

5.2 Thinking in Circles (p. 115)

The Marvellous Suspension Bridge

MY SEVENTH-GRADE CIVICS TEACHER one day decided to take time off from telling us about the major agricultural and industrial products of every country in the world to describe that wonder of modern engineering, the suspension bridge. The following dialogue ensued:

Mr. V: The engineering problem is to hold the roadway up in the air. It's held up by a lot of vertical cables attached on top to those big curving horizontal cables.

Us: What holds up those big curving horizontal cables?

Mr. V: They're held up by those big vertical steel posts.

Us: What holds them up?

Mr. V: They're attached to the roadway.

Us: Yeah, but what holds up the roadway?

Mr. V: I already told you. They're held up by those vertical cables.

Us: And what holds up those vertical cables?

Mr. V: How many times do I have to go through this? The big curving horizontal cables hold them up.

Mr. V's reasoning is circular, but it's not exactly what logicians call "circular reasoning," which is the mistake of using what you're trying to prove in the course of trying to prove it.

Anyway, after a few trips around the bridge, Mr. V. finally saw the circularity problem. "Well," he concluded, "those big vertical steel posts go down below the roadway, and they're embedded in great big cement blocks that float on the surface of the water."