Teacher guide: parking problem

Abstract

In this task students work as architects on the design of a car park (garage). The structure of the building and the distribution of the pillars have already been decided and cannot be changed. Students design the lay-out of the car park, the parking spaces and the entrance ramp. They work within certain constraints and need to provide some missing information themselves.
Discipline: mathematics
Age group: 11-15 years
Time: 100 minutes (2 lessons)

Preparation:
- copy worksheet
- Materials: pencils, rulers etc.
- optional: acces to internet to look for additional information

Example lesson plan:

Lesson 1

5 min	Organize your class in small working groups (4 students) and introduce the problem and the workplace: an architect designing a parking lot. You may want to show a video.

- see suggestion on site for a general video on the work of architects
- a more specific video – is this animation of the design of an underground parking lot https://www.youtube.com/watch?v=-UgHwU9oGno . Use the first minute and the last part from 3:28
- more videos can be found on youtube

10 min	Students are introduced to the task (worksheet) and what is expected as a product. They start working on the task.
5 min	Brief discussion with the whole class on problems and question, for example regarding 'missing' information: how big is a car? How much space is needed for turning etc. Note do not provide answers but have students find this information themselves (e.g. on the internet, exchanging personal knowledge, measuring cars etc.)
25 min	Students continue working on the task
5 min	Brief discussion of results and questions so far

Lesson 2

35 min	Students finish their design of the car park (drawing as well as an explantion)
15 min	Present (all or a few) examples and discuss results

Teaching notes

- Depending on the age/grade level of your students you may want a more detailed design.
- If enough time is available students may use additional information from the internet (for example on rules for accesible parking places; or on the turning circle of a car).