

# The bike lock

## Instructions for the teacher

Teaching objective      Revisit the concepts of addition with carrying and subtraction with borrowing

Duration                      Approximately 20 minutes

Material required        Activity sheet: *The bike lock*, virtual lock

### TASK

In this activity, the students must find the number of additions with carrying and subtractions with borrowing present in each of the three series of operations provided, with the goal of figuring out the combination of a real or pretend bike lock. The number found in each series corresponds to one of the three digits in the bike lock combination.

### PROCEDURE

#### 1. Present the scenario to the students.

*Ms. Karine is opening boxes to prepare for her class. She discovers an old bike lock in one of them. Since she doesn't remember the combination, she needs to solve the following riddle that she had given her students several years ago.*

#### 2. Distribute the activity sheet featuring the riddle to each student.

#### 3. Ask the students to solve Ms. Karine's riddle in order to figure out the three-digit combination to open her bike lock.

You have different options to validate the combination that the students find:

- Use a real lock (with a modifiable combination).
- Use a virtual lock (available [here](#)\*).
- Ask the students to write the combination on their sheet.

\*Note: You need to be logged in to Netmath to access it.

#### 4. If several students set about performing all of the calculations, have them stop and ask them one of these questions:

- Is it necessary to do all of the combinations? How do you know?
- How do you know if an operation requires carrying/borrowing?
- Are there similarities between the cases of carrying/borrowing?
- What instructions would you give a robot so that it could do the work for you?

#### Examples of answers:

It is not necessary to do all of the calculations. All we have to do is look at the digits in each column of the addition or subtraction:

- In addition, when the sum of one of the columns is greater than 9, carrying is necessary.
- In subtraction, when, for a given position, the digit on the bottom is greater than the digit on the top, borrowing is necessary.

**SOLUTION : 8-6-4**