CENTRES FOR EXCELLENCE IN MATHS

FE centre resource

Pearson

# Lesson plan

# Speed

## 1. Lesson objectives

- Convert between units of time (seconds, minutes and hours)
- Understand the meaning of average speed and the factors that can affect average speed in real-life contexts
- Solve problems that involve distance, time and speed

## 2. GCSE curriculum

**Ratio, proportion and rates of change**

**R1** change freely between compound units (e.g. speed) in numerical contexts

**R10** use compound units (e.g. speed)

## 3. Lesson plan

This is an overview of the lesson. More notes can be found in the notes in the lesson slides.

| Activity | Purpose of this activity | Time (min) | Guidance | Materials |
|---|---|---|---|---|
| Introduction | To solve a problem involving converting units of time | 10 | Show learners the student sample thinking. Ask learners to complete task in pairs and then bring them together in a whole class discussion. | Mini whiteboards<br><br>Slide 2 |
| Discuss 1 | To explore the concept of speed as rate | 10 | Introduce the key idea of speed as the distance travelled per unit of time. Discuss the examples of using ratio tables to calculate average speed. | Slides 3–7 |
| Explore 1 | To introduce the concept of average speed using the context of travelling | 20 | Use online maps or the maps in the handouts. When using an online map or map application, choose a local landmark and ask learners to calculate the average speed of the journey from the centre to the chosen landmark. Edit slide 10 to show the name of the chosen landmark and prepare the answers for the handout. Ask learners to work in pairs to calculate average speed using ratio tables. | ‘Online maps’ handout<br><br>Slides 8–9 (no internet)<br><br>Slide 10 (internet) |

| Activity | Purpose of this activity | Time (min) | Guidance | Materials |
|---|---|---|---|---|
| Discuss 2 | To discuss the methods of finding average speed | 10 | Once learners have completed the task, discuss the different learner approaches. Ask learners to share which methods they found to be most efficient.<br><br>The answers on slide 11–13 are for the ‘no internet’ version of the task only. Tutors using the ‘internet’ version of the task will need to prepare answers based on the chosen landmark. | Slides 11–13 (no internet) |
| Explore 2 | To explore the concept of speed by making or using ratio tables in the context of pizza delivery times | 10 | Ask learners to work in pairs to work out which pizza will be delivered closest to a time point, given average speed and distance. Provide blank or partially filled ratio tables as scaffolding if required. | Slide 14<br><br>‘Pizza time’ handout<br>‘Pizza time scaffold’ handout |
| Discuss 3 | To compare problem-solving approaches | 10 | Once learners have completed the task, have them explain their reasoning and methods. Discuss factors that pizza shops need to think about when delivering pizza. | Slides 15–18 |

| Activity | Purpose of this activity | Time (min) | Guidance | Materials |
|---|---|---|---|---|
| Practice questions | Learners apply their knowledge to exam questions | 10 | Ask learners to work independently to answer exam questions. After they have completed the task, ask learners to discuss their methods and thinking. | Slides 19–23<br><br>‘Exam Practice’ handout |
| Review | To summarise learning and review the concept proportional reasoning | 10 | Summarise the concept of speed as how it is applied in the problems learners have worked on. It is important to discuss and make sense of any different methods learners have used to solve the problems rather than prescribing a best method. | Slide 24 |