

## CIVIL ENGINEERING

### Career-Focused Video

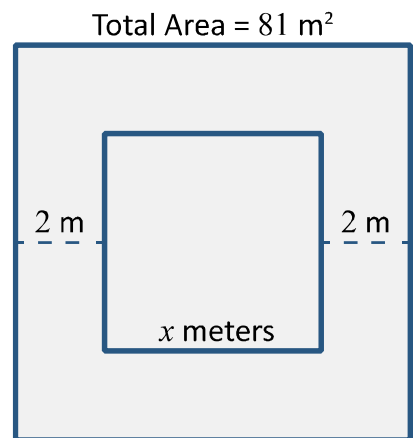
- 1) Describe one part of the civil engineer's job.
- 2) What is the most enjoyable part of the civil engineer's job?
- 3) What is at least one challenging aspect of being a civil engineer?
- 4) What are actions you could take or classes you should take if you are interested in becoming a civil engineer?

### Factoring and Area

You are a civil engineer working with a construction company who is pouring a concrete foundation for a residential building.

The main foundation will be a square with side lengths  $x$  meters. However, building codes require a reinforced concrete border strip that is 2 meters wide running around the entire perimeter of the foundation, as shown in the figure on the right.

The total area covered by the main foundation plus border must equal 81 square meters to meet the structural load requirements for the building's weight.



Using the area formula, you can see that the total area can be represented by  $(x+4)(x+4)$ , which you know must be 81 square meters. You complete the following calculations:

$$(x+4)(x+4) = 81$$

$$x^2 + 8x + 16 = 81$$

$$x^2 + 8x - 65 = 0$$

Factor the resulting trinomial and check your work.