	Express
A	08:00	?	10:00
B	08:20	09:20	?
C	-	09:50	-
D	-	10:50	-
E	?	11:10	11:20

## Train times string graph

String graphs are a visual way to show train timetables. Each line shows a train's journey from station to station. The 08:00 express has been added:



Activity Sheets

Freight Schedules Activity Sheet 2

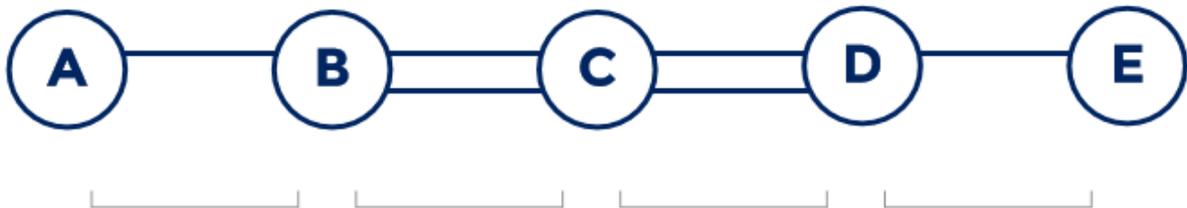
1

- Fill in the gaps to complete the timetable for stopping and express services on activity sheet 1.
- Complete the 'string graph' on activity sheet 1, to show each train's journey:
  - Mark the time when each train will reach each station.
  - Join each train's dots to create a line for that journey.

2

The freight train will take 1.5 times as long as the stopping service to get from A to E. It will not stop at any stations. How long will it take the freight train to complete the journey from station A to station E?

Calculate in minutes how long the freight train will take to pass between each station:



3

The freight train company suggests two freight services. These would pass through station A at 08:30 and 08:55.

- Work out a timetable for these two freight journeys.
- Add these freight journeys to your string graph using a different colour.

Which, if any, of these services will be possible? Remember that trains can only pass each other between B and D.

- Use your string graph to find where the lines cross. Can the trains pass each other at that point?